Reuters Insights

RystadEnergy

Powering the AI Era

The global energy industry's capacity, constraints and choices

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Foreword

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A.I. adoption and the data centers powering it have triggered the single largest capital investment cycle of this decade, with sweeping implications across related sectors: energy chief among them. When we were tracking power markets just a few years ago, data centers represented a modest share of total consumption: steady growth, but not enough to move the needle.

However, with the commercialization of LLMs, datacenters are now the main drivers of power demand growth in next decade for world's biggest economies, including the US, Europe and leading Asian markets. Not only has it mobilized capital for IT hardware and related data center equipment, energy players across the value chains are also increasingly seeing the benefits of this build-out for their businesses.

Yet, it is not without its challenges, principally how the grid and the power mix will deal with this build out that has such a mismatch in terms of development timeline. And how exactly do data centers and the AI boom change the energy market landscape? How are decision makers in energy companies viewing this data center build out and its subsequent impact? How does decarbonization commitment by some governments and the biggest hyperscalers change the power build out for this demand?

With such a short history for AI adoption, much remains uncertain. To answer these questions and begin to navigate the increasingly important partnerships between the energy sector and the data center world, we have put together this report.

By using a mixture of surveys from Reuters Insights and data from Rystad Energy data center and power research, we merged the data driven analyses with primary intelligence from decision makers in the energy sector. The picture that emerges is more nuanced; Yes, the demand is real and large, but its impact on energy markets is uneven and varies by regions, power markets and subsectors.

We hope this report gives you a clearer map of where things stand - and where they are heading.

Executive summary

The energy industry has stopped debating whether AI-driven power demand is real – this is now fully acknowledged and companies are actively adapting their strategies. Nine in ten senior executives in energy companies (91%) report that their organizations are already exploring or actively engaged in data center and hyperscaler projects, while an effectively equivalent amount (89%) expect data center and AI infrastructure growth to have at least a moderate impact on electricity demand in their primary market over the next five to ten years. The boardroom question is now evidently whether the energy system can be built to meet such demand on terms the energy industry expects.

What our survey of 148 senior energy executives across North America, Europe, the Middle East, Asia and Latin America reveals is a sector currently digesting two key interpretations of what this means. Confidence in their own operations is high – 87% of executives expect their organization to fare somewhat or significantly stronger over the next decade, 78% expect capital expenditure to increase over the next three years, and three-quarters describe data center demand as a top priority or one of several important factors shaping strategic planning. Few of the senior energy executives we surveyed expect to lose from this build-out, with a majority expecting to emerge in a stronger position.

But confidence in the power system is markedly lower. Two-thirds (66%) rate the current state of the power grid in their primary market as good or excellent at supporting the next decade of demand growth, and 77% are at least moderately confident the grid can meet projected data center demand without significant reliability issues. But only six percent describe themselves as extremely confident on that second question, and 69% are at least moderately concerned about major reliability events (blackouts, brownouts, capacity shortfalls) over the next five years, driven at least in part by data center demand. More than half (51%) rank energy supply as one of the most significant constraints, or the single most significant constraint, on data center expansion in their primary market.

The strategic response is already clear and is reshaping the generation mix. Natural gas is being rehabilitated as a data center fuel – 44% of executives expect it to play one of the largest roles in meeting AI-driven demand over the next decade, second only to solar at 51%, but critically ahead of wind at 30%. Nuclear is also back in serious conversation. Existing nuclear life extensions (28%), small modular reactors (18%) and new large-scale nuclear (16%) collectively capture more mindshare than wind alone, and advanced nuclear – including Gen IV reactors, microreactors and fusion – is the single most-cited emerging technology (45%). Almost half of executives (48%) say data center demand is driving renewed investment in nuclear in their primary market.

Three patterns run through every chapter that follows and are worth flagging here. The first is regional polarization: North American and European executives are reading the same demand wave through structurally different lenses, with North America respondents more bullish on growth, more concerned about the grid, and more aggressive in their commercial response. The second is the rehabilitation of generation technologies that the previous transition narrative had partly written off – gas, existing nuclear and new nuclear forms. The third is the asymmetric power of the hyperscaler customer: 68% of executives whose organizations work with hyperscalers describe them as more demanding than traditional commercial and industrial customers, and 75% expect engagement to grow further over the next five years.

This is what the industry is thinking on the threshold of the largest demand expansion most senior energy leaders will see in their careers. The chapters that follow set out what that means for capacity, for constraint and for the choices the industry is now making.

Actionable insights

91% are already in the game.

Nine in ten senior energy executives report their organizations are exploring or actively engaged in data center and hyperscaler projects. The expectation phase is over.

89% expect material market impact.

Almost nine in ten expect data center and AI infrastructure growth to have a moderate, significant or transformational impact on electricity demand in their primary market over the next five to ten years.

87% expect to fare better.

Confidence in the organization is high. Market signals indicate that energy companies are seeing the benefits of the data center buildout, with improved margins, stronger demand and higher valuations.

51% rank energy supply as a top-tier constraint.

Roughly half of executives put energy supply as one of the most significant — or the single most significant — constraint on data center expansion, alongside grid interconnection delays, regulatory uncertainty and equipment availability. There are sincere concerns about whether the grid will manage to meet the projected energy demand of data centers.

Solar 51%, natural gas 44%, energy storage 41%.

The expected generation mix for AI is solar-led but gas-anchored, with storage as the third pillar and nuclear in serious conversation across three forms (existing 28%, SMR 18%, new large-scale 16%).

68% find hyperscalers more demanding.

Among organizations already working with hyperscalers, more than two-thirds find them more demanding than traditional commercial and industrial customers — and 75% of the broader sample expect engagement to grow further.

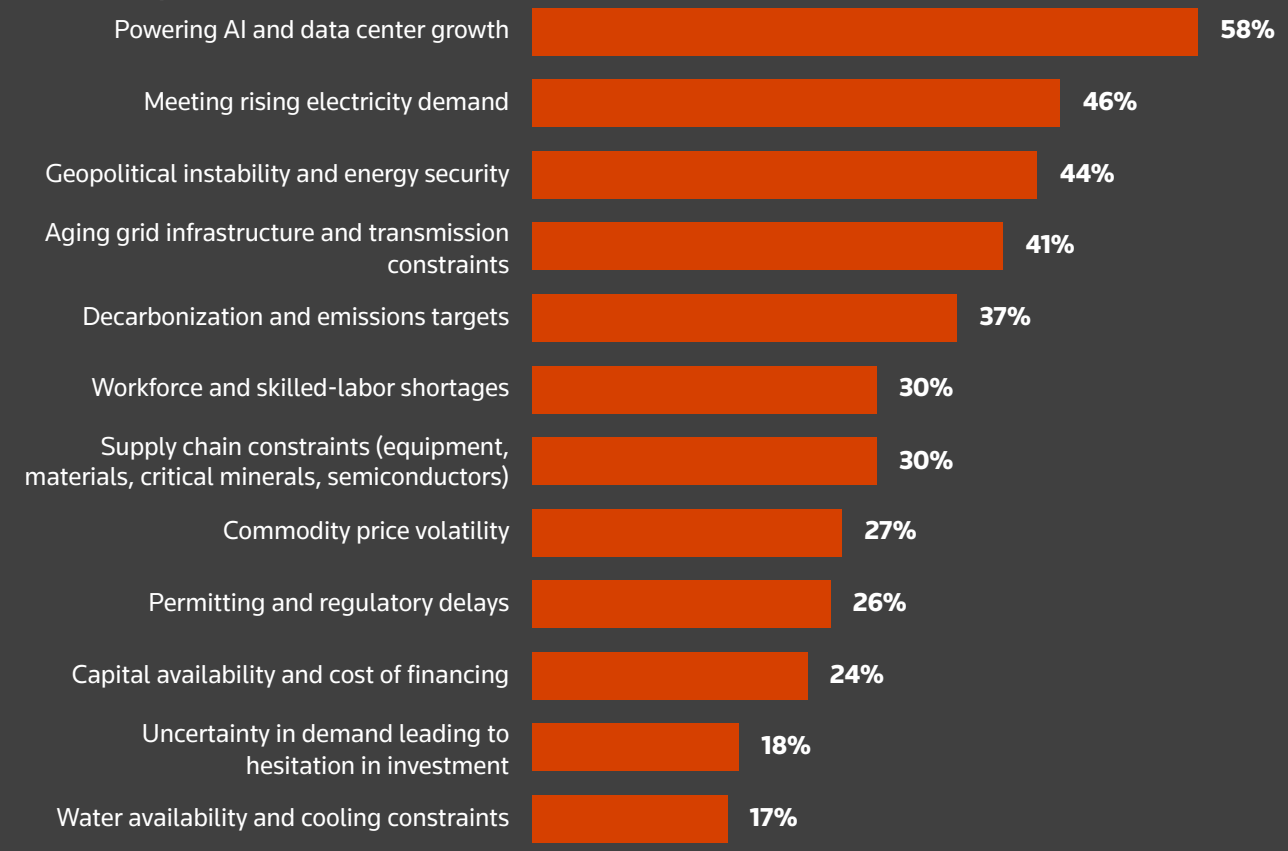
The emerging demand reality

For most of the past decade, the electricity demand story in mature economies was a story of slow growth, efficiency gains and a gradual electrification of heating and transport that kept aggregate load growing largely in line with GDP. Utilities planned around demand curves that bent gently upward, and the biggest risk most planners modeled was that demand would evolve more slowly than expected.

That assumption is now outdated, with AI-driven power demand surging. Almost six in ten senior energy executives (58%) name powering AI and data center growth as one of the most significant challenges facing the industry over the next five to ten years. This makes it the single most-cited challenge in our survey, ahead of meeting rising electricity demand more broadly (46%), geopolitical instability (44%), aging grid infrastructure (41%), and decarbonization and emissions targets (37%).

FIGURE 1a: **POWERING AI AND DATA CENTER GROWTH IS THE MOST-CITED CHALLENGE FACING THE ENERGY INDUSTRY.**

Which of the following do you see as the most significant challenges facing the energy industry over the next 5 to 10 years?



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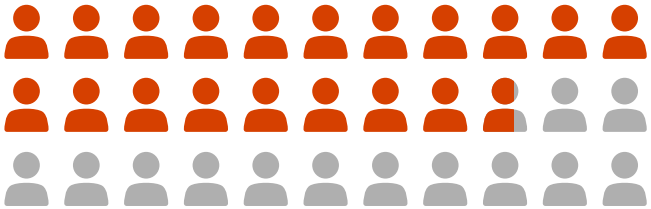
Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

When the question is reframed to address the most promising opportunities seen by executives, data center and AI demand as a new customer segment leads the list at 59%, ahead of growth from rising electricity demand (51%), and decarbonization and electrification (41%). For the first time in a generation, the industry is reading rapid demand growth as both its largest opportunity and its most prominent near-term challenge.

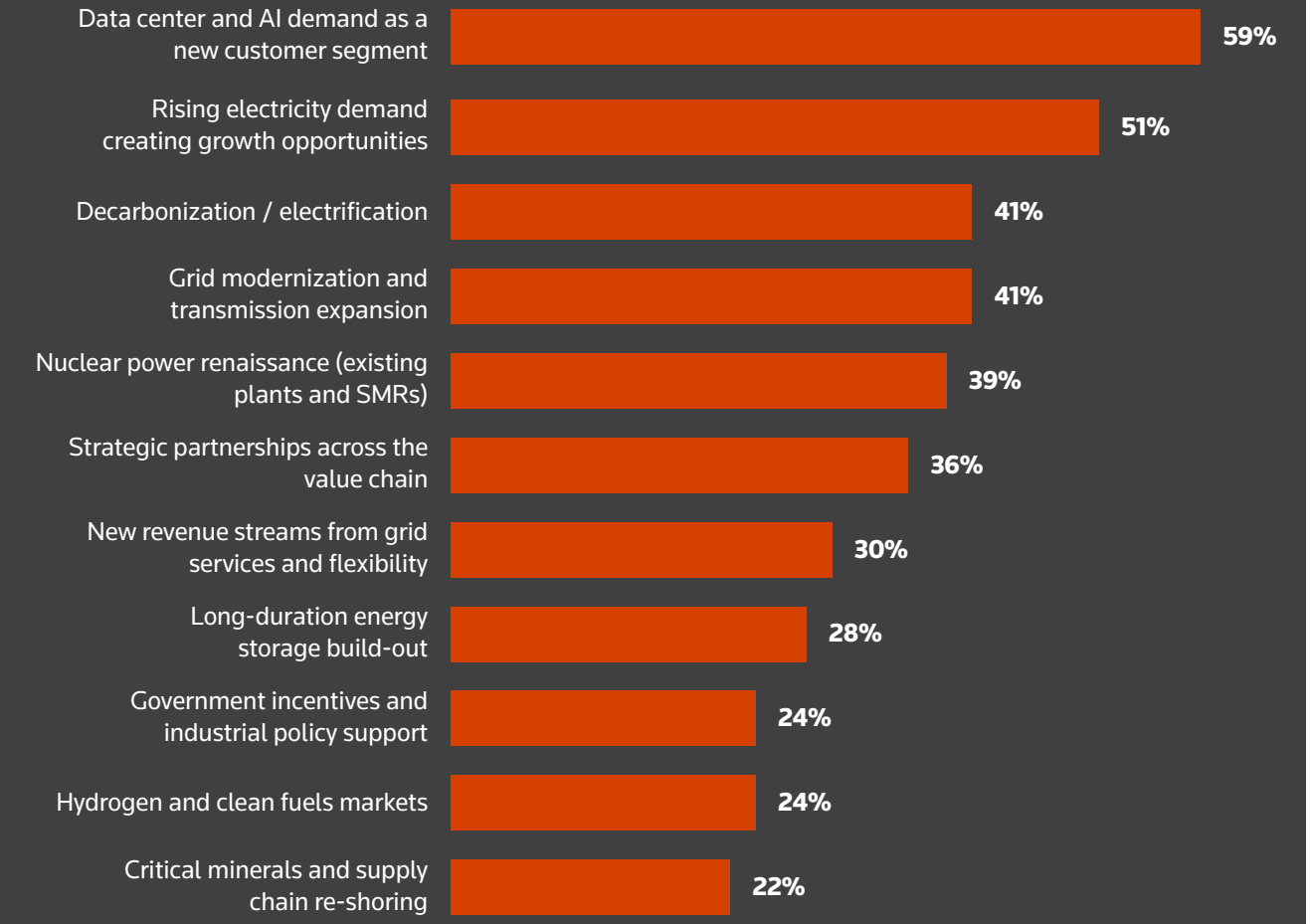
The expectation is that the impact will be material across the power sector. Eighty-eight percent of executives expect data center and AI infrastructure growth to have a moderate, significant or transformational impact on electricity demand in their primary market over



59%

Share of respondents who see data center and AI demand as the most significant opportunity facing the energy industry

FIGURE 1b: **DATA CENTER AND AI DEMAND, ALONGSIDE MORE GENERAL INCREASES IN POWER DEMAND, ARE CONSIDERED PREVALENT OPPORTUNITIES FOR ENERGY PROVIDERS.**
Which of the following do you see as the most significant opportunities facing the energy industry over the next 5 to 10 years?



Reuters Insights RystadEnergy

Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

the next five to ten years; 47% expect significant or transformational impact specifically.

Asked to put a number on it, 79% expect data centers to account for 11% or more of total electricity demand in their primary market by 2030, and 38% expect 16% or more. That distribution sits decisively above the 5–10% bracket that most executives would have placed it in two years ago, and above the headline figures that mainstream system planning has historically assumed.

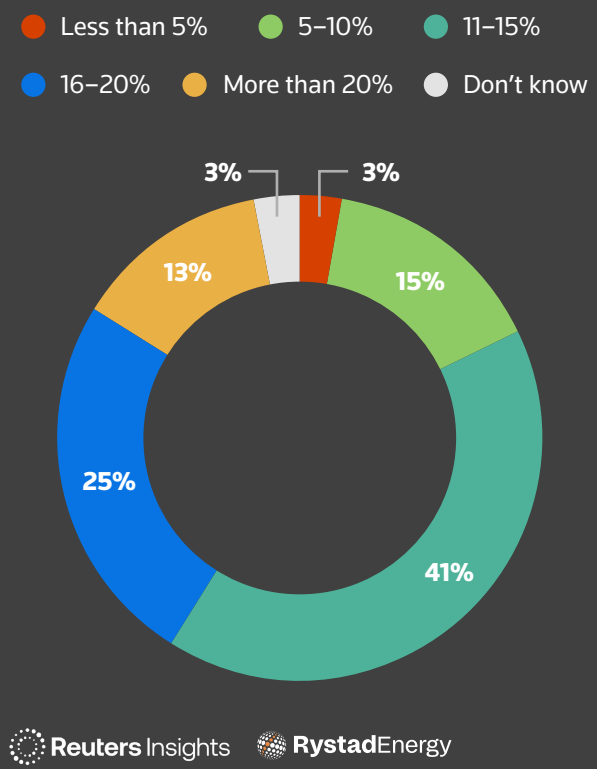
There is, however, a distinct regional contrast on the demand side of the puzzle. More than two-thirds (68%) of North American executives in our study flag powering AI and data center growth as a top challenge, against 49% of Europeans – a gap that runs in the same direction on the opportunity question (69% vs 49%).

Such a divergence is also visible when asked about the prospective impact for the sector. Sixteen percent of North American executives expect transformational impact on primary-market electricity demand, against just 8% of Europeans. North American respondents are considering the demand wave as bigger, faster and closer than their European counterparts, and that asymmetry is consistent through every subsequent finding in this report.

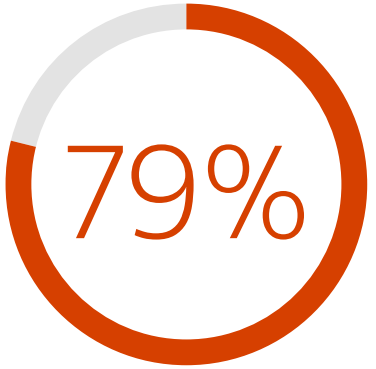
A senior energy reader looking at these numbers might reasonably ask whether what they are seeing is a real shift in expectations or simply an industry geared for a wave that may not materialize. The growth-view question

FIGURE 2: **FOUR IN FIVE ENERGY EXECUTIVES EXPECT DATA CENTERS TO ACCOUNT FOR AT LEAST 11% OF TOTAL POWER DEMAND IN THEIR PRIMARY MARKET.**

By 2030, what share of total electricity demand in your primary market do you expect data centers to account for?



Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.



Expect data centers to account for 11% or more of total electricity demand in their primary market by 2030

suggests it is the former, but with one caveat. Thirty-nine percent of executives describe the trajectory as a sustained boom, with growth continuing or accelerating through 2030 and beyond. A further 28% expect a plateau, and a quarter expect a soft landing as efficiency gains and chip improvements reduce power needs per data center. Only five percent expect a bubble. In other words, senior energy executives consider demand to be real and durable.

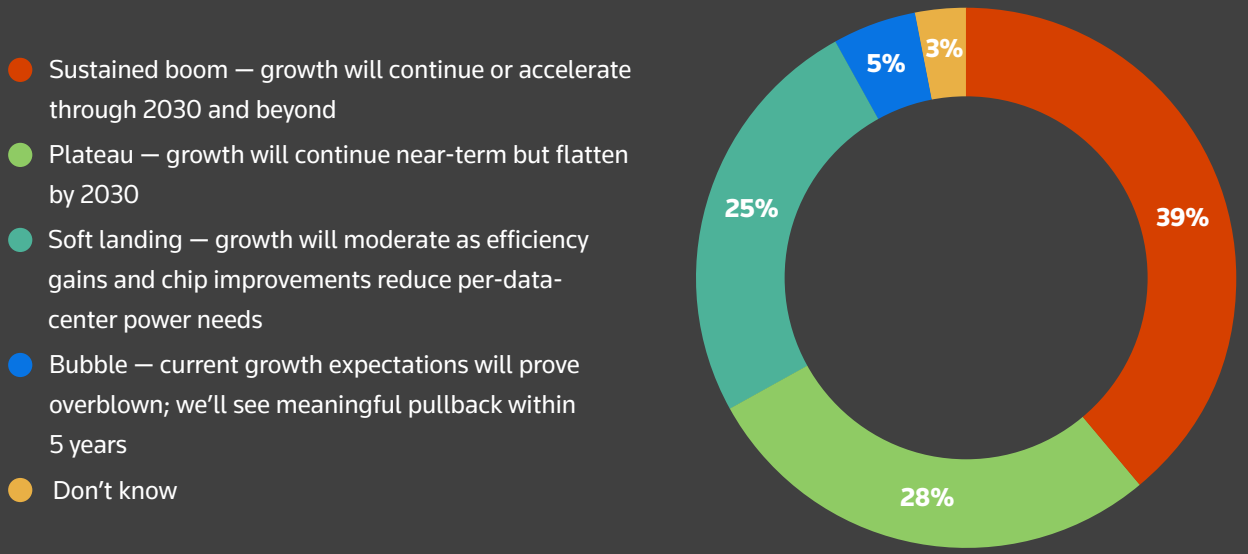
The caveat is, once again, the regional split inside this question. Fifty-three percent of North American executives see a sustained boom, effectively twice the share (26%) of our European cohort, and 35% of Europeans see a soft landing or bubble (combined), against 24% of North Americans.

> Organization whose primary market is North America are pricing AI-driven demand as a near-term lock-in

The polarization is a finding in its own right, and it is sharper than the headline trajectory split alone suggests. Both sides are reading the same data center pipeline (at least in the US, where hyperscaler investment has been concentrated), as well as the same hyperscaler announcements and the same chip-efficiency curves, but they are arriving at materially different conclusions about durability and longevity.

FIGURE 3: **JUST FIVE PERCENT OF ENERGY EXECUTIVES EXPECT A MARKET BUBBLE RELATING TO DATA CENTER DEMAND.**

Looking ahead, which of the following best describes your view on data center and AI demand growth?



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Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

The implication for senior leaders is therefore linked closely to timelines. Organizations whose primary market is North America are pricing AI-driven demand as a near-term lock-in: capital is being committed against an expected demand wave that executives believe will arrive in the coming years.

Organizations whose primary market is Europe are pricing the same demand wave as more contingent – a curve that could yet flatten as efficiency gains land. Those two strategic postures imply different procurement practices, different commercial approaches, and a different read on how much of the next decade's capex needs to be committed inside the next 12 to 18 months.

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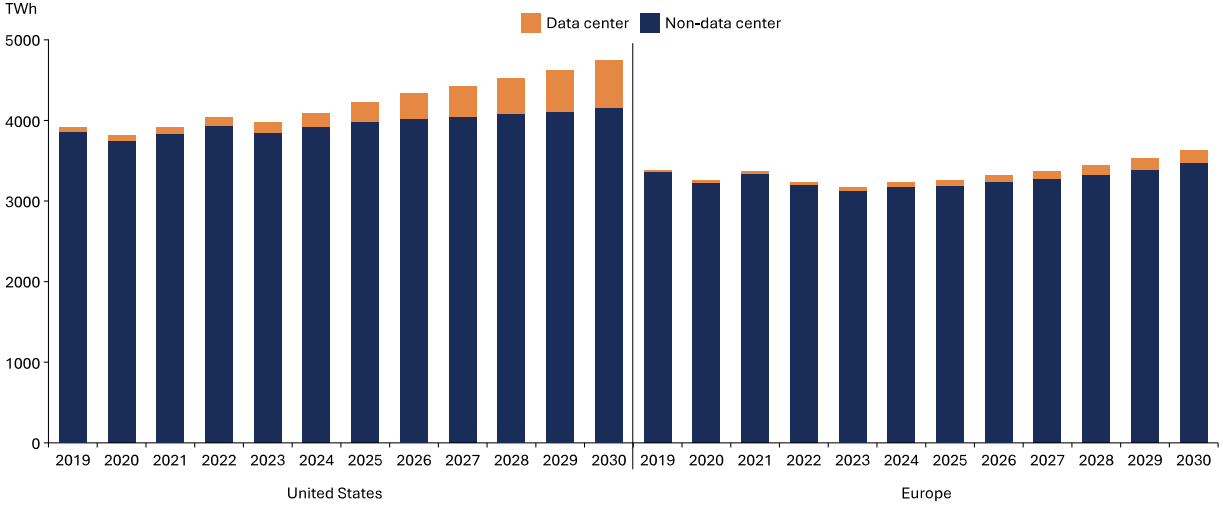
From 2023 to 2025, global installed data center capacity grew 50% to 141 gigawatts (GW), equivalent to an addition of all capacity built before 2020. From a pipeline of more than 500 GW of projects announced, Rystad Energy expects this expansion to continue, with risked data center capacity projects to total 262 GW by 2030.

This will consume close to 1,300 terawatt-hours (TWh) of power by 2030 – equivalent to 4.5% of current world power demand. Due to the distribution of data center build-outs, the scale of demand will vary significantly across regions. For the US, the power demand of data centers in 2030 could climb as high as 12% of total nationwide demand. Some countries such as Ireland could see the rise of data centers account for more than 20% of total national power demand.

Data centers are poised to remain key drivers of power demand in most regions. In the five-year period between 2020 and 2024, power demand growth was muted at 0.9% CAGR for the US and no growth at all in Europe. In contrast, the five-year period from 2024 to 2028 is expected to see power demand grow by 2.5% and 1.8% CAGR in the US and Europe, respectively.

The impact of data centers stretches far beyond rising power demand – the sector also represents the single



Source: Rystad Energy Data Center Solution, Power Macro Solution

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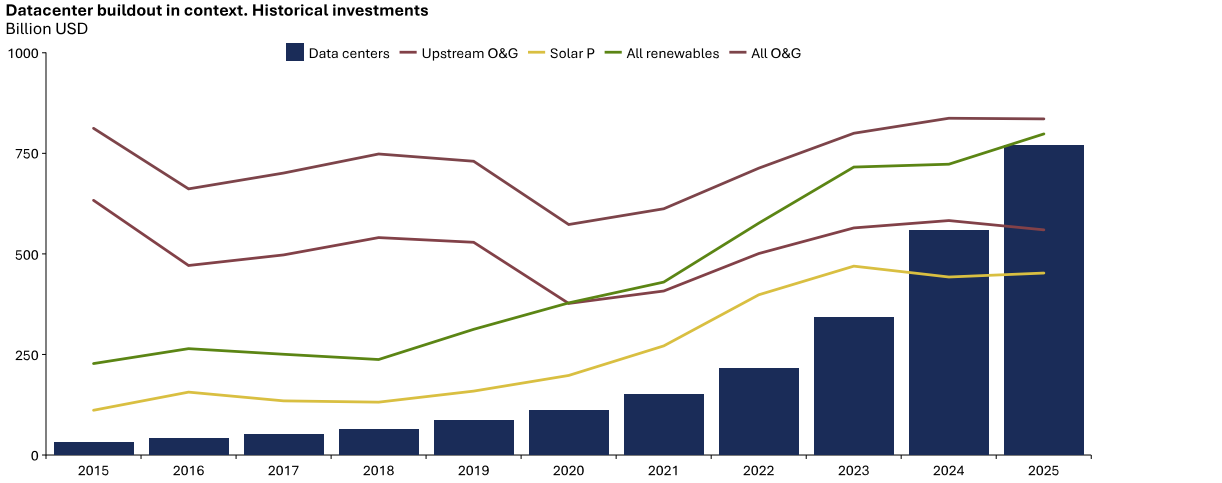

Source: Rystad Energy Data Center Solution, Oil&Gas Solutions and Renewables & Power Solutions

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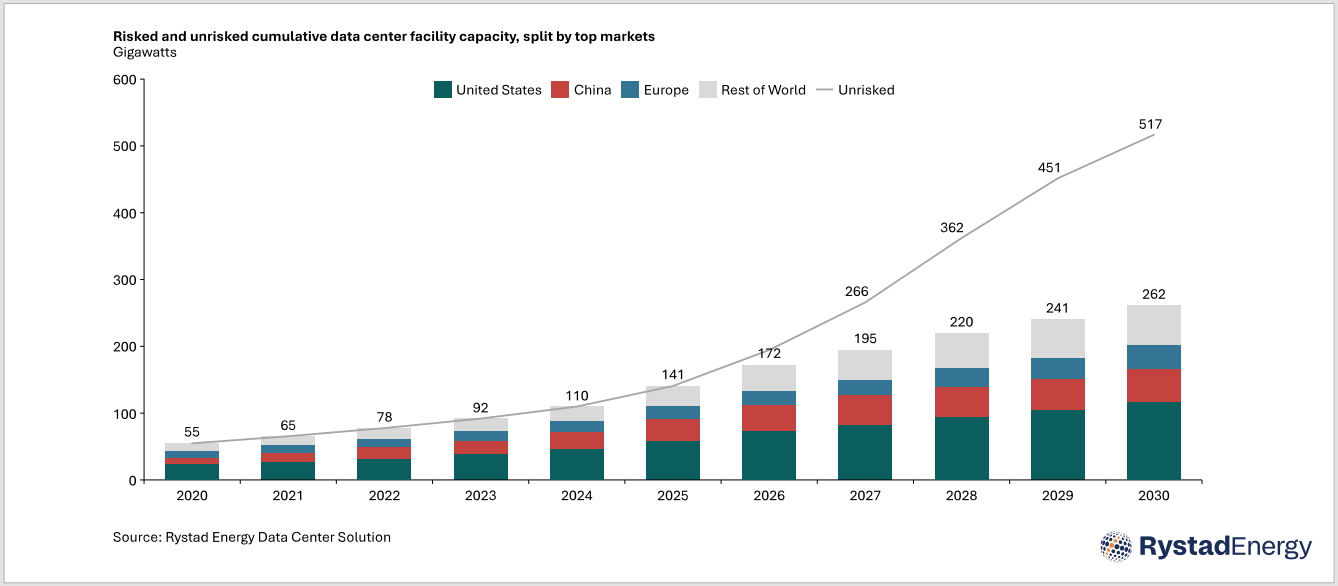
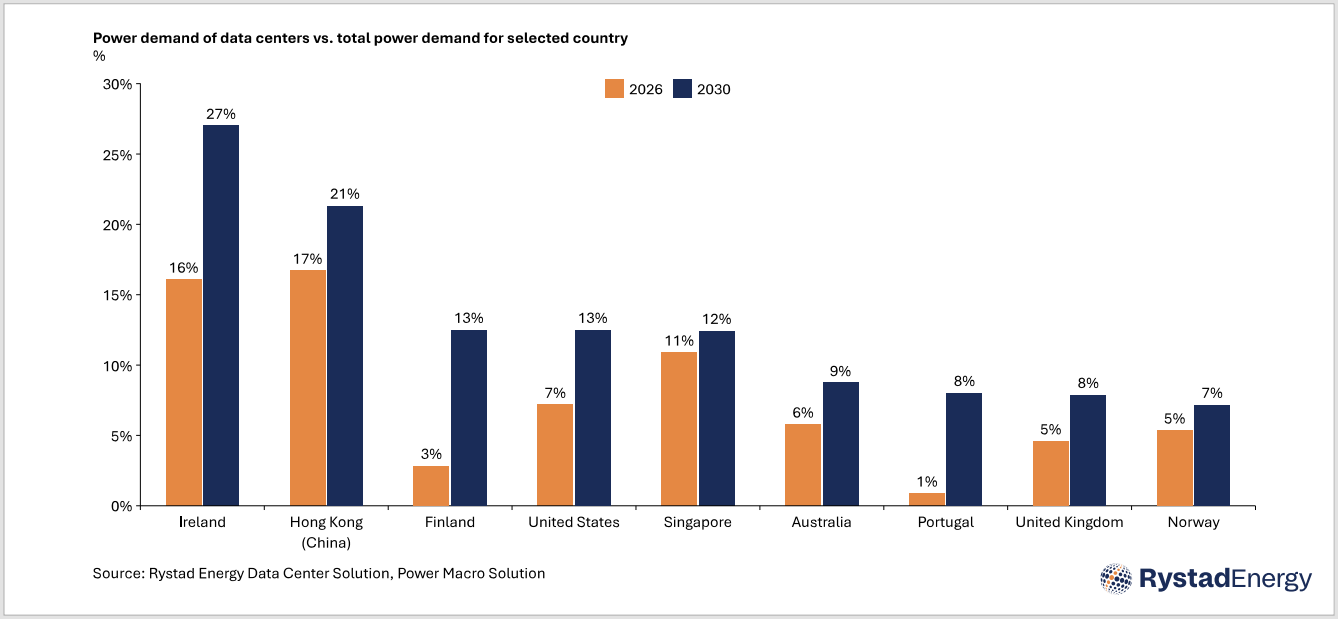
biggest magnet for capital expenditure in recent years. As total capex reached $770 billion in 2025, data center investments have surpassed those of upstream oil and gas activities in the same year. Solar PV investments, broadly acknowledged as the most substantial growth story in energy supply over the past 10 years, had already been eclipsed by data centers in 2024. From 2020 to 2025, annual data center investments grew by almost 600%.

With the massive scale of investments into data centers, significant revenue and value creation will eventually need to be realized in order to sustain such capex levels. Based on the average pay-back period that can be expected for data center infrastructure and IT equipment, the sector will need to see trillions of dollars of revenue in the near term. The revenue growth seen in frontier AI labs suggests that we are on the right trajectory, yet the next few years will be crucial.





Diverging confidence among energy stakeholders

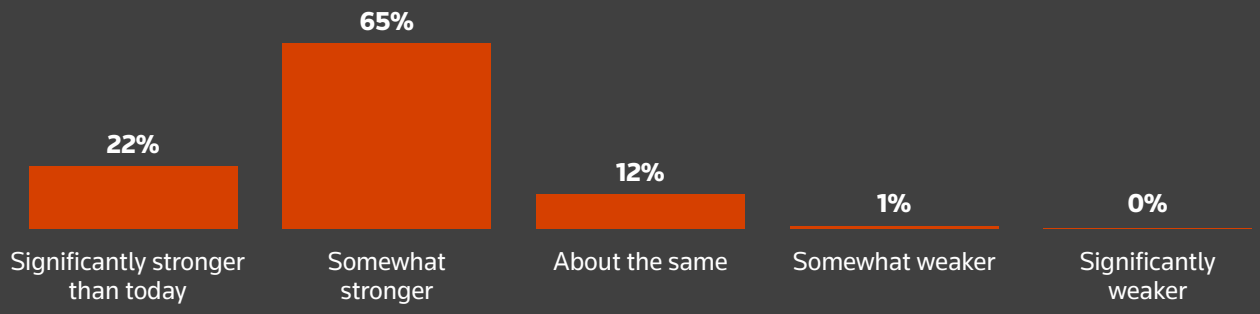
The most striking pattern in our research is the gap between how energy executives assess the impact of surging data center power demand, and the confidence they hold in the wider energy system itself.

Eighty-seven percent of senior energy executives expect their organization to fare somewhat or significantly stronger over the next five to ten years. Equally, expectations for capital expenditure mirror that confidence, with 78% expecting capex to increase over the next three years (8% significantly), while 76% report mid-term projects (two to five years) or longer-term projects (five years plus) as the dominant features in current investment pipelines. Three-quarters say data center-driven demand is currently shaping strategic planning as a top priority (14%) or one of several important factors (61%). The picture, looking inward, is of an industry that believes it has the strategy, the capital and the time to win on AI-driven power demand.

Confidence in the system, however, is strikingly different. Two-thirds of executives rate the current state of the power grid in their primary market as good or excellent at supporting the next decade of demand growth, and 76% are at least moderately confident the grid can meet projected data center demand over the next five years without significant reliability issues.

FIGURE 4: **A SIGNIFICANT MAJORITY EXPECT THEIR ORGANIZATION TO FARE STRONGER OVER THE SHORT TO MEDIUM TERM.**

Looking ahead over the next 5 to 10 years, how do you expect your organization to fare?



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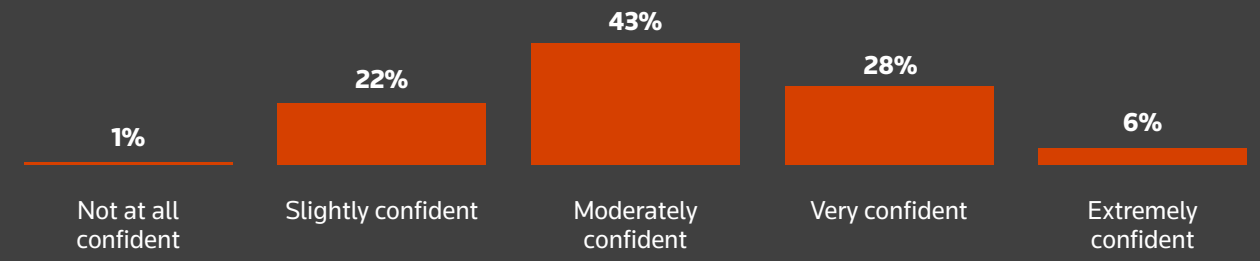
Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

FIGURE 5: **A MAJORITY REMAIN CONFIDENT THAT THEIR PRIMARY MARKET'S GRID CAN MEET PROJECTED DATA CENTER DEMAND.**

How confident are you that the power grid in your primary market can meet projected data center demand over the next 5 years without significant reliability issues?



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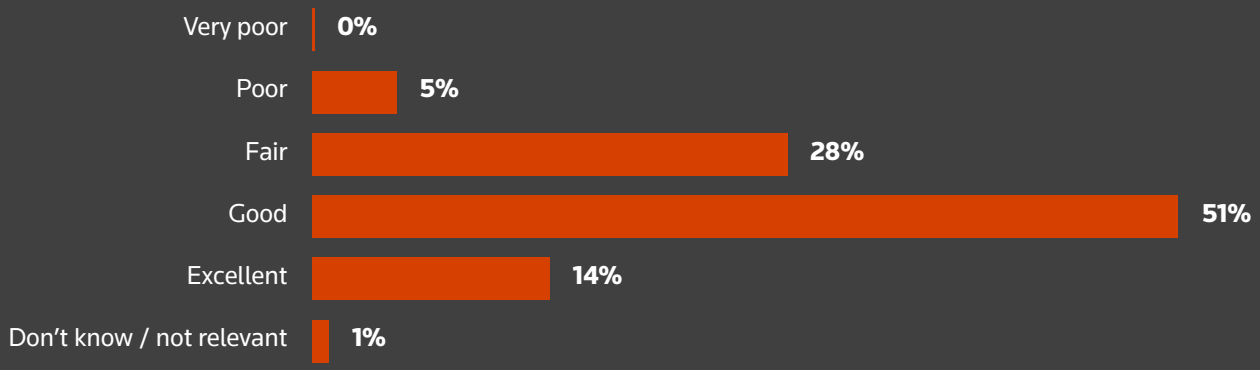
Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

In isolation, that sentiment would be considered reassuring. But two distinct qualifications from our research need to be taken into consideration. Only 6% are extremely confident on the data center question, and 69% are at least moderately concerned about major reliability events (blackouts, brownouts, capacity shortfalls) over the next five years, driven at least partly by data center demand. Concern at the extreme tail is not large (7% extremely concerned), but the middle of the distribution has clearly shifted toward the concerned half.

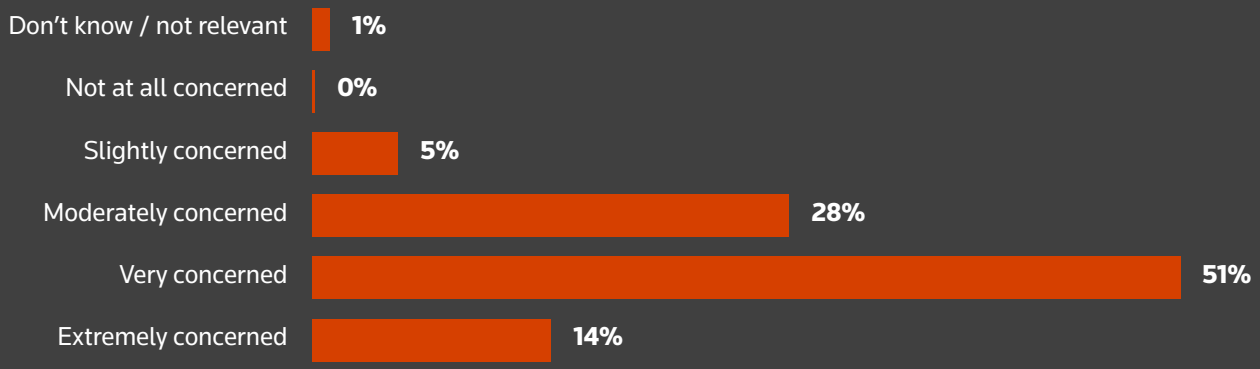
The regional contrast seen within the industry's perception of demand is equally prevalent for its perception of the respective energy systems. Aging grid infrastructure and transmission constraints are named as a top challenge by 55% of North American executives, against 26% of Europeans – a 29-percentage-point gap. The interpretation is not that European grids are unconstrained per se, but that European executives are identifying more prominent pressure points elsewhere. Commodity price volatility (38%), decarbonization requirements (39%), and capital cost (27%) all run higher in Europe than in North America. North American executives are looking at the buildout task and identifying the grid itself as the headline problem, perhaps driven by the fast-paced nature of data center buildout in North America, which has exposed weak points in the grid.

FIGURE 6: **THEIR IS MORE WIDESPREAD CONCERN OVER THE RISK OF RELIABILITY EVENTS OVER THE NEXT FIVE YEARS.**

How would you rate the current state of the power grid in your primary market in terms of its ability to support the next decade of demand growth?



Thinking about systemic risk, how concerned are you about the possibility of major reliability events (blackouts, capacityshortfalls) in your primary market over the next 5 years, driven in part by data centre demand?



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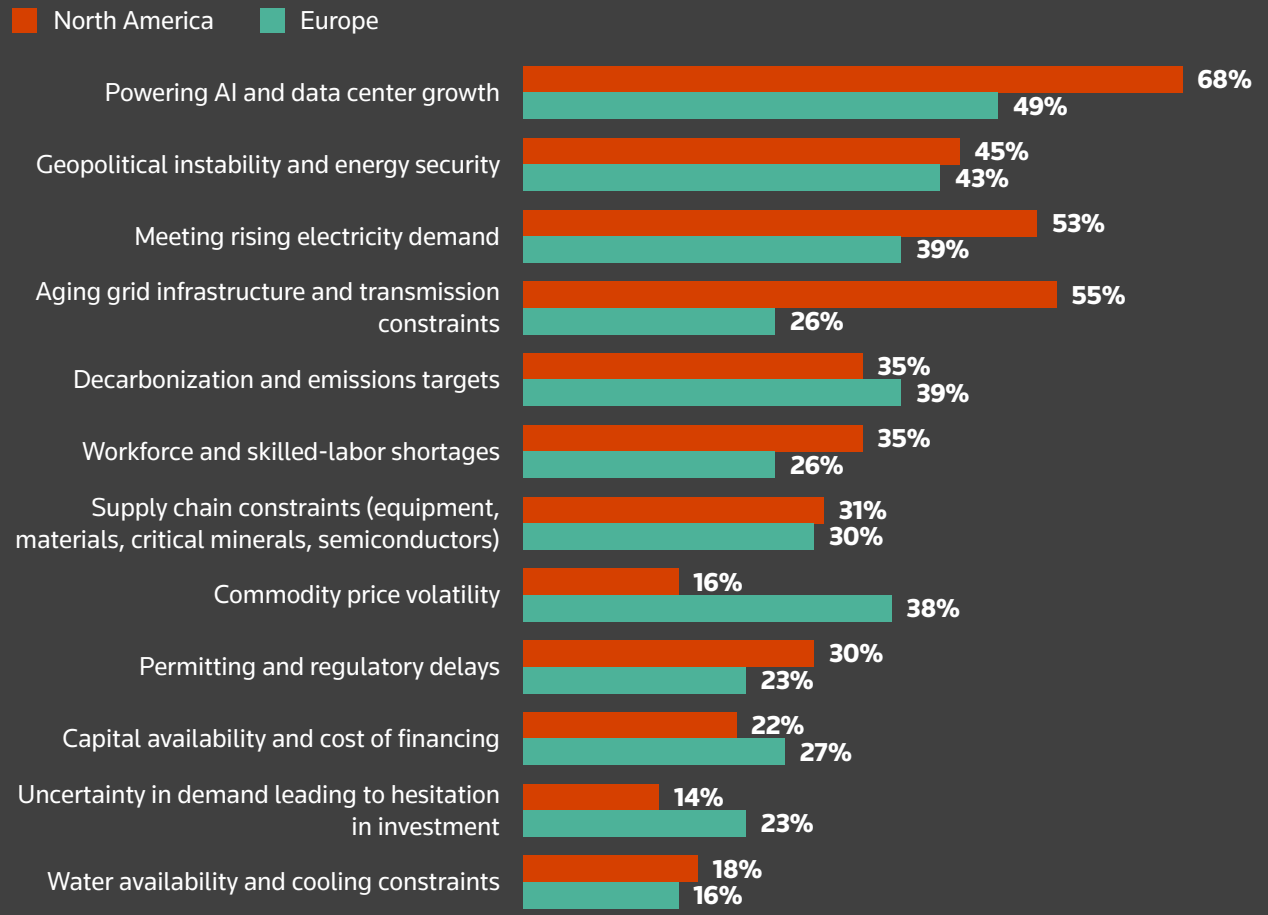
Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

This has a structural consequence for how capital is being deployed. Rather than indicating that system-level constraints will cause their organizations to fail, executives are confident they will find success even in a potentially uncooperative environment, or by finding opportunities to upgrade grids and address more structural issues impacting that system.

This will require significant and far-reaching risk management, specifically the difference between organizational risk and systemic risk. Organizations are pricing in friction, building optionality into project pipelines, and increasingly positioning to take a margin from the bottleneck rather than only from the build-out. Decision-makers who only stress-test their own balance sheet against demand growth are ignoring the bigger risk – that system reliability will wreak havoc on capex plans.

FIGURE 7: **NORTH AMERICAN EXECUTIVES FLAG AGING GRID INFRASTRUCTURE AS A TOP CHALLENGE AT MORE THAN TWICE THE EUROPEAN RATE.**

Which of the following do you see as the most significant challenges facing the energy industry over the next 5 to 10 years? by Region



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Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

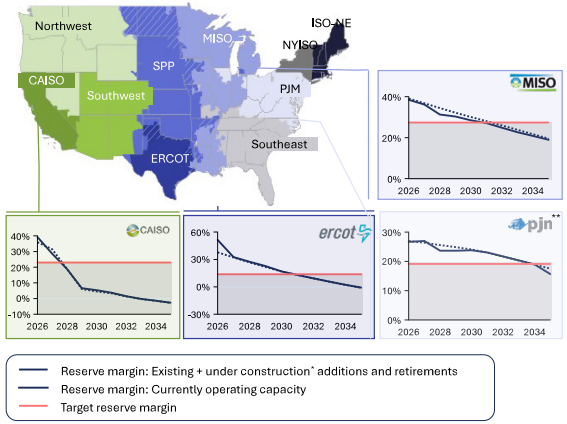
THE MARKET VIEW

This load growth raises the issue of grid readiness and reserve capacity. Based on the 2025 European Resource Adequacy Assessment report from ENTSO-E, 68% of the region's power markets might fail the reliability standard by 2028 (Lost of Load Expectation, or LOLE, above three hours per year). With high renewable energy penetration forecast in the near term, a greater need for flexibility can be expected.

A similar situation can also be seen in the US, with key markets like PJM, ERCOT and MISO all having high risk under the 2025 North American Electric Reliability Corporation's (NERC) long-term reliability assessment. US grids are facing capacity shortfalls as reserve margins tighten. CAISO crosses its adequacy threshold first, around 2028, followed by MISO in the early 2030s and ERCOT by 2035. PJM remains above its threshold until the 2030s, though capacity auctions are already signaling growing scarcity.

US grids are facing capacity shortfalls as reserve margins tighten

Selected ISO reserve margins



*EIA 860 reporting projects planned supply additions currently under construction ELCC adjusted– demand-side resources are not incorporated into the reserve calculations; ** In a simplified analysis, only VRE values have been ELCC adjusted for PJM. Source: Rystad Energy research and analysis

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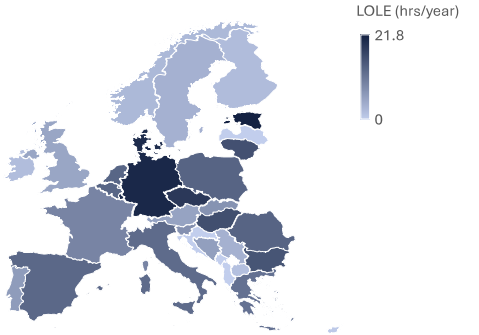
Looking forward to 2028 timeline, the majority of markets in Europe can be at risk of not meeting Reliability Standard

Loss of Load Expectations (LOLE) of various European power markets*
Hours per year



*Value expected in 2028 based on reports
Source: Rystad Energy research and analysis, ERAA 2026 report – ENTSO-E, NESO report

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Profiling key system constraints

Asked directly about what might slow the AI-power build-out over the next five years, energy executives state a list of constraints rather than any one bottleneck.

Grid interconnection and transmission delays lead at 41%, followed by regulatory uncertainty on emissions and clean power requirements (39%), permitting and siting for new generation (32%), critical equipment and material availability (30%), generation capacity build-out timelines (30%), capital deployment and financing speed (28%), and skilled workforce for power project delivery (28%).

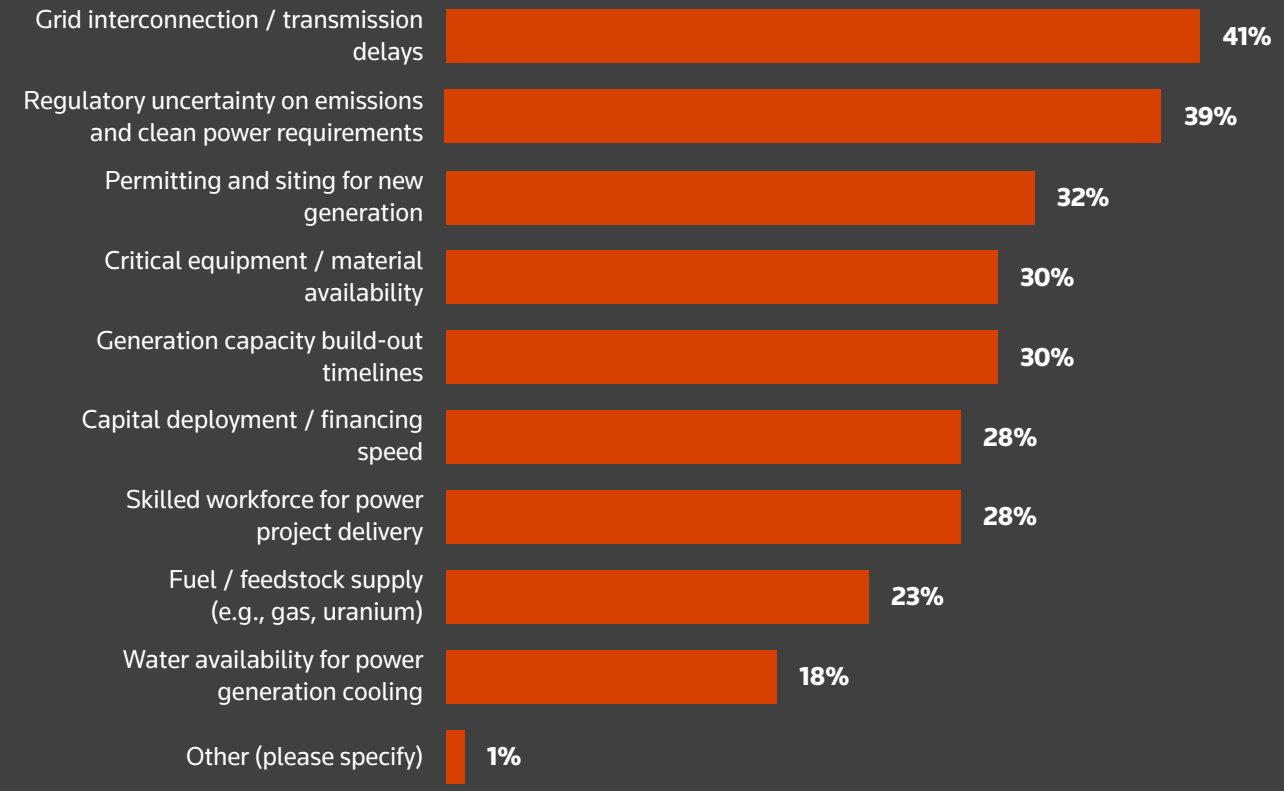
The flatness of this distribution indicates there is no single fix that clears the pipeline. Energy organizations are instead operating in an environment in which six or seven constraints will need to be addressed concurrently for the build-out to happen at the pace the customer base is now demanding.

Looking at this data, senior energy executives are currently witnessing an environment in which the value created by being early on any one item is reduced relative to the cost of being late on three or four others.

Perhaps overlooked here is the fact that data center load itself is hard to plan for. Speed-to-power expectations measured in months rather than years is the most-cited challenging characteristic of data center and AI load,

FIGURE 8: **THE ENERGY SECTOR SEES A BROAD MIX OF CONSTRAINTS TO SERVING DATA CENTER DEMAND.**

Thinking specifically about your industry's ability to serve data center demand in your primary market, which of the following do you see as the most serious constraints over the next 5 years?



Reuters Insights RystadEnergy

Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

identified by 46% of respondents, followed by rapid revisions to forecasted load growth (39%), tight reliability service level agreements (38%), concentrated geographic siting in narrow grid pockets (35%), and single-site loads at gigawatt scale (34%).

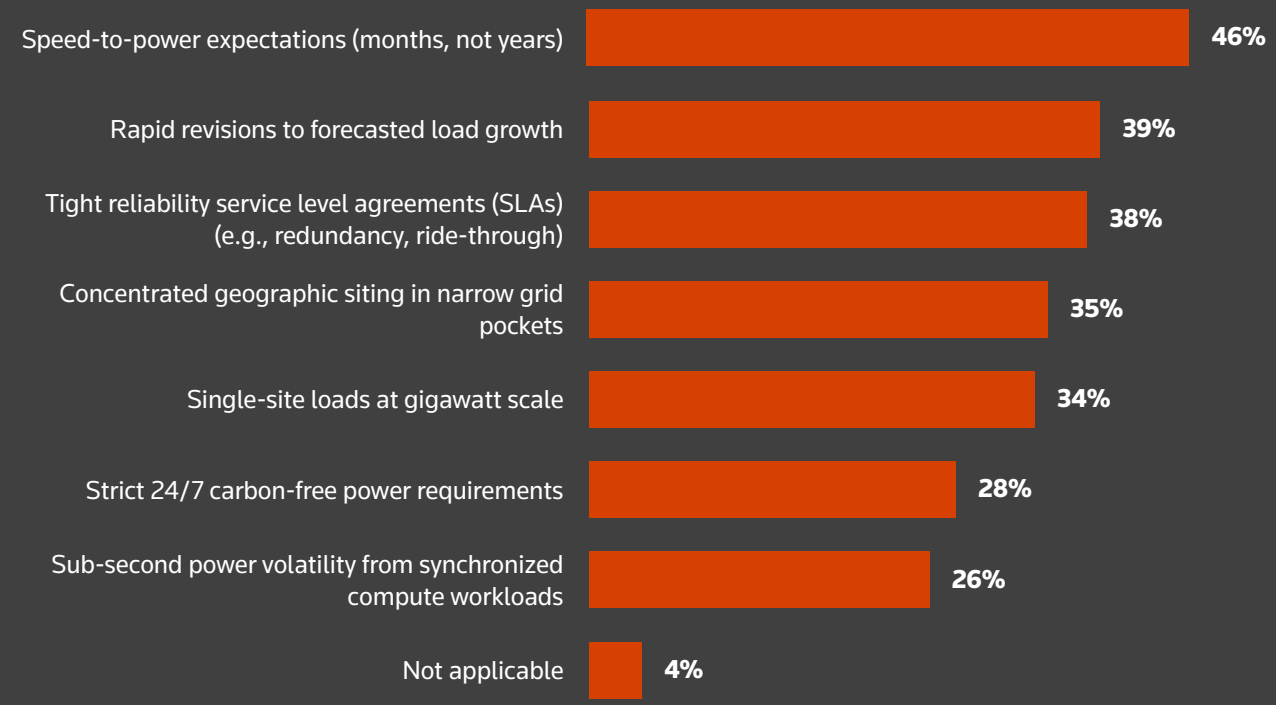
For planning, this is a bad scenario to consider. Load growth is sizeable, fast, concentrated, volatile, and accompanied by performance guarantees that traditional commercial and industrial customers do not typically demand. Rapid revisions to forecasted load are a particular pressure point for North American executives (47%) compared with European counterparts (30%), while tight reliability SLAs (43% NA vs 32% Europe) also run higher.

The constraint picture is not equal across the sector, however. When segmenting data by organization type, the diversity of responses becomes clear. Asked what their organizations are changing to meet data center customer needs, 56% of executives report investing in energy storage to manage load volatility, 51% report investing in new generation capacity, and 47% report developing new commercial offerings tailored to data centers, including 24/7 carbon-free power and dedicated supply.

Renewables developers are building toward a supply-side play: they lead on new generation capacity investment (71%) and on storage investment (69%), positioning to be the operator of choice for hyperscalers willing to pay for clean, firm, dispatchable power.

FIGURE 9: **SPEED-TO-POWER IS THE DATA CENTER PLANNING PROBLEM ENERGY SUPPLIERS FIND HARDEST.**

From your perspective as an energy supplier, which characteristics of data center / AI load are most challenging to plan for?which of the following do you see as the most serious constraints over the next 5 years?



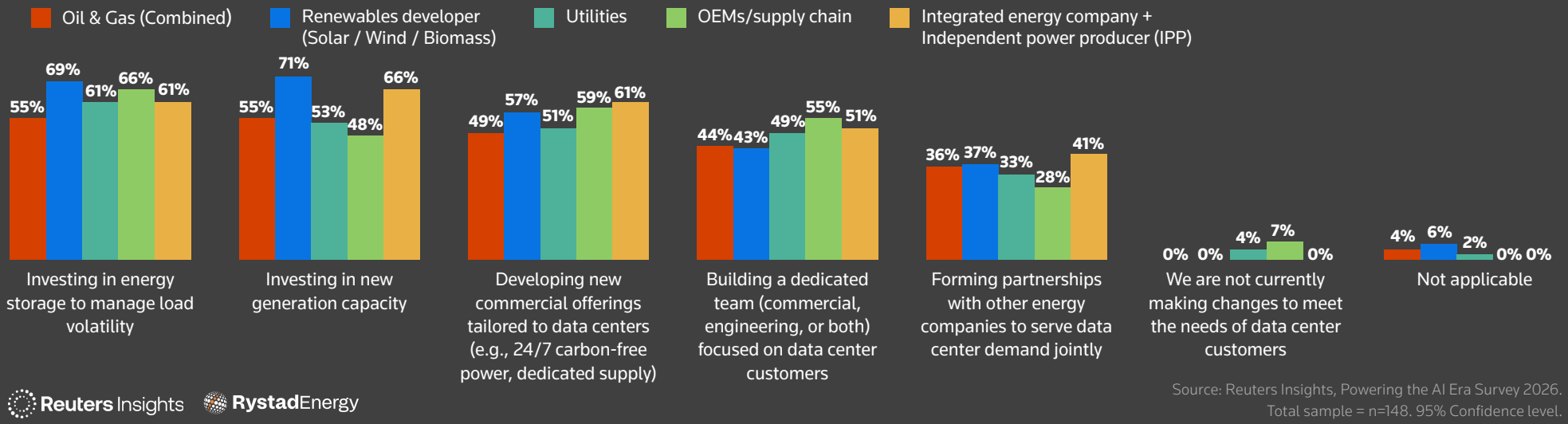
Reuters Insights RystadEnergy

Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148, 95% Confidence level.

Integrated energy companies and IPPs are building toward a commercial-leverage play: they lead on partnerships (41%) and on tailored commercial offerings including 24/7 carbon-free supply (61%), positioning to capture margin from the customer-facing complexity of the hyperscaler relationship rather than only from the underlying generation asset.

FIGURE 10: **ENERGY ORGANIZATIONS ARE ADOPTING DIFFERENT STRATEGIES TO MEET THE NEEDS OF DATA CENTER CUSTOMERS.**

What changes, if any, is your organization making to meet the needs of data center customers? by Organization Type



Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

OEMs and supply chain firms are building toward an embedded-services play. They lead on dedicated team build-out (55%), positioning to be the technical counterparty that translates customer specifications into deployable hardware at the speed-to-power tempo the customer demands. This is particularly pertinent as new challenges emerge related to the specific load behavior of data centers and AI, specifically requirements for onsite generation and load flexibility.

Utilities, notably, do not lead on any single response item – sitting in the middle of every distribution and playing the role of an operator with the broadest exposure to every constraint at once.

How that response aligns with plans for capital expenditure depends on the constraint each segment considers most binding. Capital expenditure intentions are uniformly bullish – 78% expect capex to increase over the next three years, with 70% expecting moderate increases of 10–25% and a further 8% expecting significant increases above 25%.

North American executives are slightly more aggressive on the capex pulse than Europeans (88% expect any increase, against 69% in Europe). The project horizon is dominantly mid-term: 58% report most of their current investment pipeline as two-to-five-year projects, against 18% reporting five-year-plus. That is a meaningfully shorter average horizon than the industry has perhaps historically operated on for major generation and transmission assets, and may have an impact on the types of generation asset being pursued. The customer asking for power in months is reshaping not only how energy organizations sell, but what they build and how they plan their balance sheet over the next five years.

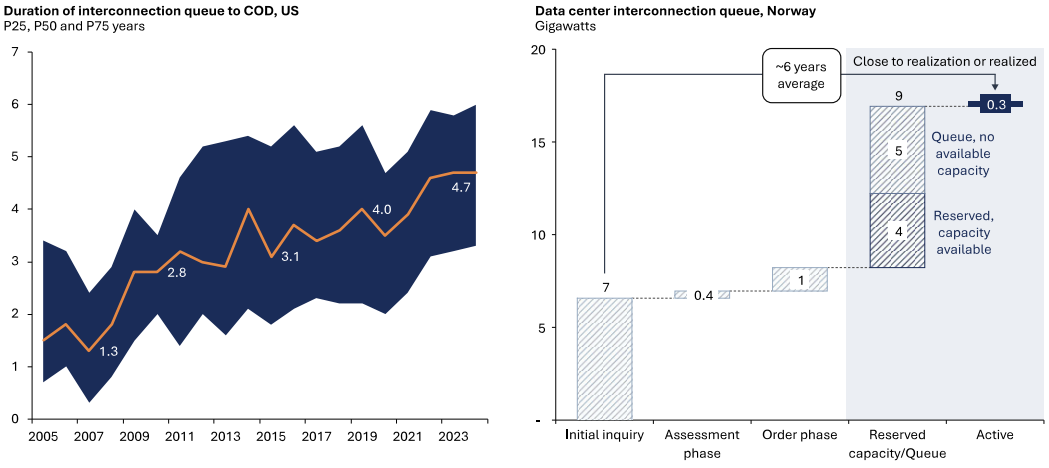
MARKET VIEW

In the US, interconnection timelines have stretched from roughly six months in 2005 to between three and six years today. The median lies at around four years, as queues have ballooned into the hundreds of gigawatts and transmission investment has failed to keep pace. This, in turn, will hamper new capacity to support power demand growth, as well as approval for new loads into the grid.

Norway illustrates the same dynamic in a contained market. Rystad Energy analysis shows that data center interconnection demand stands at around 12 GW, against only 0.3 GW of active connected capacity, with a further 5 GW waiting on available capacity and an average lag of six years from order confirmation to energization. Despite representing less than 1% of Norwegian electricity consumption, data centers account for close to 40% of interconnection queue capacity.

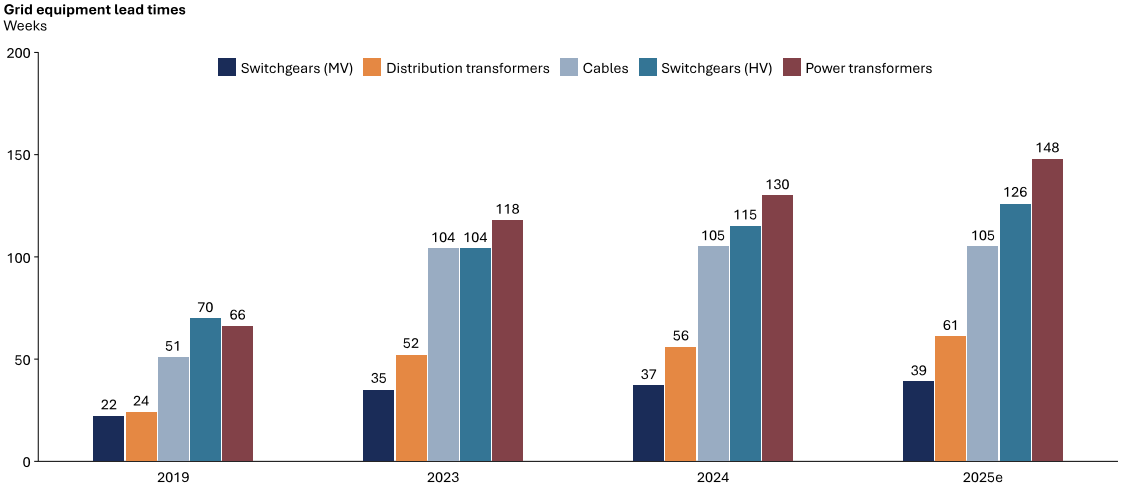
The demand from giga-scale data center campuses has also caused stress in equipment supply chains. Based on data from Rystad Energy equipment research, high-voltage transformer lead times have stretched to around 150 weeks in 2025, up from just 65 weeks in 2019, with some orders reaching 200 weeks. Heavy-duty gas turbines run 36–62 months. Switchgear and cables have seen similar increases.

New grid additions are severely constrained, with years of wait time



Source: Rystad Energy research and analysis

RystadEnergy



Source: Rystad Energy Equipment Solution

RystadEnergy

Selected oil and gas players' data center activity

Company type	Company	Partnerships	
O&G Major	Chevron	Microsoft	To power West Texas AI data center complex (exclusivity agreement)
	ExxonMobil	NextEra Energy	To develop gas-fired power plants+ CCS on the U.S. Gulf Coast
Oilfield service	slb	NVIDIA	To manufacture server-rack infrastructure, cooling and other hardware
	Baker Hughes	Frontier Infrastructure	To develop CCS, power generation and data center projects
		DATAVOLT	To develop data centers in Saudi Arabia
		TX Turbine-X Energy Inc.	Provision of turbine packages for data center projects
	HALLIBURTON	VoltaGrid	To develop data centers in the Middle East
		ARMADA	Deploy HAL Landmark software on modular data centers at the edge
Gas utility	Southwest Gas		Northern Nevada pipeline expansion driven by data center demand
	Aspire Energy Express	American Electric Power	To build pipeline supplying a fuel-cell facility powering a data center

Source: Rystad Energy Data Center Solution

RystadEnergy

The practical consequence is that developers can secure an interconnection slot but might be unable to obtain the equipment needed to connect within the same timeframe. As a result, operators now routinely secure critical equipment before sites are even selected, treating procurement as a development prerequisite rather than a downstream step. Contract timing now matters as much as equipment selection, with early movers holding a material cost advantage over those entering the market today. The importance of experiences in supply chain coordination, together with large-scale project management, is more prevalent than ever for data center industries.

The challenge of large-scale developments creates opportunities for collaboration between data center developers and energy players with the necessary experience and know-how. From setting up onsite generation to supplying fuel and equipment, integrated energy companies and service providers are rapidly exploring opportunities within the data center ecosystem.

Recasting the generation mix

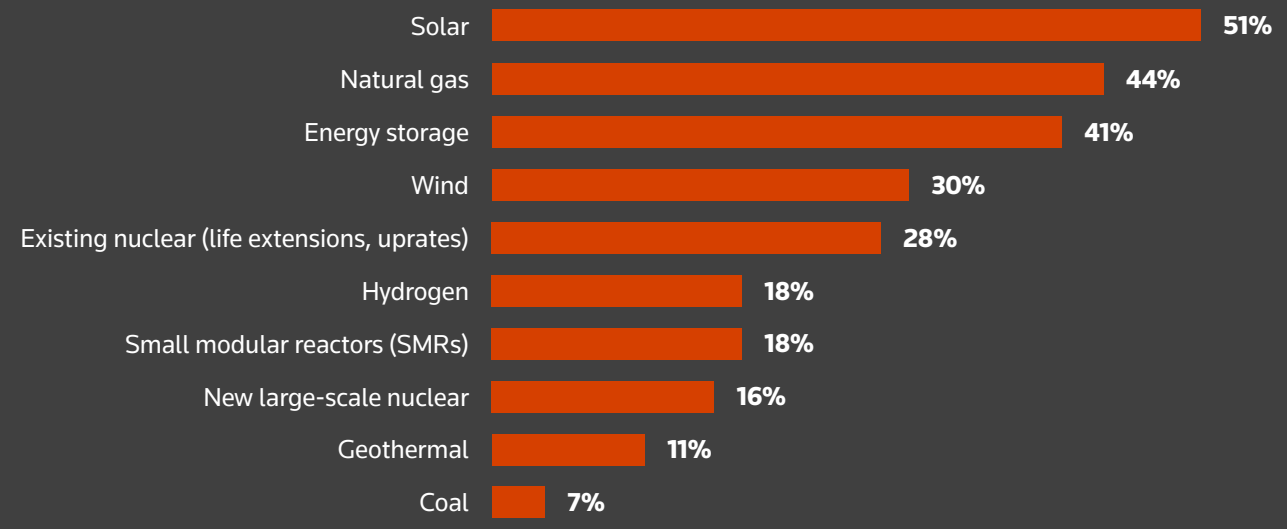
For most of the past decade, the headline question in generation capacity planning has been the speed of the renewables build-out and the pace at which fossil capacity could be retired without compromising system reliability. The implicit assumption was a steady downward pressure on natural gas, a phase-out of unabated coal, and a contested debate over the role of new nuclear.

AI-driven power demand has redrawn that conversation. Asked which power sources will play the largest role in meeting data center and AI demand over the next five to ten years, executives lead with solar (51%), followed by natural gas (44%), energy storage (41%), wind (30%), existing nuclear life extensions and uprates (28%), small modular reactors (18%), hydrogen (18%), new large-scale nuclear (16%), and geothermal (11%).

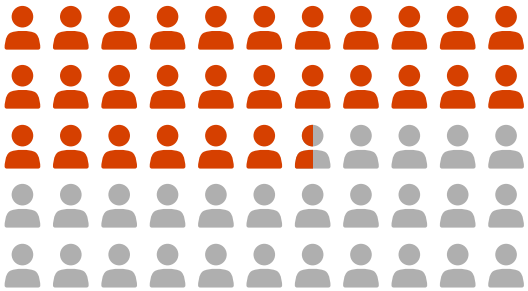
While additional solar PV capacity stands the most favored solution, the quiet rehabilitation of natural gas as a credible long-horizon fuel for AI infrastructure marks a notable shift. Another is the fact that nuclear in three forms (existing extensions, SMR, and new large-scale) garners more cumulative mentions than wind alone. A third observation is the absence of any large preference from the energy industry for geothermal as a component part of the mix, despite recent deals from hyperscalers such as Google's 3 GW framework agreement with Fervo Energy, signed in March 2026.

FIGURE 11: **SOLAR, GAS AND ENERGY STORAGE ARE EXPECTED TO LEAD THE WAY IN CATERING FOR DATA CENTER DEMAND.**

Which power sources do you expect to play the largest role in meeting data center and AI demand over the next 5–10 years?



Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.



51%

Share of respondents expecting solar to play a major role in meeting data center and AI demand over the next 5 - 10 years

The regional contrast is particularly sharp on the question of which energy sources are expected to meet data center and AI demand, and should resonate strongly among most senior energy executives.

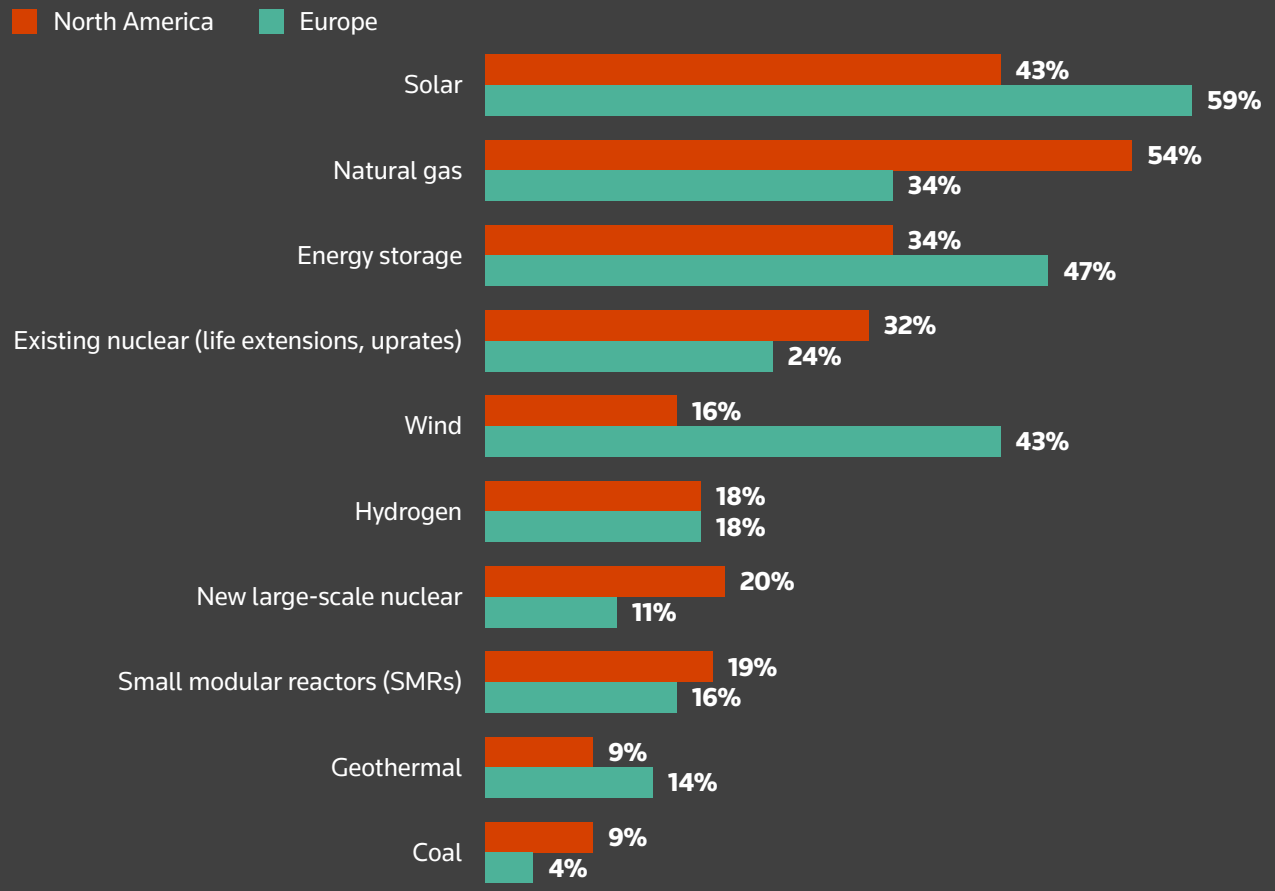
While more than half (54%) of North American decision-makers see natural gas playing a leading role in meeting AI-driven power demand, just 34% of their peers in Europe feel the same. European executives, in turn, strongly favor a greater buildout of renewables split between solar PV (59% against North America's 43%), wind (43% against North America's 16%), and energy storage (47% against 34%).

> While more than half of North American decision-makers see natural gas playing a leading role in sating AI-driven power demand, just 34% of their peers in Europe feel the same.

North American executives expect AI-driven demand to be met disproportionately by gas with nuclear in support; European executives expect it to be met disproportionately by renewables with storage as the firming mechanism. Both regions, in other words, are approaching the same demand wave through the generation mix their existing systems can most realistically scale.

FIGURE 12: **WHILE RENEWABLES LEAD IN EUROPE, NORTH AMERICAN MARKET PLAYERS SEE A PREFERENCE FOR NATURAL GAS.**

Which power sources do you expect to play the largest role in meeting data center and AI demand over the next 5–10 years? by Region



Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

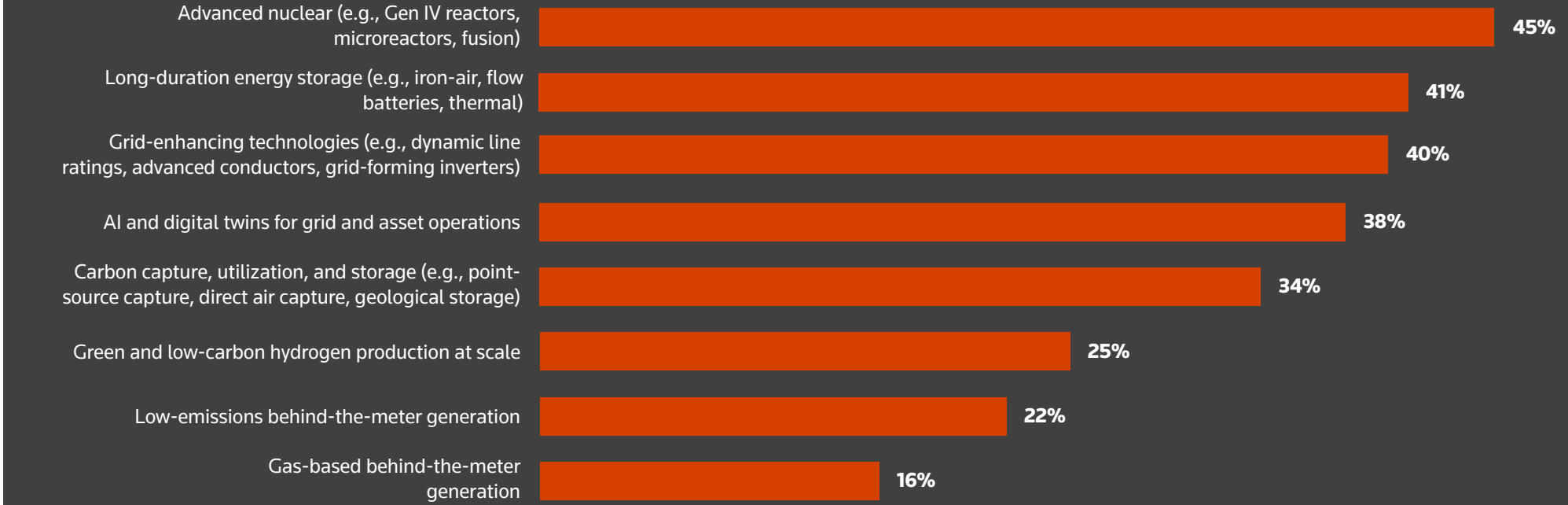
While those generation technologies are well established today, other emerging alternatives – such as advanced nuclear, long-duration energy storage, and grid-enhancing technologies – are also expected to play a longer-term role in meeting surging power demand.

Advanced nuclear – including Gen IV reactors, microreactors and fusion – is the most cited emerging technology among our survey cohort, as seen in figure 14.

However, one important caveat is how advanced nuclear includes both near-deployable SMR designs and longer-horizon fusion. While 45% of executives regard advanced nuclear as the emerging technology most likely to play a role in driving demand, this may sit across different timelines.

What the executives are doing about the generation mix at the system level is consistent with these technology rankings. Asked how data center demand is changing energy system planning and investment in their primary market, 49% report increasing focus on grid stability and ancillary services, 49% report accelerating new generation build, 48% report driving renewed investment in nuclear (existing plants or SMRs), and 45% report concentrating new transmission investment around data center clusters.

FIGURE 13: **ADVANCED NUCLEAR IS THE MOST-CITED EMERGING TECHNOLOGY FOR SERVING AI-DRIVEN DEMAND.**
Which of the following emerging technologies do you expect to be most important for serving data center and AI demand?



Reuters Insights RystadEnergy

Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

This capital reallocation may also be split by region – 41% of North American executives report a shift from other energy sectors toward power, against 23% in Europe – and it sits among the more strategically consequential findings of our research. The North American oil and gas industry, in particular, is increasingly positioning itself inside the energy transition as an alternative to fast-deploying renewable power.

From a grid perspective, a similar narrative is being portrayed. Half of executives (50%) name long-duration energy storage as one of the most important grid and system-level interventions over the next five to ten years, followed by grid-enhancing technologies and distributed generation (47%), and major transmission build-out (43).

That narrative lands on four key cornerstones of grid-level modernization needed to power the AI era – storage, grid technologies, transmission, and coordination. A system built on more solar, more gas, more nuclear, more storage, and more single-site gigawatt loads is a system that needs all four legs of that stool to hold.

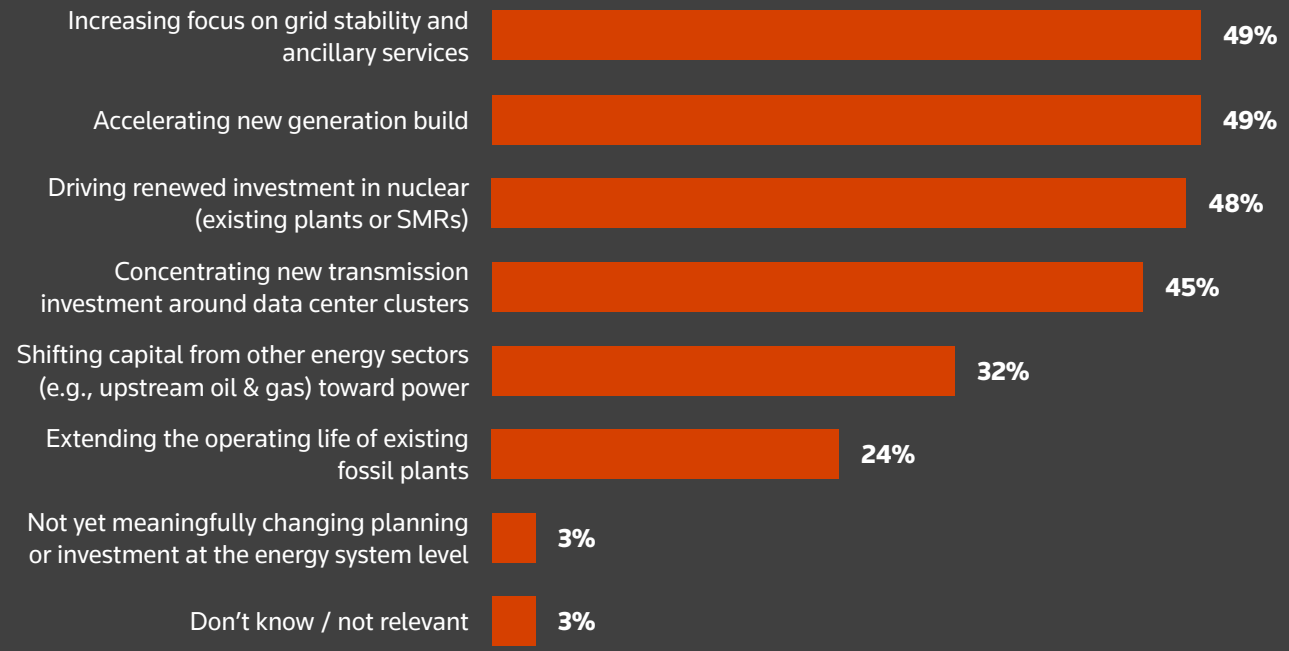
Taken together, the new generation mix is plural by design, with each component picking up part of the demand load that AI-driven growth has imposed and will continue to impose in greater quantities.

Organizations winning the next decade will not be those that bet on a single technology. It will require diverse portfolios and approaches that cover multiple legs of the mix and whose commercial books can cater to customers that value clean, firm, dispatchable power at gigawatt scale on a tight timeline.

The political economy of that mix will likely be contested, with clean power mandates at odds with the rehabilitation of gas in some jurisdictions, and with the nuclear renaissance depending on policy certainty that some markets cannot yet provide. But the operational intent of the industry is clear.

FIGURE 14: **GRID STABILITY, BUILD-OUT OF NEW GENERATION AND RENEWED NUCLEAR FOCUS ARE KEY CONSIDERATIONS FOR ENERGY SYSTEM PLANNING.**

In what ways is data center demand changing energy system planning and investment in your primary market?



Reuters Insights RystadEnergy

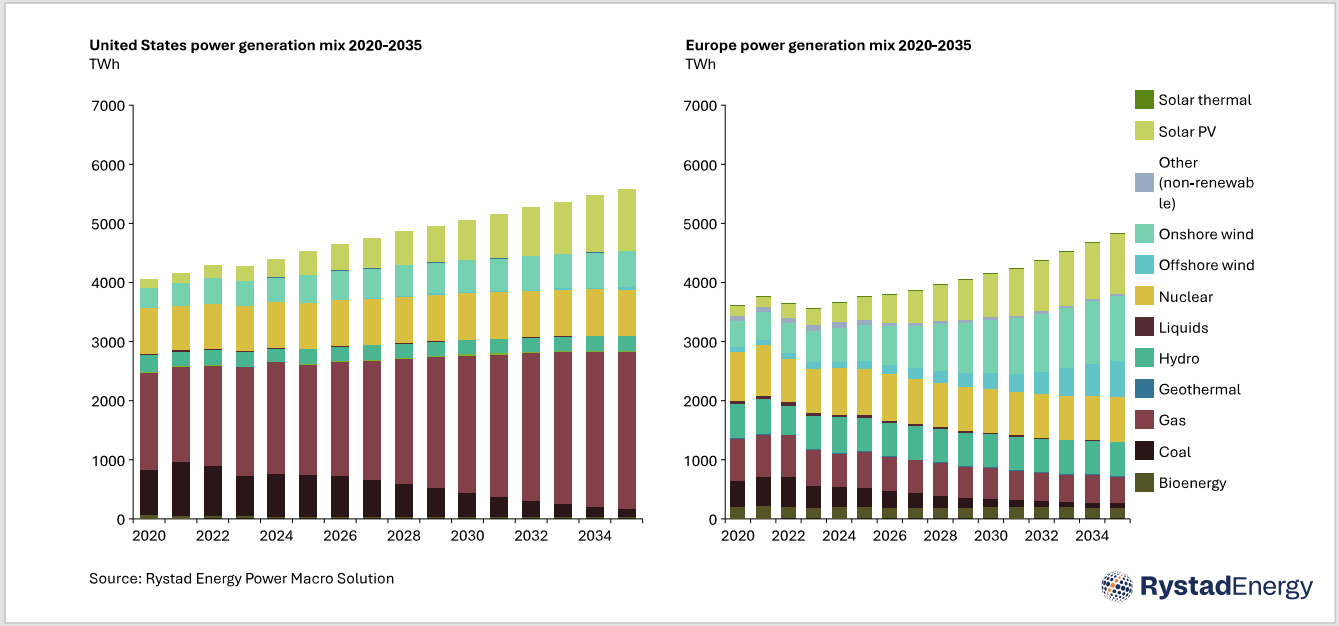
Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

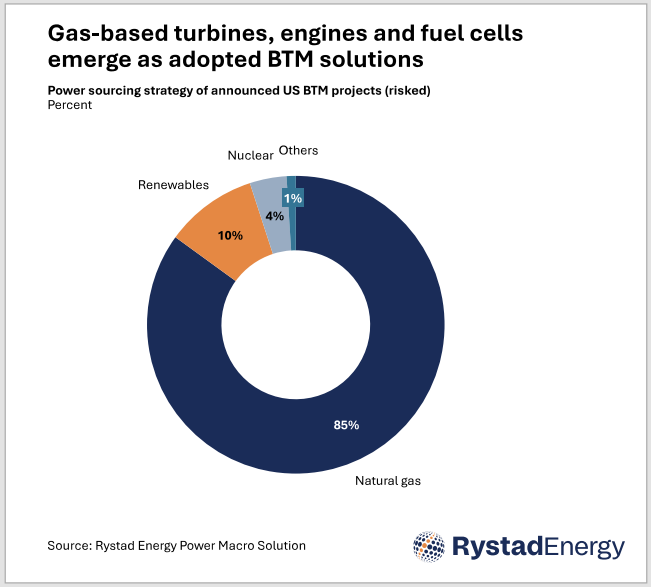
THE MARKET VIEW

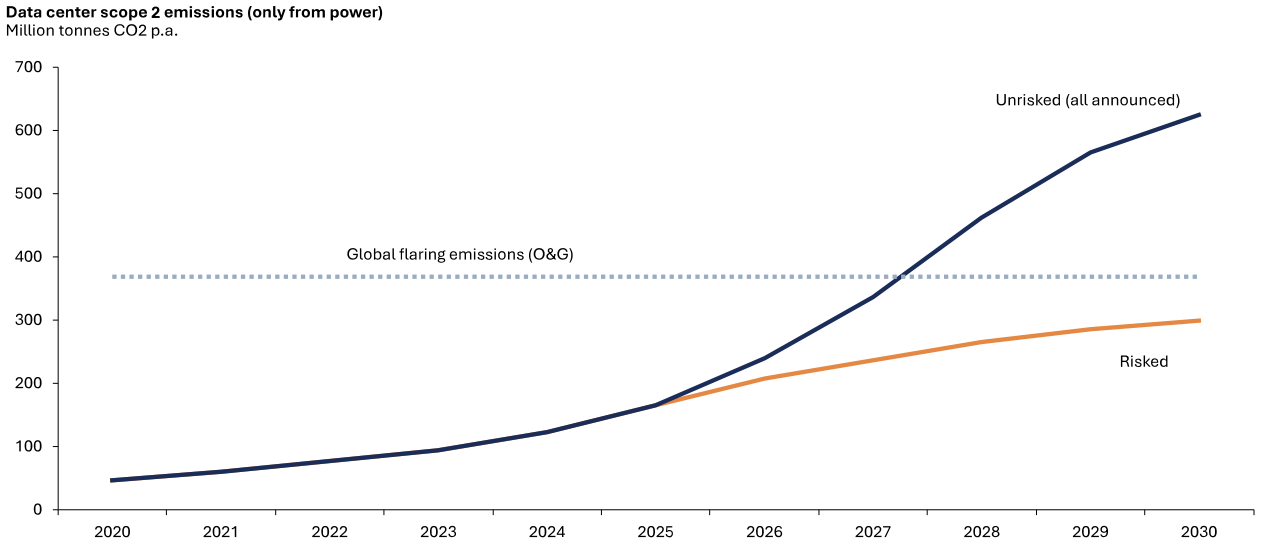
The energy sources providing power to data centers will naturally vary depending on the power mixes of each market, influenced by factors including resource availability, regulations, and construction costs. Favorable economics and the push for energy transition in recent years have generally increased the share of renewables in more power mixes.

Yet, differences still exist. Countries like the US, with an abundance of cheaper natural gas, will see a higher share of gas-based generation in their mix compared to most European countries. The demand for stable, base-load power for most standard IT and AI workload will raise questions about mixes with a high share of variable renewable energy (VRE), and will require more energy storage and flexibility-enhancement measures. Meanwhile a gas-heavy mix will perform worse on carbon intensity metrics, leaving operators and stakeholders vulnerable to future regulatory changes.

Natural gas dominates behind-the-meter (BTM) power for US data centers, accounting for 85% of announced BTM project capacity, with renewables at 10% and nuclear at 4%. The BTM shift is being driven by grid constraints rather than technology preference. Gas remains the only option with the unit size, lead time and dispatchability to meet hyperscale power demands at pace. In Europe, BTM and hybrid projects also have a high natural gas share of about 75%. However when looking at recently signed PPAs







Source: Rystad Energy Data Center Solution

RystadEnergy

with data centers as offtakers, the largest share stems from solar and onshore wind.

On a risked basis, the global data center buildout could generate close to 300 million tonnes (Mt) of CO2 annually from power consumption by 2030 – roughly on par with current emissions from upstream oil and gas flaring. The unrisked pipeline doubles that figure to around 600 Mt.

The emissions outlook is driving a notable nuclear renaissance among hyperscalers in the US. AWS has secured power from the Susquehanna and Calvert Cliffs nuclear plants, while hyperscaler agreements now extend to SMRs and geothermal alongside conventional renewables. Microsoft has amassed 30 Mt of CO2 removal credits as of 2025, and Google acquired renewable energy developer Intersect Power for $4.75 billion.

VOLODYAR/ADOBE STOCK

Working with the hyperscaler

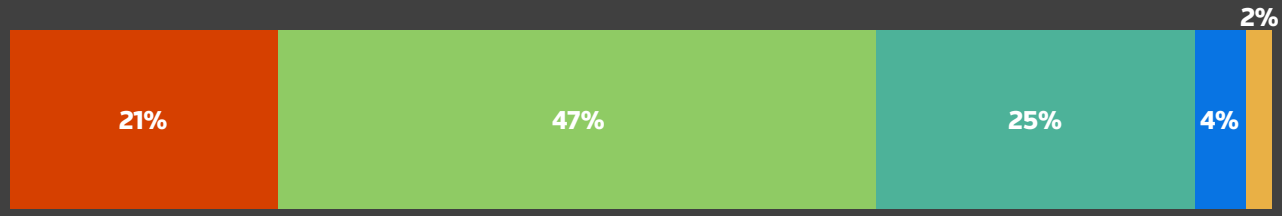
The hyperscaler customer emerged in the energy industry's commercial conversation in the second half of the last decade, initially being treated as another large commercial and industrial buyer with sustainability preferences. This has since evolved to become a customer whose commercial demands, contractual structures and operational expectations have begun to reshape the way energy suppliers organize themselves to serve large industrial loads.

> More than two-thirds describe [hyperscaler and data center customers] as moderately or significantly more demanding to work with than traditional commercial and industrial customers.

Of the 118 organizations in our survey actively working with hyperscaler and data center customers, more than two-thirds (69%) describe them as moderately or significantly more demanding to work with than traditional commercial and industrial customers, with 21% saying significantly so. Just 6% find them less demanding.

FIGURE 15: **MORE THAN TWO-THIRDS OF ENERGY ORGANIZATIONS WORKING WITH HYPERSCALERS FIND THEM MORE DEMANDING THAN TRADITIONAL COMMERCIAL AND INDUSTRIAL CUSTOMERS.**

Compared to traditional commercial / industrial customers, are data center / hyperscaler customers more demanding to work with?demand over the next 5 years without significant reliability issues?



Reuters Insights RystadEnergy

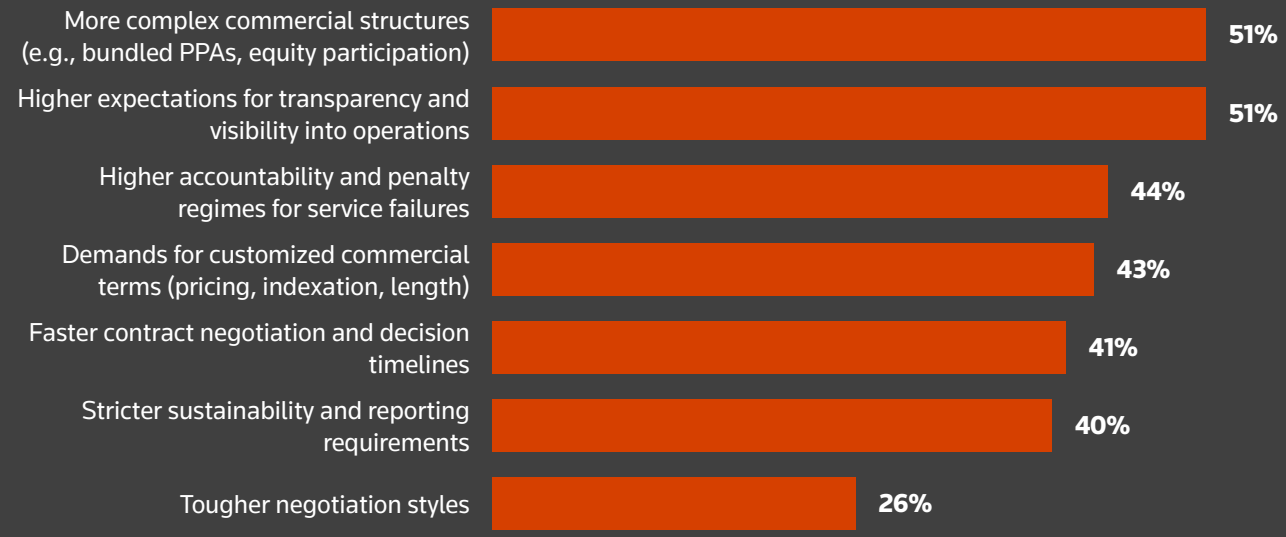
Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

While this signal is loudest in North America, where 78% of energy organizations working with hyperscalers describe them as more demanding, it is a structural reading across the surveyed sample.

How that additional demand expresses itself is consistent enough across the sub-sample to suggest an underlying commercial pattern. Among the 81 executives whose organizations find hyperscalers more demanding, 51% cite more complex commercial structures, including bundled PPAs and equity participation, 51% cite higher expectations for transparency and visibility into operations, and 44% cite higher accountability and penalty regimes for service failures. Also strongly cited were demands for customized commercial terms covering pricing, indexation and length, faster contract negotiation and decision timelines, and stricter sustainability and reporting requirements.

This multitude of demands is illustrative of a customer that wants more sophisticated contracts, more aggressive performance terms, faster paperwork, and a sustainability footprint that can credibly count toward its own targets.

FIGURE 16: **HYPERSCALERS ARE CONSIDERED MORE DEMANDING ACROSS MULTIPLE FRONTS.**
In what ways are data center / hyperscaler customers more demanding compared to traditional commercial / industrial customers?



Reuters Insights RystadEnergy

Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

MUHAMMAD/ADOBE STOCK

These are all elements energy market participants will have to get to grips with quickly.

The negotiations and deals that energy organizations have engaged in with hyperscaler and data center operators over the past 24 months only underscore the picture of a highly demanding customer base.

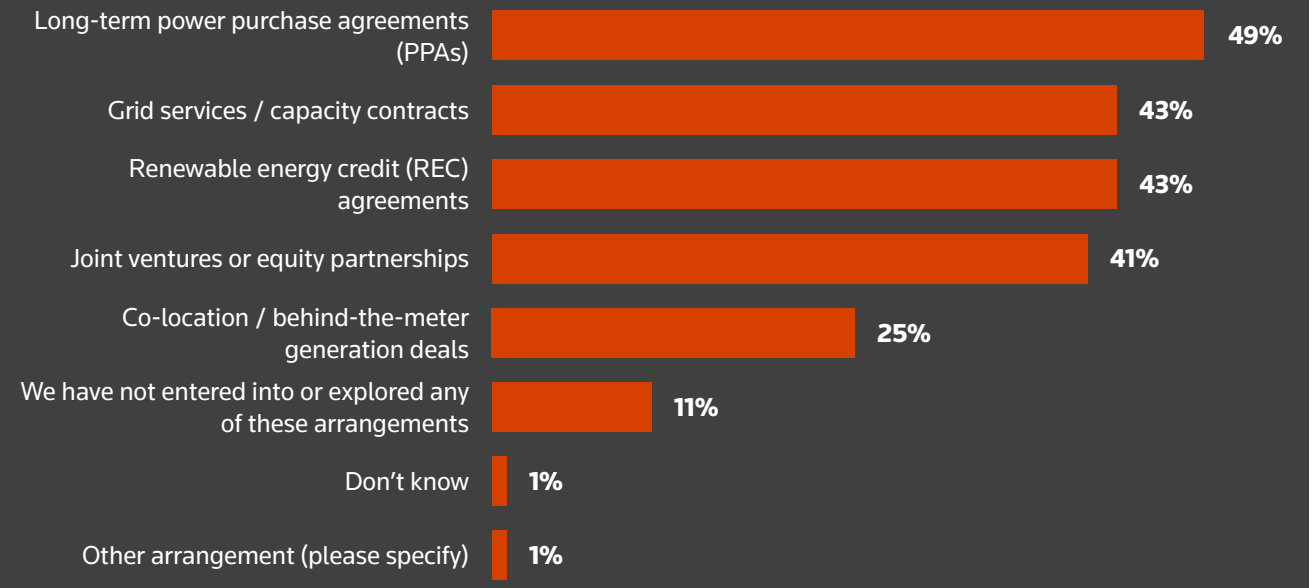
Long-term PPAs are popular (49%), closely followed by grid services and capacity contracts, and renewable energy credit (REC) agreements (both 43%), while 41% of respondents also said joint ventures and equity partnerships are being explored.

The headline finding is that while the conventional long-term PPA remains the dominant commercial vehicle, less conventional agreements are coming to the fore. A sizeable minority have entered or explored joint ventures or equity partnerships with hyperscaler counterparts. This represents a level of commercial intimacy that would have been highly unusual five years ago, and one that signals a structural shift in how the customer relationship is being framed.

The strategic response from energy organizations is consistent with the externally-facing commercial shift. Forty-seven percent are developing new commercial offerings tailored to data centers, including 24/7 carbon-free power and dedicated supply structures, while 44% are building dedicated commercial or engineering teams focused on data center customers.

FIGURE 17: **THE LONG-TERM PPA REMAINS DOMINANT, BUT JOINT VENTURES AND BEHIND-THE-METER ARE RESHAPING THE COMMERCIAL CONVERSATION.**

Has your organization entered into, or actively explored, any of the following types of arrangements with hyperscalers (large cloud and AI providers, e.g., Amazon AWS, Microsoft Azure, Google Cloud) or data center operators in the past 24 months?



Reuters Insights RystadEnergy

Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

The 24/7 carbon-free offering is primarily a North American story – with 61% of North American executives report developing such offerings, against 34% in Europe – and the dedicated-team build-out points in the same direction (54% North America against 34% Europe). This is arguably the internal mirror of the demanding customer picture: the hyperscaler counterparty is sufficiently distinct, sizable and insistent on bespoke terms that the cost of serving it the old way is no longer justifiable.

The forward-looking signal on engagement is uniformly bullish. A significant majority (75%) of executives expect

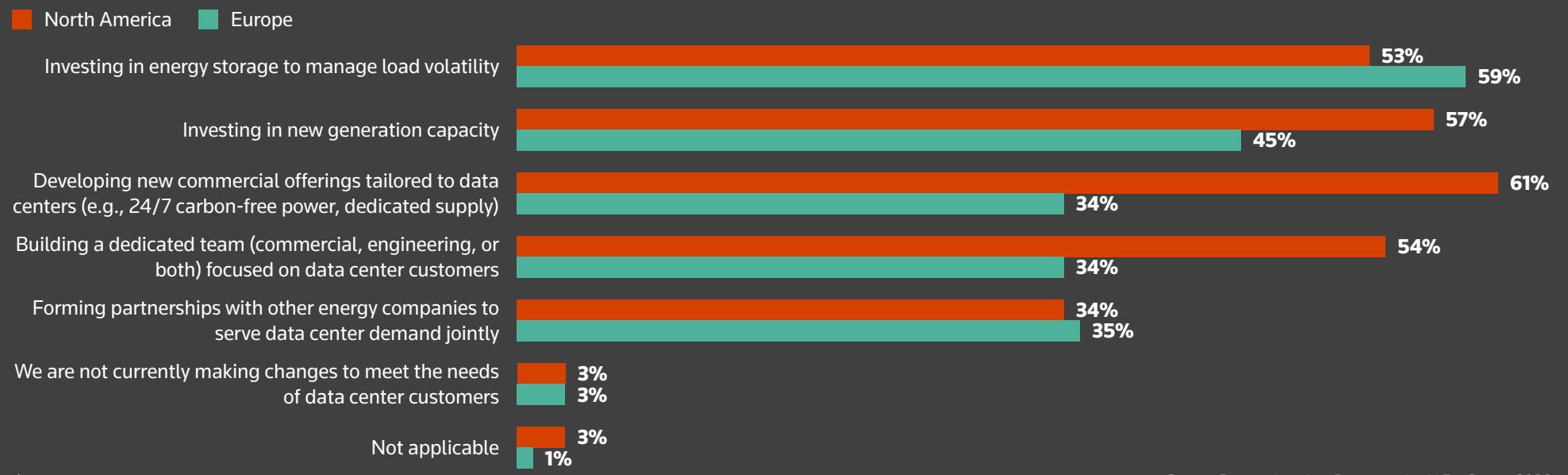
their organization's engagement with hyperscalers and data center operators to increase over the next five years. The industry is leaning into a customer relationship it knows is harder than the relationships it has historically managed, because the prize on offer – long-horizon load growth at unprecedented scale – is large enough to justify the operational complexity.

What emerges from our research is a picture of a customer–supplier relationship in the early stages of being rewritten on the customer's terms, with the supplier-side organizing itself accordingly. Indeed, more traditional structures such as long-term PPAs are still anchoring commercial agreements, but additional conversations are now being held that are more novel for the energy industry. Themes include joint venture structures, behind-the-meter arrangements, 24/7 carbon-free product design, faster paperwork, harder penalty regimes, and equity-partnership questions.

The implication for energy leadership is that selling into the hyperscaler segment requires a different operating model from selling into traditional commercial and industrial customers. Dedicated commercial teams, faster contracting cycles, and bespoke product structures are the cost of entry for the segment of the customer base that is driving the demand wave this report has examined. The next decade will reveal whether the industry will manage to hold its margin discipline while accommodating those terms, at the speed the customer is asking for.

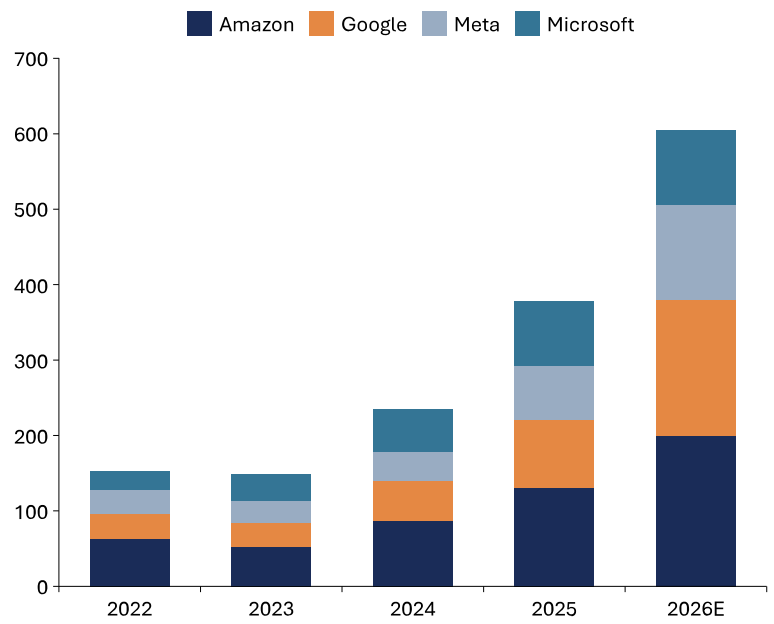
FIGURE 18: **NORTH AMERICAN ENERGY ORGANIZATIONS ARE RESTRUCTURING AROUND THE HYPERSCALER CUSTOMER AT A SUBSTANTIALLY HIGHER RATE THAN EUROPEAN COUNTERPARTS.**

What changes, if any, is your organization making to meet the needs of data center customers? by Regionthe next 5–10 years? by Region

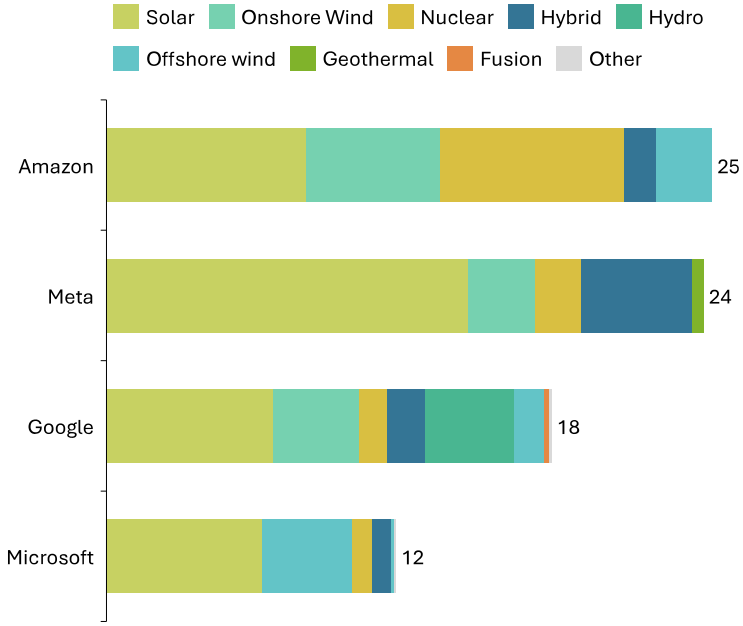


Source: Reuters Insights, Powering the AI Era Survey 2026.
Total sample = n=148. 95% Confidence level.

Reported hyperscaler capex
Billion USD



Data center PPA's offtake by hyperscalers split by energy source*
PPA capacity (GW)



*PPA capacity based on operational assets
Source: Rystad Energy Data Center Solution; Hyperscaler's financial reports

RystadEnergy

THE MARKET VIEW

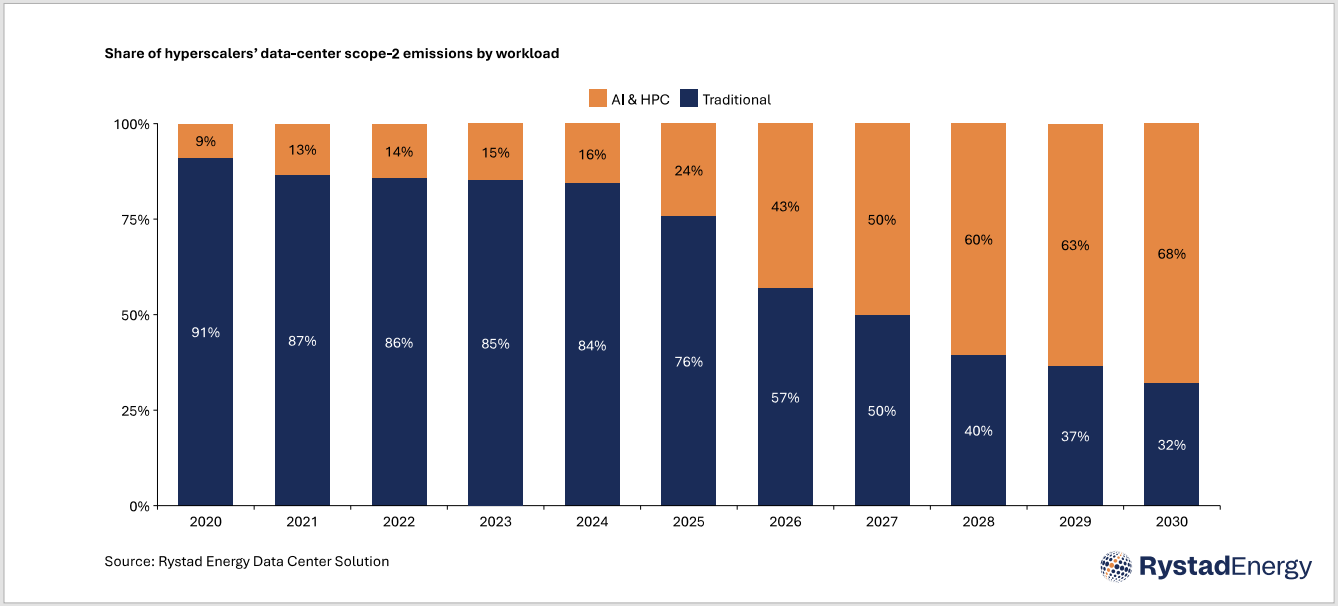
Investments in AI and data centers by the biggest hyperscalers – a group consisting only of Microsoft, Amazon, Google and Meta – have increased dramatically over the last few years and are now expected to surpass $700 billion per year, based on the latest financial reports. With their massive build-out of datacenters, hyperscalers quickly emerge as the most important customer and partner group for energy companies. Having set strong climate goals early this decade, hyperscalers are the top renewable energy buyers in the world, with close to 80 GW of operating renewable energy capacity linked to PPAs, and another 50+ GW in the pipeline. As most of their climate goals are still for 2030, the renewable energy PPA volume will continue to grow.

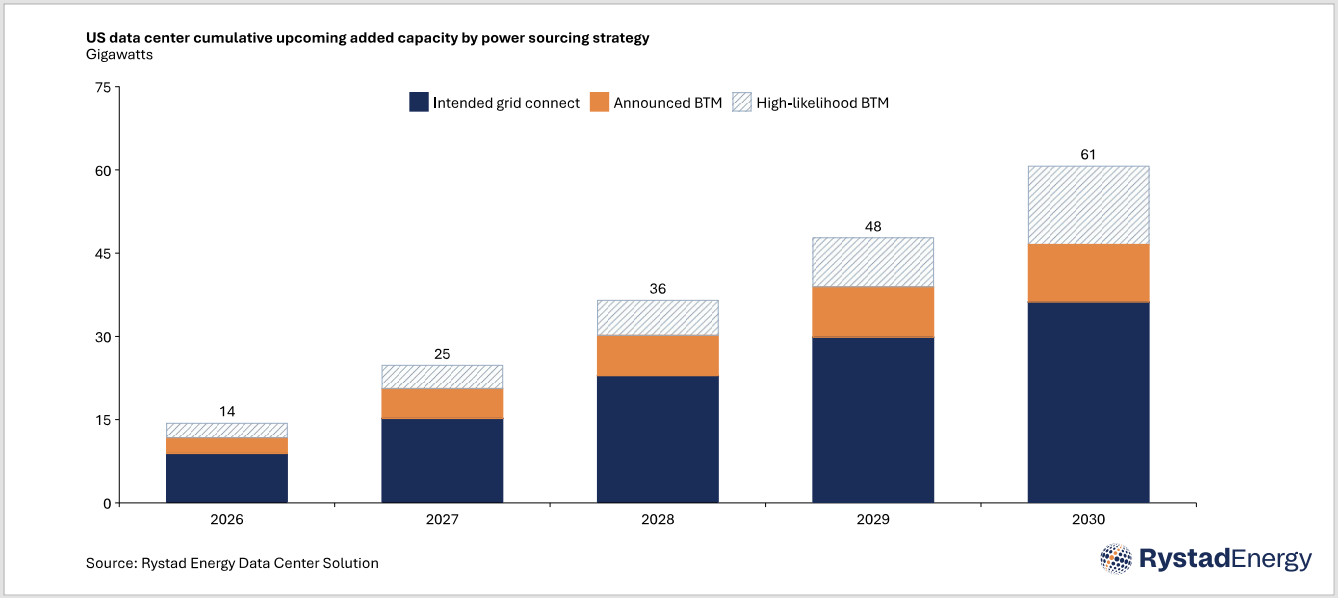
Yet, amid pressure to stay ahead in the AI race, the urgent need to secure power and getting these new data centers online in a short amount of time has also opened up opportunities for energy majors and upstream companies. For instance, Chevron and Microsoft are in exclusive talks over a proposed 2.5 GW gas-fired power project in West Texas, scalable to 5 GW. Market data suggest development costs could reach $7 billion initially and a fast-track timeline could see operational startup by the end of 2027.

Enbridge, which transports roughly 20% of the natural gas consumed in the US, is expecting to see up to 10 billion cubic feet per day of incremental gas capacity to support data center demand. That tally equals about 45% of total North American gas transport today. Around 40% of America's projected data center capacity in 2030 is associated with some form of BTM or hybrid generation, which is expected to be fueled primarily by gas.

The AI race will undoubtedly create further challenges for hyperscalers as they strive to meet the climate goals they set around 2020. Scope 2 emissions for the major hyperscalers are currently on track to rise by between 11 and 14 times by 2030, with AI-supporting data centers accounting for 67% of this increase. Still committed to their targets, hyperscalers are also positioning themselves as the main enablers of new clean generation technologies, including small modular reactors, advanced geothermal, and long-duration energy storage.

A second dimension of sustainability is emerging for the data-center industry: ensuring that local communities benefit from and are protected against the costs of data center buildout projects. At the US federal level, for instance, March 2026 saw Amazon, Google, Meta, Microsoft, OpenAI, Oracle, and xAI sign the Ratepayer Protection Pledge, committing to shoulder the investment needed for generation buildout and grid upgrades rather than passing those costs to rate-payers. As more regulations and issues emerge, more of such engagement can be expected, along with infrastructure upgrades, tax benefits, and widespread job creation.





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