Adapting domestic gas infrastructure to meet AI's energy demand

Executive summary

The AI buildout is rapidly becoming a gas-delivery story. That's because AI data centers are larger, more concentrated, and more time sensitive compared to other commercial and industrial electricity consumers. That kind of load often requires natural gas as the transition fuel to generate firm, dispatchable power around the clock, given constraints with other non-intermittent power alternatives.

Based on PwC analysis, PwC expects a hike in gas demand generated by the considerable growth of AI data centers. After establishing that AI load translates into significant gas demand, we address the question of deliverability: Is the domestic gas network reliable enough to move the gas requirements on time, at pressure, and through well-connected infrastructure? We highlight new commercial structures that are taking shape to deliver this energy demand and discuss what that can mean for the energy industry, data center developers, investors, and policymakers.

Main findings:

- PwC's scenario analysis across three cases—bear, base, and bull—shows that by 2035, incremental AI-linked gas demand would rise to 7.58 billion cubic feet per day (Bcf/d), 8.55, and 11.47, respectively (depending on a range of assumptions discussed later). What's noteworthy is that even if a fraction of committed capital reaches operation, gas demand moves materially.
- Existing gas systems that are integrated across gathering, transmission, transport, storage, etc., may hold the advantage. Existing rights-of-way and storage fields matter because they compress schedule risk.
- Within the oil and gas industry, new commercial models are emerging to move gas closer to load requirements. New partnerships seem to be forging between midstream operators, data center developers, and investors, oriented toward ensuring a reliable networked gas supply to power the AI economy.
- For data centers, energy procurement is no longer a back-office function but a strategic differentiator. Given the scale, concentration, and uptime requirements of AI data centers, natural gas remains a critical fuel for the heavy-duty turbines required to deliver reliable, around-the-clock power. From an investor standpoint, contracted gas infrastructure has become a bankable asset in the energy market.

The scarce resources to build the gas-delivery model to power the AI data center growth are often not dollars but permits, pipeline, rights-of-way, turbines, water, and time. The infrastructure that leverages those advantages is likely to capture an outsized share of the value.

Quantifying AI's growing gas demand

The conversation around AI infrastructure has been dominated by a single question: Where will the electricity come from? It may be the right question, but it's incomplete. Behind almost every megawatt of firm, dispatchable power that a hyperscaler needs is a gas molecule that must be produced, moved, stored, and delivered on time. The AI buildout is not just a power story. It is rapidly becoming a gas-delivery story.

PwC's Global Infrastructure Outlook 2025–50 forecasts a 54% rise in annual global infrastructure spending between 2024 and 2050 with the accelerating adoption of AI computing hubs and data centers. This represents a cumulative total of $151.1 trillion over 25 years. Within that broader buildout, annual investment in data center is projected to more than double from $114 billion in 2024 to $252 billion in 2027.

Annual infrastructure spending (2024-2050)

	2024	2050
Global	$4.4 trillion	$6.9 trillion
Americas, led by the US	$1.2 trillion	$1.9 trillion

Source: PwC's Global Infrastructure Outlook 2025–50; forecast modelling by Oxford Economics

At PJM, one of the nation's largest grid operators, preliminary large-load adjustments suggest roughly 32 GW of incremental demand by 2028 and 60 GW by 2030. These are not forecasts about a distant future. One notable technology company has announced data center investments to the tune of $60-$80 billion in 2025 to give order and scale of magnitude. This is putting a spotlight on the counterparties who can deliver reliable energy which in turn monetizes AI workloads.

> The AI buildout isn't just a power story. It is rapidly becoming a gas-delivery story, and the market hasn't fully priced in what that means.

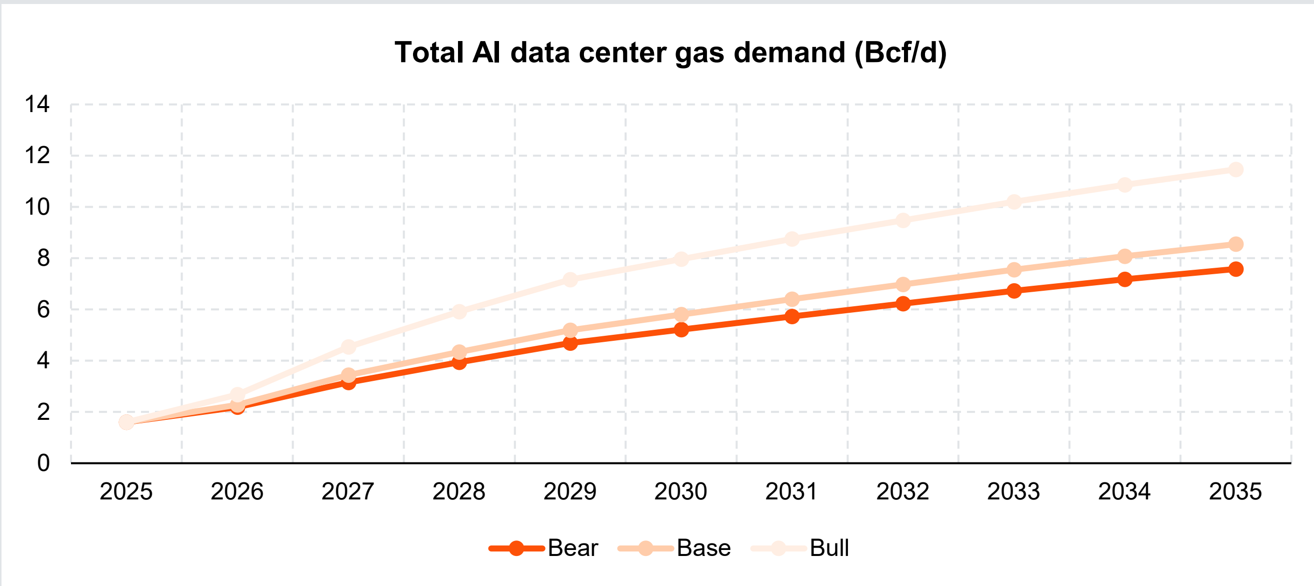
The demand signal

AI data centers are not typical commercial and industrial electricity consumers. They are uniquely large, concentrated, and exceptionally time sensitive. A single multi-hundred-megawatt campus has near-zero tolerance for interruption. When you translate that kind of load into the fuel required to generate firm, dispatchable power around the clock, you land squarely on natural gas, given constraints with other non-intermittent power alternatives.

To understand the volume of gas required, consider this: generating 1GW of gas power requires filling up 83 Olympic-sized pools per hour. To quantify the potential scale, PwC constructed a scenario analysis across three cases, reflecting a range of assumptions about how much announced data-center capacity actually gets built, permitted, and energized over the next decade. The analysis is deliberately conservative: accounting for construction lags, permitting bottlenecks/failure rates, efficiency gains, and a rising share of non-gas power substitution over time.

The model does not assume an immediate step-function in demand; the ramp builds as projects move from announcement to operation. The results are striking. By 2030, incremental AI-linked gas demand reaches 5.2 Bcf/d in the bear case, 5.8 Bcf/d in the base case, and 8.0 Bcf/d in the bull case. By 2035, those totals rise to 7.6, 8.6, and 11.5 Bcf/d—significantly higher than the current ~1.6 Bcf/d.

AI-linked gas demand rises in every scenario (2025–2035)



Source: PwC scenario analysis based on public data center load growth benchmarks, disclosed hyperscaler capex, DOE disclosures, and EIA gas-generation conversion factors; outputs reflect modeled total US data center gas demand under three scenario assumptions for completion, permitting, utilization, efficiency gains, and non-gas substitution.

Scenario assumptions at a glance

The scenario framework starts from 280-340 GW of addressable announced US data-center capacity and applies case-specific assumptions for completion, permitting success, delivery realization, behind-the-meter share, high-utilization grid and BTM capacity factors, heat rate, annual efficiency improvement, and non-gas power substitution reaching 40%-48% by 2035.

Even the base case becomes meaningful at a system level. PwC analysis shows that based on a 72% chance of announced data centers getting completed, the gas demand in the base case would be 5.80 Bcf/d, which is 2.6 times the current level. And the bull case is large enough to help reshape basin economics, pipeline expansion logic, and the competitive landscape for gas-fired generation.

PwC analysis shows that if even a fraction of AI infrastructure committed capital reaches operation, gas demand moves materially.

Integrated systems have an advantage

Having established that AI load translates into gas demand, we turn to the question of deliverability. A molecule of gas in the Permian Basin is worthless to a data center campus on the East coast unless it can be moved on time, at pressure, through infrastructure that is already connected, or can be connected without a five-year permitting fight.

This is where existing gas systems hold an incumbency advantage that can be difficult to replicate with greenfield alternatives. The relevant asset isn't just wellhead production. It's the integrated system: gathering, transmission, intrastate transport, laterals, compression, storage, line pack, and operational balancing, as several recent public disclosures also show. Existing rights-of-way and storage fields matter because they help compress schedule risk. In an AI buildout defined by time-to-power, schedule compression is often worth more than marginal fuel cost differences. Existing pipelines can enable dedicated generation, partial islanding, redundancy, and multi-site balancing, features that are commercially critical when the data center's main product is uptime.

Gas infrastructure is not merely a fuel supply chain. It is reliability architecture.

New commercial structures are responding to market reality

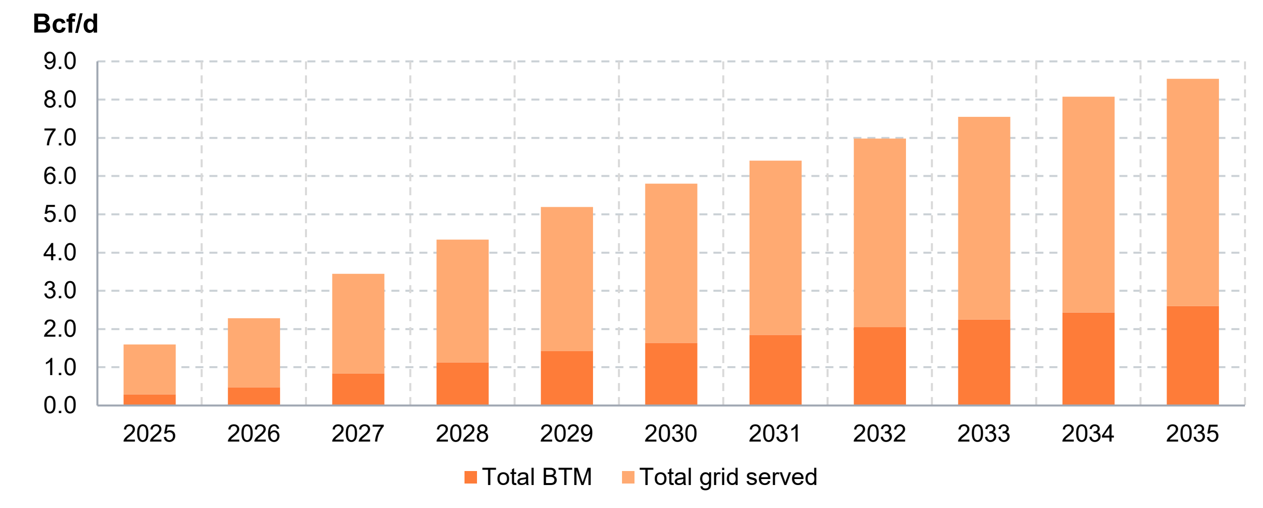
The important commercial shift that is occurring is gas moving closer to load requirements. The traditional model of selling molecules into a general wholesale market is being supplemented by structures that are more akin to bespoke infrastructure partnerships. Recent public filings also show that new gas agreements are not commodity sales, but integrated power-delivery contracts.

Three commercial models are emerging:

- **Behind-the-meter generation**: on-site or near-site gas generation supported by firm fuel supply and reserved transportation capacity.
- **Dedicated lateral-plus-generation:** a specific campus helps secure bespoke transport and generation rather than waiting in a grid interconnection queue.
- **Wellhead-to-workload architecture:** supply, transport, storage, generation, and load are linked under coordinated commercial agreements spanning the value chain.

Behind-the-meter (BTM) generation is a clear example of this shift as it helps drive gas supply from the wholesale market into the data center operating model itself. Rather than waiting for grid interconnection, a campus can pair on-site or near-site generation with firm fuel supply. The public BTM operating footprint, while small today, is expected to become significant by 2030, demanding nearly 2 Bcf/d according to our projections. While not every data center campus may be self-supplied, for time-sensitive AI workloads, BTM generation can turn gas infrastructure into a speed-to-power product with reliable uptime.

BTM vs. Grid-Served Gas Demand (Base scenario)



Source: PwC scenario analysis where BTM and grid-served values are modeled allocations of total data center gas demand based on assumed behind-the-meter adoption shares, heat rates, and capacity factors. To be interpreted as scenario outputs, not measured census.

The implication: midstream is no longer just a transport business in the AI operating environment; it is becoming an enabling platform aligned with hyperscaler requirements. Advantaged gas players will likely be those that can offer a credible bundle, including:

- Basin access
- Transport rights
- Storage
- Permitting know-how
- Generation partners
- Creditworthy contract structures

Reliability matters, not just commodity

The investment case for gas infrastructure in the AI cycle is stronger when framed around contractability, not commodity optionality. Midstream assets often become more compelling when the offtaker is buying certainty, duration, and deliverability, what data-center customers demand.

How a large midstream company is commercializing the AI opportunity

The company's 2025 adjusted EBITDA was approximately 90% fee-based, with disclosed contract features including take-or-pay structures, long-term tenors, inflation escalators, and investment-grade counterparties. Its demand-pull contracts with data centers and utilities represent more than 6 Bcf/d of contracted pipeline capacity with an 18-year weighted average life—translating to more than $25 billion in expected revenue.

Data-center customers often want uptime, not merchant volatility exposure. Long-dated fuel arrangements aligned with AI-related demands can provide that stability through the following:

- Fee-based transport
- Reserved lateral capacity
- Firm storage rights
- Dedicated generation

In an AI-powered economy, gas infrastructure is attractive not because it represents cyclical growth, but because it can convert a reliability requirement into visible, contracted cash flow.

Data center customers aren't buying molecules. They're buying uptime. That can make contracted gas infrastructure highly bankable assets in the energy market.

The bottleneck? Time, not capital

The hyperscalers have tens of billions in committed capital. The bottleneck is often what money cannot easily accelerate, including:

- Permitting
- Equipment constraints
- Labor shortages

Regulatory, supply chain, and labor constraints can be decisive bottlenecks for data center buildouts, reinforcing resilient energy networks' commercial importance as companies compete for speed to market. Median timelines from notice of intent to final environmental impact statement alone were at 2.2 years in 2024, highlighting that even streamlined federal reviews remain lengthy. Developers also should navigate local zoning disputes, water constraints, and long critical equipment lead times to stand up projects as local resistance emerges in major data center markets like Virginia's Loudoun and Fairfax counties.

Grid operators are scrutinizing large-load requests more closely to manage stranded-cost risk. At the same time, competition for turbines, electricians, and industrial capacity is intensifying across LNG exports, transmission upgrades, and conventional power projects. For data center developers, the ability to secure reliable, dispatchable energy infrastructure may determine their actual project timelines.

These challenges don't remove the opportunity. They can amplify the scarcity value of infrastructure that already exists. Already-permitted corridors, connected pipelines, operational storage, and expandable compression become the rate-limiting assets in a system where everyone is competing for the same constrained inputs.

New partnerships can shape the gas network for AI

Gas is a faster, scalable dispatchable solution in many of the regions where AI load is arriving today. In a cycle where the scarce resources are not dollars but permits, pipelines, rights-of-way, turbines, water, and time, the infrastructure that already possesses those advantages is likely to capture an outsized share of the value.

This requires buyers, sellers, and investors to collaborate in new ways. Here's what this can mean for different stakeholders:

- **Midstream operators**

  The companies better positioned are often those that already hold the integrated bundle: basin connectivity, permitted rights-of-way, transport capacity, storage. Industry leaders can demonstrate the commercial sophistication to structure long-dated, fee-based agreements with creditworthy AI counterparties.

- **Critical equipment and services**

  The coordinated partnership ecosystem between various stakeholders along the value chain includes midstream providers supplying fuel deliverability, turbine OEMs and EPCs providing power logistics, and hyperscalers providing long offtake agreements required to finance the projects and balance customer affordability.

- **Hyperscalers and data-center developers**

  Developers that secure dedicated gas infrastructure early, through behind-the-meter generation, lateral agreements, or wellhead-to-workload partnerships, can energize campuses faster than those waiting in conventional grid interconnection queues. These developers see energy procurement as a strategic differentiator, not a back-office function.

- **Investors and lenders**

  The new financing thesis rests on visibility and duration, not commodity price speculation. The contractability of AI-linked gas infrastructure is creating a distinct asset class: long-dated, fee-based, inflation-escalated cash flows backed by investment-grade counterparties.

- **Policymakers**

  Permitting reform may determine whether AI load is served by domestic gas infrastructure or deferred, offshored, or forced into less reliable alternatives. The tension between local land-use resistance and national economic competitiveness in AI is real and growing. Streamlining infrastructure review, without removing environmental safeguards, is an economic imperative, not just an energy policy question.

For the industry, the critical question isn't whether AI may require gas, but whether the gas network can adapt quickly and efficiently to meet that demand.

Next steps

Nontraditional competitive entrants continue to enter the energy domain, resulting in convergence across the energy value chain and more broadly across the energy industry's subsectors. As scenarios unfold over the longer term, companies should be positioning themselves to gain strategic advantage today, exceeding time to value in the race to meet demand generated by the AI "gold rush."

It is critical to also look at business models and consider where there may be opportunities for reinvention. Those may include expansion into new lines of business, associated operating models to enable delivery of products and services for new product and services, and organizational structures with the right domain capabilities in place and at scale. This morphing ecosystem will likely also continue to be a place for deals, innovative partnerships, and joint venture arrangements.

PwC's Industry Edge

PwC is helping clients across the technology, power and utilities, oil and gas, and industrials sectors meet the challenge of the future. Our industry-led approach brings together functional capabilities and deep domain experience to help organizations address evolving value chains and compete in an increasingly dynamic market. By delivering the right skills and strategic perspectives, our sector-focused approach helps clients move with urgency across the value chain, driving breakthroughs for their business, as they navigate the race to differentiate and create sustained value.

Contacts

Ryan Hawk
ryan.l.hawk@pwc.com

Larry Abramson
larry.abramson@pwc.com

Michelle Seale
michelle.seale@pwc.com

pwc.com