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# Navigating Contractual Considerations in the AI Data Center Construction Boom

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The explosive growth of artificial intelligence (AI) is transforming U.S. data center construction, creating new opportunities and challenges across the construction, energy, and technology sectors. Demand for digital infrastructure is surging, requiring massive amounts of energy, larger facilities, and driving record-breaking competition amid resource constraints.[1]

In North America alone, data center market demand, as measured by potential utility energy consumption, is projected to grow: 7.8 gigawatts (GW) of capacity is under construction and an additional 31.6 GW is in planning as of mid-2025 — 10 times the level seen just five years ago.[2] Vacancy rates in existing facilities have dropped to 2.3%, and 73% of new builds are already pre-leased, underscoring the urgency and competitiveness of the sector.[3] Hyperscale cloud and AI providers are driving this growth and reshaping regional geographies, with traditional hubs like Northern Virginia expanding and new markets emerging in rural areas of New Jersey, northwest Indiana, and west Texas.[4]

However, such rapid expansion faces major hurdles. Grid connection wait times average four years, and commercial electricity costs have jumped 30% since 2020, pushing 75% of new development into lower-cost power markets.[5] In response, operators are pursuing short- and long-term strategies such as behind-the-meter power generation, powered-land sites, and retrofitting existing facilities with stranded power to keep pace. Some of these behind-the-meter solutions, such as on-site mobile generators, are likely short-term fixes, as the industry waits for new, large-scale utility capacity to come online, which is generally more efficient and cost-effective in the long term.

The U.S. government has recognized the strategic importance of AI data center infrastructure and is taking steps to accelerate permitting, leverage federal lands, and provide financial incentives for qualifying projects.[6] As a result, private investment is booming, with Google, Microsoft, AWS, and others committing billions of dollars to new projects, signaling a long-term transformation of the nation's digital and energy infrastructure.[7]

In a rapidly changing environment, participants must navigate not only traditional risks related to project delivery and supply chain management, but also new challenges arising from grid interconnection wait times created by increased interconnection requests, evolving regulatory frameworks, and the shifting dynamics of capital markets.

## Power Grid Consumption Considerations

Data center size is measured by the amount of power, in megawatts (MW), that the facility needs to operate,

including its computing and cooling functions. A 30-MW data center facility was once considered large, but today's hyperscale projects routinely exceed 100 MW, with some campuses planned at 2 GW — enough to power millions of homes. By 2035, AI data center power demand could reach 123 GW — up from just 4 GW in 2024.[8] This explosive growth is driven by the computational intensity of AI workloads, which require dense racks of graphics processing units (GPUs) and other specialized hardware. GPUs are designed to handle complex mathematical calculations at high speeds, making them essential for processing the vast amounts of data involved in AI tasks. Further, the electricity that these devices use ultimately turns into heat, which the data center must remove by using cooling equipment that also consumes energy.[9] This duality leaves hyperscalers perpetually thirsty for more power.

To meet these demands, developers are exploring innovative power solutions. For instance, Microsoft's $16 billion deal to revive the Three Mile Island nuclear plant in Pennsylvania is securing 835 MW of clean energy for its AI data centers.[10] Other companies are investing in hydropower and natural gas to bypass grid bottlenecks and ensure a reliable energy supply. Novel alternative power solutions have also been proposed, including using small modular nuclear reactors.

Environmental regulations add another layer of complexity. Temporary power solutions, such as gas turbine power units, are sometimes used to keep projects on schedule, but rapid permitting and local inspection approvals are critical to maintaining milestones. The federal government is responding with executive orders to streamline environmental permitting, encourage the use of Brownfield and Superfund sites, and direct the secretary of commerce to launch a program to provide financial support for high-capacity AI data center development and related energy, manufacturing, and infrastructure projects.[11] However, many permits for data centers are issued at the state level, including special use zoning permits and air permits for the diesel generators installed to ensure power if there is an outage from the main power supply.

Example Projects

At the 2025 Energy and Innovation Summit in Pittsburgh, PA, American companies announced more than $90 billion in new projects in and around Pennsylvania, including:

- Google's $3 billion hydropower deal and $25 billion in regional data center investments.
- Blackstone's $25 billion commitment to data centers and energy infrastructure.
- Meta's plans for multi-gigawatt AI data centers, including the Prometheus campus in Ohio.
- CoreWeave's $6 billion AI data center in Pennsylvania.
- Constellation Energy's $2.4 billion upgrade to the Limerick nuclear plant.
- Energy Capital Partners' $5 billion data center at York II Energy Center.[12]

## Key Issues With Surging Demand

The scale of new AI data centers, the demands of stakeholders, and the provisions of upstream contracts are adding new complexities to traditional project execution and delivery methods.

Supply Constraints

The supply chain for data center construction is under strain. Critical components — transformers, switchgear, GPUs, cooling systems, and generators — face long lead times, often exceeding one year. Given the booming demand and incentives to get potential data centers operational on an expedited timeline, there is increased pressure for procurers of this equipment to source components as quickly as possible.

Supply chain disruptions are compounded by international tariffs, rising material costs (steel, aluminum, copper, cement), and labor shortages. Development and construction schedules are routinely built around the anticipated lead times for critical equipment, which often require developers to source the critical equipment even before the facility is designed, forcing contractors to adopt modular construction and prefabrication techniques to accelerate delivery.[13]

To address the limited supply of materials, cloud services providers (CSPs), such as Amazon Web Services, Google Cloud, Microsoft Azure, and others, are partnering with colocation providers, who offer shared data center facilities where companies can rent space for servers and other computing hardware, to expand their data center infrastructure. Typically, CSPs partner with colocation providers to quickly scale their operations without the need for significant capital investment in building new facilities from scratch. Through these symbiotic development partnerships, however, the CSPs and colocation providers are both strategically positioning themselves to capitalize on the growing demand for cloud services and data management solutions. Even so, prices for colocation capacity have risen by 35% since 2020, and new capacity is often leased out years in advance.[14] Vendors are leveraging scarcity to negotiate more favorable contract terms, including upfront payments and tariff pass-throughs.

Interconnection With the Power Grid

Grid connection delays are a major bottleneck, with average wait times approaching four years and reports of up to seven years.[15] Developers are seeking powered-land sites and behind-the-meter solutions, such as on-site natural gas generation, renewables, or even nuclear power, including revitalizing existing power plants or utilizing smaller-scale modular reactors, to bypass grid constraints. These approaches can cut years off project development timelines but often require developers to seek more creative, and sometimes expensive, sources of power.

Regulatory reforms, such as the Federal Energy Regulatory Commission's (FERC) "first-ready, first-served" cluster studies, are aimed at expediting interconnection, but challenges remain.[16] Colocating data centers with existing power plants is emerging as a strategy to leverage surplus interconnection capacity and reduce transmission costs.[17]

Accelerated Construction Schedules and Extended Lead Times

The pressure to deliver quickly is reshaping payment schedules, staffing models, and risk allocation in contracts.

This urgency is forcing flexibility until supply chain bottlenecks ease. For example, prefabricated modules for power skids, which house electrical distribution equipment (transformers, switchgear, UPS, etc.) can be independently constructed and installed if supply chain issues arise with other critical components, such as the cooling modules or IT pods. The prefabricated equipment can then be sourced and seamlessly integrated when available. However, these approaches require a significant increase in skilled labor — both to support the parallelization of construction activities and to manage the complexity of integrating temporary and permanent systems. Design professionals may face the challenge of developing more flexible designs than previously required to account for these emerging challenges in supply and demand on the projects.

International Tariffs and Pricing Volatility

Tariffs on imported components are affecting both delivery times and pricing. Vendors increasingly include tariff payments in their pricing, and if not, often include contractual provisions shifting the obligation to pay for importation tariffs to the purchaser. The volatility of international trade policies adds another layer of uncertainty to project planning and budgeting.[18]

## Contract Considerations

The rapid pace at which the industry aims to bring new data centers online presents challenges and new opportunities for creative contracting frameworks.

Upfront Payments and Aggressive Payment Schedules

Suppliers are negotiating more aggressive payment schedules, leveraging their control over scarce equipment and labor. Contractors may find increased leverage due to the commitments required for speed and quantity.

In this context, suppliers — especially those providing scarce or long-lead-time critical equipment (such as transformers, switchgear, generators, and specialized cooling systems) — are pushing, often successfully, for more aggressive payment schedules. Contractors and developers, recognizing that timely delivery of these components is essential to meeting project milestones and securing grid connections, are increasingly pressured to agree — and have their lenders agree — to upfront payments or accelerated payment terms. This is a departure from the traditional model, where suppliers often bore more risk by extending credit or waiting for payment until after delivery or installation. Given the intense demand, developers and their lenders are compelled to embrace these new payment terms and the associated risks to successfully realize their AI data center projects.

Complex Structuring and Creditworthiness

As tech companies and other developers drive these projects, a growing number of stakeholders less familiar with typical construction practices are entering the construction ecosystem. Contractors and suppliers must assess the creditworthiness of these newcomers and consider strategies to insulate themselves from risk pushed down through upstream agreements. Consider requiring upfront payments, limited representations and warranties, and other risk mitigation strategies. New tariffs, costs due to force majeure delays, and other unknown costs should be exceptions for a guaranteed maximum price. Force majeure provisions should be heavily scrutinized to allow for schedule delays due to supply chain issues and other matters outside of the control of the contractor, especially

when there are liquidated damages for failure to timely complete the project. Construction contingencies should also be heavily negotiated because of the ever-changing equipment market for data center developments.

The financing structures for data centers are evolving, with asset-backed securities (ABS), single-asset single-borrower (SASB) loans, which are tied to the financial performance of a specific property, and other hybrid models that blend real estate and project finance. Lenders are underwriting long-term cash flows from hyperscalers, but the complexity of these deals requires careful attention to developer experience, construction guarantees, and exit strategies.[19]

Wider Scope of Sourcing Materials and Liability

Engineers and contractors are accepting additional liability for code compliance, especially when sourcing equipment that is not Underwriters Laboratories (UL) listed.[20] Typically, contractors and suppliers prefer to use UL-listed equipment, as it bears a highly regarded certification of rigorous safety and reliability testing, despite its often higher price tag than non-UL listed counterparts. However, non-UL listed equipment may present drawbacks, such as increased safety risks, potential noncompliance with local codes, and challenges in obtaining insurance coverage.

Contractors may need to grapple with challenges related to insurance coverage if using alternatively sourced equipment, and suppliers of compliant equipment have greater pricing leverage. Additionally, builders who must use non-UL listed equipment to meet demands may consider requiring project owners or developers to agree to indemnity provisions if such alternatively sourced equipment is required to meet demanding schedule deadlines. The pressure to innovate and source alternative materials must be balanced against regulatory and insurance requirements.

Service Level Agreements and Planned/Unplanned Outages

Further complicating projects are the common scenarios of renovating or expanding existing facilities. Many times, data center operators have service level agreements (SLAs) with their tenants or customers; these SLAs often guarantee uninterrupted service, including power and cooling, and typically provide compensation to customers when service interruptions occur. The existence of SLAs plays a crucial role in the risks associated with maintaining continuous operation and integrity of utilities serving data centers. In the case of construction work on operating data centers, owners may seek to shift their SLA risk to the contractors if construction activities cause power outages or spikes in temperature or humidity within data halls.

When a service outage or other interruption is unavoidable, it is important for the parties to coordinate for a planned outage. This generally requires detailed planning and coordination to minimize impacts, ensure that any necessary downtime is scheduled during off-peak hours, and that the planned outage, including its timing and duration, is communicated well in advance to all stakeholders. As with unplanned outages, missing dates for planned outages or otherwise extending the duration of such outages, can expose the owner to damages under SLAs, and owners try to shift some or all of this risk to contractors.

Contractors should consider the potential liability of covering owner damages to customers under related SLAs due to unexpected outages and missing milestones for planned outages, and incorporate such potential liability

into their risk assessment during contract negotiations. By proactively addressing these considerations, contractors can mitigate risks and uphold the reliability standards expected in high-stakes data center construction environments.

Liquidated Damages and Performance Risk

Suppliers and builders often resist liquidated damages provisions due to supply chain uncertainty. In many projects, major or critical equipment is sourced directly by the developer, which means contractors are not assuming liquidated damages risk for equipment delays. This is also true for interconnection and other obligations typically managed by the owner or developer. As a result, contractors are increasingly decoupling the project schedule and liquidated damages risk from equipment delivery. Negotiating appropriate performance and delivery terms is critical, given the potential for project delays and supply chain disruptions. Suppliers should be transparent about their lead times and supply chain capabilities and avoid accepting liquidated damages for aggressive or unrealistic timelines. Stakeholders should closely evaluate and balance their potential liquidated damages exposure against their business and growth goals.

## Conclusion

The AI data center construction boom is fundamentally transforming the U.S. electric infrastructure landscape, driving rapid changes in project delivery, risk allocation, and contract negotiation. Contractors and suppliers are being challenged by accelerated schedules, complex stakeholder structures, persistent supply chain constraints, and evolving regulatory requirements. On the other hand, the boom has made data center construction projects more financially lucrative, leading developers and contractors to consider accepting greater risks than they have been accustomed to in the past. In this high-stakes environment, the ability to strategically structure contracts — allocating risk, securing favorable payment terms, and building in flexibility — has become essential. Record demand and long grid delays have made it critical for market participants to proactively manage exposure, whether through upfront payments to secure scarce equipment, shifting the risk of accelerated deadlines to upstream parties, or by leveraging alternative power solutions and innovative financing structures to bridge capacity gaps until new infrastructure comes online.

To capitalize on the opportunities presented by the AI revolution while minimizing downside risk, stakeholders must combine robust risk assessment with proactive engagement across the value chain. The winners in this evolving market will be those who anticipate demand, innovate on efficiency, and build resilient supply chains, while ensuring their contracts reflect the realities of today's competitive and capacity-constrained environment. Troutman Pepper Locke attorneys are well-positioned to advise clients on emerging market trends and negotiate contracts that help protect their interests. Our team excels at helping clients navigate the complexities of the current boom and secure long-term success in the AI data center sector.

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