Gridlock to grid speed: A new blueprint for accelerating utility projects

GenAI was utilized in the creation of this image

kpmg.com

Executive summary

Utilities are under pressure to deliver grid infrastructure faster, yet most still rely on delivery models built for a different era, prioritizing certainty over speed. Today, that same risk-averse approach is slowing execution just as delivery speed is determining where large, energy-intensive projects are built.

Much of that delay comes from how projects are run. Fragmented teams slow decisions, while late-stage planning, rigid contracting, and siloed data make it harder to act early and manage risk. Outside the utility, constraints are tightening. Supply chains are constrained, rights-of-way are more complex to secure, particularly in rural areas, and the sheer volume of permitting requirements is extending timelines and raising costs.

Leading utilities are starting to change how they deliver projects, including using clearer risk frameworks to support earlier decisions, working with partners more collaboratively, and improving how data and programs are managed. But consolidation and capacity constraints across engineering and construction providers are making it harder to structure projects effectively.

Accelerating grid delivery requires acting earlier and with greater discipline, not simply avoiding risk, but managing it with the understanding that full certainty is no longer an option.

GenAI was utilized in the creation of this image

Introduction

For decades, utilities have followed a project delivery model built around one overriding principle: absolute certainty. This conservative approach made sense for its time. By waiting for final regulatory approvals, fully completed engineering, and tightly defined contract scopes before moving forward, utilities protected capital and shielded investors and ratepayers from costly redesigns, contractor claims, or regulatory rejection. But in today's environment, that same caution can also create delays at a time when utilities are competing to deliver power to the same energy-intensive projects, and speed increasingly determines the outcome. This raises a critical question:

When does protecting against risk begin to create a different kind of risk altogether?

That risk-avoidance culture now shows up in ways that directly slow execution, just as supplies of critical equipment, materials, and skilled labor remain constrained—and delays can mean losing the ability to secure them. Fear that regulators may disallow cost recovery often delays or defers critical decisions in the name of prudence.

Utilities also default to rigid, risk-transfer contracting models that protect against downside but create friction with vendors, slow execution, and turn inevitable uncertainty into prolonged scope disputes.

Project data often remains trapped in departmental silos, limiting transparency and hindering real-time risk management. Ironically, the industry's ingrained bias toward risk avoidance is now a substantial threat to capital efficiency.

Meeting modern grid demand requires utility leaders to move faster without abandoning discipline. Here we outline a practical path to make that transition.

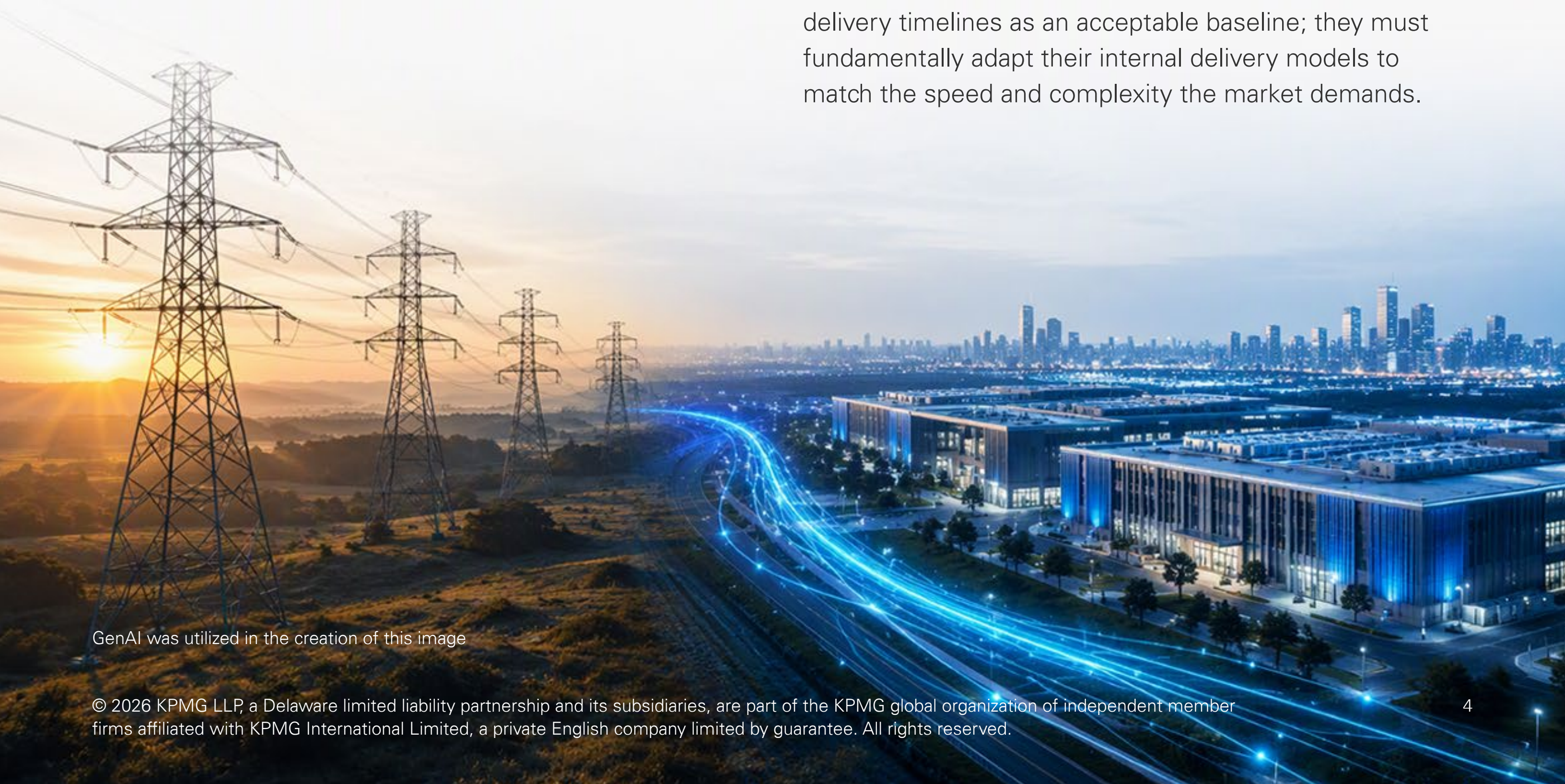
By adopting a single framework for defining risk, deploying collaborative commercial models that align vendor incentives, and establishing a single source of truth for project data, utilities can compress project cycle times and deliver the generational build-out.

The widening gap between grid needs and delivery speed

The current grid delivery model is operating under the weight of historic underinvestment and a long-standing, risk-averse culture. This underinvestment now manifests as a severe talent shortage, with two-thirds of utilities reporting insufficient staffing levels in the engineering and project management roles most critical for execution, according to our benchmarking analysis. Over time, this cautious approach has steadily stretched out the baseline schedule for major transmission work. Major transmission projects that should take five to seven years now regularly require ten or more years to complete, according to our analysis.

The resulting delays are colliding with an unprecedented demand shock. Technology companies and advanced manufacturers are aggressively seeking massive, concentrated power loads to support new artificial intelligence (AI) clusters and data centers. Because access to power is now their primary constraint, a utility's delivery velocity has effectively become the deciding factor in where these facilities locate and build.

While this rapid growth brings immense economic opportunity, it also invites intense public debate over grid strain, resource allocation, and community impacts. Navigating this heightened scrutiny means utilities can no longer afford to treat these extended delivery timelines as an acceptable baseline; they must fundamentally adapt their internal delivery models to match the speed and complexity the market demands.



GenAI was utilized in the creation of this image

Breaking the bottlenecks: why grid projects stall

Major projects have historically been managed through a fragmented structure of dispersed resources, with no single point of accountability for project success. This lack of clear ownership creates decision paralysis and multiplies complexity. According to our benchmarking analysis, the number of stakeholders involved in a project can jump from 15 to more than 40 as it moves into the initiation phase, creating significant progress delays before work can even begin.

This combination of project planning challenges and governance, risk, and regulatory demands frequently stalls execution at critical points in the delivery cycle (see sidebar, "What one large US energy project reveals about delivery risk").

What one large US energy project reveals about delivery risk

A large, regulated US generation project offers a cautionary example of what happens when delivery complexity outpaces execution discipline. A project was initially approved with an expected capital cost of roughly $14 billion and targeted in-service dates in the mid-2010s, but it ultimately entered commercial operation years behind schedule and at a total cost of more than $30 billion.[1, 2]

Execution suffered from a series of compounding failures. The original engineering and construction model proved unmanageable at scale, and the primary contractor's bankruptcy forced the owners to take over management mid-construction. This disruption was worsened by quality-assurance deficiencies that triggered intense federal oversight and delayed approvals.[4, 5]

Meanwhile, regulatory reviews over cost recovery and prudency subjected every budget update to intense scrutiny from the public and shareholders.[6, 7]

The core lesson for grid delivery leaders is that optimization must extend far beyond engineering and scheduling. Successful execution requires early integration of governance, contractor readiness, quality control, and regulatory strategy. Without this early alignment, handoffs multiply, execution stalls, and recovery becomes far more expensive than prevention, particularly when new delivery approaches are adopted without the governance needed to manage risk effectively

Beneath these execution failures sits a structural tension utilities now face. Delivering faster often requires committing capital earlier and at risk to secure materials, labor, and capacity. But utilities must still demonstrate after the fact that those investments were prudent, used, and useful to recover costs through rates.

When execution breaks down, this tension intensifies—driving greater regulatory scrutiny, prolonging recovery timelines, and compounding financial exposure.

GenAI was utilized in the creation of this image

[1] US Energy Information Administration, Today in Energy, "Plant Vogtle Unit 4 begins commercial operation," May 1, 2024.

[2] Reuters, Paul Day, "Vogtle's troubles bring US nuclear challenge into focus," August 24, 2023.

[3] POWER Magazine, Sonal C. Patel, "How the Vogtle Nuclear Expansion's Costs Escalated," September 24, 2018.

[4] US Nuclear Regulatory Commission, inspection reports for Vogtle Units 3 and 4, 2021.

[5] Engineering News-Record, Scott Judy, "Vogtle Project Owner's Quality-Assurance Gets NRC Scrutiny," June 22, 2021.

[6] Georgia Public Service Commission, "Commissioners Approve Agreement for Vogtle Construction Costs," December 19, 2023.

[7] Georgia Recorder, Stanley Dunlap, "Georgia Power, state regulators agree to division of Vogtle nuclear plant costs," Georgia Recorder, August 31, 2023.

[8] Reuters, Paul Day, "Vogtle's troubles bring US nuclear challenge into focus," August 24, 2023.

Fragmented and failing: How workflows and technology hinder execution

Utility operating models often fail to turn capital plans into execution at speed. Fragmented workflows slow decisions, blur accountability, weaken handoffs, delay regulatory progress, drive engineering rework, and limit supply chain performance.

This fragmentation begins at project inception with weak early-stage planning discipline. Teams frequently treat initial planning and scoping as open-ended exercises rather than managing them against a strict critical path with integrated accountability and targets by functional discipline. Without clear visibility into performance relative to plan during these formative stages, foundational delays quietly accumulate long before formal execution even begins.

Early decisions are often made in functional silos, with planning teams relying on historical assumptions rather than incorporating real-time input from procurement, supply chain, right of way, and construction teams. The result is plans that appear viable at inception but break down once execution realities are introduced.

As projects move between planning, engineering, and finance, a lack of system integration triggers significant rework. Utility technology stacks are often poorly equipped to handle the scale of modern grid expansions, forcing teams to rely on a patchwork of disconnected software platforms that cannot communicate effectively. Without a single source of truth, employees must resort to extensive manual data entry to move and re-create foundational project data—such as cost, schedule, and risks—across these systems. This manual duplication not only adds unnecessary cycle time to every project phase but also introduces severe risks to data quality. When critical project metrics are keyed in by hand across multiple databases, the data quickly degrades, leaving executives without the accurate, real-time visibility needed to manage massive capital portfolios and make timely informed decisions. In practice, this leaves decision-makers relying on outdated information, often missing the narrow windows required to intervene and keep projects on track.

Finally, fragmented internal processes directly undermine external supply chain operations. While leading organizations in other industries have adopted more integrated supplier management and forecasting practices, many utilities continue to struggle with early supplier engagement and long-range planning needed to support accelerated project timelines.

Because utilities fail to share integrated, reliable forecasts early in the project lifecycle and avoid making large at-risk purchases, critical materials and labor are secured too late to support accelerated timelines. This reactive approach creates a final, critical bottleneck just as projects approach the construction phase.

Fragmented and failing: How workflows and technology hinder execution

Utility operating models often fail to turn capital plans into execution at speed. Fragmented workflows slow decisions, blur accountability, weaken handoffs, delay regulatory progress, drive engineering rework, and limit supply chain performance.

This fragmentation begins at project inception with weak early-stage planning discipline. Teams frequently treat initial planning and scoping as open-ended exercises rather than managing them against a strict critical path with integrated accountability and targets by functional discipline. Without clear visibility into performance relative to plan during these formative stages, foundational delays quietly accumulate long before formal execution even begins.

Early decisions are often made in functional silos, with planning teams relying on historical assumptions rather than incorporating real-time input from procurement, supply chain, right of way, and construction teams. The result is plans that appear viable at inception but break down once execution realities are introduced.

As projects move between planning, engineering, and finance, a lack of system integration triggers significant rework. Utility technology stacks are often poorly equipped to handle the scale of modern grid expansions, forcing teams to rely on a patchwork of disconnected software platforms that cannot communicate effectively. Without a single source of truth, employees must resort to extensive manual data entry to move and re-create foundational project data—such as cost, schedule, and risks—across these systems. This manual duplication not only adds unnecessary cycle time to every project phase but also introduces severe risks to data quality. When critical project metrics are keyed in by hand across multiple databases, the data quickly degrades, leaving executives without the accurate, real-time visibility needed to manage massive capital portfolios and make timely informed decisions. In practice, this leaves decision-makers relying on outdated information, often missing the narrow windows required to intervene and keep projects on track.

Finally, fragmented internal processes directly undermine external supply chain operations. While leading organizations in other industries have adopted more integrated supplier management and forecasting practices, many utilities continue to struggle with early supplier engagement and long-range planning needed to support accelerated project timelines.

Because utilities fail to share integrated, reliable forecasts early in the project lifecycle and avoid making large at-risk purchases, critical materials and labor are secured too late to support accelerated timelines. This reactive approach creates a final, critical bottleneck just as projects approach the construction phase.

External factors compound delays

While utilities struggle to optimize their internal execution, they are simultaneously facing an increasingly hostile external environment. Prolonged supply chain shortages for critical, long-lead equipment—often driven by concentrated and fragile global supply chains—continue to limit how quickly projects can advance, even when other internal planning milestones are met.[9] At the same time, securing rights of way has become more complex and less predictable, particularly in rural areas, where land acquisition challenges introduce significant cost variability and schedule delays..

These constraints are compounded by a grueling permitting environment. Complex environmental reviews, mandated by federal statutes such as the National Environmental Policy Act, alongside reviews conducted by agencies like the US Army Corps of Engineers and state equivalents such as the California Environmental Quality Act, often create substantial, multiyear hurdles before construction can even begin.[10]

Beyond major environmental reviews, utilities must also navigate a high volume of land-use approvals—securing permits for each road, rail, and infrastructure crossing across hundreds of miles of transmission development.

Because these external permitting timelines are so rigid and protracted, any internal utility delay early in a project's lifecycle is severely magnified, ultimately destroying capital efficiency. At the same time, the regulatory landscape is shifting to actively mandate and reward execution speed (see sidebar, "Why velocity is now a regulatory mandate").

[9] EA, "Rising component prices and supply chain pressures are hindering the development of transmission grid infrastructure," February 25, 2025.

[10] US Army Corps of Engineers, "Cascade Renewable Transmission Environment Impact Statement," accessed July 21, 2026.

[11] California Public Utilities Commission, "CPUC Adopts Decision to Streamline Transmission Permitting," January 30, 2025; ; New York State Department of Public Service, "RAPID Act Regulations Set to Lower Costs and Accelerate Grid Modernization in New York," February 12, 2026.

Why velocity is now a regulatory mandate

While utilities work to modernize internal execution, regulators at every level are simultaneously restructuring the external environment to reward speed and penalize delays. This shifting policy landscape makes internal velocity a regulatory necessity:

1 **Federal action:** To break interconnection logjams, the Federal Energy Regulatory Commission issued Order 2023. This sweeping reform shifts the interconnection process from a slow "first-come, first-served" model to a rigorous "first-ready, first-served" cluster study process, penalizing projects that lack mature designs.

2 **Regional urgency:** Independent system operators and regional grid operators (RTOs) are following suit. To manage historically congested interconnection queues, regional grid operators are broadly transitioning toward stricter early-stage readiness standards, fundamentally altering how utilities must sequence their preconstruction planning.

3 **State-level mandates:** States are aggressively mandating accelerated timelines to meet economic and climate goals. For example, California's CPUC GO 131-E reforms simplify transmission permitting and environmental review, while New York's RAPID Act is designed to accelerate approvals for major transmission and renewable energy projects, helping reduce development timelines.[11]

For utilities, the message is clear: The regulatory environment will no longer accommodate the risk-averse, sequential delivery models of the past.

A practical framework to accelerate delivery

This transition requires utility leaders to rethink how risk is managed and how governance, engineering, and execution operate as one integrated system.

Case study: The framework in action

Facing industry-standard project timelines that stretched **more than 10 years,** a large West Coast utility launched a targeted transformation to accelerate its capital delivery. The goal was ambitious: to reduce major project cycle times by more than **30 percent,** potentially saving up to **43 months** on critical infrastructure delivery.

10 Years

30 Percent

43 Months

The utility is executing this transition by adopting the practical framework outlined in this paper. The effort began by building a performance-driven culture and establishing a unified risk framework to empower faster, more consistent decision-making.

With this foundation in place, the utility is now moving from a fragmented, decentralized structure to a centralized execution model. This involves a targeted overhaul of its core delivery functions: streamlining governance to create single-point accountability, shifting to collaborative commercial models to align supplier incentives, and deploying technology to create a single source of truth for project data.

By implementing this disciplined, structured approach, the utility is on a clear path to delivering the critical infrastructure needed to meet surging grid demand and drive regional growth.

Start with speed: Fostering a culture of velocity

Success begins by building a performance-driven culture that empowers project teams and aligns functional accountability and project incentives with schedule acceleration. This requires deliberate organizational change management, aligning talent, roles, and resources with a new delivery model that embraces intentional, managed risk. Moving faster requires committing capital earlier, often at risk; excessive or poorly calibrated risk can lead to cost recovery challenges, contractor advantage, execution breakdowns, and regulatory disapproval.

A unified risk framework is the essential first step in this transition. Today, functions assess risk through inconsistent lenses, slowing decisions and obscuring trade-offs. Aligning on a single framework calibrated to the company's risk tolerance allows teams to frame decisions and mitigation plans consistently. For example, if accelerating a schedule requires the early procurement of major equipment, the framework identifies the up-front costs of reserving that material capacity, balances them against the risk of project cancellation (including the cost of canceling or reselling the equipment), and weighs both against the cost of delaying the project if procurement is deferred. Quantifying risk-based decisions in this structured way removes the mystery from project decision-making.

Leading utilities are extending this approach beyond individual projects to the portfolio level, enabling them to aggregate demand for critical materials, secure manufacturing capacity earlier, and make trade-offs that reduce enterprise-wide delivery risk.

GenAI was utilized in the creation of this image

Centralizing the execution model

With a unified risk framework established, utilities must modernize the mechanics of how projects are actually delivered. Our internal benchmarking data shows a clear industry trend: Leading utilities are abandoning fragmented teams in favor of centralized capital delivery models for their internal operating model. Realizing these benefits requires focused change across three core execution functions to break down silos, align incentives, and accelerate delivery.[13]

Governance and planning:

Streamline gate approvals, enhance performance visibility, and align internal planning to seamlessly integrate with new, accelerated processes rolling out across grid operations. Centralization in this phase requires establishing a centralized, project management organization to ensure single-point accountability. To enforce this accountability, these leaders must actively measure performance against "speed-to-market" key performance indicators (KPIs)—specifically tracking earned value, milestone attainment, forecast accuracy, and strict schedule variance.

For example, as RTOs like PJM Interconnection transition to "first-ready, first-served" interconnection models, utilities face strict readiness milestones just to secure and maintain a position in the queue. If a utility cannot rapidly mature its early-stage planning internally—and track that progress against precise KPIs—then it risks missing critical filing windows and delaying project completion by years. Of course, speed must be paired with disciplined planning; moving too quickly can put cost recovery at risk.

Engineering and procurement:

Modernizing these functions requires a fundamental shift away from traditional, adversarial contracts toward collaborative commercial models. This is critical given current resource constraints. According to our internal benchmarking data, 67 percent of utilities report insufficient staffing levels in engineering and design, a constraint often mirrored across EPC and design partners.

At the same time, consolidation across engineering firms is reducing the pool of independent providers. This consolidation can erode the traditional separation between the engineer of record and the independent review function (such as the owner's engineer), making it more difficult to maintain the checks and balances required for effective design assurance.

In response, these commercial models replace misaligned incentives with shared risk and reward, shifting teams from negotiating scope and change orders to solving problems together and accelerating execution. American Electric Power partnered with Quanta Services through a long-term strategic agreement to deliver major high-voltage transmission programs, including 765 kV infrastructure projects.[14]

Execution and technology:

Utilities can accelerate construction timelines through more flexible contractor management and targeted use of AI and digital tools, which have been shown to reduce engineering and permitting cycle times.

Crucially, utilities must use these digital tools to establish a single source of truth for project data, eliminating the silos that force manual rework. Currently, nearly half of utilities (45 percent) report that their technology platforms actively slow down their processes, according to KPMG analysis. While AI can add value across the project lifecycle, its strongest near-term impact is in scope development and design, where it can quickly unify complex data and stakeholder inputs, accelerating engineering and permitting timelines.

[13] Author's note: While external delivery models and vendor relationships (including engineering, procurement, and construction) are critical to execution, the focus here is on the internal operating changes utilities must make to work effectively within a constrained ecosystem.

[14] American Electric Power, "AEP and Quanta Services Announce Strategic Partnership to Advance Transmission and Power Infrastructure," Nov. 5, 2025.

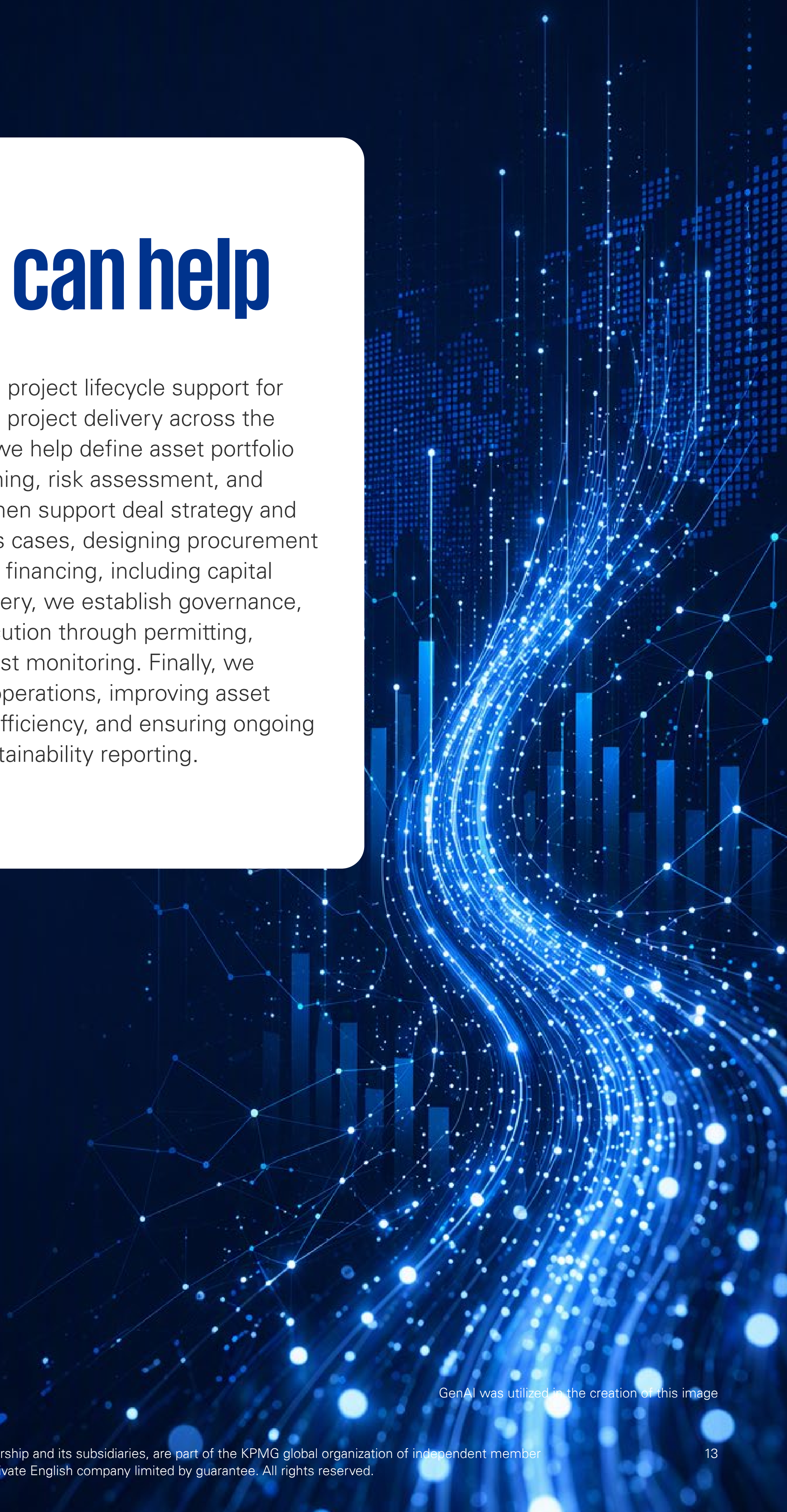
Powering tomorrow: Delivering the grid of the future

The window to act is closing. Utilities that continue relying on legacy delivery models are at risk of forfeiting capital, delaying critical infrastructure, and falling behind at the very moment demand for grid expansion is accelerating. This is no longer about improvement at the margins; it is an immediate leadership imperative to modernize governance, unify risk, and centralize execution now. Those who move decisively will shape the future of the grid—and those who hesitate will be defined by missed opportunity. In an increasingly competitive landscape, capital and development will flow to the players that can deliver at speed, not wait for slower incumbents to adapt.

GenAI was utilized in the creation of this image

How KPMG can help

KPMG LLP provides structured project lifecycle support for major infrastructure and capital project delivery across the full lifecycle. At the front end, we help define asset portfolio strategy, including capital planning, risk assessment, and sustainability integration. We then support deal strategy and execution, developing business cases, designing procurement approaches, and assisting with financing, including capital raising and grants. During delivery, we establish governance, manage risk, and oversee execution through permitting, contract administration, and cost monitoring. Finally, we help optimize performance in operations, improving asset utilization, driving operational efficiency, and ensuring ongoing regulatory compliance and sustainability reporting.



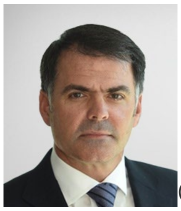
GenAI was utilized in the creation of this image

Authors

Clay Gilge

Principal, Infrastructure & Capital Projects

Clay is a principal and leader in the KPMG Capital Projects Advisory practice. He is the chief architect of the firm's global major projects methodology, Project IQ, and its capital project data engineering tools. Over his career, Clay has advised more than 40 Fortune 500 companies on capital programs totaling more than $300 billion and has authored more than 30 articles on capital project efficiency, construction risk management, performance, and technology. Prior to joining KPMG, he held senior roles in contract and materials management at Intel and served as a project engineer at Bechtel.



Geno Armstrong, PE

Principal, Infrastructure & Capital Projects

Geno is a principal and founder of the Major Project Advisory practice at KPMG and leads the global Engineering & Construction practice. Over his 25-year career at KPMG, he has advised companies and boards through market volatility, regulatory shifts, and digital transformation in infrastructure, and has consulted on some of the largest and most complex projects worldwide.

Christyn Fobbs

Director, Infrastructure & Capital Projects

Christyn is a director in the KPMG Capital Projects Advisory practice and leads the Energy Operations team. She advises utilities and other capital-intensive companies on translating growth strategy into executable programs with experience across portfolio strategy, capital allocation, construction execution, materials readiness, asset development, and performance improvement. Her work focuses on building the discipline and capabilities required to deliver complex capital programs with confidence at scale.

Lienna Tieh, PE

Director, Infrastructure & Capital Projects

Lienna is a director in the KPMG Capital Projects Advisory practice. She is a civil engineer by trade and has advised multiple Fortune 500 clients on large capital programs that average more than $15 billion of capital investment. She has advised owners of complex capital programs, stood up project management offices, and liaised between project teams and the C-suite to enhance communications and drive executive decisions.

We would like to thank our contributors:
Daniel Cohen, Karen Henrie, and Colleen Thompson.

For more information, contact us:

Geno Armstrong, PE
Principal, Infrastructure & Capital Projects
KPMG LLP
garmstrong@kpmg.com

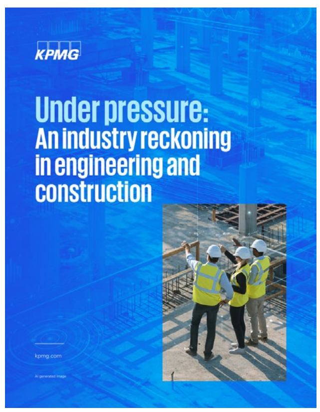
Clay Gilge
Principal, Infrastructure & Capital Projects
KPMG LLP
cgilge@kpmg.com

Christyn Fobbs
Director, Infrastructure & Capital Projects
KPMG LLP
cfobbs@kpmg.com

Lienna Tieh
Director, Infrastructure & Capital Projects
KPMG LLP
ltieh@kpmg.com

Related thought leadership:

Boosting capital project efficiency to meet rising electricity demand



Under pressure: An industry reckoning in engineering and construction

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