

Powering the Data Center Boom: How Grid Policy Can Deliver Clean Power Faster

Nov. 11, 2026

Bloomberg Philanthropies

BloombergNEF

Contents

Section 1. Executive summary 1

Section 2. The big environmental challenge for data centers in developed markets 6
2.1. Data centers could consume 7% of electricity by 2035 6
2.2. Grid delays push data centers toward on-site power 7
2.3. The scale of on-site gas generation at data centers 8
2.4. On-site gas plants have a two-pronged emissions impact 11
2.5. Renewables' potential role in on-site generation 12

Section 3. Policies to accelerate data center grid connections 15
3.1. Policy updates 16
3.2. Grid-connection policy mechanisms 16
3.3. Measuring the impact of connection policies 17

Section 4. Grid-connection policies in major data-center markets 20
4.1. Minimum maturity requirements: Simple to mandate, low burden to comply 20
4.2. Competitive processes: Allocate scarce capacity to strategically important projects 23
4.3. Financial commitments: Making loads commit capital to proceed through the queue 28
4.4. Cluster studies: Texas Batch Zero process has yet to produce evidence of positive impact 34
4.5. Bring your own generation (BYOG): Encouraging faster connections and grid-connected gas plants 36
4.6. Flexibility requirements: Non-firm grid connections can enable faster connections 40
4.7. Special economic zones: Accelerate permitting for projects near spare grid capacity 45

Section 5. Implications for selected emerging data-center markets 48
5.1. Brazil 49
5.2. India 55
5.3. Indonesia 63
5.4. Malaysia 68

About us 75

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Section 1. Executive summary

17

Number of markets reviewed in this report

2,354TWh

Expected data center power demand globally by 2035

345MtCO2e

Annual emissions of on-site gas plants at US data centers, if all announced projects are built

Data center electricity demand is likely to quadruple by 2035 and account for 7% of global power consumption. Much of this growth is planned for the US and Europe, where grid-constraints are delaying new connections and holding up projects. Developers have responded by planning their own gas-fired power plants so they can reap the huge financial rewards of energizing their facilities quickly. Renewables have played an extremely limited role in feeding these needs due to higher land usage and lower dispatchability than gas.

This trend creates two main climate challenges: more emissions-intensive electricity in the near term and locking in fossil-fuel consumption over the longer term. Power generation from on-site gas plants is more emissions-intensive than electricity from the grid in markets where these plants are built. BloombergNEF estimates that if all announced gas plants to be co-located with data centers in the US are built and operated, they would boost emissions by an amount equivalent to 10% of US power sector emissions in 2025. More importantly, once these projects are online, economics may encourage them to keep operating well into the future even though many are intended as a temporary measure until grid links are available. This presents a significant risk that fossil-fuel use is locked in with further data center development.

Ensuring new data centers can link to the grid is the more sustainable option in developed markets. Expediting those new connections is key to limiting both the near-term emissions impact and the risk that fossil fuels are locked in – especially in the US, where much off-grid gas plant capacity is planned. Continuing to decarbonize the power system in parallel to ensure data centers run on the cleanest possible electricity also remains vital.

Climate challenges for data centers vary across markets, reflecting differences in power-generation mixes, grid conditions and clean-power procurement options. In emerging markets, the near-term issue is greatest where grid access is relatively fast but power systems rely heavily on coal. In these places, faster grid access can increase fossil-fuel generation if cleaner capacity does not expand alongside demand.

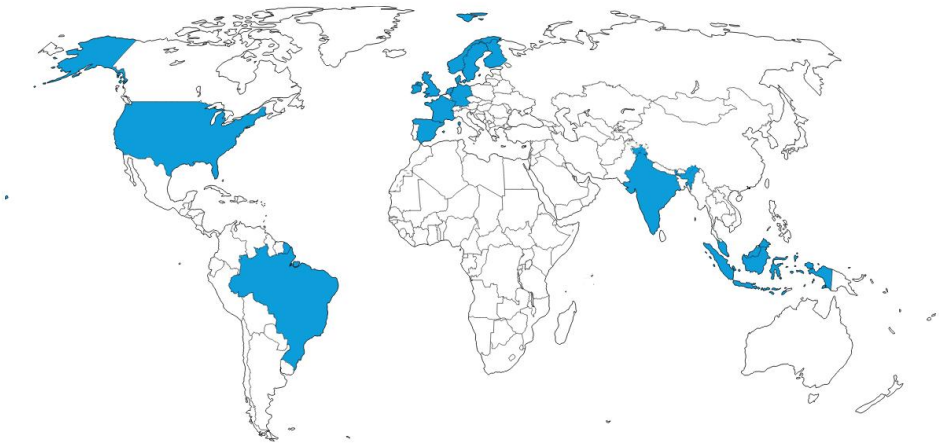
The scale of data-center demand could also create an opportunity: demand could help bring new clean capacity into the system where policy and procurement frameworks support the technology.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

This BloombergNEF report commissioned by Bloomberg Philanthropies examines how rapid data-center electricity demand growth is affecting power systems and how grid constraints are pushing developers toward on-site gas generation. It sets out a framework of policies that can help accelerate grid connections and reviews how these approaches are being used in major data-center markets. The report then examines four very different emerging markets – Brazil, India, Indonesia and Malaysia – and considers how lessons learned in more developed data center markets might be applied in the developing country context. Finally, we examine the implications on grid constraints, fossil fuel generation and renewable energy deployment in these emerging markets.

Figure 1: Markets reviewed in report



Source: BloombergNEF

Key findings:

- **Most policies to speed grid connections are still too new to evaluate how long it takes for data centers to get grid connected or what impact they will have on emissions.** Policies analyzed in this report fall into two categories: those that aim to improve the quality of applications entering the grid-connection queue and those seeking to accelerate processing of grid mature grid applications. We evaluate four metrics: simplicity, developer burden, speed and climate impact.
- **Minimum maturity requirements and financial commitments for connection applications are becoming universal tools for filtering demand queues.** Maturity requirements, which require grid applications to meet basic criteria for eligibility, are relatively simple to implement and place little burden on credible developers, but there is minimal evidence whether strict requirements lead to faster connections. Financial commitments make applicants put capital at risk via application fees, deposits or minimum billing obligations. These have stronger evidence of success. Ohio Power Co.'s large-load tariff, for example, reduced its demand pipeline from more than 30 gigawatts to 13 gigawatts.
- **Competitive processes are starting to emerge in regions where grid capacity is scarce, but markets differ substantially in what they prioritize.** Data centers applying for grid

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

connections in Singapore must meet national strategic objectives, while grid applications in Spain are ranked by sustainability criteria. Grid operators in Germany put more weight on project maturity and technical readiness. Pricing is not considered in any of these processes, though EDF's tender for French sites does.

- **Bring-your-own-generation – where data centers are required to bring new generation onto the grid to offset their load – can accelerate grid access. But climate impact depends on policy design.** In the US, a lack of sustainability requirements means data centers in many regions can simply invest in new grid-connected gas to energize more quickly. In Europe, sustainability requirements are given greater weight. Ireland's rules are likely to stimulate investment in gas, but developers must then match 80% of annual demand with additional renewable energy.

Table 1: Assessment of grid-connection policies reviewed in this report

Policy type	Simplicity *Is the policy simple to design and implement?*	Burden *How much burden does the policy place on developers?*	Speed *Is there strong evidence this policy speeds up grid connections?*	Climate friendliness *Does the policy result in a cleaner energy supply for data centers?*
Maturity requirements	**Very straightforward** – Widely used globally and easy to define what "mature" looks like	**Very light** – BNEF has not reviewed any examples of meaningful queue impacts from maturity requirements	**Theoretical** – Clears the queue in theory but strict rules have only recently been enforced so minimal evidence	**Indirect** – Should accelerate connections but no exogenous climate impact
Competitive processes for land or power	**Moderate** – All case studies reviewed incorporate different factors and processes to determine outcome	Very light – Singapore received more applications than available capacity	**Theoretical** – Should clear the queue in theory but processes are new so minimal evidence to support	**Direct** – Singapore and Spain processes rank projects against energy efficiency and decarbonation metrics
Financial commitments	**Straightforward** – Minimum demand charges, collateral and exit fees are common practice	**Light** – Developers told BNEF they are willing to commit the fees in force/under proposal in some markets.	**Demonstrated** – Utilities deploying very onerous large-load tariffs in US have cut down their demand queues	**Indirect** – Should accelerate connections but no exogenous climate impact
Cluster studies	**Complex** – Only network wide example, Batch Zero process in Texas, very complex and delayed	**Heavy** – Developers told BNEF they worried about delays due to being grouped with low-quality project.	**Theoretical** – Unclear whether cluster studies have accelerated connections on generation side, let alone demand	**Indirect** – Should accelerate connections but no exogenous climate impact
Bring-your-own-generation (BYOG)	**Moderate** – Grid operators must make choices about how much generation is sufficient and may need alternative study routes for that generation	**Heavy** – Adds major capital and development burden on data center developers. Generation queue can also be clogged.	**Demonstrated** – SPP BYOG process aims for a connection agreement in 150 days	**Case-specific** – Examples of deployment in the US and Ireland favor the buildout of grid-connected gas power.
Flexibility requirements	**Complex** – Need to define technical and operational requirements for when and how loads are curtailed	**Moderate** – Curtailment risk may lower the allure of the site to develops with high reliability needs	**Demonstrated** – Data centers can connect instead of waiting for firm capacity	**Case-specific** – Flexibility has the potential to impact emissions, but modelling shows the direction and magnitude of this effect is a function of power generation mix.
Special economic zones	**Moderate** – UK AI growth zone policy proceeding meaningfully more slowly than France's	Very light – Dedicated zones provide investment and infrastructure clarity	**Demonstrated** – One site in France is set to energize 700 megawatts by 2029 and five more sites are already selected.	**Direct** – Zones can be sited to make use of excess renewable generation, helping balance power supply and demand

Source: BloombergNEF. Note: Color legend is the following: ■ = Positive, ■ = neutral and ■ = negative impact. AI is artificial intelligence. SPP is Southwest Power Pool

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

- **Flexible connections – where data centers can agree to curtailment in exchange for speedier connections – could help avoid both off-grid and on-grid fossil fuel investment.** Some data center developers BNEF spoke with in the US indicate they are likely to respond to curtailment by using back-up diesel generators for low tens to hundreds of hours per year. While obviously less sustainable than relying on energy storage for flexibility, it would on average be less emissions-intensive than operating a gas plant off-grid and prevent fossil fuel lock-in risk as diesel engines are not cost efficient to run in the long run.
- **Cluster studies – which have been used previously to assess groups of power-generating projects – have not been widely adopted to consider data center grid applications in batches.** Studying large demand connection requests together has the potential for faster application processing, but this outcome has yet to be proven for data centers. Previous cluster studies conducted on power projects did not meaningfully expedite their grid access. Texas' Batch Zero is the most prominent example of a cluster study for demand-side connections, but the process has been enormously complex and controversial.
- **Designating zones where data centers receive faster access to energy could be effective at accelerating data center energization and siting projects near renewable energy generation.** France has identified six fast-track sites totaling 4.4 gigawatts. Supply is pre-reserved in each location, meaning the sites require little near-term grid upgrades. One site is already aiming to energize 700 megawatts of demand by 2029. The UK's AI Growth Zone policy has been slower to roll out, showing that an impactful growth zone policy is not simple to design.

This report also examines four emerging data-center markets: Brazil, India, Indonesia and Malaysia. Lessons learned include:

- **Data center growth comes in power systems with different generation mixes, grid conditions and approaches to connecting large loads. There is thus no one-size-fits-all solution to managing grid constraints or avoiding growth of fossil fuel power generation.** Still, experience from major data-center markets can help identify which approaches are relevant and where planning for grid access and power supply may be needed.
- **In India, Indonesia and Malaysia, the wider power system needs to shift toward cleaner energy for grid-connected data centers to avoid increasing fossil-fuel generation.** The extent to which data-center demand can support new renewable capacity in the wider power system varies by market. It depends on the procurement options available and whether corporate demand can stimulate new renewables.
- **In India, the main grid challenge is expanding local transmission and substation capacity fast enough around concentrated data-center hubs.** Under BNEF's Economic Transition Scenario, much of the additional electricity needed for data centers through the mid-2030s is supplied by greater use of existing coal plants. From the late 2030s, solar and wind generation grow as their economics improve, supported by increasing storage deployment. Data-center operators have several ways to procure clean power, and companies are already backing new solar and wind projects.

  In Indonesia, grid access is straightforward where infrastructure is already available, but large sites with sufficient grid capacity are becoming more limited. Data center demand in Indonesia is likely to first drive new coal generation in plants with low utilization rates and then drive up gas demand. Current rules give data centers fewer options to support new renewables, as they cannot buy directly from independent generators.

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

© Bloomberg Finance L.P.2026

- **In Malaysia, the main issue is whether generation and network capacity can expand quickly enough to meet growing demand.** Data centers in Malaysia are set to drive up the use of existing coal and gas plants in the near term. In the long run, demand growth is likely to result in new gas capacity and coal life extensions. Data centers can buy power from third-party renewable generators and are already supporting new solar projects.
- **Brazil already faces both a queue-management problem and has physical transmission constraints.** However, BNEF expects renewables to meet almost all of the generation needed for new data centers through 2035. The impact on fossil fuels will be low. Large consumers can buy directly from renewable generators, and additional demand could also absorb some of the clean energy capacity that currently is curtailed.

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Section 2. The big environmental challenge for data centers in developed markets

Faster grid connections can reduce the climate impact of data center growth where grid electricity is less emissions intensive than on-site gas

Electricity demand from data centers is rising quickly, putting pressure on both power systems and policymakers. In developed markets with constrained grids, new facilities can take years to secure a grid connection, while developers place a premium on bringing computing capacity online quickly. That gap is encouraging some projects – specifically in the US – to use on-site gas generation as a "temporary" source of power. If this approach expands, it could raise near-term emissions and support investment in gas assets that continue operating after data centers connect to the grid. Faster grid connections therefore have the potential to reduce the climate impact of data center growth in markets where most activity has taken place to date.

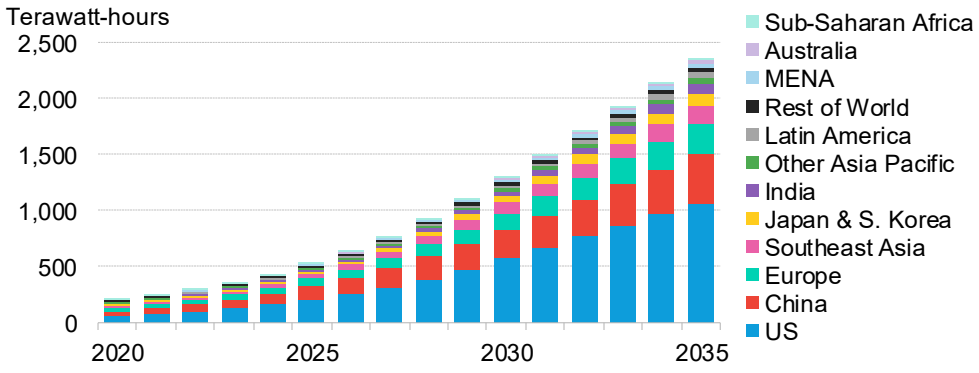
Connecting data centers to the grid does not eliminate their emissions impact, however. New load growth on the grid will encourage more utility-scale fossil fuel investment if it cannot be met with renewables. Grid decarbonization is thus essential to mitigate the climate impact of data centers.

This section considers the climate risk posed by on-site gas generation in the US. Yet this story is not relevant to every market in the world. In many emerging markets where the power system is heavily reliant on coal – and there is no available domestic supply of gas – the risk of data center demand growth is not that off-grid gas will be built, but that grid-connected demand will increase coal generation and extend the lifetime of thermal assets. For more analysis on the challenges facing emerging markets, see Section 5.

2.1. Data centers could consume 7% of electricity by 2035

The growth of compute-intensive generative AI technologies with broad economic applications has fueled an explosion of investment in new data center capacity. In BNEF's base-case outlook – which calculates future build as a function of today's announced project pipeline – power demand from data centers doubles between 2026 and 2030 and almost quadruples to 2,354 terawatt-hours (TWh) by 2035, equivalent to 7% of total global electricity demand (Figure 2). While this growth is sizable, it arguably represents a lower bound for capacity growth through the end of the decade as the announced project pipeline continues to grow quickly.

Figure 2: Data center electricity demand



Source: BloombergNEF, DC Byte. Note: MENA is Middle East and North Africa.

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

© Bloomberg Finance L.P.2026

2.2. Grid delays push data centers toward on-site power

Data centers almost exclusively were powered from direct grid connections until 2025

Data centers almost exclusively were powered from direct grid connections until 2025. But the time to link up to the grid has extended beyond the targets of developers for energizing their facilities in some major markets, particularly parts of the US. This gap is driving some data center developers to build their own behind-the-meter gas plants to energize projects more quickly.

Prioritizing speed to power

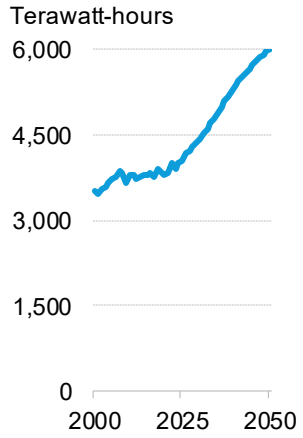
The world's largest tech companies are rushing to expand the availability of their AI services, seeking high returns and answering shareholder pressure to move quickly. Some are willing to pay exorbitant sums to do so, and independent developers that can build data center facilities and lease compute capacity to large AI labs see huge economic potential from this dynamic. Anthropic, for example, is paying xAI $1.25 billion per month for access to more than 300 megawatts (MW) of Nvidia GPU computing capacity. Data center developers are thus prioritizing projects that can energize as quickly as possible, and an obsessive focus on "speed to power" has come to characterize the industry.

Grid connection backlogs are delaying new data centers

Much of this data center capacity is planned for markets where power demand has been largely flat in recent decades. Final electricity consumption in the US, for example, rose at a compound annual growth rate of only 0.35% between 2000 and 2020. That left many grid operators without the administrative and engineering capacity to connect new load quickly and at scale.

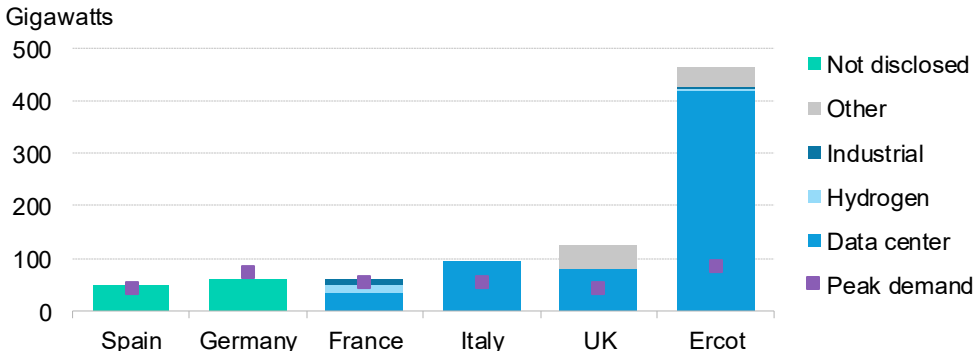
Load is now growing much more quickly, due in no small part to data centers. BNEF's long-term Economic Transition Scenario sees a compound annual load growth rate of 1.6% over 2020-2050 (Figure 3). In some areas, data center capacity seeking connection is on par with or exceeds peak demand of the entire incumbent power system (Figure 4). Data centers dominate demand-side connection queues in regions where disclosure by end-use is available. In the Electric Reliability Council of Texas (Ercot), capacity seeking grid access is nearly five times current peak demand. While some of this capacity can be attributed to "phantom" requests, where speculators make connection requests that are unlikely to materialize, all applications must still be processed.

Figure 3: Long-term US power demand, BNEF Economic Transition Scenario



Source: BloombergNEF

Figure 4: Electricity demand queue by source in selected markets, versus current peak demand

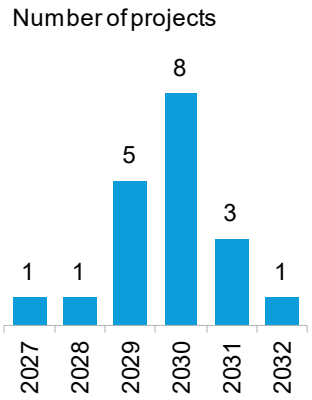


Source: BloombergNEF, Red Electrica de Espana, Reseau de Transport d'Electricite, Electricity Networks Association, Terna, Electricity Reliability Council of Texas (Ercot) and Transnet BW.
Note: Ercot is the power market encompassing most of Texas.

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

© Bloomberg Finance L.P.2026

Figure 5: Year of requested/expected in service dates for Dominion projects presented to PJM from May 2025 to March 2026



Source: BloombergNEF, PJM Interconnection.

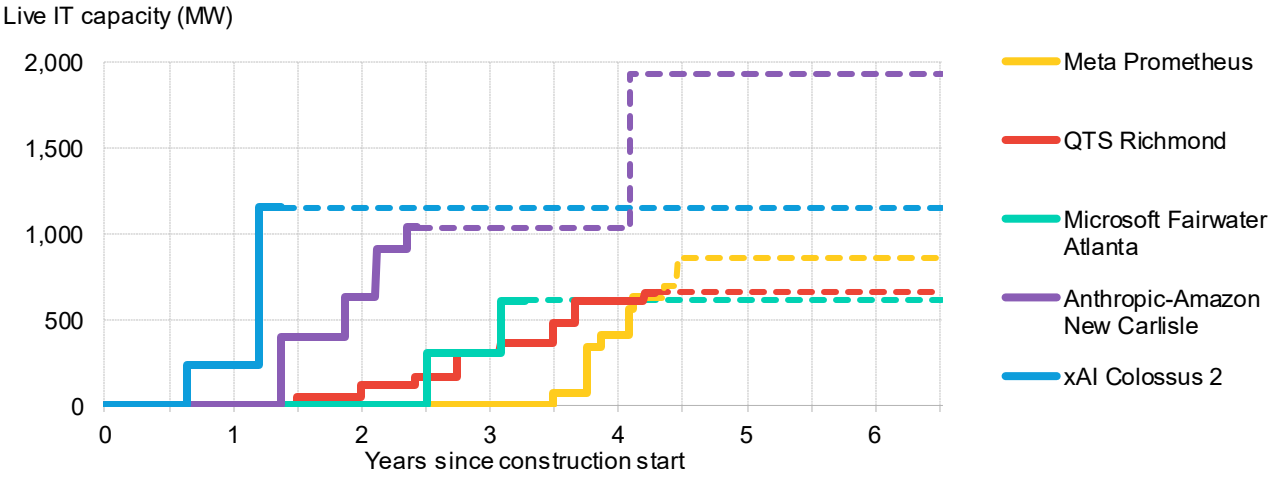
The surge in new demand is also happening as grid infrastructure nears the end of its life, and necessary upgrades are slowing grid connection times. Public statements for key utilities in PJM Interconnection (PJM), home to a third of US data center capacity, illustrate how large data centers that have yet to apply for a grid connection may need to wait until the early 2030s for a grid connection (Figure 5).

- A November 2025 statement from utility **AEP Ohio** stated that **"**None of the 13,022.7 MW of New Data Center Load can be reliably served until the completion of the 2025W1-570 project […] anticipated to be in service by approximately Q4 2031.**"**
- Documents from May 2025, October 2025 and March 2026 relating to utility **Dominion's** applications to PJM for grid upgrades indicate that most connection requests seeing their first presentation to PJM from May 2025 to March 2026 had expected/requested in-service dates clustered around 2029-2030, with several projects expecting a connection in 2031 or later.

On-site gas generation: A potential shortcut to energizing data centers

Several large AI data centers have been able to energize their sites quickly by installing gas turbines on-site as they waited for grid connections. xAI's Colossus sites in Memphis, Tennessee, were the most notable initial examples. The 250MW Colossus 1 was energized in just 299 days, and the 1GW Colossus 2 was energized in 439 days, according to analysis by Epoch AI (Figure 6). The practice was also adopted at OpenAI and Crusoe's Stargate Abilene facility in Texas. These early examples have led to a rapidly growing pipeline of on-site gas generation projects co-located with data centers.

Figure 6: Selected energization timelines for frontier AI projects that have energized more than 500MW in live IT capacity



Source: BloombergNEF, Epoch AI. Note: Dots indicate days that are happening in the future and expected plans for further energization; lines are kept flat if no plans are announced.

2.3. The scale of on-site gas generation at data centers

A substantial pipeline of on-site gas generation is emerging alongside data center development, particularly in the US. While announced capacity is large, projects vary widely in maturity and timing, meaning the pipeline should be viewed as an indication of potential scale rather than a

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

© Bloomberg Finance L.P.2026

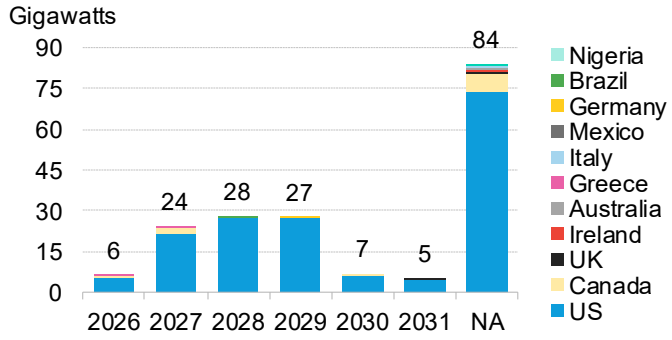
forecast of what will ultimately be built. Equipment availability and other development constraints will influence how quickly projects can move forward.

181GW of announced capacity

BNEF has tracked 181GW of announced proposed gas-fired generation capacity to be co-located with data centers

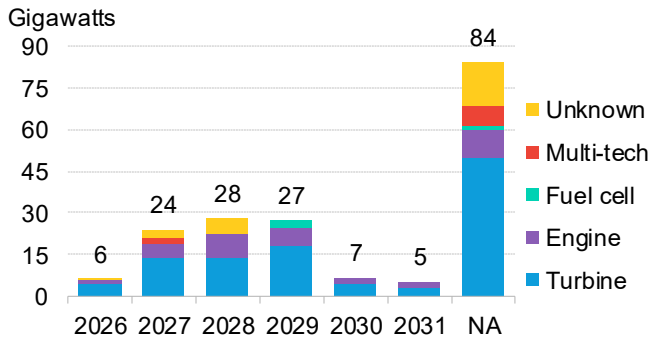
BNEF has tracked 181GW of announced gas-fired generation capacity co-located with data centers, most of which aims to come online before 2030 (Figure 7, Figure 8). Over 90% of this, or 165GW, is for US-based projects, particularly in Texas and parts of PJM. If all this capacity comes online, this would equate to a quarter of the total operating US gas fleet as of 2025. There are also small pockets of activity across Canada, the UK and Ireland. Many developers say they aim to connect these projects to the grid in the long term, when they can potentially begin exporting power. Initially, however, the gas generation will be entirely behind-the-meter.

Figure 7: Announced gas-fired generating capacity proposed for location on-site at data centers, by region



Source: BloombergNEF, Global Energy Monitor. Note: "NA" indicates announced capacity that has no associated timeline. Data as of Oct. 5, 2026.

Figure 8: Announced gas-fired generating capacity proposed for on-site at data centers, by equipment type



Source: BloombergNEF, Global Energy Monitor. Note: "Multi-tech" means a variety of generation equipment is being used. Data as of Oct. 5, 2026.

Could supply chains disrupt the pipeline of on-site gas at data centers?

Gas turbine supply is expected to increase manufacturing capacity to serve growing data center demand

Data center demand for utility-scale turbines has surged, lengthening lead times for delivery. While the market today is quite tight, gas turbine supply is expected to increase as more manufacturers commit to expanding production capacity. BNEF's bottom-up database of 44 assembly facilities across 26 manufacturers shows announced expansions lifting annual turbine output to 102GW by 2030, up from 67GW in 2025 (Figure 9). North America is the fastest growing manufacturing region due to the surge in local demand (Figure 10). Utilities and other independent power providers are in the market for the same gas turbines, but data center developers are currently highly capitalized and well positioned to outbid competitors. Data centers are already anticipated to make up as much as 25% of GE Vernova's orders in 2026, according to its CEO, more than double the 10% from 2025.

Labor and natural gas supply could be a risk to gas build

Increased manufacturing capacity does not resolve all potential bottlenecks. As turbine makers scramble to fulfill orders, limited construction labor availability is beginning to present challenges. GE Vernova CEO Scott Strazik said in a May 2026 earnings call that the company is booking 2030 capacity before 2029 capacity sells out, since customers cannot commit to having the site

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

prepared in time for 2029 deliveries. Data center developers BNEF spoke to also say that a shortage of labor is starting to influence their data center siting decisions.

Figure 9: Current and planned gas turbine manufacturing capacity, by manufacturer

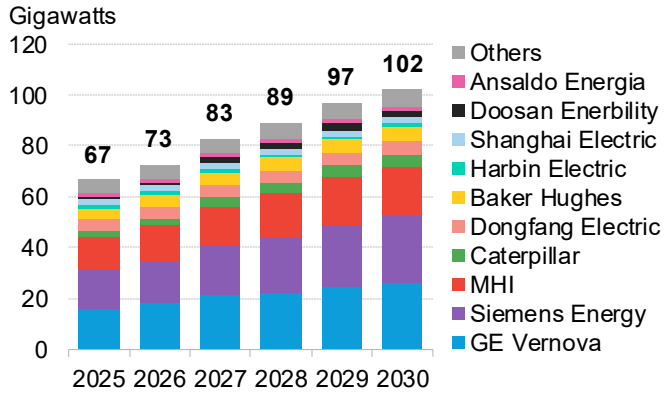
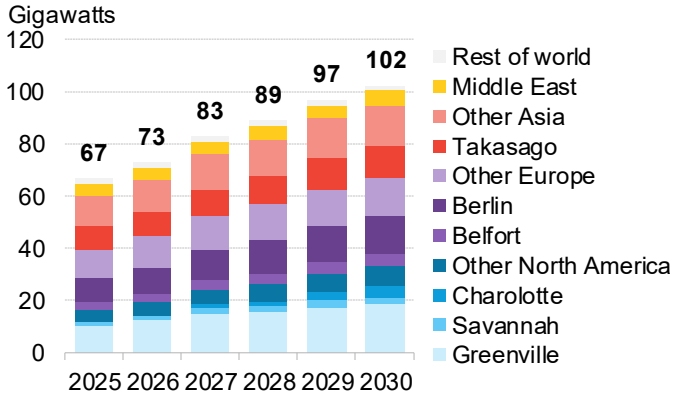


Figure 10: Current and planned gas turbine manufacturing capacity, by major site

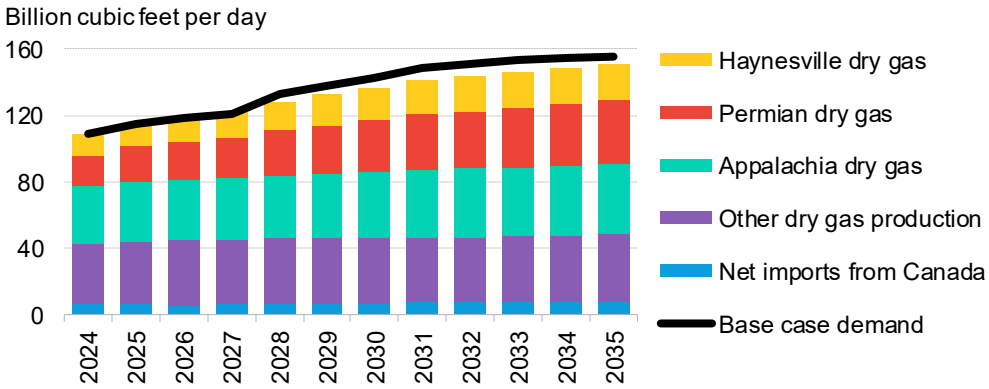


Source: BloombergNEF. Note: Capacity reflects BNEF estimates and may differ from company reports. Includes heavy-duty, industrial and aeroderivative gas turbines, but not include capacity that could be generated by building these turbines in a combined-cycle configuration. Does not include refurbished aeroderivative turbine capacity. MHI is Mitsubishi Heavy Industries.

BNEF estimates that the US gas market could be supply constrained as early as 2028

BNEF estimates that the US gas market could also become supply constrained as early as 2028, meaning that solving the gas turbine and the labor shortages alone might not be enough to help energize new compute. BNEF's base case for gas demand sees a 4 billion cubic feet per day (bcf/d) shortage of gas by 2035 (Figure 11), equivalent to 10% of daily US natural gas production in 2025. As new export terminals reach investment decisions and start up at the end of the decade, export demand for gas could increase, tightening supply even further.

Figure 11: US gas supply and demand balance until 2035



Source: BloombergNEF. Note: Values for 2026-2035 are a forecast.

On the flip side, in a scenario where no new data center demand materializes after 2025, there is a 3.2 bcf/d surplus of gas by 2035. This suggests that the expected deficit in supply is directly tied to demand growth from data centers. The Permian Basin in West Texas and Haynesville Basin in Louisiana are expected to see the highest supply by 2035, potentially sheltering the Texas pipeline of on-site gas projects – the largest in the US.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

2.4. On-site gas plants have a two-pronged emissions impact

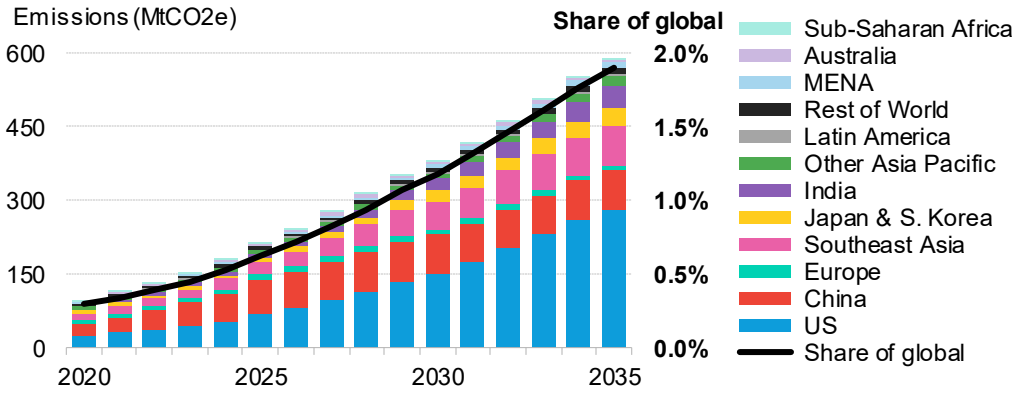
Data centers are set to drive a rise in global emissions through greater use of grid-connected coal or gas facilities. Yet the proliferation of on-site gas plants – particularly in the US – could boost emissions further and create additional fossil-fuel lock-in risk.

Data center power demand would account for nearly 2% of global emissions if grid-connected

Data center electricity demand could reach 2,354 terawatt-hours by 2035, equivalent to 7% of global electricity demand

Data center electricity demand reaches 2,354 terawatt-hours (TWh) by 2035 in BNEF's base case, equivalent to 7% of global electricity demand. The emissions associated with this growth are contingent on the power systems supplying that electricity. Assuming data centers consume power at the average grid emissions intensity of their respective regions, BNEF estimates that their electricity use would be associated with 587 million metric tons of carbon dioxide equivalent (MtCO2e) annually by 2035, or around 2% of global emissions in that year. The US would account for almost half of the total, at 282MtCO2e (Figure 12).

Figure 12: Data center emissions according to BNEF's base case data center capacity outlook, assuming all data centers are grid connected



Source: BloombergNEF, DC Byte.

On-site gas plants at US data centers could boost emissions by over 150MtCO2e annually

BNEF has examined what the net additional emissions would be if all planned behind-the-meter projects in the US get built. The current pipeline of on-site gas plants planned specifically for US data centers would emit about 345MtCO$_2$e per year, assuming plants run an average capacity factor of 60%. This 152MtCO$_2$e higher than a scenario in which the data center capacity associated with this gas equipment is powered from grid electricity, a 54% increase versus the base case described above. This is equivalent to 10% of total US electricity emissions in 2025.

On-site gas plants risk locking in fossil fuels beyond the lifetime of their initial data center offtake

Most data center project developers BNEF has spoken with say they plan to use on-site gas as a "bridge" solution for five to seven years, or until they are able to secure grid connections. Marginal costs analysis suggests these plants would have emissions impacts far beyond that, however.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

The marginal cost of generating power on-site can be significantly lower than pulling power from the grid

The all-in levelized cost of producing power on-site from a gas plant is often higher than buying power from the grid, assuming the capital costs of the gas plant itself are amortized in the calculation. However, once the developer has built the generator, those costs are effectively sunk, and the developer would inevitably compare electricity costs on a straight marginal basis. Viewed through that lens, the cost of generating on-site can be much lower than pulling from the grid.

BNEF calculated the levelized cost of running a 500MW IT capacity data center using on-site gas power. Power from the facility can cost upwards of $140/MWh while the US industrial grid tariff is much cheaper (Figure 13). However, the marginal cost of operating assets can be cheaper than the grid, at $21-43/MWh (Figure 14). As such, data centers may be incentivized to draw a significant share of their power from these sources.

Figure 13: LCOE for a gas plant serving a 500MW IT capacity data center versus grid prices in the US

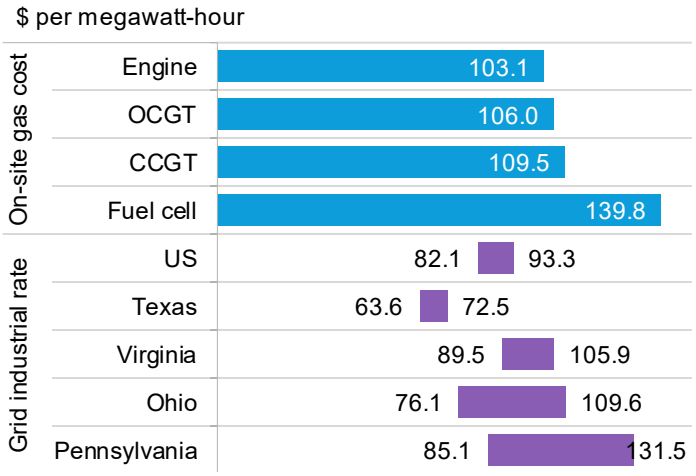
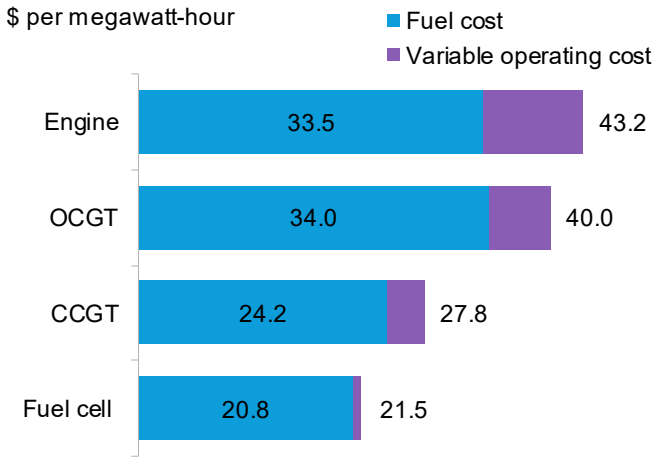


Figure 14: Marginal cost of production for on-site gas plant serving a 500MW IT capacity data center in US



Source: BloombergNEF, Energy Information Agency. Note: LCOE is levelized cost of electricity. CCGT is 150-megawatt combined-cycle gas turbine, and OCGT is a 34.5MW open-cycle gas turbine. We assume a 500MW data center that has a power usage effectiveness of 1.2 with a reliability target of 99.9%. Industrial electricity prices show ranges from March 2025 to February 2026. Cost does not include carbon prices. Gas price is $3.97/MMBtu.

Much of this on-site gas capacity is not owned by data center developers themselves. Data centers procure power by signing short- or long-term power purchase agreements (for a duration of to three to five years) with gas plant developers. However, the economically productive lifetime of a gas plant far exceeds these timelines. This means that even if the data center is plugged into the grid, the plant could easily continue generating power for a different consumer or export to the grid, risking fossil-fuel lock-in for the next two to three decades.

2.5. Renewables' potential role in on-site generation

Solar-plus-storage can serve a large share of power demand competitively on the grid, but in most cases it falls short as a solution for providing around-the-clock electricity for data centers on its own. Data centers have incredibly high reliability needs, asking power to be available upwards of 99.9% of year. Solar-plus-storage can meet a significant portion – but not all – of this demand. In addition, solar projects have large land-use needs, making them impractical in cases where data centers are close to population centers.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

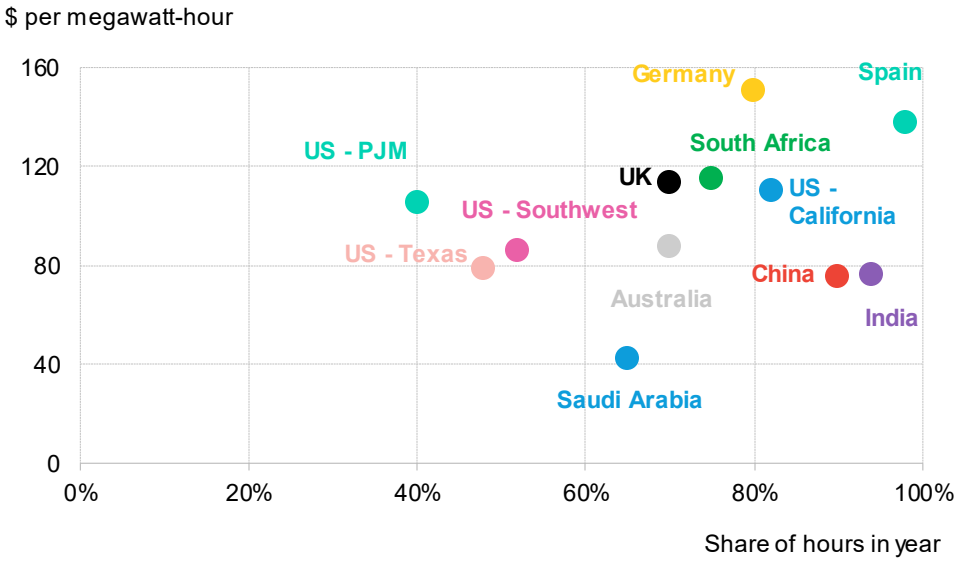
Solar-plus-storage is not the only source of renewable energy available to data centers, but wind power needs more land than solar and has longer development timelines – two key disadvantages in this application.

Can solar-plus-storage compete with gas on cost and speed to power?

Solar-plus-storage can meet a large share of demand hours at prices competitive with combined-cycle gas turbines

Solar panels and lithium-ion batteries are inexpensive enough that solar-plus-storage can meet a large share of demand hours at prices that are competitive with a CCGT, although the exact share of hours varies by market (Figure 15). In Spain, Saudi Arabia, India and China, solar-plus-storage can deliver baseload power for much of the year at a competitive cost due to abundant sunlight and cheap equipment. In the US, low gas prices mean that outside of California, co-located projects are only cost-competitive with a CCGT for half of annual data center demand.

Figure 15: Levelized cost of electricity and demand share at which solar-plus-storage beats a CCGT for baseload power



Source: BloombergNEF. Note: CCGT is combined-cycle gas turbine. MWh is megawatt-hour. Assumes a 4-hour lithium-ion battery. Grid connection costs excluded.

Solar-plus-storage projects should also theoretically be able to meet developers' demands for speed to power. Given the modular nature of these plants, solar-plus-storage construction times are in the range of two to four years. Today, solar and battery materials are in oversupply and can be procured quickly, giving the technology an edge over gas turbines facing bottlenecks.

Reliability and land-use constraints will limit potential of behind-the-meter solar-plus-storage at data centers

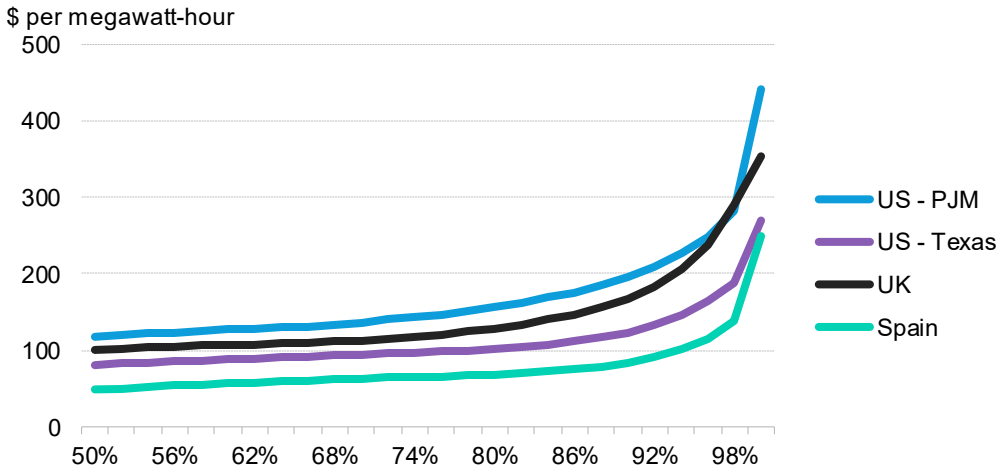
The cost of a solar-plus-storage plant increases exponentially as plant reliability nears 100% of hours met

While solar-plus-storage can meet demand for upwards of 80% of hours in a year, this is not enough to serve data center loads, which typically require 99.9% uptime. To ensure baseload power with solar-plus-storage, developers would need a larger solar-plus-storage plant than is currently cost-competitive with gas. The cost of increasing the output of a solar-plus-storage plant increases exponentially as reliability nears 100% of hours met. BNEF estimates that the cost of meeting 100% of hours is 2.8-3.6 times as expensive as 80% of hours across PJM, Texas, the UK and Spain (Figure 16).

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Figure 16: Levelized cost of electricity for solar-plus-storage as a function of hours where baseload demand is met

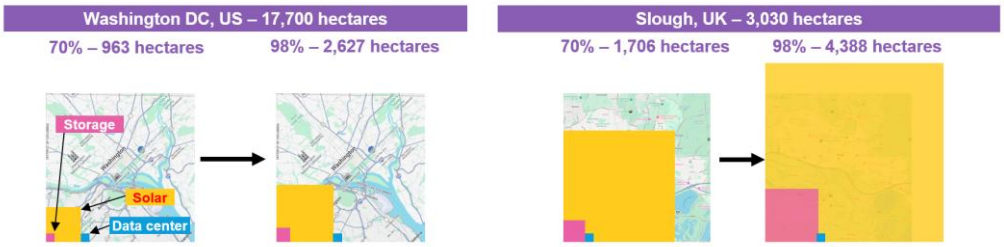


Source: BloombergNEF. Note: Assumes a 4-hour co-located lithium-ion battery. Grid connection costs are excluded.

The amount of land needed to build a high-capacity-factor solar-plus-storage project is prohibitive

Data centers are typically situated near highly developed areas, where the amount of land needed to build a high-capacity-factor solar-plus-storage project is prohibitive. Figure 17 illustrates the acreage needed to use solar-plus-storage for a relatively small 100MW data center. Land permitting and zoning are a major hurdle to data center development.

Figure 17: Land-use of a 100MW data center with a solar-plus-storage site



Source: BloombergNEF, Google Maps.

Gas versus renewables is a not a binary choice

Renewables and on-site gas can and are occasionally being deployed together

While renewables are often framed as an alternative to on-site gas generation, both can and are being deployed together. Crusoe's Stargate Abilene site paired its 360MW, as reported by *Business Insider*, of gas turbines with an undisclosed amount of solar and storage. Google also announced a 1GW energy project formed of wind, solar, batteries and on-site gas generation to be co-located with a data center in the Texas panhandle, *Power Magazine* reports.

Recent analysis from Semianalysis suggests that SpaceX could be procuring solar manufacturing equipment as part of a broader plan to deploy solar alongside its ambitious data center buildout. If this strategy is successful, it could provide a blueprint for other developers to pursue similar plans.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Section 3. Policies to accelerate data center grid connections

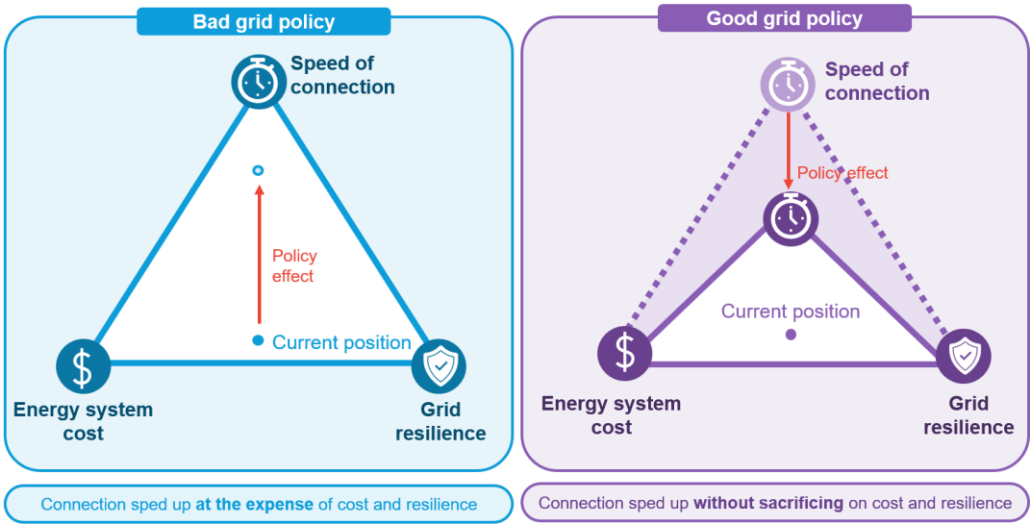
To minimize data centers' environmental impact, power market operators can speed connections to the grid

Powering data centers via the grid today would result in lower CO2 emissions than using on-site gas in the US and Europe. In both cases, their grids are heavily supplied by lower-carbon sources of power, including nuclear, hydro and renewables. Keeping data centers connected to the grid in developed markets is therefore a core pillar of keeping them green.

If fast connections were the main job of grid operators, this would be simple. They could aggressively invest in new generation and transmission capacity to support all new loads requesting connections. They could even allow new loads to connect before necessary grid reinforcements are added. However, system operators' primary goal is ensuring system reliability while keeping costs in check. Allowing rates to spike or the grid to go down has the potential to catapult otherwise obscure grid operators into the public and political limelight.

The following sections of this report focus on policies that can be put in place to help resolve this trilemma of (1) accelerating new customer connections while (2) maintaining system reliability and (3) keeping overall costs in check. Here in Section 3 we offer a high-level overview of the kinds of policies that are being implemented globally to achieve these three goals. Section 4 features case studies of how these policies are being adopted, mostly across developed markets. Section 5 considers how lessons learned in those markets might be applied under the different grid and generation conditions of selected emerging markets.

Figure 18: Schematic of a good versus bad policy



Source: BloombergNEF

Grid-connection policy is only one part of the broader challenge. The emissions impact of data-center growth also depends on the generation mix, the availability and deployment of cleaner power and longer-term power-system planning and decarbonization. These factors vary substantially across markets and are considered elsewhere in the report.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

3.1. Policy updates

The grid-connection policies reviewed in this report serve two broad objectives: selecting quality applications and accelerating connections for viable projects. Section 3.2 separately considers the mechanisms through which individual policies work.

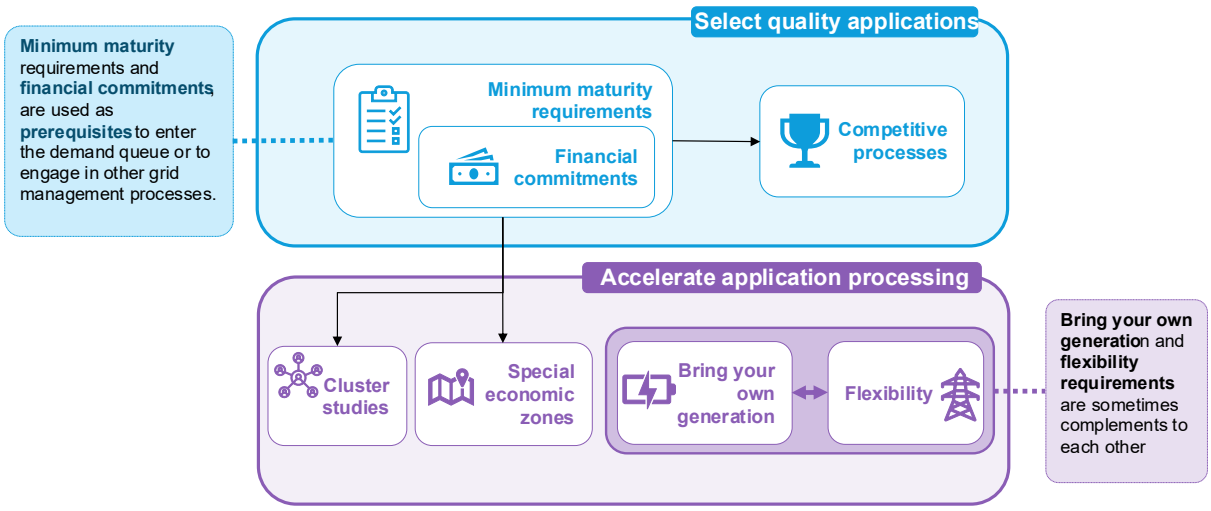
Grid-connection policies reviewed in this report serve two broad objectives: selecting quality applications and accelerating connections for viable projects

Policies to select quality applications survey connection queues to identify projects that are more mature and more likely to proceed. Minimum maturity requirements and financial commitments can filter out speculative or less-developed applications before grid operators put significant time and resources toward assessing them. Competitive allocation processes go further by assigning scarce power or land among applicants according to specified criteria.

Policies to accelerate application processing for viable projects include cluster studies, special economic zones, bring-your-own-generation requirements and flexibility requirements. These policies address constraints affecting projects as they move through the connection process, although they do so in different ways.

Although policies are defined and evaluated individually in this report, they can be used in combination. Minimum maturity requirements, for example, are often used as prerequisites for cluster studies or competitive capacity-allocation processes (Figure 19).

Figure 19: Relationship between policy mechanisms



Source: BloombergNEF. Note: Black arrows indicate that a policy is often used as an input for another policy. Minimum maturity requirements, for example, can be used as prerequisites for competitive processes, cluster studies or special economic zones.

3.2. Grid-connection policy mechanisms

Across these two objectives, the grid-connection policies reviewed in this report work through three main mechanisms: filtering demand, allocating scarce capacity and changing how demand interacts with the power system. Individual policies can work through more than one mechanism.

Policies that **filter demand** aim to remove speculative or less-developed applications before grid operators commit significant time and resources to assessing them. Policies that **allocate scarce capacity** determine how limited power or land is distributed among competing projects. Other policies **change how demand interacts with the power system**, for example by influencing

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

where projects locate, requiring additional power supply or allowing demand to adjust when and how much electricity it draws from the grid.

Table 2: Policies for accelerating demand connections covered in this report

		Mechanism of action			
Policy type	**Definition**	Filter demand	Allocate scarce capacity	Change how demand interacts with the power system	**Examples reviewed in this report**
Maturity requirements	Applicants prove project credibility through site control, permits, land rights and technical readiness.	■			Norway, UK, Sweden, Texas
Competitive processes	Developers win rights to power or land by meeting sustainability or strategic metrics	■	■		Spain, Germany, Singapore, France Denmark, Finland
Financial commitments	Applicants pay study fees, deposits, reservation charges or collateral before or during the application.	■			Texas, Spain, France, Germany, UK, Georgia (US), PJM
Cluster studies	Applications are reviewed in groups instead of serially		■		Texas
Bring-your-own-generation	Projects can connect to strained grids if they invest in new generation capacity or storage			■	SPP, Ireland, Spain, PJM, MISO
Flexibility requirements	Projects can connect before grid upgrades are complete if they agree to non-firm service			■	PJM, Texas, Netherlands, Spain
Special economic zones	Regulators create designated regions where access to power, land or permits are streamlined		■	■	UK, France, EU

Source: BloombergNEF. Note: SPP is Southwest Power Pool, PJM is PJM Interconnection, and MISO is Midcontinent Independent System Operator.

3.3. Measuring the impact of connection policies

BNEF evaluates policies across four metrics: simplicity, developer burden, speed and climate impact

Connection policies address different bottlenecks in the grid-connection process, so their impact cannot be assessed on connection speed alone. BNEF evaluates the policies reviewed in this report across four dimensions:

- **Simplicity** considers how easy a policy is to design and implement.
- **Developer burden** considers what the policy requires from developers.
- **Speed** considers whether there is evidence that a policy accelerates connections to the grid.
- **Climate impact** considers how directly the policy design can influence the emissions outcome; in some cases, that effect depends on how the policy is implemented and on local power-system conditions.

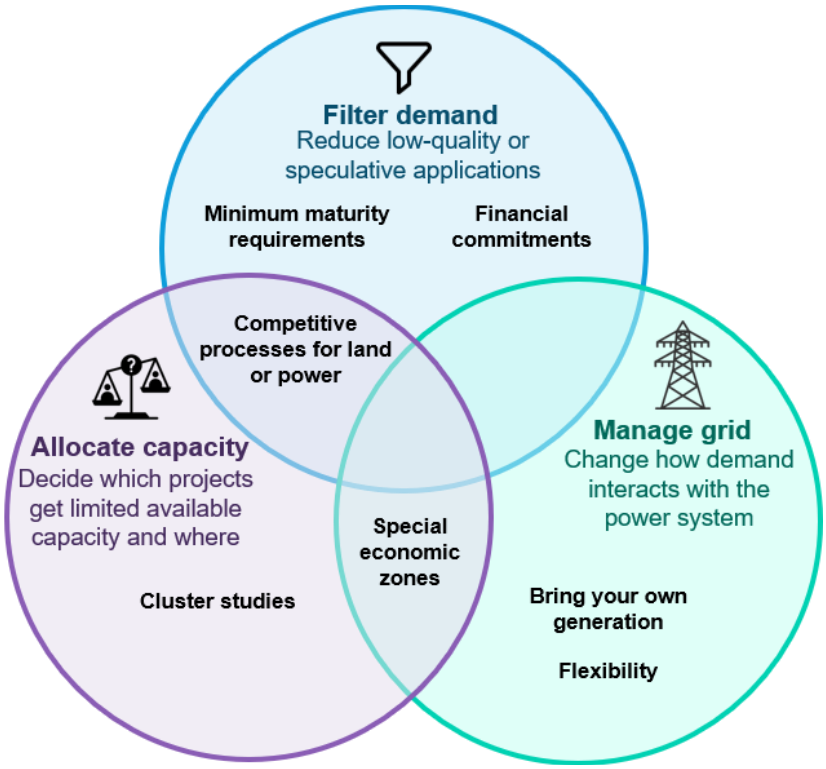
The strength of the evidence also varies across policies. Some mechanisms have been in place long enough to show observable effects, while others are recent or remain at the proposal stage. Where empirical evidence is limited, BNEF distinguishes between observed outcomes and expected effects. Reliability and system-cost implications are discussed in the case studies where they are material.

These assessments describe the characteristics of, and evidence for, the policies reviewed in Section 4. They do not indicate whether a policy is relevant in every market. Section 5 separately assesses the relevance of individual mechanisms against the specific grid challenges identified in each emerging market.

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

© Bloomberg Finance L.P.2026

Figure 20: Policy levers for accelerating data center connections



Source: BloombergNEF

Connection policies do not replace longer-term grid planning

The policies reviewed in this report focus on improving near-term connection processes and how available grid capacity is allocated or used. They do not remove underlying network or generation constraints.

Where large-load growth continues, longer-term planning for transmission, distribution and generation will also be important. Responsibility for this planning varies by market and can involve grid operators, utilities, regulators and governments. Without longer-term planning, the constraints that connection policies are designed to manage may persist or re-emerge.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Table 3: Assessment of grid-connection policies reviewed in this report

Policy type	Simplicity *Is the policy simple to design and implement?*	Burden *How much burden does the policy place on developers?*	Speed *Is there strong evidence this policy speeds up grid connections?*	Climate friendliness *Does the policy result in a cleaner energy supply for data centers?*
Maturity requirements	**Very straightforward** – Widely used globally and easy to define what "mature" looks like	**Very light** – BNEF has not reviewed any examples of meaningful queue impacts from maturity requirements	**Theoretical** – Clears the queue in theory but strict rules have only recently been enforced so minimal evidence	**Indirect** – Should accelerate connections but no exogenous climate impact
Competitive processes for land or power	**Moderate** – All case studies reviewed incorporate different factors and processes to determine outcome	Very light – Singapore received more applications than available capacity	**Theoretical** – Should clear the queue in theory but processes are new so minimal evidence to support	**Direct** – Singapore and Spain processes rank projects against energy efficiency and decarbonation metrics
Financial commitments	**Straightforward** – Minimum demand charges, collateral and exit fees are common practice	**Light** – Developers told BNEF they are willing to commit the fees in force/under proposal in some markets.	**Demonstrated** – Utilities deploying very onerous large-load tariffs in US have cut down their demand queues	**Indirect** – Should accelerate connections but no exogenous climate impact
Cluster studies	**Complex** – Only network wide example, Batch Zero process in Texas, very complex and delayed	**Heavy** – Developers told BNEF they worried about delays due to being grouped with low-quality project.	**Theoretical** – Unclear whether cluster studies have accelerated connections on generation side, let alone demand	**Indirect** – Should accelerate connections but no exogenous climate impact
Bring-your-own-generation (BYOG)	**Moderate** – Grid operators must make choices about how much generation is sufficient and may need alternative study routes for that generation	**Heavy** – Adds major capital and development burden on data center developers. Generation queue can also be clogged.	**Demonstrated** – SPP BYOG process aims for a connection agreement in 150 days	**Case-specific** – Examples of deployment in the US and Ireland favor the buildout of grid-connected gas power.
Flexibility requirements	**Complex** – Need to define technical and operational requirements for when and how loads are curtailed	**Moderate** – Curtailment risk may lower the allure of the site to develops with high reliability needs	**Demonstrated** – Data centers can connect instead of waiting for firm capacity	**Case-specific** – Flexibility has the potential to impact emissions, but modelling shows the direction and magnitude of this effect is a function of power generation mix.
Special economic zones	**Moderate** – UK AI growth zone policy proceeding meaningfully more slowly than France's	Very light – Dedicated zones provide investment and infrastructure clarity	**Demonstrated** – One site in France is set to energize 700 megawatts by 2029 and five more sites are already selected.	**Direct** – Zones can be sited to make use of excess renewable generation, helping balance power supply and demand

Source: BloombergNEF. Note: Color legend is the following: ■ = Positive, ■ = neutral and ■ = negative impact. AI is artificial intelligence. SPP is Southwest Power Pool

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Section 4. Grid-connection policies in major data-center markets

This section offers case studies of policies that are being used to manage demand connection queues, predominantly in US and European markets where demand has grown rapidly in recent years. The sub-sections define different policy types, explain how they have been implemented and examine whether there have been any observed or expected impacts from the policies. While each policy type has its own sub-section, many markets are deploying multiple policies in conjunction, and many policies overlap.

4.1. Minimum maturity requirements: Simple to mandate, low burden to comply

Table 4: Impact of minimum maturity requirements

Metric	Impact
Simple	Very straight-forward
Burden	Very light
Speed	Theoretical
Climate friendliness	Indirect

Source: BloombergNEF.
Color legend: = positive, = neutral and = negative

Minimum maturity requirements (MMRs) are criteria that grid connection applicants must meet to be seriously considered by grid operators or utilities for capacity allocation in the connection queue. These are among the simplest and most widely adopted policies for selecting quality applications, though their stringency varies by market.

MMRs are a simple way for a grid operator to remove or de-prioritize low-quality or speculative applications because they increase the cost burden of applying in the first place. A good MMR policy deters bad-faith, speculative applications without being so strict as to deter good-faith applications from businesses in real need of electricity.

While all markets have slightly different demand connection processes, Table 5 provides examples of MMRs across four markets (the UK, Finland, Norway and Texas). This comparison captures the requirements needed at the point where a connection application becomes more concrete and is allocated some kind of capacity in the demand queue. For Texas, we profile both the MMRs required to qualify as "Studied Load" in the transitional Batch Zero[1] process, and the rules proposed by the Texas Public Utility Commission for what might be expected past that.

Land rights and permitting progress are common criteria in MMRs

Land rights are the most common minimum maturity requirement across markets

Land rights are the most common MMR across markets. A developer can typically meet a land rights requirement via direct ownership, a lease or an option on the project site. In Texas and the UK, the MMR rules also define a duration for the land rights. While in Texas the requirement is to have the land secured for at least five years past the intended full energization date, in the UK, expected timelines are much higher, at 20 years past the application date.

Securing permits is not always needed, but evidence of having applied for them is a qualifying criterion in some markets. Norway is strictest on this, requiring applicants to have full land-use and zoning approval from the relevant municipality before application submission. Finland has softer requirements, only asking applications to have started the environmental permit process before applying.

[1] Batch Zero is the one-time process currently underway in Texas to address the demand queue in a single cluster study process. This process is designed to clear a large backlog before Ercot transitions to a recurring batch study with different, yet-to-be-defined rules. Texas' approach to batch studies is discussed in detail in **Section 4.4**.

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Financial commitments and MMRs

Grid operators are increasingly requiring applicants to pay upfront fees or securities on top of screening for MMRs to deter immature projects and derisk capital invested in grid upgrades, mainly in the US. These are important tools that intersect with MMRs. For example, in Texas, developers need to pay financial security equal to $50,000 per megawatt of power requested from Ercot to qualify for and be studied within the state's Batch Zero program. However, provisions for financial commitments often extend beyond the application and connection offer process through to the lifetime of the contract. They are therefore discussed separately, in Section 4.3.

Norway and Texas develop strict criteria for queue entry

Norway and Texas are examples of power markets where strict MMRs were deployed to deter speculative grid queue applications

Norway and **Texas** are examples of power markets where strict MMRs were deployed to deter speculative queue applications. Statnett, the national transmission system operator in Norway, reported a data center queue of 9.3GW as of August 2026, a third of its peak demand of 25.3GW. Ercot is facing even worse queues, with more than 494GW large load requests as of September.

Norway has potentially the strictest requirements of any market profiled in this section. As well as land rights and land-use permits, developers seeking to connect to the transmission system must provide detailed site designs for their project and evidence that financing has been secured until the next decision gate in the project. This applies to all requests above 100MW, which is higher than the capacity thresholds in comparable policies in Texas and the UK (Table 5). As such, even though Norway's policy is the strictest, it would impact a smaller pool of projects than other markets' policies.

Over what stages of the project the financial requirements should be required were a point of contention during Statnett's consultation process for the policy. The policy originally required projects to provide evidence that financing for the whole project had been secured before application. Statnett relaxed the provision after industry feedback emphasized this framework was unrealistic and would create a chicken and egg problem for developers, as project financing decisions require power certainty. Now, developers must only secure financing until the next decision gate of a project – from feasibility studies to front-end engineering studies to final investment design (FID) – and a plan to secure financing for the rest of the project.

It is too early to evaluate how Statnett's MMRs will impact Norway's data center development, as they have only recently been implemented after a quick development process. Statnett proposed the initial requirement in April 2026 before incorporating stakeholder feedback and implementing the rule on July 1, 2026.

Texas currently has MMRs that projects must meet to be eligible for its transitionary Batch Zero process. These are among the more stringent MMRs observed across markets, requiring land rights, previously conducted grid studies and payment of a pre-grid study security fee. According to a September 2026 presentation from Ercot, 194GW of load could be studied in Ercot's Batch Zero process. This is more than double Texas' peak load of 91GW and 22GW more than BNEF's forecast data center power demand in 2035 for the entire US. However, this figure is preliminary and will be subject to the completion of the verification and audit process. Even if all 194GW is reviewed under the proposed MMRs, an even higher volume of requests will remain in the queue. This suggests that even relatively strict MMRs, on their own, may not be enough to bring demand queues down to system peak levels.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Table 5: Comparison of minimum maturity requirements for demand connection applications

	UK	Norway	Texas' Batch Zero
Status	In force	In force	In force
In force date	April 2025	July 2026	July 2026
Minimum size (MW)	None	100	75
Stage	Before receiving Gate 2 status, which means the project has qualified to receive a confirmed connection offer	Before receiving connection offer	Before inclusion in Batch Zero as Studied Load
Land rights	Developer must have ownership, a 20-year lease, or a three-year option to lease for 20 years.	Developer must have land rights acquired via ownership, lease or option to purchase or lease.	Developer must have land rights acquired via deed, lease or option, which should extend five years past full energization date.
Permitting progress	Not required	Land use must be approved by local municipality and milestones for obtaining environmental permits should be documented.	Not required
Engineering progress	Not required	Must submit detailed site designs, but full engineering studies not needed.	Multiple potential pathways to qualify for studied load, but they largely require previous grid studies.
Financial commitment	Not required	Developers must show funds until next decision gate and a plan for financing through later phases of the project.	Must post a $50,000/MW financial security for projects studied and allocated in Batch Zero.

Source: BloombergNEF. Legend: color is = strict criteria, = moderate criteria, and white = not a requirement.

Texas' requirements for data centers to apply for connection are likely to get stricter. In March, the Public Utility Commission of Texas proposed additional requirements that projects entering future batch studies would need to meet. These include plans and timeline for obtaining project permits, information relating to site-related studies and engineering work, and energization timelines.

In August, Texas Governor Greg Abbott called for a pause on all grid connections for data centers until projects submitted even more information than previously required to grid planners. The order included additional requirements relating to tax benefits, impacts on local communities, and water consumption – three topics that have become major flashpoints in the US. Many major data center developers including Meta, OpenAI, and QTS have voiced their support for the standards set forth in this process.

The UK opts for more-relaxed entry criteria in favor of ongoing monitoring

The UK proposal keeps initial queue-entry requirements relatively light but makes retaining a connection position expensive and conditional on project delivery

The Office of Gas and Electricity Markets (Ofgem) in **the UK** has opted for a more relaxed approach to MMRs than Texas in its recently published proposal for data center connection reforms. The proposal, which was undergoing consultation until September, comes in response to an expansion of the demand-side queue to 125GW, of which data centers make up 73GW. The original process only required land rights to be secured for projects to receive a Gate 2 designation – the point at which the project has qualified to receive a confirmed connection offer.

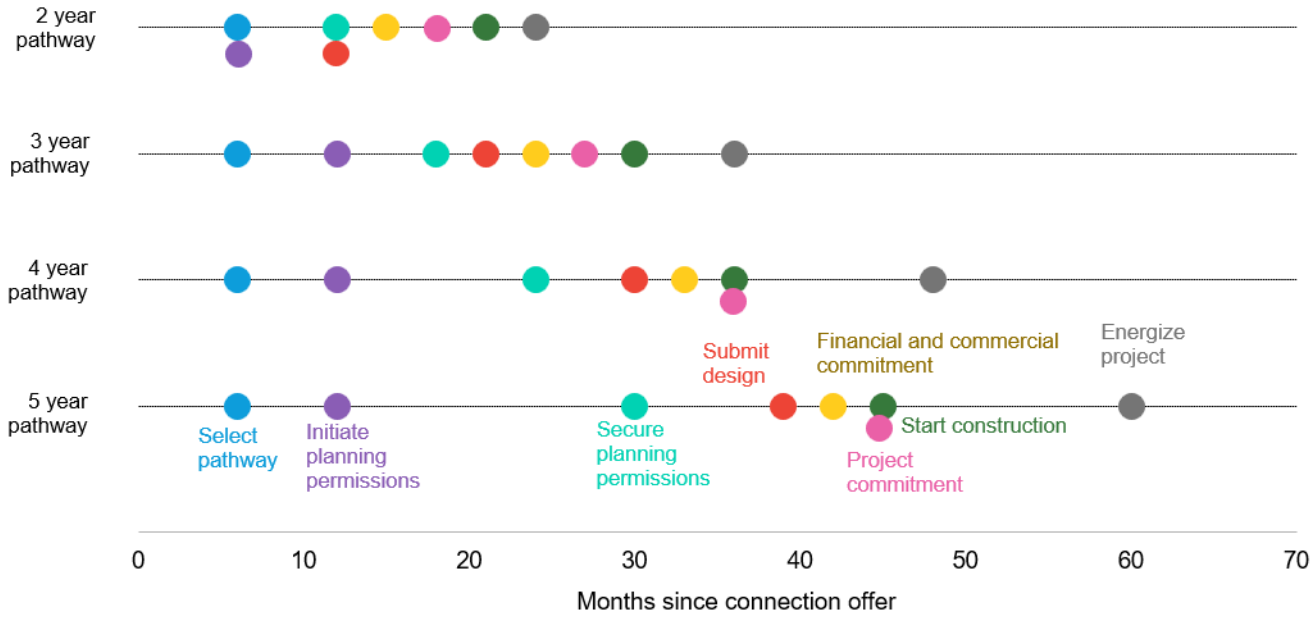
The UK proposal keeps initial queue-entry requirements relatively light but makes retaining a connection position expensive and progressively conditional on project delivery. Developers need to pay a significant financial security – £237,500-712,500 per megawatt of grid connection capacity requested – on acceptance of the connection offer and must meet a set of maturity milestones to retain their queue position. The timings of the maturity milestones depend on the pathway, defined by the time to proposed energization date of a project the developer chooses.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Milestones could include demonstrating a credible end-user or offtaker, procuring long lead time equipment, and beginning construction by specific deadlines (Figure 21).

Figure 21: Data center queue milestones in UK, by pathway to proposed energization date



Source: BloombergNEF, UK Office of Gas and Electricity Markets

This approach has the potential to deter good-faith project developers rather than just speculative projects. Its maturity milestones would only come into play only after a significant financial security has been posted – and those milestones carry genuine execution risk. This means developers could lose capital due to project delays.

Sweden had around 6GW of data center connection requests as of March 2026, which is roughly a third of its peak demand. This comes after maturity reviews and enforcement of connection-agreement deadlines in 2025, which resulted in more than 14.3GW leaving the transmission queue. However, only about 2GW of that were demand-side load requests. The other 12GW were generation projects. Sweden requires large loads to have land control confirmed, permitting processes started and submission of an hourly energy analysis to justify the requested volume of power. The Swedish success suggests that relatively simple maturity requirements can be useful in reducing queue volumes if they are monitored and enforced.

4.2. Competitive processes: Allocate scarce capacity to strategically important projects

Policymakers in some markets have begun to recognize where there is limited capacity to scale the grid and are awarding capacity via tenders or ranking processes. None of the government-run processes outlined below incorporate pricing into the tendering. They instead choose to focus on the “best” projects, though how that is defined varies widely across the three markets.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Table 6: Comparison of competitive processes

	Spain	Singapore	Germany	France (EDF)
What is being awarded?	Grid capacity at specific transmission nodes	Permission to develop new data center capacity	Prioritization in the grid connection queue	The right to develop on EDF-owned land.
Is the tender only for data centers?	No	Yes	No	Yes
Date of first tender	July 2025	July 2022	April 2026	March 2025
Land rights and readiness	Land rights are not needed but can help prove faster energization timelines.	Not required	Land rights and permitting progress represent 30% of final determining score.	Land is not a pre-requisite since the tender is for EDF-owned land.
Engineering readiness	Designs that lead to faster energization timelines are preferred.	Not required	The quality and maturity of technical and engineering designs represent 30% of final determining score.	Technical characteristics and the compatibility of project designs with a site are key considerations.
Developer maturity	Developers need to be financially mature to show economic value.	Not required	Evidence of developer's maturity represents 30% of final determining score.	Financial and legal credibility are highlighted as key criteria.
Economic value	Directly measures economic value in euros invested per megawatt of power requested.	Must show strategic value to the digital economy and add to Singapore's goal to be a technology innovation hub.	Not required	Not required
Sustainability	Emissions reduction is a key factor, disadvantaging data centers majorly.	Strict IT and building efficiency and renewable energy requirements.	Not required	Reviews the project's compatibility with the site's environmental footprint.
Network/grid benefits	Not required	Not required	Colocation with other demand or generation projects is 10% of determining score.	Not required
Commercial terms	Not required	Not required	Not required	Economic value, including price, is one metric reviewed

Source: BloombergNEF. Note: IT is information technology. Legend: color is = strict criteria, = moderate criteria, and white = not a requirement.

Table 7: Impact of competitive processes for land and power

Metric	Impact
Simple	Moderate
Burden	Very light
Speed	Theoretical
Climate friendliness	Direct

Source: BloombergNEF. Color legend: = positive, = neutral, and = negative

Spain and Singapore put more weight on objectives such as sustainability, economic contribution and strategic standing. Germany and France emphasize whether a project is mature, technically credible and ready to be developed. Tenders for leases on the land of state-owned French utility EDF was the only process with a pricing element, although no details have been published.

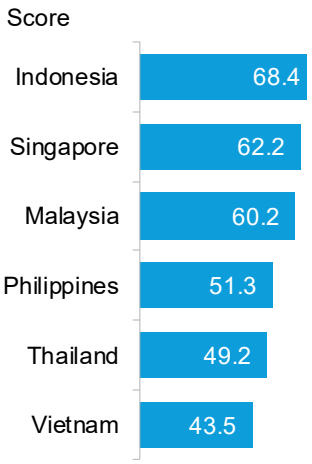
Singapore data center tender emphasizes projects that contribute to strategic innovation edge

Singapore implemented a data center moratorium in 2019 to manage resource constraints in the market. This was lifted in 2022, and capacity is now competitively allocated through the Data Centre – Call for Application (DC-CFA) program. Winning developers get access to suitable land with an expedited, less than six-month permitting process and guaranteed grid capacity.

To date, some 280MW of capacity has been made available to data center developers. The first pilot in 2023 allocated 80MW to four operators – AirTrunk-ByteDance, Equinix, GDS and Microsoft. Only the GDS project has faced delays, and it now aims for a 2027 start. Previously it expected to energize phase one by 2026. The program's second iteration made 200MW of capacity available, awarding Digital Realty, Equinix, Keppel Data Centres and ST Telemedia Global Data Centres 50MW each in August 2025 from over 20 applications. Even with the relatively low capacity being auctioned, Singapore ranked as the second-best market to develop a data center in Southeast Asia, after Indonesia, in BNEF's analysis (Figure 22).

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.
© Bloomberg Finance L.P.2026

Figure 22: BNEF data center market development ranking



Source: BloombergNEF

Alongside strategic benefits to Singapore's innovation ecosystem, the DC-CFA program imposes strict sustainability requirements on applicants. Data centers must obtain a Green Mark – Platinum certification from the country's Building and Construction Authority, achieve a power usage effectiveness (PUE) of at most 1.25, and source at least half of its power supply from clean sources. Neither the PUE nor the clean power threshold will be retroactively imposed on the four projects from the program's first stage, when the requirements were more lenient.

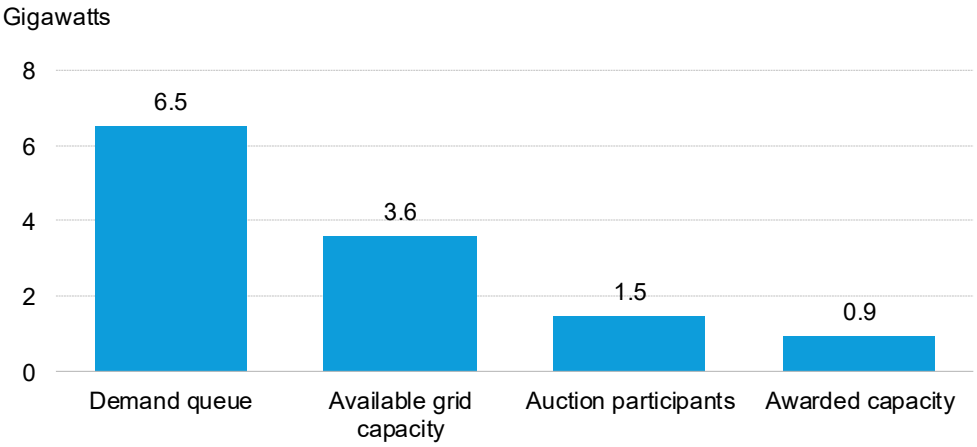
Spain and Denmark favor renewable fuels and industrial electrification over data centers

Spain uses a competitive tender for its demand connection process only at certain transmission nodes where connection applications exceed available grid capacity. This does not replace current first-come, first-served processes at other locations. At these nodes, applications are ranked on three metrics: reduction in emissions, investment volumes and time to energization.

As of July, the grid operator has identified 57 nodes where demand contests could be possible. However, data center projects systematically receive low scores because they fail to support the market's emissions reduction goals. At the end of the contest, demand projects receive a defined megawatt capacity on the transmission grid.

The first demand capacity auction was undersubscribed even though the demand queue was almost double the available capacity. Projects had to meet minimum maturity requirements to be considered for the competitive process, and four projects, including three data center developers, were rejected from participation because they failed to include required documentation. Applications totaling 1.4GW qualified to participate in the process, but only 0.9GW was allocated in February 2026 (Figure 23). The 2.6GW in unallocated capacity will be released and made available for further demand projects, according to PV Magazine.

Figure 23: Evolution of the first demand capacity auction in Spain



Source: BloombergNEF, Ministry for the Ecological Transition and the Demographic Challenge, Red Electrica, Spanish Official Gazette. Note: Demand queue data is from Red Electrica as of September 2025. Demand queue only at nodes announced for auction in July 2025.

Denmark proposed an emergency grid law in August 2026. As in Spain, the law puts data centers at the bottom of the priority list for demand connections. This comes after Energinet, the national transmission operator, introduced a three-month pause in the connection of loads in March to review its existing first-come, first served process. The policy groups demand connections into

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

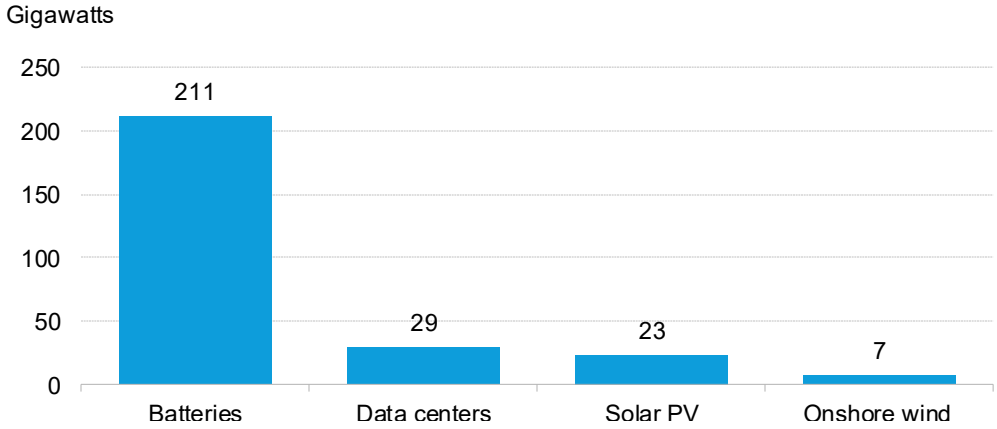
four groups of users. The first group is existing users (households and small businesses). The second is projects supporting electrification and energy transitions, which will get highest priority in the queue. The third group is batteries, and the fourth is other large loads, where data centers would fall. The last two groups can increase their priority based on how much they support the more efficient use of the grid.

Finland introduced a similar four-tier priority system for demand connection applications in September, shifting away from a first-come, first-served process. The first category is small consumption sites (up to 3MW), small data centers (up to 1MW), socially critical infrastructure and small storage projects. The second group is midsize consumption (3-100MW), data centers (1-10MW) and larger sites that agree to flexible demand for 80% of peak demand. Data centers needing more than 10MW of power fall in the third category. All other projects are placed in the final group. Data centers can boost priority via a production commitment, where they agree to procure at least half of the peak demand from power plants located in the same transmission grid. The plant must be commissioned up to three years prior to the data center.

Germany's ranking for queue allocation favors project readiness

Germany's four transmission system operators proposed a maturity-based connection process after facing massive connection queue backlogs of over 270GW as of September 2025, 3.6 times higher than peak demand. Some 211GW was for battery projects, while data centers made up a small share of the queue. (Figure 24). The existing grid connection process had no guidance on prioritizing projects in such events. The new method, Reifegradverfahren, launched in April 2026, creates a ranking framework based on maturity requirements and network and system benefits.

Figure 24: Grid connection applications submitted to the four transmission system operators in Germany



Source: BloombergNEF, 50Hertz, Amprion, TenneT, TransnetBW. Note: The underlying data were collected by each TSO between Sept. 30, 2025, and Dec. 1, 2025. BNEF used data scraping tools to recover the data.

The reform scores projects based on four criteria:

- **Land acquisition and permit status (30% of score)**: Proof of securing the land for the project required areas (e.g., through ownership, lease, preliminary agreement) and progress in obtaining all necessary official permits for construction and operation.
- **Technical plant and connection concept (30% of score)**: Quality and maturity of the technical concept, including connection planning and technical design.

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

- **Applicants' capabilities (30% of score)**: Evidence of the company's economic status and securing time-critical network components.
- **Network and system benefits (10% of score)**: Currently exclusively through project hybridization, where multiple individual projects share the same network connection point.

Germany's approach is like implementing MMRs, but the ranking system is triggered only if demand for connections exceeds supply, making the policy adaptable to changing market condition

This approach is like implementing MMRs, but the ranking system is triggered only if demand for connections exceeds supply, making the policy adaptable to changing market conditions.

France's state-owned utility is offering leases on land suitable for large grid connections

France's state-owned utility, EDF, has run a series of competitive tenders for leases on power-ready, old industrial sites. Unlike the German or Spanish process, this does not guarantee grid capacity at the end of the process. Instead, it gives access to land that in theory should have faster timelines to grid connection due to existing electrical infrastructure. EDF has identified six sites suitable for data center development, totaling 2GW of grid power (Figure 25).

Figure 25: EDF sites available for data centers



Source: BloombergNEF, EDF.

Instead of selling these sites, EDF is offering long-term leases to developers that win the bids to build there. Applications are evaluated on technical and financial structure and the project's compatibility with the site characteristics. Among the winners of tenders run to date are Softbank, which will develop a 400MW data center in the Bouchain thermal power plant site, and OpCore, which will build an at least 400MW data center at a retired coal plant in Montereau.

This bidding process can work in conjunction with the Transmission System Operator's (RTE) fast-track method, where power capacity is pre-reserved by RTE at select locations and local stakeholders choose the winning project that gets built at the site. Projects at these sites get an expedited grid connection process. The Montereau site, for example, was auctioned by EDF, but it also falls into one of the fast-track sites defined by RTE. This means the project announced in 2025 now can target an initial energization date of 2027, far quicker than the standard three-to-five-year timeline. (See Section 4.7 for more on the fast-track process.) Although the two

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

schemes can overlap, they are not the same. An EDF site can be an attractive development location without automatically being an RTE fast-track site. However, the developer on that site still needs to interact with RTE's normal connection process to obtain transmission grid access and ultimately energize the project.

4.3. Financial commitments: Making loads commit capital to proceed through the queue

Grid operators are increasingly requiring larger study fees, securities and other financial commitments

Those seeking to connect to the grid at scale have always been required to provide some form of fee to cover the cost of a grid connection study. Grid operators are increasingly requiring larger study fees, securities and other financial commitments from large loads as a condition to apply for and/or accept grid connection offers.

These financial commitments are intended to:

1. **Deter speculative applications:** Network operators require large securities posted when the application is submitted and when the connection offer is accepted.
2. **Capital recovery:** Utilities – particularly in the US – are increasingly asking data centers and other large loads to commit to prepayments and or minimum monthly billing amounts regardless of final electricity usage. These can and do deter speculative applications, but their main function is to recoup utilities' investments in grid infrastructure to serve that large load. Recouping these costs is especially important if there's a chance the demand will not materialize after the investment has already been made. These provisions are typically only imposed by a utility at the point where a large load signs a binding electric service agreement with that utility.

Fees and securities vary wildly by market but have similar end goals

Fees and securities for grid applications are becoming increasingly common around the world to limit applications from non-viable projects. They can be flat fees per application or $/MW securities that scale with project size and can be required during the application or after a connection offer is accepted. If the project does not progress, fees may not be refundable. Pre-application fees can be refundable if the application is unsuccessful but must be forfeited if the grid operator makes a connection offer and the applicant declines or withdraws the project early.

BNEF views these fees and securities as an effective tool to manage demand queues

BNEF views these fees and securities as an effective tool to manage demand queues. Established data center developers that BNEF spoke with indicated that financial commitments in the range of $100,000/MW were an effective way to deter speculative applications, without putting off serious data center projects. Requiring fees both before and after the connection offer can prevent the early-stage application processing from being clogged up.

The risk of applying high dollar-per-megawatt fees to other kinds of projects

Many data center operators are willing to pay huge securities to secure grid connections. Yet if these kinds of fees are applied to all sources of demand, there is a risk they could hinder projects critical to broader electrification efforts. The opportunity to profit from data center capacity is enormous, and thus the security is justified. The opportunity is less so for a large high-power EV charging station, for example. The UK is an example of a market that has explicitly targeted its proposed fees at data centers, while other markets are not specific about the source of electricity.

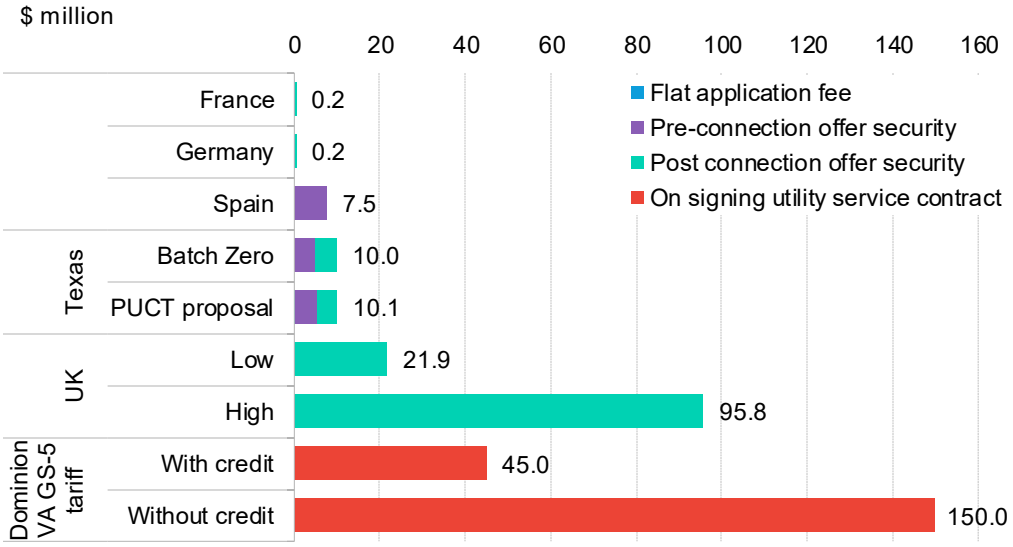
© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Texas is a good example of a financial commitment structure that matches what developers are willing to pay

Texas is a good example of a financial commitment structure that matches what developers are willing to pay. Both the current Batch Zero transitional study process and the proposed rules for future processes incorporate a $50,000/MW security to be included in a grid connection study. Another $50,000/MW fee is required following the connection offer. The proposed rules for future processes require projects to pay an additional, flat upfront application fee of $100,000-300,000 depending on the size of the load. These Texas fees are high, but not the highest (Figure 26) BNEF has seen. Since applicants have yet to undergo the Batch Zero process, it is too early to tell if this is a sufficient cost threshold to deter applications.

Figure 26: Financial commitments required by grid operators/utilities by stage of grid connection process for an example 100MW data center



Source: BloombergNEF. Note: Values for the UK are based on the policy proposed in July 2026. PUCT is Public Utility Commission of Texas. VA is Virginia.

Spain does not have a fee to apply for a grid study, but its demand auction, discussed in Section 4.2, does require applicants to post a security of €75,000/MW ($87,000/MW) that is forfeited if an offer is awarded but the project is not developed. Three data center projects in the demand queue failed to submit complete applications for Spain's recent demand auction, suggesting that this fee could have had a deterrent effect. On the other hand, there were company-specific reasons why the applicants were unlikely to proceed directly with those projects – namely legal battles and corporate restructurings.

The UK has decided to propose a much greater fee than either Texas or Spain, at £237,500-712,500/MW ($219,000-958,000/MW), but only when a connection offer is accepted. This amount is only for data center demand connection requests, unlike in other markets, where fees are typically demand-agnostic. In theory, this does not directly deter speculative applications from clogging up the application process pre-connection offer. On the other hand, the resale value of a queue slot becomes much lower if the acceptance of a connection offer has a huge financial risk associated with it.

The fee being proposed by the UK is like the financial collateral being requested via very strict large-load tariffs in the US, such as Dominion Virginia's GS/5 tariff. However, this collateral is

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

requested by Dominion when an energy supply agreement is signed, much later in the process than Ofgem is proposing.

France and Germany are two examples of markets that use fees mostly as a payment method for studies rather than as a financial deterrent. In France, the reservation fee for a grid connection is paid only after a connection offer is accepted, and at $1,160/MW, it is two orders of magnitude smaller than the data-center-specific security being proposed by the UK's Ofgem. Germany's per-megawatt fee is $1,719/MW. Both markets also charge a flat fee before the application can even be made, but Figure 26 illustrates how small this fee is compared to the per-megawatt securities charged in Spain and Texas.

US large-load tariffs: Deterring speculators, protecting ratepayers

Utilities in the US want to remove speculative projects from their demand queues, but that is not their only goal. Imposing financial requirements on data centers – in the form of large-load tariff schedules – are mainly designed to protect utilities and existing customers from paying for infrastructure to serve large loads that never materialize. Part of the incentive here is that utilities can earn returns on new investment. However, they also want to make sure to avoid political and regulatory backlash if those costs are pushed onto other ratepayers.

Large-load tariffs are specialized electricity rate schedules and service rules that utilities create for customers using large amounts of power; the threshold for these rates varies by utility. The financial commitments large loads need to make to utilities when they sign energy supply agreements are well north of the $50,000/MW fees being charged in Texas. Tariff obligations, however, typically occur later in the project lifecycle and often accompany a guarantee of power for the project. As such, it is difficult to gauge if developers would be willing to take this risk earlier in the process, when power supply volumes and timelines are uncertain. Even so, the monetary commitments data centers are signing onto under these tariffs can provide insight into the scale of cash developers are willing to pay when power supply is assured.

Financial liability provisions are nearly universal and are implemented through mechanisms such as upfront deposits and costs for contract termination

BNEF reviewed large-load tariff schedules offered by 36 investor-owned utilities across PJM, Texas, Arizona and Georgia to analyze common terms of the arrangements. Figure 27 shows that large-load tariffs are the default option for new utility customers meeting demand thresholds, and almost all tariff schedules require these customers to commit to minimum contract terms. Financial liability provisions are nearly universal and are implemented through four distinct mechanisms. Flexibility provisions, namely those that mandate curtailment, are far less prevalent. See Section 4.6 for more on flexibility.

BNEF developed a scoring framework to assess how financially onerous the 36 large-load tariffs reviewed are for customers. The score considers the scale of upfront capital customers must post to utilities, how committed they must remain in the event of contract termination, how high minimum billing components are on the tariff and what share of infrastructure upgrade costs are assigned to the customer. The result of this exercise is presented in Figure 28. Utilities in PJM consistently scored the highest on this ranking. Ohio Power Company (formerly AEP Ohio) ranked first, meaning it has the most financially onerous tariff for data centers among the examples reviewed by BNEF.

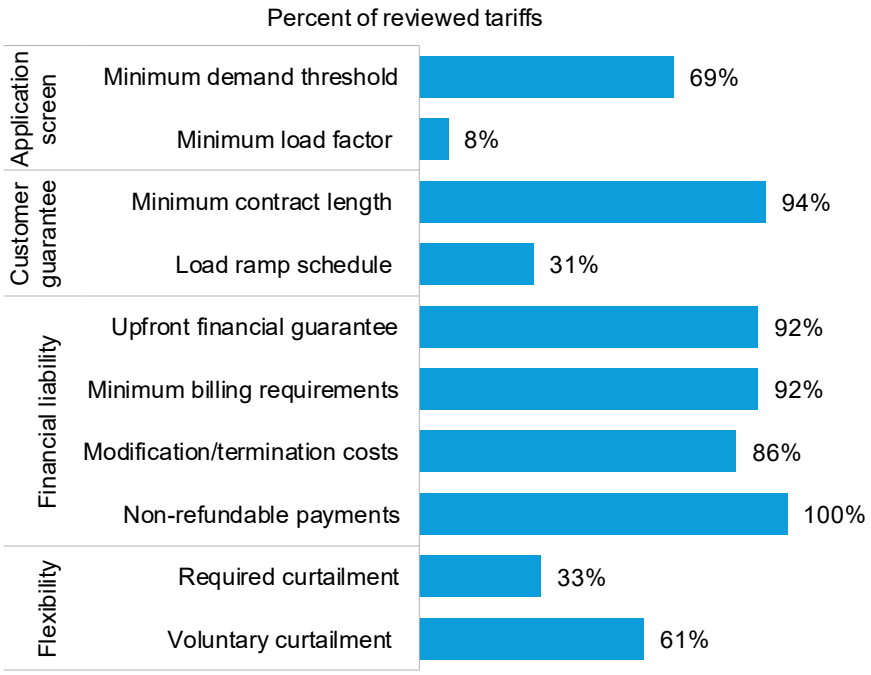
The high scores of Ohio Power Co. and other PJM-based utilities in this exercise are a function of both the large pipeline of data centers in the region and how PJM is structured. PJM's organized wholesale market prices power generation, capacity and transmission service separately, which gives utilities a common framework for identifying the costs created by large new loads. Utilities

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

can therefore translate risks from abandoned projects or underused grid investment more concretely into standardized tariff provisions.

Utilities operating elsewhere in the country scored lower in general, with Georgia Power having the highest non-PJM score, at 30/100. Georgia Power and Arizona Public Service are both vertically integrated utilities, meaning they are responsible for generation, transmission and distribution within their service territories. Their control over a greater share of the value chain means they can impose a greater share of financial commitment in customer-specific agreements, which are not necessarily captured in BNEF's scoring.

Figure 27: Prevalence of provisions across reviewed large load tariffs



Source: BloombergNEF. Note: Sample includes the most large-load-applicable retail electricity tariff from each of 36 investor-owned utilities across PJM, Texas, Arizona, and Georgia.

Ohio Power Co.: An example of successful implementation of large-load tariffs

Ohio Power Co.'s tariff for large loads is a successful example of using financial commitments to remove speculative projects

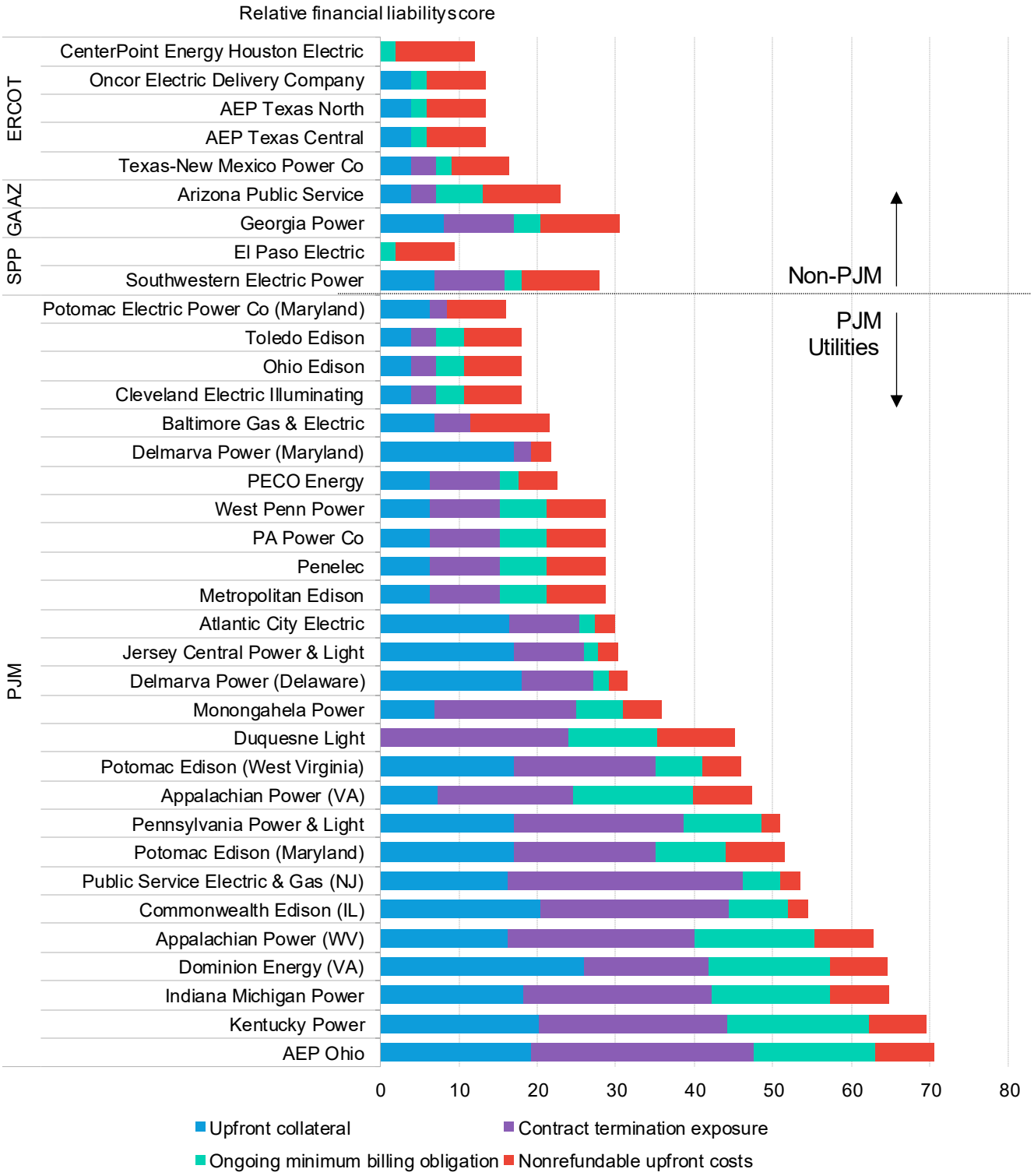
Ohio Power Co.'s tariff schedule for all data centers above 25MW is one of the most onerous – and most successful – examples of using financial commitments to remove speculative projects from the demand connection queue. The tariff as currently designed requires:

- **Upfront collateral:** The customer must pay a one-time fee of $10,000 to $100,000 for each load request. This is lower than upfront collaterals recorded for other tariffs where a per-megawatt dollar value is required. The customer also needs to pay at least 50% of the total minimum charges for the full contract lifetime upfront as collateral against early exits.
- **Termination exposure:** Once a connection offer is extended, the customer needs to sign a letter of agreement in which it agrees to pay back all of costs tied to any transmission upgrade if the customer cancels the project or delays energization by more than 12 months.
- **Minimum billing:** The customer has four years to ramp up to the full contracted capacity and will be required to pay a minimum of 85% of the contracted capacity even if lower volumes are consumed for a total of 12 years.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Figure 28: Relative financial liability of large load tariffs reviewed by BNEF, scored 0-100



Source: BloombergNEF

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Table 8: Examples of stringent financial commitments required in large-load tariffs

Utility / Tariff	Upfront collateral	Termination exposure	Minimum billing
Ohio Power Co. / Data Center Tariff	50% of minimum bills over full contract term, released in equal increments annually over 12-year minimum term; credit-based reductions	Liable for full cost of grid upgrades if terminated early	85% of contracted capacity, scales with load ramping
Dominion VA / GS-5 tariff	$1.5 million/MW with up to 70% reduction based on credit, released in equal increments annually over 14-year minimum term	Liability for minimum bills through duration of contract; up to 50% reduction through free capacity reduction and resale	85% of contract T&D demand, 60% of generation costs
ComEd IL / Rate RDS – LDPAC	Flat $1 million deposit plus $500,000 for each additional 100MW above 200MW; additional deposit for cost of grid upgrades exceeding credit-based allowance	Outstanding revenue shortfalls under 10-year Transmission Security Agreement	100% of contracted capacity but charged at heavily reduced $/kW rate
PPL / LP-6 tariff	Security for infrastructure costs otherwise spread across rate base; released once revenue recovers this cost	Greater of remaining billing obligations or outstanding deposit	80% of contracted capacity dropping to 50% once collateral is recovered

Source: BloombergNEF. Note: Nonrefundable cost obligations are omitted to emphasize provisions that vary more materially across selected utilities. T&D is transmission and distribution. MW is megawatts. LDPAC is Large Demand Project Applicant or Customer.

Since the tariff was approved, the demand connection pipeline in Ohio Power Co.'s service area dropped from over 30GW down to 13G

Since the tariff was approved in July 2025, the demand connection pipeline in Ohio Power Co.'s service area dropped from over 30GW to 13GW as developers chose to not continue with formal engineering studies for their projects. This was further reduced to 5.6GW when potential project developers opted out of signing legally binding agreements that come with significant financial commitments. This is less than half of the 12.2GW of data center contracts that were signed before the tariff went into effect. It is yet to be seen whether the queue will rise again in future.

Georgia Power: Bilateral contracts with a vertically integrated utility

Georgia Power has implemented new rules as of February 2025 for new customers using more than 100MW of power. These rules have strict financial contribution requirements and minimum contract lengths for all large loads, not just data centers. However, unlike Ohio Power Co., which has a fixed tariff structure, Georgia Power negotiates the exact obligation with each individual customer. The utility can offer a more flexible tariff structure because it is vertically integrated and has visibility into generation, transmission and distribution across the entire region it serves.

Generally, Geogia Power's large load customer must agree to the following contract conditions, although exact details vary by customers. At its core, the provisions are quite similar to ones offered by Ohio Power Co.

- **Upfront collateral:** The customer pays the local infrastructure costs needed specifically to connect and serve its site.
- **Minimum billing:** The customer is required to pay the price of actual electricity consumption or the minimum contracted amount, whichever is higher. This allows the utility to recover the cost of serving the load, although this has not been around long enough to gauge if the minimum negotiated is enough to prevent costs from bleeding into the rate base.
- **Termination exposure:** If the customer terminates the contract early, it may be liable for the minimum monthly contract for the rest of its contract even if no electricity is used. All data center customers get a minimum 15-year contract, but agreements can extend to 25 years.

There is no strong evidence to suggest Georgia Power's financial requirements have shortened the large load queue

In contrast to Ohio Power Co., there is no strong evidence to suggest if these financial requirements have shortened the large load queue. The utility reported 31 large load customers

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

had committed to 12.4GW power as of March 2026. About 8.5GW of these projects had already broken ground, including 10 that are already online.

4.4. Cluster studies: Texas Batch Zero process has yet to produce evidence of positive impact

Table 9: Impact of cluster studies

Metric	Impact
Simple	Complex
Burden	Heavy
Speed	Theoretical
Climate friendliness	Indirect

Source: BloombergNEF. Color legend: = positive, = neutral and = negative.

Some markets are switching to cluster or batch studies, where groups of connection applications in a region or under a utility's jurisdiction are reviewed together, rather than sequentially. While cluster studies for demand connections are being introduced in response to data centers' load growth, cluster study processes have been in place for generators seeking connection for years. The main goal of a cluster study process is to determine what infrastructure upgrades need to be implemented for mature projects to connect to the grid.

It is unclear whether running cluster studies to review projects is more efficient and faster than conducting serial reviews. Cluster studies for generation projects have a history of getting delayed due to high volumes of applications overwhelming the grid operators. One cluster study being delayed and being re-studied numerous times has knock-on effects on future clusters, sometimes leading to cancellations of new application intake. The best-known cluster study for demand connections today is Texas's Batch Zero process. California's Pacific Gas and Electric Company (PG&E) cluster study process for demand is arguably more mature, having run two demand connection studies to date, in 2024 and 2025.

Data center developers BNEF spoke to are aggrieved at the use of cluster studies for demand connection applications because it groups newer, immature developers

Some data center developers BNEF spoke to are aggrieved at the use of cluster studies for demand connection applications because it groups newer, immature developers that have minimal ability to pay for their share of the grid upgrades with long-standing industry players. Developers encourage coupling entrance into the cluster study with strong financial commitments, in the form of letters of credit and large lump-sum upfront downpayments, to discourage speculative projects from entering the study. Additional rules like requiring developers to retain the grid connection for a minimum number of years and submitting letters of intent from customers were also acceptable.

The usefulness or scope of cluster studies is largely a function of market structure. The Texas cluster study process is unique compared to the others BNEF reviewed, which are all utility-run. Texas' Batch Study process is run by the ISO across the entire grid. It also moves beyond just planning. The process will allocate exact megawatts of capacity to projects. Other examples that BNEF reviewed primarily use cluster studies as a planning tool, and no megawatts get allocated to applicants at the end of the process. This fact is not necessarily a policy or business decision by these bodies but rather reflects the market structure in which they operate. Individual utilities, like PG&E, may need approval from their ISO to approve which connections they can agree to.

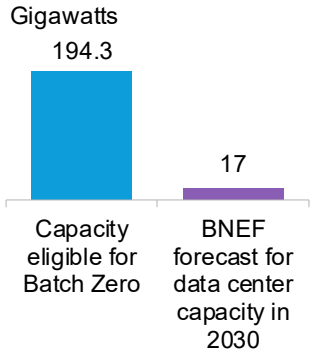
How is Texas' cluster study process developing?

Texas's Batch Zero, which represents the state's transition from studying very large new electricity customers individually to assessing them as a group, has been in force only since July 2026. The Batch Zero process will put projects into one of three baskets: Base Load, existing projects that require no re-study; Studied Load, eligible for inclusion after being studied; and early-stage projects that are simply excluded.

Much of Ercot's large load pipeline that will be included in Batch Zero is speculative. The latest estimates show that 362 large-load projects, equal to 194GW, had been conditionally placed in

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Figure 29: Ercot's Batch Zero pipeline versus BNEF forecast



Source: Ercot, DC Byte, BloombergNEF.

the Base or Studied categories. Another 302GW from 373 projects have applied for connection but are not eligible for Batch Zero. Data centers make up around 90% of this large load pipeline. However, BNEF's base-case outlook for data center capacity in Texas – which is based on the announced project pipeline – estimates that only 8.25GW of additional data center capacity will come online by 2030 in Ercot, bringing the total to 17.2GW (Figure 29).

The long Batch Zero process is set to be delayed as a result of two pauses implemented in the past two months by Texas Governor Greg Abbott. In August, he directed that the PUCT and Ercot pause all new data center connections until the full pipeline undergoes an "audit." While it is not entirely clear what the audit would entail, it could include collecting and reviewing information related to power and water use, on-site generation, cooling technologies, ownership, state and local financial incentives, and community impacts. The Governor similarly directed the Texas Commission on Environmental Quality to stop issuing air permits to data centers until Ercot's audit was complete.

Did cluster studies work for generation connection in the US?

Using cluster studies to review generation connection requests has been a common practice in the US since 2008. The California Independent System Operator (Caiso) was the first to adopt the framework to manage soaring renewables requests because of favorable financing and policy environment. This was followed by SPP and MISO in subsequent years. FERC Order 2023 made cluster studies for generation projects a mandatory practice across the nation.

Since the order went into effect, all regional grid operators have initiated transitional cluster study programs, akin to what is being proposed for Texas' Batch Zero. Under the FERC order, cluster studies must be completed within 150 days, although some regions have been granted extensions for certain clusters. Failure to comply with the timelines can lead to transmission operators paying fines of $1,000 to $2,500 per business day, which should help prevent delays.

It is too early to determine if cluster processing was a better alternative to serial processing of generation applications

Large volumes of projects have already been removed from the connection process in many regions, but it is too early to determine if this was a better alternative to serial processing of applications (Figure 30).

- **PJM Interconnection**: PJM started clearing its 160GW generation queue from 306 projects in 2023 and reduced it to only 46GW by 2025. Ultimately, 130 requests totaling 17.4GW received a generation connection agreement. Projects that voluntarily withdrew or were subsequently removed spent on average 448 days in the cycle.
- **NYISO**: Cluster Study 2024 started with 240 projects in February 2025, which was reduced to only 92 projects as of March 2026.
- **SPP**: The 2024 cluster was the largest cluster study in the power market's history, starting with 260 projects totaling 66.5GW. This was reduced to 138 projects totaling 38GW after completion of the Phase 1 re-study in July 2026. Phase two and a subsequent connection facilities study are still left to be completed.
- **Caiso**: Cluster 15 received 541 requests totaling 350GW in new capacity, roughly seven times Caiso's peak demand. Only 86 projects that amount to 28.7GW remained in the study as of July 2026.

There is a history of transmission operators getting delayed in reviewing clusters due to overwhelming volumes of applications – potentially an ominous sign for grid operators considering the same for demand connections. Although both SPP and Caiso were successful in massive

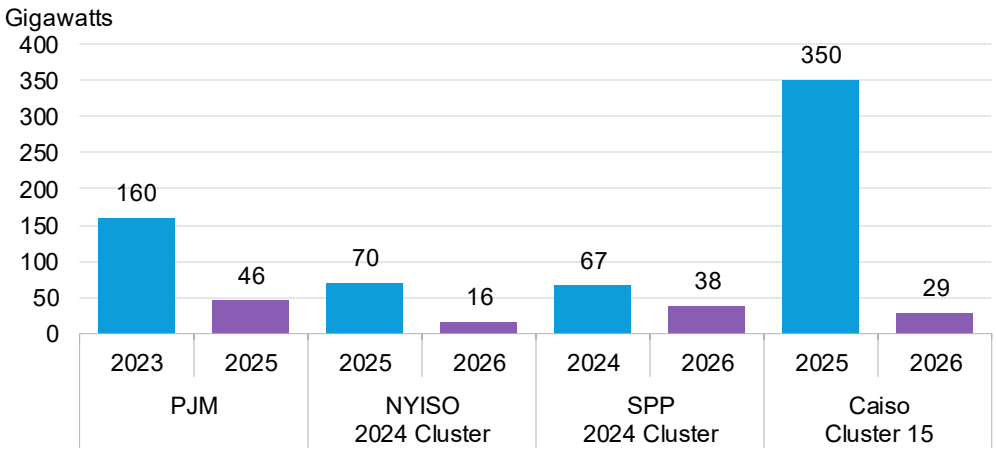
© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

queue reductions, the process took far longer than planned, leading subsequent application intake cycles to be delayed.

- In February 2024, Caiso appealed to FERC to cancel its annual application intake process. The grid operator was still processing applications from its Cluster 14 cycle submitted in April 2022, and had yet to start reviewing Cluster 15, which had been submitted in April 2023.
- SPP filed a request with FERC in August 2024 to delay the closure of its 2024 cluster from October 2024 to March 2025 and defer the new application cycle. SPP said it was inundated with requests and had to finish re-studies before 2024's work could be initiated.

Figure 30: Generation connection queues over time, in select power markets



Source: BloombergNEF, PJM Interconnection, NYISO, SPP, California Independent System Operator.

A key reason for delays has been the need to constantly re-study clusters; this will likely impact demand connection cluster studies as well. FERC recognizes this as a structural problem in Order 2023. Withdrawing projects from the cluster or materially changing project parameters can trigger a re-study of the cluster because the assumptions for what projects will be built and how much infrastructure that amounts to has significantly changed.

- In PJM, projects are allowed to withdraw from Decision Point III, the gate before the connection agreement is signed. After these removals, PJM re-studies or "re-tools" the cluster to adjust the cost obligations for existing customers in the group. Projects can still choose to withdraw at this point, triggering a second re-tooling.
- MISO has explicitly reported "cascading delays", meaning changes in an earlier cluster propagates into the next ones. A number of 2022 clusters in MISO are currently facing a cascading delay until the 2021 cluster restudy is completed in November 2026.

4.5. Bring your own generation (BYOG): Encouraging faster connections and grid-connected gas plants

BYOG policies require that sources of new power demand develop or contract power generation to offset the impact of their demand. The aim of these policies is to bring generation online at a rate commensurate with demand and ensure power system reliability. While they are a good way to encourage data centers to stay connected to the grid, they are also likely to stimulate

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

investment in grid-connected gas power in markets where they have been deployed, largely because of the competitiveness of gas-fired power in those markets.

Table 10: Impact of bring-your-own-generation

Metric	Impact
Simple	Moderate
Burden	Heavy
Speed	Demonstrated
Climate friendliness	Case-specific

Source: BloombergNEF. Color legend: = positive, = neutral and = negative.

This section explores three different BYOG policies deployed in four markets: Ireland, SPP, MISO and PJM (Table 11). Ireland was the earliest to implement a BYOG policy for data centers. It has the most stringent requirements and is led on the implementation of clean energy requirements. PJM is notable as its proposed policy would have made it the only market on the list without a strict requirement the new generation be located near new load. SPP pioneered a co-study process for generation and load that aims to accelerate time to connection for both. A similar process has since been proposed by MISO.

Ireland and Spain: BYOG with renewable matching

Ireland was one of the first power markets to be overwhelmed by digital infrastructure. The Commission for Regulation of Utilities (CRU) issued restrictions on data center connection applications in November 2021 to mitigate grid congestion. Because of already approved connections, power demand from data centers rose from 5% to 23% of Ireland's metered electricity consumption from 2015 to 2024. The de-facto moratorium was lifted in December 2025 when a BYOG policy was implemented to support generation growth. Following this, the transmission system operator (TSO), EirGrid, reported new data center connection requests in the greater Dublin area will be reviewed on a case-by-case basis until 2028.

Table 11: Comparison of BYOG policies

	Ireland	PJM – Bring your own new capacity	SPP – High Impact Large Load Generation Assessment process
Policy description	Demand connections are conditioned on matching demand with local generation and/or storage.	Large loads must bring their own capacity or be subject to a flexible connection agreement.	Loads and associated generation can be studied together to offset grid impact and accelerate connection.
Is this in force? If yes, since when	In effect as of December 2025	Proposed August 2026	In effect as of January 2026
At what load size does this policy become relevant?	Applies to all new data center connection applications ≥1 MVA.	Applies to new "large loads," defined as ≥50MW.	≥50MW on transmission systems above 69kV, or ≥10MW on systems at or below 69kV
Is there a clean energy requirement?	Data centers must match 80% of annual demand with additional renewable energy produced in Ireland.	No requirement	No requirement
Is there a distance requirement for the generation from the load?	Matching generation/storage must be onsite or "proximate" to the data center. Separate renewable projects do not have the same local pairing requirement.	New capacity can be anywhere in PJM.	In general, load and generation must be no more than two substations apart. They must be within one substation if the generator is connected to a 765kV transmission line.
Is the generation profile required to meet some kind of standard?	Dispatchable generation/storage is required to connect to the grid and participate in the electricity market.	New capacity is designed to support wider system stability rather than serve the large load directly.	The generator's output is limited to the hourly load forecast of the load unless directed otherwise by SPP.
How much of the power demand must be met by the generation?	On-site generation must meet peak demand of the data center.	Load is required to bring enough new capacity to meet resource adequacy requirements rather than hourly or annual generation matching.	No minimum requirement, but only the portion of load effectively offset by the additional generation is likely to benefit from the accelerated pathway.

Source: BloombergNEF. Note: = strict criteria, = moderate criteria, and white = not a requirement.

The BYOG policy requires that a data center meet its peak load with dispatchable generation and/or storage within the same local area of the grid in order to participate in the national

© Bloomberg Finance L.P. 2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

electricity market. This rule applies to data center connecting transmission above 10 megavolt-amperes (MVA). Data centers connecting at least 1MVA but less than 10MVA must provide a generator that generates enough power to serve the data center only.

Ireland is one of three main markets to include a sustainability requirement within its BYOG framework. Developers are required to meet 80% of annual power demand with additional renewable energy generated in Ireland. To prevent a shortage of renewables from acting as an immediate near-term bottleneck to data center development, facilities get up to six years from when a data center is energized to achieve full matching. This is to allow time for the projects and generation connections to be developed. If the data center cannot meet the renewables matching by the sixth year, the capacity provided to the site will be reduced to the volume that is matched, or the connection agreement may be terminated entirely.

In October 2026, **Spain** proposed a new rule that would require that data centers match at least 80% of their hourly electricity consumption with renewables, which is far stricter than the Irish model of annual matching. Data centers would initially need to match at least 60% of their hourly electricity consumption with renewable power, with the requirement ramping up over time to 70% in 2029 and then 80% in 2032. Developers would also need to adhere to water efficiency standards and ensure the facility is operated by European companies. This rule would apply to all data centers using at least one megawatt of power.

The renewable energy source must be additional, meaning it needs to be from a new generation plant built no more than 36 months before the energizing of the data center as opposed to Ireland's six-year window post-energizing. Solar would be exempt from the age requirement, as long as it is procured from a generator not already under a long-term power purchase agreement.

This is updated from the August 2026 proposal which sought to mandate 80% hourly matching from day one. While Spain's rules can encourage new investment in renewable energy, data center developers told BNEF the strictness of the rules may to deter investment in the market altogether. It could be the case that data centers would struggle to procure enough renewable energy to achieve the stated hourly matching target. The latest version is yet to become law, but BNEF expects the government to finalize it before the November elections.

SPP, MISO: Accelerated studies for new load and generation

To deal with a growing number of large-load requests, **Southwest Power Pool (SPP)** – the regional transmission organization for the central US – developed the High Impact Large Load Generation Assessment (Hillga) in 2025. This BYOG policy allows large loads to be studied alongside nearby generation projects and offers an accelerated path to a connection agreement in 150 days. The basic concept of the process is that loads that are close to similarly sized generation on the grid will have little net impact on the grid's operation and reliability. Connection agreements can therefore be signed without needing to wait for any significant grid upgrades.

Like in Ireland, the Hillga process requires that the supporting generation be in the local network area of the load. This is defined as within at least two substations, or one substation if the projects are connected to the 765kV transmission network. The output of the plant needs to be limited to the hourly demand forecast of the load unless otherwise directed by SPP.

The Hillga process is designed to accelerate connection for large loads, but only as a temporary stopgap. Connection agreements signed under Hillga are only valid for five years. Generators and loads are expected to go through other study processes in the interim to support greater connection with the grid.

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Midcontinent Independent System Operator (MISO) is developing a similar process of studying generation alongside loads in the same network area to bring processing times down to 120 days. Loads would need to be 250MW or greater to qualify, which is five times the minimum required in the Hillga process.

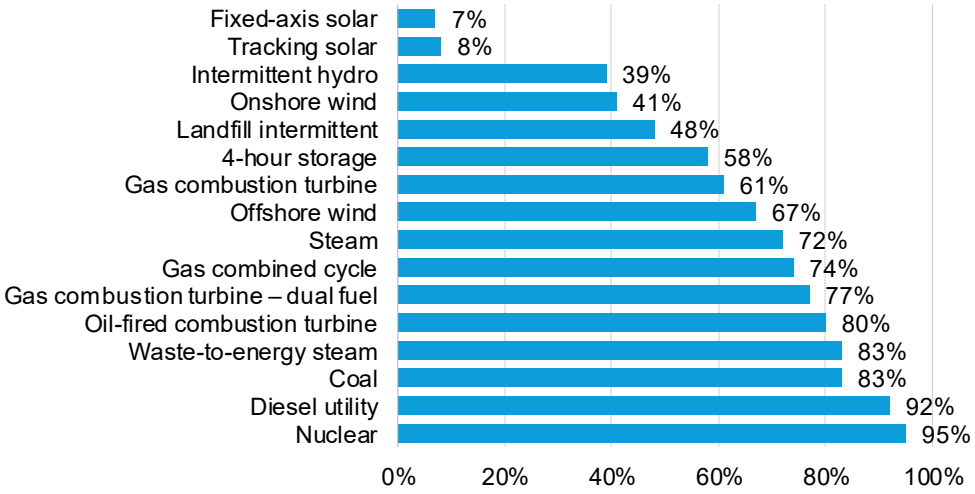
PJM: Bring-your-own-new-capacity (BYONC) proposal has no location requirements

PJM Interconnect filed a BYOG policy proposal with FERC on Aug. 13, 2026. FERC rejected the proposal in October because it was linked to a policy allowing non-firm demand connections, which may have distorted the market (see Section 4.6). While the BYOG policy will not be deployed in its current form, the proposal still offers insight into what a future policy may look like.

PJM adapted the BYOG acronym as bring your own new capacity (BYONC), expanding the practice to include demand response as an eligible form of capacity. BYONC has emerged as a direct alternative to getting what is referred to as an interim resource adequacy service (IRAS) – a non-firm grid connection where operators would have the right to curtail large loads from the grid during capacity shortfalls.

Unlike the other BYOG case studies examined in this section, PJM explicitly stated that there were no proximate location requirements on the new capacity – it simply must be in PJM. This reflects the fact that lack of generating capacity is PJM's biggest challenge, rather than lack of transmission capacity as in Ireland or SPP.[2] More capacity in the wrong locations could ultimately change that, however. FERC's rejection of BYONC stemmed in part from "concern" that the program didn't account for locational and deliverability requirements for the capacity in question.

Figure 31: Effective load carrying capacity class by generation type 2027-2028



Source: PJM Interconnection, BloombergNEF.

PJM's BYONC requires more than simply matching load nameplate capacity with generation nameplate capacity. Sources of generation are derated according to how reliably they can meet demand when required. While the exact formula for each individual asset is different, a simplified

[2] A June 2026 FERC order for PJM specifically requires it to design accelerated studies/interconnection for "electrically proximate" load and generation – or argue why it should not have to. As a result, the process relating to BYONC may incorporate this at a future date.

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

© Bloomberg Finance L.P.2026

way to estimate the required capacity by generation type is to de-rate installed capacity by the effective load carrying capacity (ELCC) of a resource as defined by PJM (Figure 31). By this back-of-the-envelope measure, a load would need to procure 13.6 times as much fixed-axis solar capacity as nuclear capacity to meet the same BYONC requirement. Loads can procure a portfolio of generation across different asset types to meet requirements.

While data centers are likely willing to pay for this new generation to come online to offset their load, investment is not the only barrier to getting new generation online. PJM, like most power markets in the US, has a congested generation connection queue as well as demand queue.

4.6. Flexibility requirements: Non-firm grid connections can enable faster connections

Table 12: Impact of flexible connection agreements

Metric	Impact
Simple	Complex
Burden	Moderate
Speed	Demonstrated
Climate friendliness	Case-specific

Source: BloombergNEF. Color legend: = Positive, = neutral and = negative

Some grid operators are starting to offer large loads non-firm service agreements in exchange for allowing them to connect to the grid more quickly. If a load can be flexible when power demand peaks, then less grid buildout will be needed to ensure reliability. FERC in the US has directed the six transmission operators under its jurisdiction to develop three new kinds of flexible connection agreements, of which two are flexible connection services. One offers interruptible service while grid updates are underway; the other is a permanent flexible contract.

Data center developers BNEF spoke with are generally in favor of lowering their grid power draw for anywhere from 50 to the low hundreds of hours per year in exchange for speedier connections. While data centers can flex their power draw from the grid in multiple ways, shifting onto backup diesel generators or energy storage is more feasible for many operators than actually flexing the compute (Table 13). Flexing compute demand might be possible for large hyperscale operators, but many colocation developers have no control over the compute draw in the facility because they are essentially landlords of powered shelf space for tenants who fit out and control their own servers.

Table 13: Relative capability of different types of data centers to flex energy consumption

Type of operational flex for data center	Co-location	Self-build (hyperscaler)	Self-build (non-hyperscaler)
Shift – reschedule or relocate compute away from constrained hours or locations	Low-medium	High	Low-medium
Shape – use energy storage or backup diesel to maintain compute load while acting flexibly to the grid	Medium	High	Medium
Shed – curtail facility or compute load to provide peak relief or emergency support, delaying or forgoing some workloads	Low-medium	Medium-high	Low-medium
Shimmy – adjust demand to provide balancing, frequency response or ramp support	High	High	High

Source: BloombergNEF, Lawrence Berkeley National Laboratory, Electric Power Research Institute.

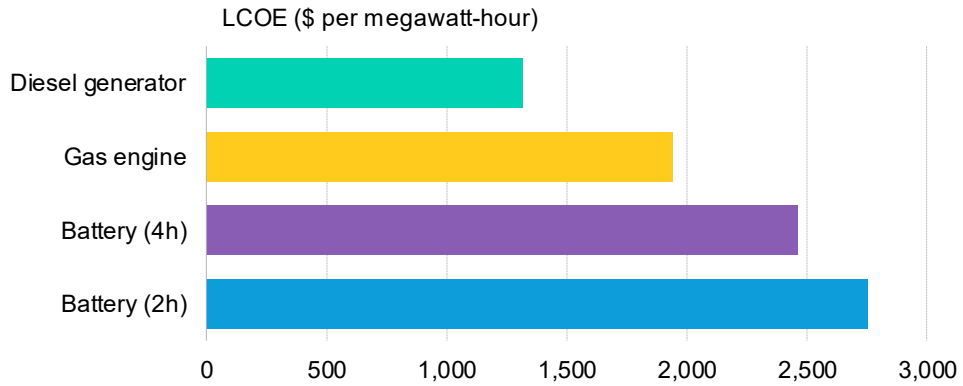
BNEF expects that flexible connection agreements will largely be served by swapping onto backup diesel gensets in the absence of strong regulation and support for batteries. Lithium batteries could provide cost-competitive backup for short durations, but developers told BNEF that they expect to be called on for flexibility during winter storm events where outages could extend for 10+ hours, a duration for which diesel has the advantage (Figure 32). For this reason, developers said that their willingness to agree to these kinds of flexible connection agreements would depend on the relaxation of EPA rules around the use of backup diesel generators.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Flexible connection policies are sometimes offered as an alternative or complement to BYOG policies discussed in the previous section. Having some form of onsite power is a key strategy for ensuring reliability while agreeing to interruptible transmission service.

Figure 32: Levelized cost of electricity, one 12-hour event per month, Virginia



Source: BloombergNEF. Note: Energy generation and storage are sized under the assumption that the full data center load must be met during an outage. Diesel generators are assumed to be installed in a 3-for-2 redundancy design. Batteries are sized such that more batteries are installed to meet outage durations longer than the output of the battery at full load: for instance, for a 12-hour outage at a 100MW data center, the capex of 300MW of 4-hour batteries is modeled.

Do flexible connection agreements help reduce data-center emissions?

Assessing the emissions impact of flexible connection agreements is complex. The analysis must account for second-order effects, and the appropriate counterfactual against which to assess flexible operation is ultimately a matter of judgment. BNEF believes that greater flexibility is likely to support a cleaner energy system overall, in part by reducing the need for on-site gas generation.

Shifting compute can increase grid emissions intensity based on renewable economics

A recent MIT study identified two effects of shifting compute across time. First, temporal flexibility can improve the economics of renewable projects by increasing electricity demand during periods of high renewable generation. Second, it can flatten the load profile, improving the economics and utilization of baseload thermal generation.

The ultimate system-level emissions impact depends on which effects dominate, which reflects the competitiveness of renewable power versus fossil fuels. The study found that shifting compute to another time reduced emissions in Ercot but increased them in the mid-Atlantic region of the US, largely due to the differing economics of renewables in both regions.

The alternative to flexibility could be new gas and coal investment

Another counterfactual is that developers choose not connect to the grid at all. In that case, developers may turn to building off-grid gas power. Against this new counterfactual, allowing data centers to use flexible connection agreements is likely to deliver a better climate outcome by reducing the incentive for on-site fossil-fuel generation.

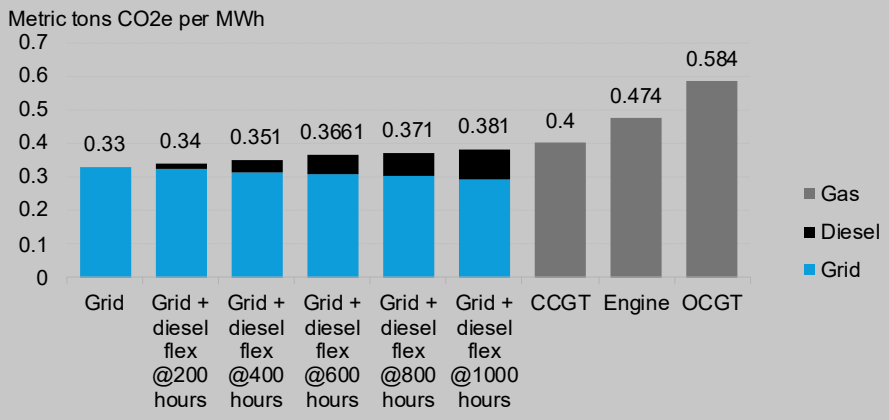
© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Data centers are more likely to shape load with diesel than shift compute

The temporal flexibility described in the MIT paper is not the only form of flexibility available to data center operators. In fact, developers BNEF spoke to said they are more likely to rely on diesel gensets to reduce grid consumption while maintaining a flat real load, rather than flex their workloads. While every hour spent consuming diesel is worse for the climate than an hour consuming power from the grid, using diesel to be flexible could be much more sustainable than fully relying on gas-fired power for year-round.

Average emissions intensity of data center electricity by energy supply



Source: BloombergNEF. Note: Assumes emissions intensity of diesel at 780 kilograms of CO2 equivalent per megawatt-hour (kgCO2e/MWh) and grid electricity at 330kgCO2e/MWh, the average emissions intensity of the US grid in 2025 in BNEF's New Energy Outlook

Diesel-powered flexibility would also reduce the risk of locking in fossil fuels

Relying on diesel for flexibility rather than building onsite gas prevents fossil fuel lock-in. The marginal cost of running diesel is high, so data centers are likely to shift away from using that source of energy as their grid connection is firmed. The marginal cost of running gas turbines is lower than industrial electricity tariffs, incentivizing sources of demand to continue using the turbines even once a fully functional grid connection is available.

PJM offers Interim Resource Adequacy Service as alternative to BYONC

PJM explored a rule that would have allowed loads above 50MW to get grid connections without securing enough new capacity to serve their peak demand – if they agreed to be curtailed during system-wide supply shortages. Utilities would have been responsible for choosing which loads to curtail, so PJM suggested creating a large load registry with all loads and their project details.

PJM filed the proposal with FERC in August 2026. It was rejected in October, deeming the service outside of its jurisdiction because it involved setting retail electricity rates. One commissioner pointed out that the plan could result in power market distortion, as non-firm demand connections would be called on to curtail before load that was enrolled in voluntary demand response. This would essentially create a false signal that generation capacity was adequate to meet demand.

While the policy was rejected in its current form, its proposal and rejection provide guidance for what a future version of the policy may look like.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Table 14: Comparison of flexible transmission service options, by region

	PJM	ERCOT	Netherlands		Spain
Service name	**Interim resource adequacy service (IRAS)**	**Provisional Controllable Load Resource (PCLR)**	**Time-Dependent Transport Right**	**Non-firm Alternative Transmission Agreements (ATO)**	**Type 3**
Distribution or transmission service?	Transmission and distribution	Transmission and distribution	Transmission	Transmission and distribution	Transmission
Implementation status	Proposed August 2026. Rejected by FERC in October 2026.	Approved June 2026 but not yet operational.	Implemented since April 2025.	Available in congested areas since 2024. Plans to extend to non-congested areas in 2026.	Proposal finalized July 2026. Set to be implemented by September 2026
Is there a monetary benefit to participating?	Loads would be compensated for interruptions.	No	Lower grid tariffs		No
Is there a guaranteed minimum level of service	No	No	Load receives firm service for a guaranteed 85% of hours.	No	No. The rules suggest but do not commit to uptime of 90%.
How much operational discretion does the network operator have to curtail load?	Loads would be called early in the load flexibility stack but only during grid capacity shortfalls.	No specific emergency conditions must be met.	Must meet minimum requirements for service but times of curtailment can vary.	Large amount of operational discretion.	Curtailment only happens during specific network security events.
Can the grid operator directly turn off access?	No	Automated dispatch control to ramp load up or down	No	No	Grid operator can physically trip the power flow
Are loads given notice of curtailment?	Transmission owners would need to respond to requests for curtailment in 10 minutes.	Load does not receive any specific advance notice for flexibility	Notice given at least a day ahead.		No. Required to respond in real time.

Source: BloombergNEF. Note: Legend: color is = high operational burden, = moderate burden, and white = low burden.

Texas' fast-track flexible connection pathway is tougher on large loads

Ercot's Provisional Controllable Load Resource (PCLR) pathway is similar to PJM's IRAS service but arguably more onerous for data centers. Loads are not compensated for participation in Ercot, and no specific emergency conditions must be met for the service to be called on. Loads can choose to be a PCLR, meaning they are guaranteed a portion of requested peak demand, but any power drawn above that threshold is subject to curtailment. The Batch Zero process, which is the umbrella policy PCLR falls into, has been approved as of June, but PCLR regulations and procedures are still under development.

While PJM reserves curtailment for capacity shortfall, PCLR loads in Ercot would essentially be curtailed at the grid operator's discretion as part of normal congestion and dispatch services. This is automatically determined by Ercot's Security-Constrained Economic Dispatch tool, which decides which power plants to run while ensuring transmission lines are not overloaded. There are no defined warnings for when loads are expected to curtail, unlike in PJM, where loads have 10 minutes to reduce power draw. No compensation framework exists for curtailed loads.

Large-load tariffs in the US are not focused on flexibility

While operators in the US are developing interruptible transmission services, the large-load tariffs reviewed by BNEF show that flexibility provisions are likely secondary to cost recovery for utilities

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

© Bloomberg Finance L.P.2026

in the US. Of the 36 large load tariffs reviewed by BNEF, only 33% had mandatory curtailment provisions, whereas 61% offered voluntary curtailment options. Most voluntary curtailment schemes offer payment or credit as compensation for reducing load.

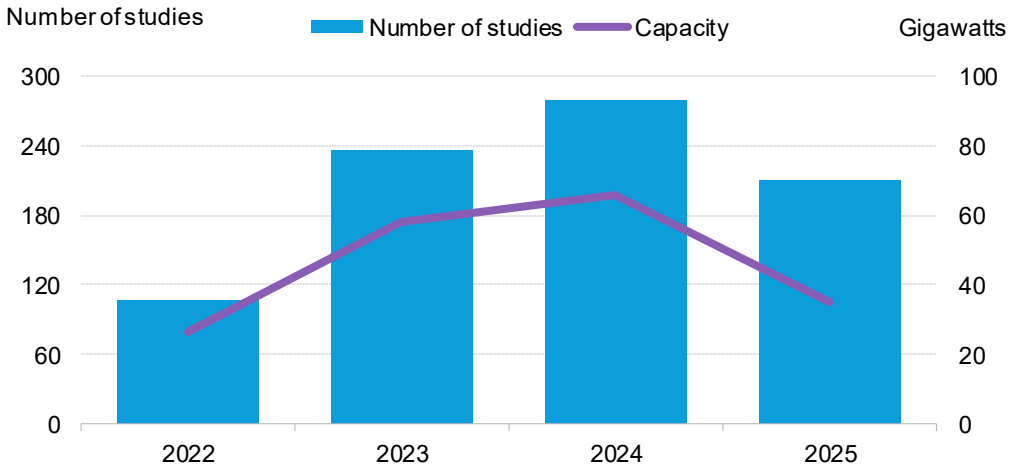
This aligns with the financial incentives for utilities in the US. They generate revenue from increased capital expenditure on assets, which they can then "rate base": charge the costs, plus a regulated rate of return, to customers. Flexibility provisions in service contracts would theoretically reduce capex requirements and thus utility profitability.

The Netherlands and Spain offer similar flexibility options

The **Netherlands** offers three kinds of non-firm transmission service options, called alternative transport rights, to all users of power, irrespective of size. The first forms of these agreements were implemented in 2024 to try to resolve grid congestion. At the end of 2025, 210 requests were awaiting a transmission grid connection, less than the year prior but still substantial (Figure 33). Offering alternative transport rights was cited as one of the measures used to shorten the queue in 2025 but only 40% of the 50 non-firm offers were actually signed.

The models of non-firm transmission have varying levels of similarity to options in PJM and Texas but stand out in their day-ahead notice for load reduction requests. The Time Duration Transport Right guarantees power for 85% of the year, like the minimum threshold defined in Ercot's PCLR. The Non-Firm Transport Rights guarantees no minimum level of capacity, and the load is at the discretion of system availability, like PJM's model of flexibility. In both cases, loads that participate are compensated via lower power tariffs and are given at least 24-hour notice for how much power they will have available for use.

Figure 33: Netherlands transmission demand queue



Source: BloombergNEF, Netbeheer Nederland.

Spain is also developing a non-firm transmission contract framework that incorporates features seen in other markets. Loads can get curtailed during network security events with minimal forewarning, and there is no compensation for the curtailment. The transmission operator can physically trip and stop flow of electricity at a line or substation if needed for system reliability. The policy was finalized in July 2026 and took effect in September 2026.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

How do we ensure grid reliability when switching from the grid to backup solutions?

Data centers can rapidly change their power draw (ramps of hundreds of megawatts per second) and near-instantly swap from grid supply to an on-site source. In July 2026, a system fault in PJM led to 3.8GW of data center loads disconnecting almost automatically, called "transfer-tripping." This is the largest load-drop event seen in PJM, and nearly double the events recorded in July 2024 and February 2025 when about 1.5GW of load disconnected.

An abrupt disappearance of load creates massive imbalances between generation and demand and results in frequency and voltage swings. This is important because electrical equipment has a range of voltage magnitude and frequency within which it is safe to operate. It took 10 minutes for the grid to stabilize during the July 2026 incident in PJM. The market is now considering explicit "ride-through" requirements for data centers and other huge loads, similar to rules that already apply to generators. Ride-through is the ability for assets to remain connected to the grid during short-term grid issues instead of switching off immediately at the earliest signs of disturbances. Similar policies are also being introduced in other markets.

Lack of visibility to voltage ride-through capacity from data centers disconnecting is one of the key concerns identified by the North American Electric Reliability Corporation (NERC). In the May 2026 guidelines, NERC recommended the utilities make ride-through requirements a part of connection contracts. Developers could be required to invest in new equipment to meet the standards, which could add additional expenses to energize data centers.

4.7. Special economic zones: Accelerate permitting for projects near spare grid capacity

Table 15: Impact of special economic zones

Metric	Impact
Simple	Moderate
Burden	Very light
Speed	Demonstrated
Climate friendliness	Direct

Source: BloombergNEF. Color legend: = positive, = neutral and = negative.

Designating special zones where data centers can energize quickly is becoming an increasingly important strategy in Europe. This concept is at the core of the EU's Cloud and AI Development Act (CADA). While CADA is far from becoming an implemented law, one of its core tenets is that it would ask EU member states to each designate their own AI acceleration zones. Projects in these zones would go through a streamlined permitting process to simplify development. Notably, this single permitting process would not incorporate the process of contracting a grid connection, which would continue to be handled separately. CADA is still in development, but the success of its proposed data center acceleration zones will be a result of how individual member states design their own zones.

France's "fast-track" zones are far ahead of UK's AI Growth Zones

The UK and France offer two differing examples of markets that are already in the process of building special economic zones (Table 16). Both concepts were initially publicized near the start of 2025, but they have progressed at different paces.

France's process relies on the government working with the transmission system operator, RTE, to pre-identify sites that can support large loads with minimal grid reinforcement in the near term. RTE then reserves capacity at the site while the landowner – which may be a public or private entity – selects a data center developer for the site. France has identified six fast-track sites to

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

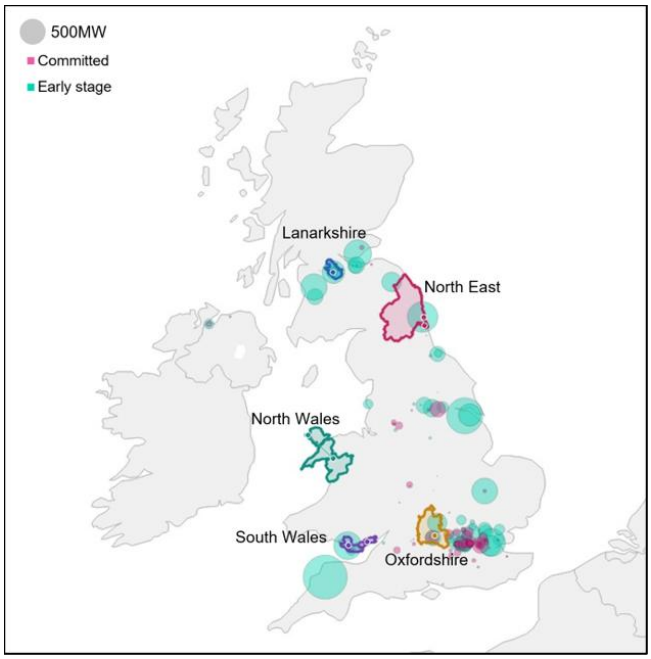
date, amounting to 4.4GW in grid capacity (Figure 34Four of the sites have selected developers already.[3]

Figure 34: France fast-track zones for data centers



Source: BloombergNEF, Réseau de Transport d'Électricité.

Figure 35: UK data center pipeline against AI growth zones



Source: BloombergNEF, DC Byte. Note: AI growth zones are mapped to county they sit in when exact boundaries are not available.

The UK AI Growth Zone (AIGZ) plan has made less progress in energizing real projects. Five zones have been identified as AIGZs, but the mechanism by which a data center in the zones would receive preferential treatment in a demand queue has yet to be determined (Figure 35). The proposal includes a measure similar to France's that would allow the government to ask the grid operator to pre-allocate connections. It also proposes allowing data centers to skip the queue if other local network demand in the queue is canceled, though this would likely have limited impact on accelerating energization timelines.

Table 16: Comparison of data center zones in the UK and France

	UK	France
Is this in force? If yes, since when	• **January 2025:** Mentioned in government's AI action plan • **November 2025:** Deliver AI Growth Zones policy paper published	• **February 2025:** Fast-track zones proposed • **May 2025:** RTE publishes connection process for Fast Track sites. • **December 2025:** First "fast-track" sites identified
How are zones selected?	• **Decentralized:** Regional governments or businesses can apply for a region to be designated as an AI growth zone. They must demonstrate the zone can support 500MW+ in new load by 2030.	• **Centrally planned:** The government pre-designates specific sites that can support large loads with minimal need for near-term grid reinforcement. • **Specific focus:** Fast-track sites are selected predominantly for energy system characteristics.

[3] One of these sites was leased by EDF as part of its competitive tender process, described in Section 4.2. While EDF's sites can overlap with the fast-track zones, they are not automatically part of the process.

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.
© Bloomberg Finance L.P.2026

	UK	France
	• **Multi-functional:** Growth zones intended to support regional economic development as well as fast energization for data centers.	
What is a relevant project?	• **Zone-specific:** Any data center being developed in the growth zone is a relevant project.	• **Project-specific:** The owner of the site that has been designated as qualifying for the fast track runs a selection process of their own design to choose a data center developer. This could be a public or private landowner depending on site.
Scale of the initiative	• **Each growth zone** must be able to feasibly support **500MW** in new data center growth by 2030. • **Five growth zones** are currently selected.	• Each Fast Track **site must be able to support 400-1,000MW** in data center capacity. • **Six sites** have been selected, four of which have been contracted.
Benefits in demand queue	• **Specific mechanisms for grid allocation benefits are still in development. Proposal includes:** – Data centers in growth zones receive **preferential treatment in demand queue** if capacity is freed up from cancelled projects in local network area. – There is no specific commitment to support additional capacity growth in growth zones over other areas. – Government can ask NESO to pre-allocate grid capacity for projects that have yet to fully materialize.	• Capacity at the site is pre-allocated until a data center developer enters a connection agreement • Fast Track sites are selected for their potential in supporting **>700MW in load growth on a 3- to 4-year** timeline. • Fouju fast-track site that has been allocated to Campus IA set to have 700MW energized by 2029.
Other benefits	• Policy paper outlines creation of a **national team of AI data center planning experts** funded with £4.5 million. • **Electricity subsidies** of up to £14-24/MWh in specific zones.	

Source: BloombergNEF

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Section 5. Implications for selected emerging data-center markets

Data-center electricity demand is poised to expand around the globe. The growth will be felt across power systems with very different power-generation mixes, grid conditions and approaches to connecting large new loads. These markets face challenges in delivering this expansion, some similar and some different. However, lessons learned where build is well underway can help emerging markets identify appropriate policies to suit their unique circumstances.

This section examines four potential large data-center markets: Brazil, India, Indonesia and Malaysia. For each, it provides an overview of the data center industry as it is operating today, discusses main grid-access and infrastructure challenges, and evaluates the relevance of policies to manage large-load grid connections examined in previous sections of this report. It also models the impact of new data center power load on grid-connected power installations and outlines options available for data centers to buy cleaner power.

The challenge of rising power demand

The four different markets each have different grid constraints. Brazil has both a queue-management problem and physical transmission constraints. In India, the main challenge is expanding local transmission and substation capacity fast enough for concentrated data-center hubs. Indonesia's challenges vary considerably by location. Malaysia's main issue is whether generation and network capacity can expand quickly enough to meet growing data-center demand.

Table 17: Challenges in serving new load growth from data centers

Market	Demand queue oversubscribed	Transmission and distribution grid constrained	Generation shortfall
Brazil	■	■	
India		■	
Indonesia		■	
Malaysia		■	■

Source: BloombergNEF

Faster grid access alone does not guarantee a lower-emissions outcome in fossil-fuel-heavy power systems

Climate risk

Faster grid access alone does not guarantee a lower-emissions outcome in fossil-fuel-heavy power systems. Power generation capacity also will need to become cleaner as demand grows. In major data-center markets assessed earlier in the report, rising data-center power demand is driving a growth in both grid-connected and off-grid gas power-generating capacity. In emerging markets, the climate challenge is different. To date, there has been little interest in off-grid gas projects. However, data-center power demand risks increasing coal-fired generation, according to modeling in BNEF's Economic Transition Scenario (ETS).

In India, much of the additional electricity needed for data centers through 2035 is likely to be supplied by coal plants. In Indonesia, utilization rates for existing coal plants remain low, so coal

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

generation is likely to rise first as demand grows from data centers. Gas generation will then rise as coal utilization increases. Malaysia's additional demand increases the use of existing coal and gas plants in the near term. The longer-term climate risk there comes from new gas capacity replacing retiring coal plants. The story is quite different in Brazil, where almost all incremental generation through 2035 is likely to come from renewables.

Can data centers catalyze new clean capacity?

Local power systems must also shift to cleaner generation to prevent the build-out of grid-connected data centers from boosting fossil-fuel generation in emerging markets

Local power systems must also shift to cleaner generation to prevent the build-out of grid-connected data centers from boosting fossil-fuel generation in emerging markets. The question is whether data centers, with their scale and often backing from large tech companies, could accelerate that transition. The potential varies by market and depends to a large degree on whether mechanisms are in place to smooth contracts between new large loads and clean generators.

- **India:** Data-center operators have several ways to buy clean power, and companies are already backing new solar and wind projects.
- **Indonesia:** Current rules do not allow data centers to contract directly with independent renewable energy generators. The available alternatives do not provide a clear link between corporate demand and new renewable capacity.
- **Malaysia:** Data centers can contract with third-party renewable generators and are already supporting new solar projects. Grid access charges can affect the economics of these contracts.
- **Brazil:** Large consumers can contract power directly with renewable energy generators. Additional data-center demand could also absorb some renewable energy generation that is currently curtailed. Transmission capacity remains a constraint.

5.1. Brazil

In Brazil, BNEF sees renewables feeding almost all incremental generation needed to meet growing data-center demand through 2035

Brazil is a regional data-center hub with a large, early-stage project pipeline. BNEF expects the country's data-center electricity demand to rise 12-fold from 2TWh in 2025 to 25TWh in 2035. Brazil's rich hydropower resources leave it with one of the world's cleanest power grids, with renewables accounting for almost 90% of electricity generation in 2025. BNEF's ETS sees renewables feeding almost all incremental generation needed to meet growing data-center demand through 2035, leaving relatively low risks that fossil-fuels will gain with the spread of data centers. However, system inflexibility and firm-capacity requirements still could create the need for additional flexible capacity.

The more immediate challenge is grid access. Brazil faces both a large connection queue, where requested demand may exceed what ultimately materializes, and physical transmission constraints, which limit how much new load can connect in particular locations. Brazil's data center grid connection requests reached more than 26GW in the last quarter of 2025, up 10-fold from a year earlier. In response, national system operator ONS introduced a new approval process for large loads. That includes periodic access rounds, financial guarantees and competitive allocation where requests exceed available capacity. These measures address queue management and the allocation of scarce capacity, but they do not remove the physical constraint. Large data centers will still depend on sufficient transmission capacity at suitable connection points.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

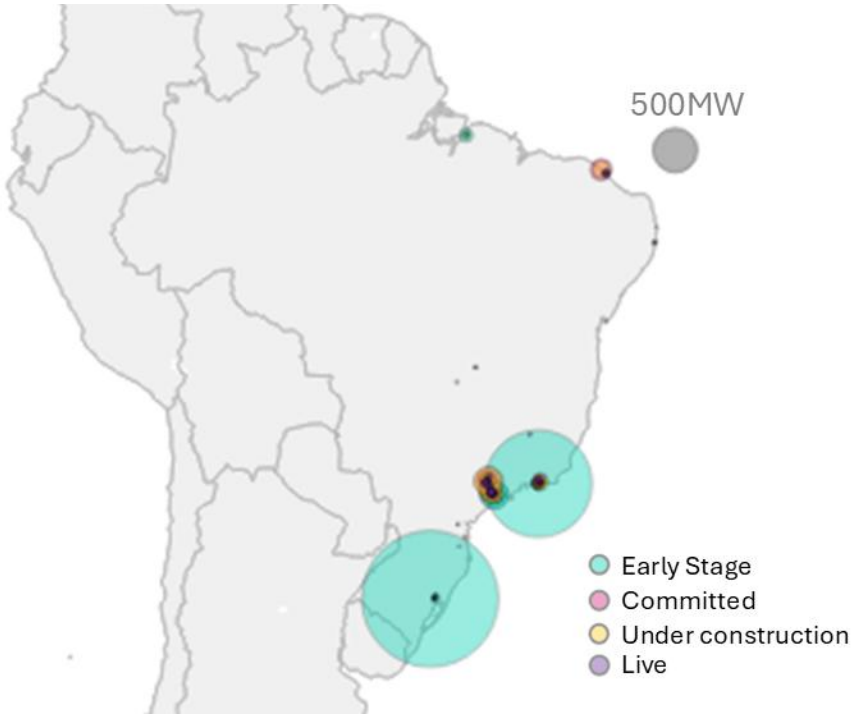
Market overview

Brazil is currently the main data-center hub in South America, with about 62% of the region's live IT capacity and 555MW in operation. Most live capacity is in the heavily populated Southeast and is characterized by mid-sized, latency-sensitive data centers.

The current operating base contrasts with the project pipeline. Planned capacity is equivalent to more than 1,700% of live IT capacity, but much of it still needs to clear major development milestones before coming online. About 87% of pipeline capacity remains at the early stage. Committed projects represent 10%, and only 3% is currently under construction. Around 7.7GW of early-stage capacity – or 80% of the existing pipeline – is concentrated in only two AI campuses, Scala's AI City and Elea Data Centers' RIO AI City (Figure 36, Figure 37). Both are multi-gigawatt projects, and their unprecedented size creates development risks including financing challenges and potential delays.

Brazil's nationally interconnected power system is an important feature of the market. Most generation and electricity demand are connected through it

Figure 36: Brazil data center capacity pipeline



Source: BloombergNEF, DC Byte. Note: Data as of Sept. 23, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction. MW is megawatt.

Brazil's nationally interconnected power system is an important feature of the market. Most generation and electricity demand are connected through the National Interconnected System (SIN), linking most of the country's power system. The renewables-rich Northeast is emerging as an important location for data-center development by combining abundant renewable resources with international connectivity. Ceará is a major landing point for subsea optical-fiber cables linking Brazil with North America, Europe and other markets. The region also hosts much of the country's wind and solar capacity. This combination has attracted large projects: ByteDance's data center will source most of its power from Casa dos Ventos' 630MW Ibiapaba wind complex

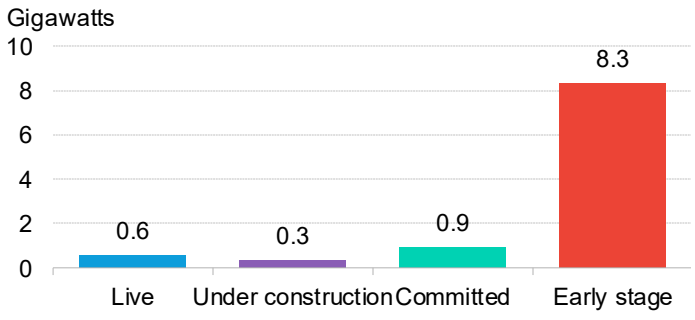
© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

in the state. The region could attract more AI training and other compute-intensive workloads that are less sensitive to latency.

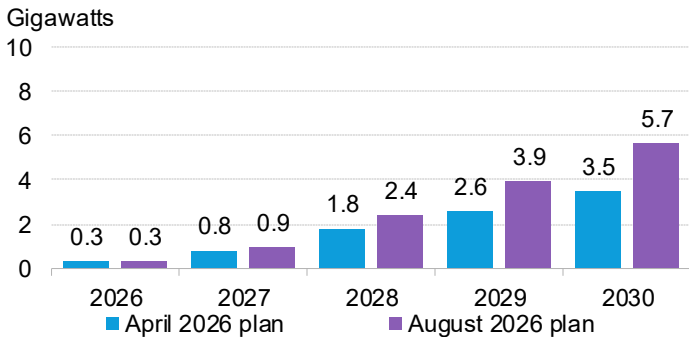
Brazil's key electricity government agencies – the national system operator (ONS), the electricity market operator (CCEE) and power-sector regulator (Aneel) – publish regular updates on the data center outlook based on project and grid-access data. Their projected data center load for 2030 rose to 5.7GW in August 2026 from about 3.5GW in the April planning cycle – a 63% increase in four months (Figure 38). Government agencies assume 50% of the data center capacity pending connection approval will be commissioned, given the uncertainty associated with a large, multi-year pipeline.

Figure 37: Brazil data center IT capacity, by project status



Source: BloombergNEF, DC Byte. Note: Data as of June 10, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction.

Figure 38: Brazil data-center average demand forecast, according to government agencies

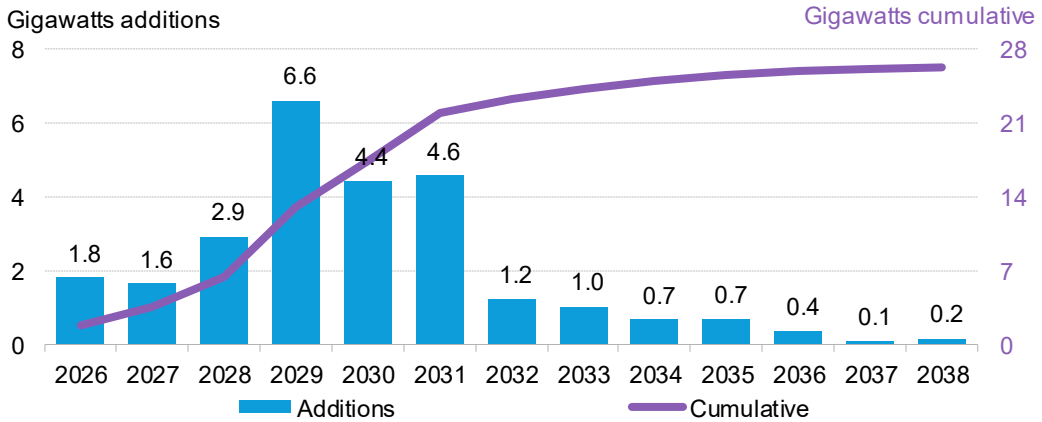


Source: ONS, CCEE, Aneel, BloombergNEF. Note: Figures are in average gigawatts, representing average power demand over the period.

The queue for total power capacity demand represents a 10-fold increase from a year ago, when requests amounted to 2.5GW

Brazil's data center grid connection requests to the Ministry of Mining and Energy (MME) reached more than 26GW across 77 projects in the last quarter of 2025, or about 30% of Brazil's average power demand projected for October 2026, according to ONS (Figure 39). The 2025 application queue includes projects with varying maturity levels, with planned commissioning dates ranging from 2026 to 2038, with a peak of 6.6GW in 2029. The queue for total power capacity demand represents a 10-fold increase from a year ago, when requests amounted to 2.5GW.

Figure 39: Data center connection requests to Brazil's grid, October 2025



Source: EPE, MME, BloombergNEF. Note: data as of October 2025.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

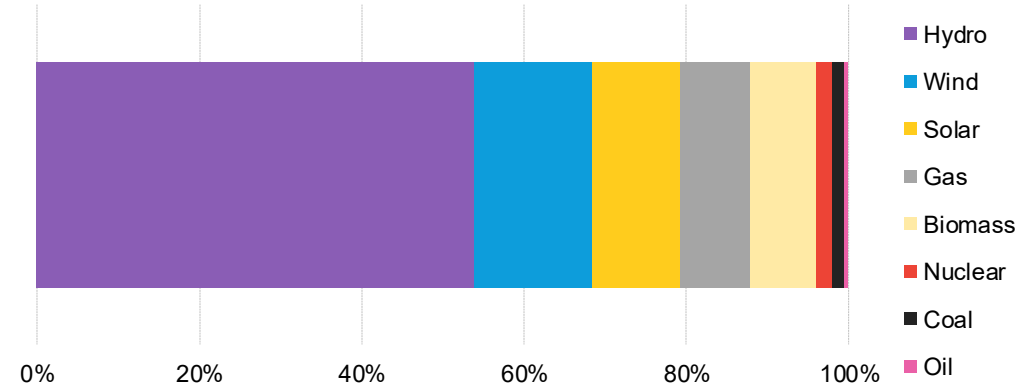
Policy and power procurement

Large consumers can contract directly with renewable generators through Brazil's free power market

The Brazilian government is seeking to attract data center investment while upgrading its grid to accommodate a rapid increase in connection requests. The government in September 2026 approved Redata, a federal incentive program that provides five years of tax relief on eligible IT equipment. The government estimates BRL 5.2 billion ($1 billion) in tax exemptions this year, falling to BRL 1 billion ($190 million) in each of the following two years. To qualify, projects must source their contracted electricity demand from low-emission sources, allocate at least 10% of installed computing, storage and data-processing capacity to the domestic market, meet a water-use efficiency limit of 0.05 liter/kWh, and invest the equivalent of 2% of tax-benefited equipment purchases in research, development and innovation in Brazil.

Data centers can meet the power requirement through PPAs signed with clean power plants while remaining connected to the grid, rather than relying on off-grid generation. Large consumers can contract directly with renewable generators through Brazil's free power market. The grid itself is already around 90% renewable, led by hydropower, wind, solar and biomass (Figure 40). This gives projects access to a low-carbon power mix even when their contracted renewables provider is not producing.

Figure 40: Brazil electricity generation by source, 2025



Source: BloombergNEF

ONS reformed its transmission-access rules with connection requests from large consumers reaching a total of 26GW in 2025, the year Redata was announced. The government launched the National Transmission System Access Policy (PNAST) in December 2025. Fully in force from April 2026, the policy defines a series of changes to the grid access approval for large loads. There will be two access rounds per year with auctions used to allocate capacity when requests exceed what is available at a connection point. The new process replaces a first-come, first-served rolling application basis process.

Developers are now required to make financial commitments to secure grid access, in addition to predefined application windows. Applicants must provide a guarantee equivalent to about three months of transmission charges when requesting access, followed by a more substantial guarantee at a later stage. These guarantees can be forfeited if projects do not move forward. This reduces the incentive for speculative projects to reserve grid-connection capacity.

The revised grid connection process has already revealed that a share of projects in the connection queue were early stage and unready to make financial commitments. In early 2026, shortly after the new process was launched, 51 industrial large-load projects – including data

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

centers – did not present a new application or financial guarantee to remain in the approval process.

Grid access and infrastructure

Improving the quality and management of the connection queue does not remove the infrastructure constraint. Projects will still depend on whether the grid can support new load in the locations and on the timelines developers require

Brazil has two main grid-connection challenges. The first is the scale and questionable quality of projects in the connection queue with the volume seeking access today likely exceeding what will ultimately materialize. This leaves a challenges for the grid operator in forecasting load and distinguishing serious projects from those that are less likely to be built. Uncertainty remains in the wider project pipeline: 92% of Brazil's planned data-center capacity remains at the announced stage.

Brazil's second challenge is physical. Its transmission system already faces congestion in renewable-rich regions, and even mature projects depend on sufficient network capacity at suitable connection points. Where requests exceed available capacity at a grid location, ONS can use auctions to allocate. Improving the quality and management of the connection queue therefore does not remove the underlying infrastructure constraint. Projects will still depend on whether the grid can support new load in the locations and on the timelines developers require.

Brazil's new access framework addresses different parts of these challenges. Financial guarantees are intended to discourage projects from reserving grid capacity without progressing, while periodic access rounds structure when applications are assessed. Auctions provide a mechanism to allocate capacity where requests exceed what the network can accommodate. These measures address queue management and the allocation of scarce capacity, but they do not expand the underlying transmission system.

The table below summarizes the current status of the key policies and mechanisms in Brazil, assesses their relevance to the grid-access challenges identified above and explains BNEF's view on why and under what conditions they are relevant.

Table 18: Brazil's data center grid connection framework

Policy / Mechanism	Policy / mechanism status	Relevance for Brazil	BNEF take
Maturity requirements	Grid access application process requires technical project information, applicable permits and a financial guarantee.	High	This measure is important to limit the growing number of projects applying for grid connection and discourage less mature projects from entering the queue.
Financial commitments	Applicants must post a guarantee equivalent to roughly three months of transmission charges. Using an average transmission tariff of BRL 5/kW/month, the guarantee for a 100MW project is roughly BRL1.5 million ($300,000).	High	The security proposed here is an order of magnitude less than data center developers in the US told BNEF they are willing to pay ($50,000/MW) to secure a slot in the queue.
Competitive processes for land or power	If connection requests exceed the available capacity at a given node, a competitive process can be held to allocate available capacity. In that case, projects bid a premium in BRL/kW, which is the primary ranking criteria.	High	Data centers compete under the same rules as other large loads, making this a demand agnostic way to allocate grid capacity, contrasting with approaches developed in other markets. In the first competitive process in October 2026, 451MW of demand applied for 228MW of available capacity, with data center projects securing all the awarded capacity

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Policy / Mechanism	Policy / mechanism status	Relevance for Brazil	BNEF take
Cluster studies	Not present	Low	Evidence does not yet support whether cluster studies are effective in clearing demand queues.
Special economic zones	Not present	Medium	Some data center projects are targeting special industrial zones, particularly around ports such as Suape in northeast Brazil and industrial areas near São Paulo. Concentrating projects in these areas could help grid planners anticipate demand and plan transmission expansion.
Bring-your-own-generation (BYOG)	Not present	Low	Brazil does not face a shortfall in generation related to data center demand growth.
Flexibility requirements	Grid connection process does not include flexibility requirements.	High	Brazil does not have specific flexibility requirements, despite a growing need for firm capacity and flexibility. Such requirements could manage how new loads impact the country demand and reduce their reliance on grid during peak hours.

Source: BloombergNEF

Renewables could provide 95% of the incremental generation needed the data-centers growth

Long-term power supply and demand

BNEF's Economic Transition Scenario indicates that the additional generation needed to meet Brazil's growing data-center electricity demand could come almost entirely from renewable sources. Renewables could provide 95% of the incremental generation needed to supply this growth, with wind contributing 17TWh by 2035 (Figure 41, Figure 42).

Figure 41: Brazil data center power demand in BNEF's Economic Transition Scenario

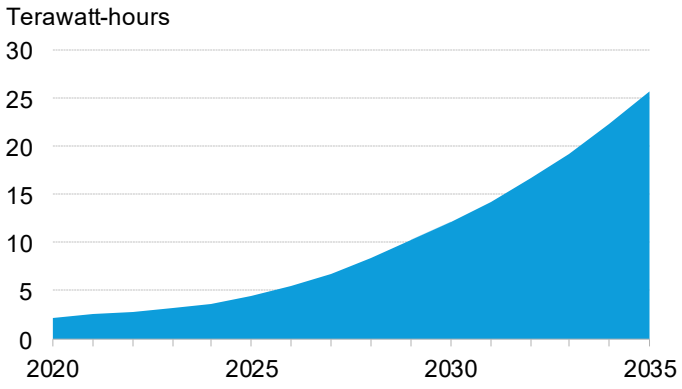
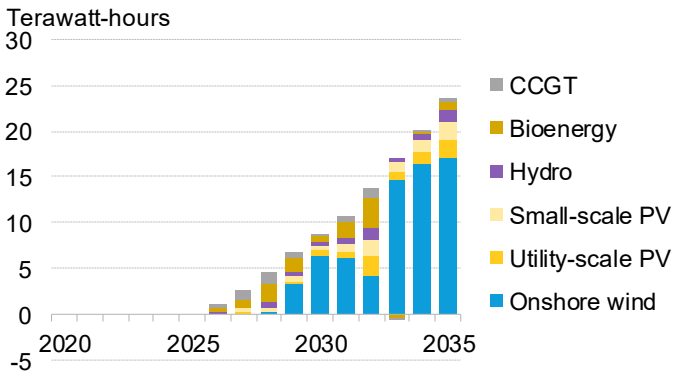


Figure 42: Incremental generation needed to meet Brazil's data center power demand in BNEF's Economic Transition Scenario



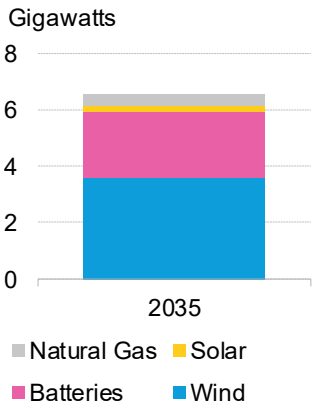
Source: BloombergNEF. Note: Charts show technologies producing more than 0.1 terawatt-hours.

The location of new wind capacity could also influence where new data-center capacity is built as transmission becomes a material bottleneck. Most of Brazil's wind resources and projects are concentrated in the northeast, which also has strong solar resources. This could make the region

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Figure 43: Incremental capacity additions to meet data center power demand in BNEF's Economic Transition Scenario



Source: BloombergNEF.
Note: "Natural gas" includes CCGT and gas peakers net additions.

attractive for large AI training and other compute-intensive workloads that are less sensitive to latency.

The concentration of renewable generation in the northeast already is stressing Brazil's power grid. In 2025, 19% of potential wind generation and 26% of solar generation were curtailed in Brazil. For wind, around 10% of curtailment was caused by energy oversupply, with most of the remainder linked to grid constraints. Large data centers could absorb some of that surplus, particularly in the northeast.

Fossil-fuel risk

BNEF sees little risk that fossil-fuel generation benefits much from data-center power demand. The economics favor clean generation. Brazil's onshore wind LCOE is around $36/MWh, among the lowest across markets tracked by BNEF.

Data center demand does increase the need for firm capacity, but the modeled impact on fossil fuels is limited. BNEF's Economic Transition Scenario sees about 400MW of additional natural gas capacity associated with data-center growth through 2035, or about 5% of total capacity additions, while 2.3GW of battery capacity is added to support firm-capacity needs (Figure 43). The gas capacity requirement attributable to data centers under BNEF's scenario is small compared with the gas capacity Brazil is already building. In March 2026, the country contracted more than 9.5GW of new natural-gas plants and renewed another 5.7GW in a capacity auction that mobilized investment of BRL64 billion ($12 billion).

5.2. India

India's grid challenge is whether local substations and transmission capacity can expand fast enough around data-center hubs

BNEF expects India's data center electricity consumption to rise eightfold from 11TWh in 2025 to 91TWh in 2035. India has substantial power generation capacity, and its interstate grid can move electricity between regions. Clean power sources, including hydro and nuclear, supplied a third of India's electricity in the first seven months of 2026, and data-center operators can buy off-site renewable energy from independent power producers or through captive projects. However, the cost and ease of corporate renewable procurement vary by state because network charges are determined or implemented at the state level. India also lacks a standardized policy for data centers and grid connection approval policy at the national level.

India's grid challenge is whether local substations and transmission capacity can expand fast enough around data-center hubs. BNEF's Economic Transition Scenario expects near-term data centers demand being met largely by greater use of existing coal plants. Renewable procurement can limit this dependence, and cheaper batteries paired with renewables should allow solar and wind to serve more of data centers' round-the-clock demand in the longer term.

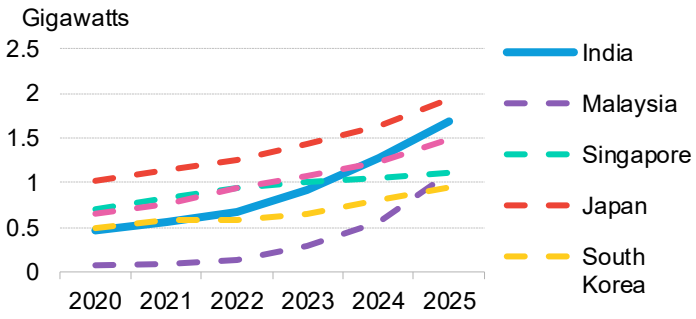
Market overview

India is one of the fastest growing data center markets in the Asia-Pacific region (Figure 44). A large domestic digital economy, expanding cloud and fiber infrastructure, competitive power costs and supportive state policies underpin this. Live IT capacity has quadrupled in six years to about 1.7GW but remains low relative to India's population at roughly 1 watt per capita (Figure 45).

India's market is dominated by co-location facilities serving multiple customers and is concentrated in Maharashtra, which hosts about 56% of operational IT capacity (Figure 46). Mumbai and Navi Mumbai benefit from financial-services demand, cloud regions, dense interconnection and subsea cables. This reinforces their lead as India's main data center hub.

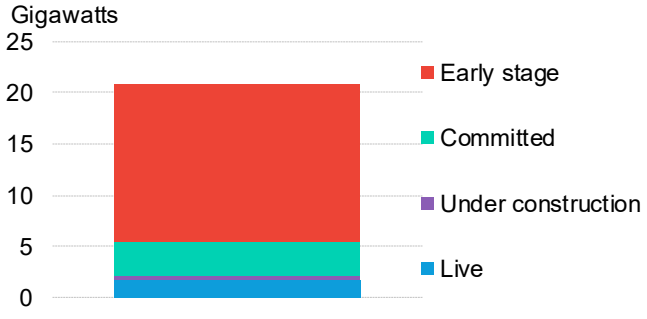
© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Figure 44: Cumulative live IT capacity of Asia-Pacific markets outside mainland China



Source: BloombergNEF, DC Byte.

Figure 45: India data center IT capacity, by project status

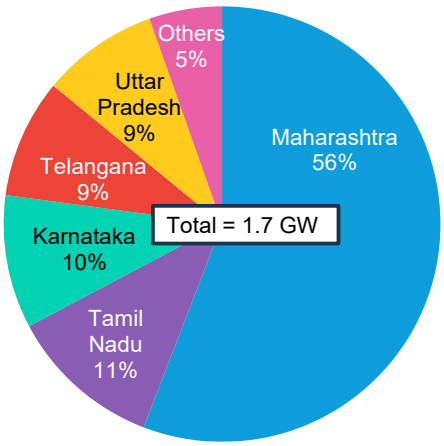


Source: BloombergNEF, DC Byte. Note: Data as of June 10, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction.

India's under-development data center pipeline is far larger than the operating market. The country has about 0.35GW under construction and 3.28GW of projects have secured land, power and permits necessary for construction and an additional 15.5GW at early stages (Figure 47). Much of this pipeline is being driven by hyperscale and AI campuses, which require larger sites and significantly more power than traditional facilities. Maharashtra accounts for about one-third of the pipeline. India's fiber connectivity is also concentrated around Mumbai, which hosts much of the country's subsea cable and internet exchange infrastructure.

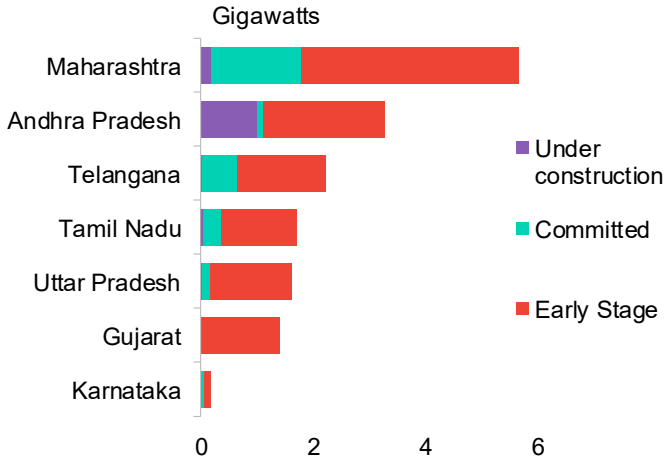
Data center growth is now spreading to other states beyond Maharashtra. Andhra Pradesh, Telangana, Uttar Pradesh Gujarat and Karnataka have introduced data center-specific policies, set capacity targets and offered incentives to attract investment. These states can also offer larger land parcels and, in several cases, better access to renewable-energy resources, making them increasingly attractive for power-intensive AI campuses.

Figure 46: India live IT capacity distribution, by state



Source: BloombergNEF, DC Byte.

Figure 47: India data center pipeline



Source: BloombergNEF, DC Byte. Note: Data as of June 10, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Policy and power procurement

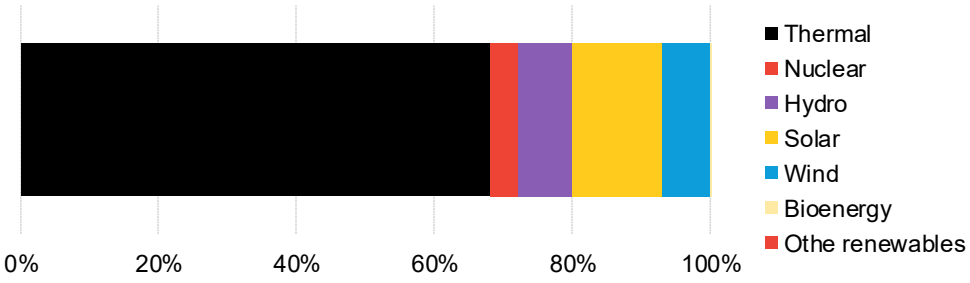
India's generation mix remains heavily weighted toward fossil fuels, with coal and gas accounting for 68% of on-grid power supply

India does not have a national data center policy, although the federal government supports data center development through incentives in some cases. The Union Budget 2026-27 introduced a tax holiday through 2047 for eligible foreign companies providing global cloud services using India-based data centers. India lowered financing barriers for data centers by adding them to the government's Harmonised Master List of infrastructure sub-sectors in October 2022. Infrastructure status gives eligible projects access to financing channels typically available to infrastructure assets, including longer-tenor lending, insurance and pension-fund capital, external commercial borrowings and financing from infrastructure-focused institutions. National building standards now also include data center-specific construction parameters, helping standardize project development and approvals.

Apart from that, India's data center policy frameworks are mainly state-led. At least 16 states have introduced dedicated policies offering combinations of electricity-tax exemptions, retail power tariff reductions, access to land, capital subsidies, dual-substation power supply, dedicated data center parks and single-window approvals. Some states also provide additional incentives if data centers consume a certain minimum share of renewable energy of their total electricity consumption.

India's generation mix remains heavily weighted toward fossil fuels, with coal and gas accounting for 68% of on-grid power supply (Figure 48). India offers multiple power procurement options for commercial and industrial consumers. Clean-power options include off-site bilateral contracts with generators and captive projects jointly developed by consumers and developers. On-site solar can use either a capex model, where consumers own the system, or an opex model, where developers own it and sell power to consumers. Consumers can also buy electricity from power exchanges on an intraday basis.

Figure 48: India electricity generation mix by source



Source: Central Electricity Authority, BloombergNEF. Note: Data through July 2026.

Power access is split across three levels. The Central Transmission Utility (CTU) manages the interstate transmission system; State Transmission Utilities (STU) plan intrastate high-voltage networks; and power distribution companies (discoms) provide most last-mile connections. Under the General Network Access framework, which governs access to India's interstate transmission network, consumers with at least 50MW of load may seek a direct connection. In practice, most data centers still connect through state networks or distribution utilities, and large sites often fund dedicated feeders, bays, transformers or substations.

Some state policies also address power infrastructure costs directly. Maharashtra provides state financial assistance toward transmission lines and substations serving data center parks established by Maharashtra Industrial Development Corporation (MIDC). Tamil Nadu's 2021 policy provided dual-substation supply for sites with at least 50MW of sanctioned load and an

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

additional feeder, funded as a deposit contribution work, above 100MW. These measures can lower development costs and improve coordination.

India's main data center hubs of Maharashtra, Tamil Nadu, Telangana, Uttar Pradesh, Karnataka and Andhra Pradesh offer competitive utility power tariffs of about $81-102/MWh. State incentives further reduce the tariff through electricity tax exemptions and tariff subsidies.

Grid access and infrastructure

Grid capacity is generally allocated on a first-come, first-served basis. Developers apply for load and the utility assesses whether the network can accommodate it. Assets serving mainly one project, such as dedicated feeders, connection bays or substations, may need to be funded by the developer. Broader upgrades that strengthen the shared network are funded by the utility and recovered through regulated network charges. Rules vary by state and connection type, and works may be built by the utility with developer contributions or, where permitted, by the developer with utility approval.

Developers have limited visibility into competing applications and available capacity at individual substations, making connection timelines difficult to predict. There is no strong evidence that speculative data center applications are materially blocking grid queues in India. The more immediate issue is large connection requests in already concentrated markets such as Maharashtra, where utilities may need to expand substations and transmission infrastructure to accommodate new demand.

India has substantial power generation capacity and an interconnected interstate grid, but connection timelines for large data centers can depend on whether sufficient transmission and local network infrastructure is available at the project location. Smaller urban facilities can often connect within six to 12 months where distribution capacity already exists, while campuses above 100MW may take 24-36 months or longer where upstream augmentation, new substations or transmission lines are required.

India is expanding its transmission network as electricity demand rises, with data centers increasingly reflected in grid planning

India is expanding its transmission network as electricity demand rises, with data centers increasingly reflected in grid planning. The CEA's National Electricity Plan sets the longer-term roadmap for both interstate and state transmission systems. Within this framework, CTUIL's rolling plan through 2030-31 identifies specific expansion needs for the interstate grid, taking into account large new industrial and data center loads. The federal government also approved 1.86 trillion rupees ($19.6 billion) for the third tranche of the Green Energy Corridor program in September 2026. About three-quarters of funding will expand intra-state transmission networks, enabling the grid to accommodate 135GW of renewable projects through March 2033. The remainder will fund battery energy storage projects.

States are separately expanding their own transmission networks around major data center clusters. In Navi Mumbai, for example, Maharashtra is developing a new 765kV substation and transmission connection to support 3.5GW of expected data center demand. West Bengal is planning a new 220/132/33kV substation to meet about 120MW of additional data center demand. Andhra Pradesh is planning new 765kV, 400kV and 220kV transmission infrastructure around Visakhapatnam to support more than 15GW of expected data center demand by 2034. This includes new substations and high voltage transmission lines for major data center clusters in the state. The challenge is whether these national and local upgrades can be delivered quickly enough as large campuses connect.

Renewable procurement can reduce the emissions associated with data center demand, but annual procurement does not necessarily provide clean power every hour. When renewable

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

output is low, facilities may still rely on grid electricity or backup generation. The climate impact of growing data center demand also will depend on renewable generation, storage and grid infrastructure expanding alongside demand.

Table 19: India's data center grid connection framework

Policy / mechanism	Policy / mechanism status	Relevance for India	BNEF take
Maturity requirements	Not present	Medium	In the major hub of Maharashtra, the gap between sanctioned and released load indicates that existing network capacity is insufficient to accommodate all approved data center demand immediately, requiring additional transmission and substation infrastructure. Where large projects compete for limited grid capacity, India could benefit from a standardized process to assess project readiness. A first-ready-first-connected model could prioritize projects based on site control, approvals, financing and construction progress, reducing the risk that immature applications block viable projects. This would not solve grid constraints but could allocate existing capacity to projects more likely to proceed.
Financial commitments	As per central power regulator guidance, a consumer of at least 50MW seeking a direct interstate-grid connection pays a $5,320 application fee. Within one month of the nodal agency issuing the connectivity offer, the consumer must provide connectivity bank guarantees of $53,191 plus $2,128/MW as financial security and enter into a network-access agreement. State regulations differ.	Medium	Financial-security requirements such as bank guarantees may help deter speculative capacity requests and avoid unnecessary network buildout when transmission and substation capacity is already constrained. However, the $2,128/MW bank guarantee is more than an order of magnitude below the roughly $50,000/MW that US data center developers told BNEF they would be willing to pay to secure a place in the connection queue in the US. In Maharashtra, utilities have sanctioned about 6GW of data center load, but only around 964MW has so far been granted. With more large projects being announced, the connection queue could grow further.
Competitive processes for land or power	India does not use a standard competitive process to allocate grid capacity to data centers. Public industrial land may be allocated through auctions or individual application review—Maharashtra industrial-land policy provides both options—but power availability is considered separately.	Medium	Where governments allocate scarce, power-ready industrial sites, a competitive process could favor projects with credible delivery plans. This is most relevant in established hubs like Maharashtra where land and grid capacity are getting limited; ordinary grid connections should remain nondiscriminatory.
Cluster studies	Not present	Low	Evidence does not yet support whether cluster studies are effective.
Special economic zones	All the data center hubs in India have state industrial agencies which allocate industrial park or zone land to data centers. These zones may be specifically designated for digital infrastructure or open to general industrial activities. Special economic zones and industrial parks are generally more likely to have sufficient power supply and substation capacity, potentially cutting grid connection lead times.	High	Data center developers are very likely to continue preferring industrial estates. Besides providing easier access to power, such areas offer simpler land permitting processes and lower likelihood of public rejection.
Bring-your-own-generation (BYOG)	Indian law allows captive generation and dedicated transmission lines but there is no requirement or favorable treatment for demand connections.	Low	India does not face a generation constraint for meeting data center demand.

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

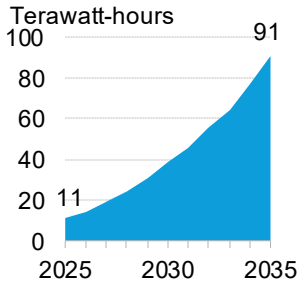
Policy / mechanism	Policy / mechanism status	Relevance for India	BNEF take
Flexibility requirements	Not present	Medium	India's Ministry of Power has acknowledged that gigawatt-scale data centers could affect grid stability and is expected to introduce grid-flexibility requirements in the National Electricity Policy 2026.

Source: BloombergNEF

Long-term supply and demand

We anticipate two tipping points in the competitive economics of different energy technologies due to the dramatic decline in the cost of PV and onshore wind technology in the past decades. The first tipping point comes when the cost of building new wind and solar becomes cheaper than new gas or coal plants. From this point on, wind and solar would be the preferred source of bulk generation. The second tipping point occurs when it is cheaper to build and operate new onshore wind or solar PV than to run an existing amortized coal or gas plants providing bulk electricity. It makes economic sense to replace that fossil plant with a new unit of renewables capacity once the LCOE of solar or wind falls below the short-run marginal cost of an existing fossil fuel plant. Under BNEF's Economic Transition Scenario, coal remains the most affordable source of firm power for data centers in the near term. Existing coal plants are relatively cheap to operate and can provide around-the-clock electricity, so they meet much of the additional demand (Figure 49). The balance begins to shift in the late 2030s in this scenario: solar generation rises strongly from 2037, while wind also makes a material contribution, and the incremental role of coal falls sharply.

Figure 49: India data center power demand in BNEF's Economic Transition Scenario



Source: BloombergNEF.
Note: Data from New Energy Outlook 2026.

Storage supports this transition by making variable solar and wind generation more dispatchable, allowing clean power to better serve the relatively flat and continuous electricity demand profile of data centers. The levelized cost of new solar-plus-storage undercuts the marginal cost of running existing coal plants in 2041, further strengthening the economics of clean firm power relative to operating existing coal and accelerating build-out of solar plus storage (Figure 50).

The Economic Transition Scenario also shows the generation and storage capacity deployed to meet rising data center electricity demand (Figure 50). The capacity outlook shows why higher coal generation does not necessarily mean substantial new coal construction. Despite large increases in coal-fired generation through the mid-2030s, relatively little additional coal capacity is added. This reflects greater utilization of the existing fleet and the fact that India has already crossed Tipping Point 1, where cost of building new renewable capacity is cheaper than building new coal plant. Battery deployment starts rising from 2031 and accelerates sharply in 2034-2035, several years before the major increase in solar capacity from 2037. This suggests storage initially plays a broader system flexibility role, shifting generation from the existing and planned renewable fleet and reducing curtailment. Wind capacity also expands through the mid-2030s, while the later surge in solar coincides with solar-plus-storage approaching Tipping Point 2 in 2041.

India's government planning outlook provides broader system context beyond data centers. The Central Electricity Authority's March 2026 resource-adequacy study, covering fiscal years 2026-27 through 2035-36, projects 315GW of coal and 786GW of non-fossil generation capacity, plus 174GW/888GWh of storage, comprising 80GW/321GWh of batteries and 94GW/567GWh of pumped storage.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Open-access rules allow commercial and industrial consumers to buy electricity directly from renewable generators and use the utility grid to deliver it to their facilities

Open-access rules allow commercial and industrial consumers to buy electricity directly from renewable generators and use the utility grid to deliver it to their facilities. Data centers are classified as industrial consumers across Indian states, meaning they often can pay high-voltage industrial tariffs. BNEF therefore uses applicable industrial tariffs and grid charges for comparisons in our analysis. The economics of renewable procurement are also affected by network charges imposed by local utilities for using their grids. Cross-subsidy surcharges make up a significant share of these charges and range from $13/MWh to $21/MWh in major data center hubs. Maharashtra, which hosts 56% of live IT capacity, has the highest cross-subsidy surcharge, at $21/MWh for industrial consumers. These charges vary by state and can change, making savings relative to utility power difficult to predict.

Figure 50: Incremental generation needed to meet data center electricity demand, BNEF Economic Transition Scenario

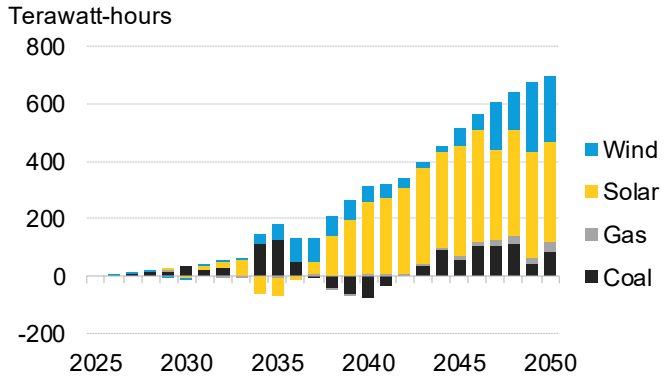
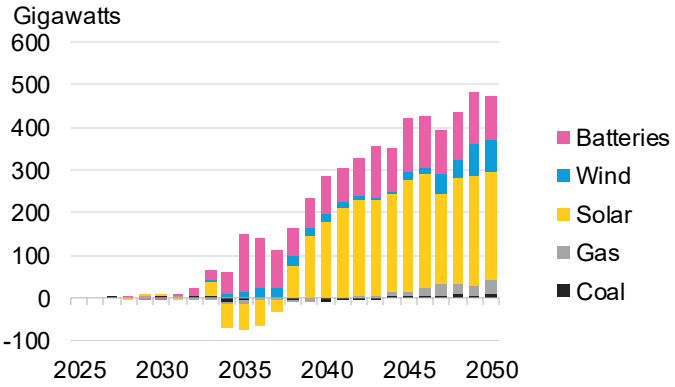


Figure 51: Marginal change in installed capacity needed to meet India's data center power demand in BNEF's Economic Transition Scenario



Source: BloombergNEF. Note: Data from New Energy Outlook 2026. The Economic Transition Scenario is BNEF's assessment of how the energy economy could evolve due to cost-based technology change to 2050. It combines near-term market activity, the uptake of new consumer-facing energy products, least-cost system modeling and trend-based analysis to describe the deployment of commercially available technologies. PV refers to photovoltaic solar. Charts show technologies producing more than 0.1 terawatt-hours. Values show the difference between the Economic Transition Scenario and a scenario without additional data-center demand. Positive and negative values can reflect different timing of capacity investment and should not be interpreted as assets built exclusively for data centers or as plant retirements.

Captive and group-captive projects can reduce some of these costs because the data center owns part or all of the associated renewable plant. This ownership can avoid certain utility surcharges, although the data center still pays network charges when power travels through the grid.

Data-center demand is today supporting the development of new renewable capacity. CleanMax, an independent power producer, mentioned in its IPO filing in 2026 that data and AI customers accounted for 42% of its 5.7GW contracted renewable portfolio by March 2026, up from 14% two years earlier. Data center operators including Equinix and CtrlS have also backed new captive solar and wind projects specifically to supply their India data centers. Corporate clean-energy targets and state incentives provide additional support, and data center operators are already signing long-term renewable-power agreements and investing in captive projects.

The concentration of data centers in hubs such as Maharashtra can strain local substations and transmission networks even when surplus renewable power is available elsewhere in the country.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Other states are using land, power and tax incentives to attract new projects and diversify development beyond established hubs.

In locations where grid capacity is scarce, allocating connections to projects that can demonstrate land readiness, permits, financing and credible construction timelines could help manage connection queues while reducing the risk that immature projects reserve limited capacity.

Fossil-fuel risks

With coal currently supplying the largest share of India's electricity, grid-connected data centers remain exposed to coal-heavy power supply in the short term

Clean generation is already cost competitive in India with solar's levelized cost of electricity at around $31/MWh. However, solar and wind output is intermittent and does not always align with data centers' 24/7 electricity demand, leaving facilities dependent on grid power when renewable generation is unavailable. With coal currently supplying the largest share of India's electricity, grid-connected data centers remain exposed to coal-heavy power supply in the short term.

India has already crossed Tipping Point 1, where building a new solar or wind project is cheaper than building a new coal plant. Solar reached Tipping Point 2 in 2024, when building a new project became cheaper than running an existing coal plant (Figure 52). Yet cost competitiveness alone does not eliminate coal demand as data centers require firm, around-the-clock power. Solar-plus-storage reaches Tipping Point 2 in 2041 (Figure 53).

Figure 52: Levelized cost of new renewables vs short-run marginal cost of fossil fuel power plants in India

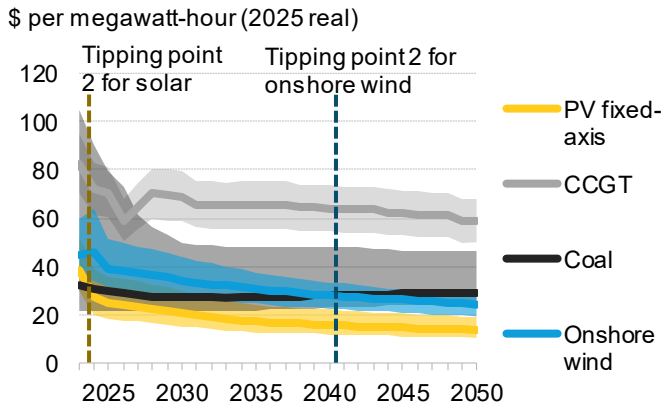
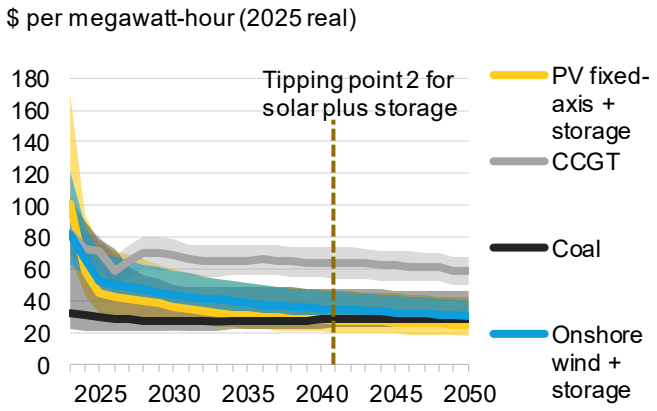


Figure 53: Levelized cost of new renewables paired with storage vs short-run marginal cost of fossil fuel power plants in India



Source: BloombergNEF. Note: Data from Levelized Cost of Electricity 2026 (web | terminal). Four-hour battery storage is assumed. Tipping point 2 refers to the year in which LCOE of the particular renewable technology falls below the marginal cost of running existing coal power plants.

The extent of near-term reliance on coal will depend on how quickly storage and wind become cost competitive and scale to support new renewables capacity addition to meet data center demand.

Corporate clean-power procurement provides a near-term route to reduce reliance on fossil-fuel generation. BNEF estimates that off-site solar and wind power purchase agreements can be cheaper than utility tariffs, allowing data centers to supplement grid supply with renewables in the short term. Adoption has been constrained by differences in state-level network charges and uncertainty over how these charges may change. More consistent and predictable rules could accelerate clean power procurement, with storage added as its economics improve.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

5.3. Indonesia

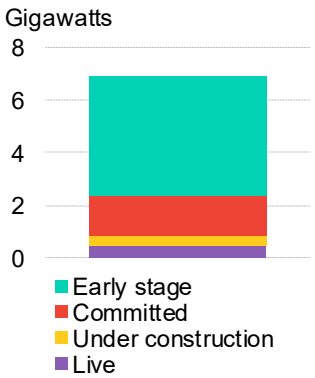
Indonesia's data-center market is expanding rapidly from a relatively small base, with BNEF expecting electricity consumption from data centers to rise from 3TWh in 2025 to 10TWh in 2030 and 26TWh by 2035. Development is concentrated in Greater Jakarta and Batam. The power system is heavily reliant on fossil fuels. Coal and gas supplied a combined 82% of state-owned utility Perusahaan Listrik Negara's (PLN) on-grid power in 2025, and current rules do not allow consumers to buy off-site electricity from third-party generators.

Grid-connection timelines are relatively short in Greater Jakarta, where the Java-Bali system has substantial generation headroom. Physical network constraints become more important where projects require new substations or transmission lines. Batam has less spare generation capacity. The main fossil-fuel in risk in Indonesia comes from greater use of existing coal and gas generation in the near term and potential additional gas capacity over time, rather than widespread reliance on on-site fossil power. PLN offers clean-power products and captive generation remains possible, but Indonesia does not yet have a clearly established route for data centers to support new renewable capacity with demonstrable additionality.

Market overview

Indonesia combines the world's fourth-largest population, one of the largest and fastest-growing economies, and a young population that spends more than three hours a day on social media. Data-center development began accelerating during the Covid-19 pandemic as demand for low-latency digital services increased. Around the same time, Batam benefited from capacity spillovers from neighboring Singapore, which imposed a moratorium on new data centers from 2019 to 2022.

Figure 54: Indonesia data center IT capacity, by project status



Source: BloombergNEF, DC Byte. Note: Data as of June 10, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction.

Indonesia had about 450MW of live data-center IT capacity as of June 2026, relatively small for a country of its size, but more than four times that amount is under construction or committed (Figure 54). Local companies DCI Indonesia and NeutraDC remain among the largest developers by live, under-construction and committed capacity. Foreign developers are ramping up investment.

The country's two main data-center hubs are Greater Jakarta and Batam (Figure 55). Both offer relatively low electricity tariffs, at about $66/MWh in Greater Jakarta and $73/MWh in Batam. These prices are partly supported by a legally-mandated cap on fossil-fuel prices and a near-freeze in retail power tariffs since 2017. Neither policy is guaranteed to continue indefinitely, and the Energy Ministry floated the possibility of relaxing the coal-price cap in June 2026.

Developers frequently locate projects in industrial estates and special economic zones. Nongsa Digital Park in Batam is an example of a zone specifically focused on digital infrastructure. Greater Jakarta has numerous industrial estates serving multiple sectors. These locations can offer simpler land permitting, existing power and other supporting infrastructure. Special economic zones also provide streamlined business licensing and fiscal incentives such as corporate tax holidays and import-duty exemptions for certain equipment.

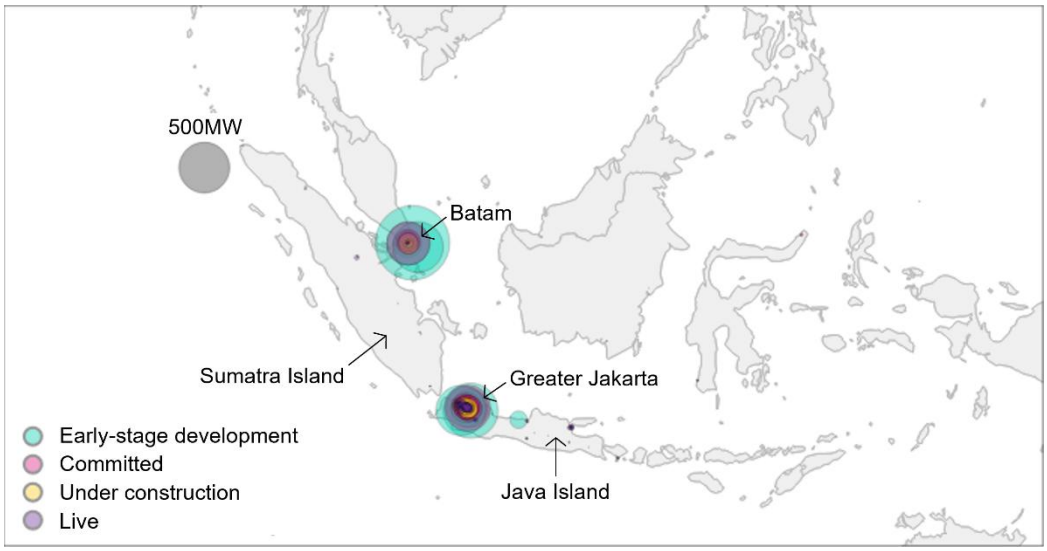
Land and generation capacity are not currently the main constraints at the national level. The issue is fiber connectivity and power generation infrastructure are spread unevenly across the country. Internet exchange points, subsea cables and other network infrastructure are concentrated in Java and Sumatra. In interviews with BNEF, developers also cited a limited pool of workers with data-center-relevant skills and the absence of a single coordinated government strategy or one-stop shop for data-center investment. Government agencies largely pursue their

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

own initiatives, and Indonesia does not offer data-center-specific fiscal incentives outside the broader benefits available in designated zones.

Figure 55: Indonesia's data center capacity pipeline



Source: BloombergNEF, DC Byte. Note: Data as of Sept. 23, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction. MW is megawatt.

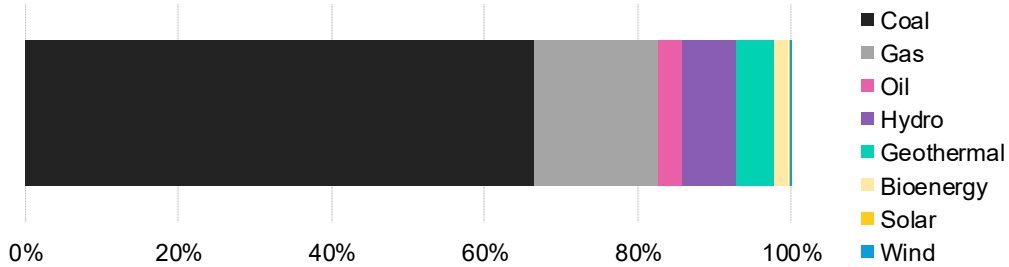
Policy and power procurement

Indonesian law does not provide retail choice or allow off-site corporate power procurement from third-party generators

PLN is the single buyer and seller of electricity across nearly all of Indonesia. Other utilities may operate only in specific areas such as industrial estates, factory complexes, mines, ports and remote villages. These private utilities can be relevant to data centers located in industrial estates. Batam is a special case: electricity is supplied by PLN Batam, a semi-autonomous PLN subsidiary with its own tariffs and service offerings.

PLN's generation mix remains heavily weighted toward fossil fuels. Coal accounted for 66% of on-grid power supply in 2025 and gas another 16% (Figure 56). Indonesian law does not provide retail choice or allow off-site corporate power procurement from third-party generators. Data centers seeking to reduce emissions therefore rely mainly on captive generation or renewable energy certificates (RECs), alongside products offered by PLN.

Figure 56: PLN power generation mix in 2025



Source: BloombergNEF, Perusahaan Listrik Negara (PLN), Ministry of Energy and Mineral Resources. Note: Includes PLN's purchases from independent power producers.

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Grid-connection timelines are relatively short. A medium-voltage connection, supporting loads of up to 30MW, can be completed within six to eight months from initial application to energization if sufficient network infrastructure is available nearby. After an application, PLN typically spends about two months discussing the demand schedule, conducting site surveys, preparing designs and completing technical due diligence. Signing an electricity-supply agreement and paying the connection fee and deposit are followed by four to six months of construction and energization.

Most new data-center projects are large enough to require high-voltage connections, which typically take 18-36 months. Timelines approach the upper end of this range when projects require a new substation or substantial new transmission infrastructure, because land surveys, permitting and acquisition add time. Industrial estates can shorten the process because high-voltage connections and permitted land may already be available, reducing total lead times to as little as 18 months.

Greater Jakarta sits on the Java-Bali grid, where generation availability is currently high. The system has a reserve margin of about 45%, which PLN plans to reduce to 34% by 2034. Coal and gas plants on the Java-Bali grid operated at capacity factors of about 62% and 26%, respectively, in 2025. This suggests that generation capacity itself is unlikely to be the main near-term constraint in the country's largest data-center hub.

Network capacity could be more limiting. PLN has consistently fallen short of its transmission-expansion targets: in the first half of 2026, its national transmission network grew by 0.6%, or 471 circuit-kilometers, while high-voltage substation capacity rose by 0.3%, or 500 megavolt-amperes. Fuel supply can also affect reliability, as highlighted by the June 2026 Java blackout due to disrupted coal deliveries.

Batam has less generation headroom, with a reserve margin of only 16%. PLN Batam offers dual-substation connections as a premium service with binding service-level agreements and a tariff of $105/MWh. In areas supplied directly by PLN, arrangements such as dual connections or exclusive use of a substation transformer are generally negotiated with individual projects.

Grid access and infrastructure

Developers can also use on-site generation to avoid some grid infrastructure requirements, but this is currently less attractive because grid electricity is relatively inexpensive.

Indonesia's grid-connection challenge is primarily physical and location-specific. Where connections take longer, the main cause is the need to build new substations and transmission lines rather than the connection process itself. Industrial estates and special economic zones can reduce this constraint by concentrating development in locations where power infrastructure is already available, but such powered land is getting increasingly scarce.

The pressure is uneven across the country. Greater Jakarta benefits from ample generation headroom on the Java-Bali grid, but transmission and substation expansion has lagged PLN's targets. Batam has less spare generation capacity. As a result, local network readiness and the availability of powered sites shape where data centers can connect and how much infrastructure is required to serve them. While Indonesia is not facing a general shortage of industrial land, data-center operators are increasingly competing for a narrowing pool of large, infrastructure-ready sites with access to sufficient grid capacity, according to industrial estate developer Puradelta Lestari and real estate service firm CBRE.

Developers can also use on-site generation to avoid some grid infrastructure requirements, but this is currently less attractive because grid electricity is relatively inexpensive. On-site power is therefore more likely to become relevant if connection timelines lengthen materially.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Table 20: Indonesia's data center grid connection framework

Policy / mechanism	Policy / mechanism status	Relevance for Indonesia	BNEF take
Maturity requirements	There are no formal requirements to demonstrate maturity before applying for grid connection. However, PLN sometimes prioritizes more proactive developers at its discretion.	Medium	Indonesia's grid connection queue is likely to grow. In this case, PLN could shift from ad-hoc project prioritization to a systematic first-ready-first-connected mechanism based on established project maturity criteria. This approach would provide developers with more predictable grid connection lead times and PLN with greater certainty of power consumption ramp-up.
Financial commitments	Payment is required only at the point of electricity supply agreement signing	Medium	If more large data center projects continue to join the connection queue, PLN could consider asking for a guarantee at the point of application, which could discourage speculative submissions
Competitive processes for land or power	Not present	Low	Not yet needed due to current abundance of land and power supply, at least in the Java-Bali grid
Cluster studies	Not present	Low	Evidence does not yet support whether cluster studies are effective
Special economic zones	Data centers in Indonesia are commonly built in special economic or industrial zones, which often have dedicated power supply and transmission infrastructure. These zones may be specifically designated for digital infrastructure or open to general industrial activities.	High	Data center developers are very likely to continue preferring special economic and industrial zones in Indonesia. Besides easier access to power, such areas also offer a simpler land permitting process and a lower likelihood of public rejection. In addition, special economic zones offer fiscal incentives.
Bring-your-own-generation (BYOG)	Data center developers are allowed to construct captive power facilities, but this rarely happens as grid power in Indonesia is very cheap. There is no requirement.	Medium	BYOG could accelerate energization in cases where a new substation and substantial new grid lines need to be constructed otherwise. However, captive power is likely more expensive than Indonesia's low-cost grid power and current grid connection lead times are not yet long enough to justify BYOG's extra costs.
Flexibility requirements	PLN does not ask for demand flexibility. In contrast, it offers optional service-level agreements that guarantee very low supply interruption.	Medium	May be needed in the Batam grid due to its relatively low reserve margin, but not in the Java-Bali grid.

Source: BloombergNEF. Note: PLN refers to Perusahaan Listrik Negara, Indonesia's state-owned power utility. PPA is power purchase agreements.

Long-term supply and demand

In BNEF's Economic Transition Scenario, coal and gas remain the most affordable options for providing the electricity supply that data centers require in the short term (Figure 57).

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Renewables, particularly solar, become more economically competitive over the longer term (Figure 58).

Figure 57: Indonesia data center power demand, BNEF Economic Transition Scenario

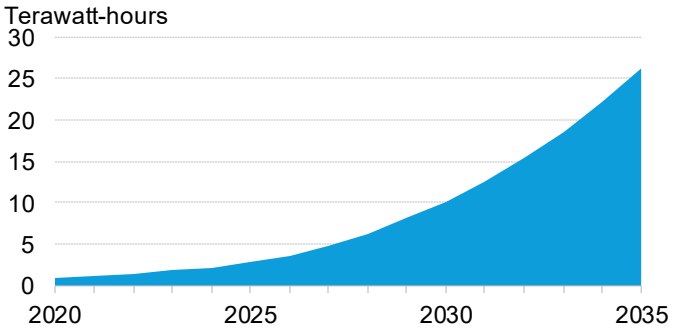
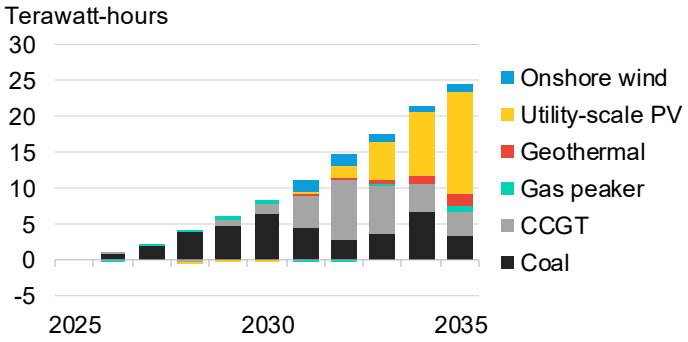


Figure 58: Incremental generation needed to meet Indonesia data center power demand in BNEF Economic Transition Scenario



Source: BloombergNEF. Note: Data from New Energy Outlook 2026. The Economic Transition Scenario is BNEF's assessment of how the energy economy could evolve due to cost-based technology change to 2050. It combines near-term market activity, the uptake of new consumer-facing energy products, least-cost system modeling and trend-based analysis to describe the deployment of commercially available technologies. CCGT is combined-cycle gas turbine and PV refers to photovoltaic solar. Charts show technologies producing more than 0.1 terawatt-hours.

PLN's power development plan aims to install 42GW of clean-power capacity between 2025 and 2034, equivalent to 71% of the total capacity additions planned over this period. However, PLN has a poor track record of meeting its renewable-energy deployment targets, as most recently exemplified by reaching less than half of its 2025 renewables capacity addition goals, based on Energy Ministry data. BNEF does not expect the full 42GW goal to be achieved.

Separately, the government launched a program in August 2026 targeting 100GW of solar capacity by 2029. Meeting this goal would require average annual installations of 33.3GW from 2027 to 2029, about 57 times Indonesia's solar installation rate in 2025, a pace BNEF considers impractical.

For data centers, current market rules limit their ability to materially accelerate renewable-energy deployment on their own

For data centers, however, current market rules limit their ability to materially accelerate renewable-energy deployment on their own. Low-cost grid electricity and relatively short grid-connection lead times reduce the incentive to build captive power plants, clean or otherwise. Data-center operators cannot contract independent power producers to build renewable projects through off-site corporate power procurement. Operators can buy unbundled RECs from PLN to offset their emissions, but this has no additionality impact as the renewable capacity already exists.

PLN also has a Dedicated Source program, which it describes as a mechanism that allows participating power consumers to co-develop clean-power plants with PLN and then purchase electricity bundled with RECs from those projects' future output. Microsoft signed a 10-year agreement with PLN for 200MW of solar power supply under this program. In November 2022, PLN concluded a similar deal with Amazon Web Services for solar power from four projects with a total capacity of 275 megawatts-peak.

The Dedicated Source program has a potentially stronger additionality claim than a simple REC purchase, but it remains contentious. Eligible projects are limited to those already listed in PLN's

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

power development plan, suggesting that PLN intends to build or procure them regardless of a power consumer's participation. Moreover, PLN currently offers Dedicated Source RECs from the already-operational Ijen geothermal power plant, further complicating the program's claim to additionality. On the other hand, PLN has historically fallen short of its renewable-energy installation targets, suggesting Dedicated Source participants could help bring planned clean-power capacity online.

Fossil-fuel risks

The extent of the fossil-fuel growth will also depend on how much planned clean-power capacity is delivered and whether data centers can support additional renewable energy capacity

Indonesia's near-term fossil-fuel risk arises primarily from greater use of its existing coal- and gas-fired power system as data-center demand grows. A partial moratorium introduced in 2022 limits the outlook for large additions of new grid-connected coal capacity, but the existing coal fleet still has substantial unused capacity.

The extent of the fossil-fuel growth will also depend on how much planned clean-power capacity is delivered and whether data centers can support additional renewable energy capacity. Indonesia does not yet have a clearly established route for data centers to support renewable-capacity expansion with demonstrable additionality. Current options include captive generation, RECs and PLN's Dedicated Source program, but each has limitations or uncertainty around additionality.

For data-center demand to play a larger role in renewable-energy deployment, developers would need procurement routes that create a clearer link between their electricity purchases and new clean-power capacity. Direct contracting with new renewable projects through off-site corporate PPAs is one possible mechanism. Other approaches could also achieve the same objective if corporate demand is material to whether new clean-power projects are built.

5.4. Malaysia

Malaysia is currently Southeast Asia's largest data-center market and its electricity demand from data centers is set to rise rapidly, from 7TWh in 2025 to 33TWh in 2030 and 45TWh by 2035. Almost all development is concentrated in Peninsular Malaysia, where 93% of grid power is generated from coal and gas. This makes the country an important test of how rapid data-center growth can be accommodated in a fossil-heavy power system.

Malaysia's main grid challenge is not a large queue of speculative projects: data centers are screened before they can formally apply for a grid connection, reducing some of the queue-quality problems seen in other markets. More material constraints are generation and network capacity. The climate risk therefore comes mainly from how new demand is supplied – through greater use of existing coal and gas plants in the near term and potentially substantial new gas capacity over time. At the same time, Peninsular Malaysia allows large consumers to buy renewable electricity from independent generators. This gives data centers a route to support additional clean-power capacity and reduce the share of new demand met by fossil fuels.

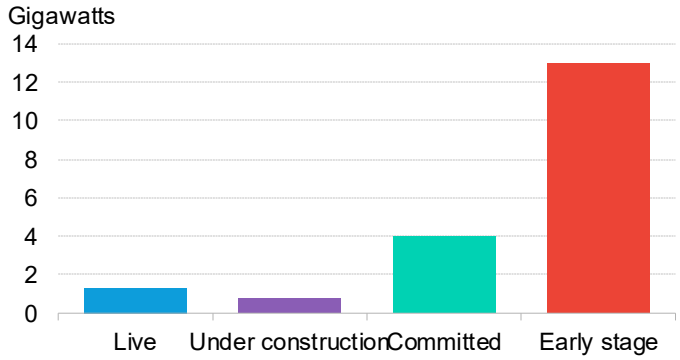
Market overview

Malaysia's live data-center IT capacity grew 10-fold to 1.3GW in June 2026 from 125MW in 2022, with another 4.7GW under construction or committed (Figure 59). This expansion has taken place amid strong government support, with Malaysia recording $95 billion in investments related to data centers from 2021 to the first half of 2026. The rapid buildout is also placing pressure on power and water infrastructure. Data centers accounted for about 6% of Peninsular Malaysia's

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

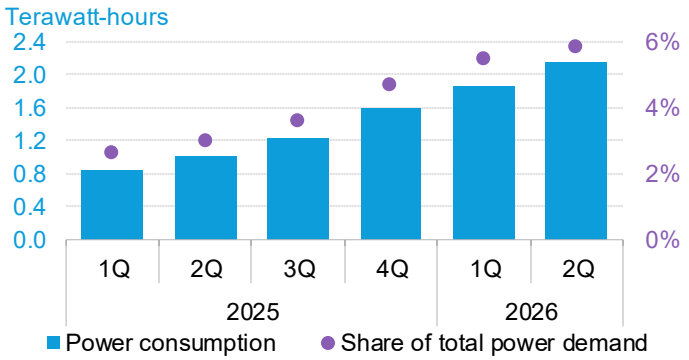
power demand in the second quarter of 2026, and that share reached 9.3% in August 2026 (Figure 60).

Figure 59: Malaysia data center IT capacity, by project status



Source: BloombergNEF, DC Byte. Note: Data as of June 10, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction.

Figure 60: Data center power consumption in Peninsular Malaysia

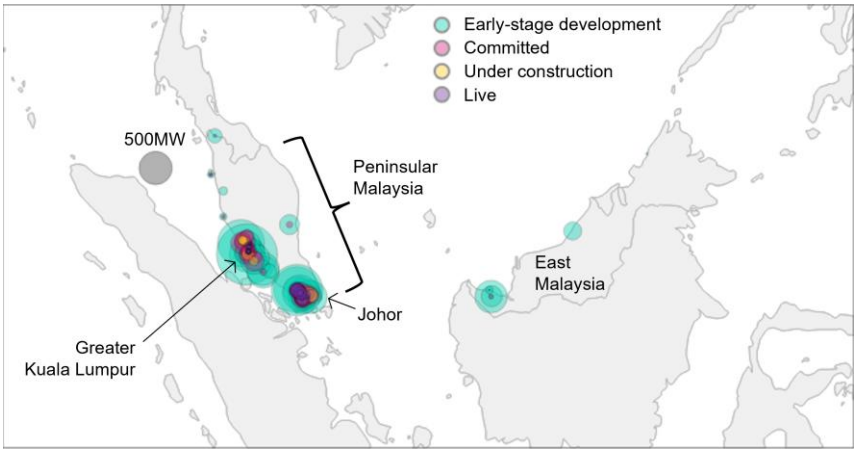


Source: BloombergNEF, Tenaga Nasional Berhad.

As power and water supplies have become more constrained, Malaysia has tightened project approvals and introduced data-center-specific power tariffs

Development is concentrated around Kuala Lumpur and in Johor (Figure 61). As power and water supplies have become more constrained, Malaysia has tightened project approvals and introduced data-center-specific power tariffs that are higher than those for other power consumers. Malaysia's inter-agency Data Center Task Force appointed the Malaysian Investment Development Authority (MIDA) as the central agency for data-center project approvals. Developers submit information including long-term development plans, investment size, expected economic impact and targeted efficiency metrics. MIDA takes about six months to evaluate applications before approving prioritized projects.

Figure 61: Malaysia data center pipeline



Source: BloombergNEF, DC Byte. Note: Data as of Sept. 23, 2026. Committed capacity is defined as projects that have secured land, power and permits necessary for construction. MW is megawatt.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Some data-center developers interviewed by BNEF raised concerns about limited transparency in the project-prioritization process. While application requirements are relatively clear, the steps and timelines used to evaluate projects are less certain. Developers also have limited information on which project characteristics are prioritized and no visibility on their position in the approval queue.

Policy and power procurement

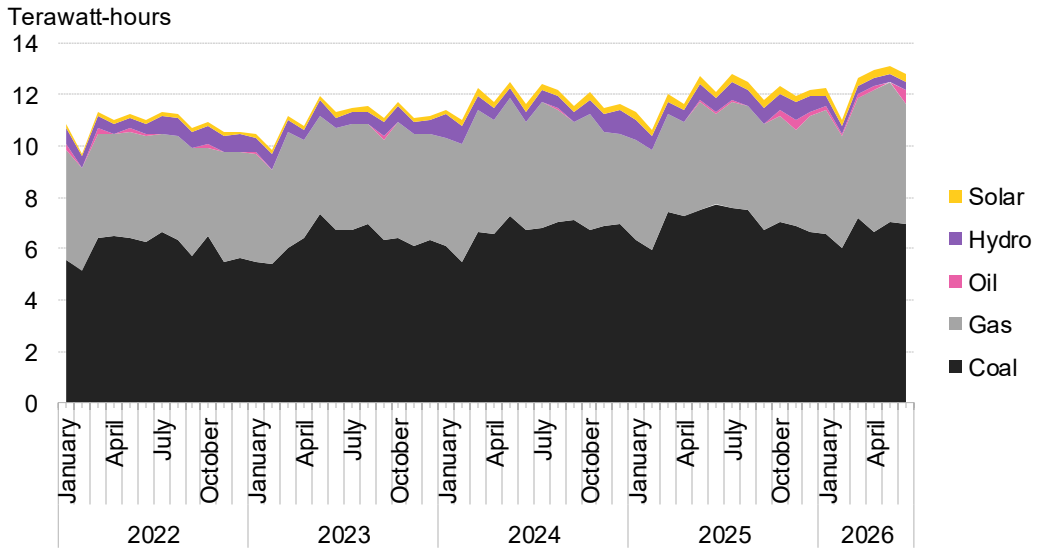
Peninsular Malaysia's power system remains heavily dependent on fossil fuels, with renewables contributing about 5% of generation (Figure 62). However, new data centers are required to source at least 30% of their electricity from clean sources. They can clear this threshold by procuring renewable power from third-party generators through the Corporate Renewable Energy Supply Scheme (CRESS) or developing on-site clean generation, as YTL is doing at its Kulai data center park.

Data centers can make a formal grid-connection application to state utility TNB only after receiving MIDA approval, reducing the likelihood of phantom projects entering the connection queue

Data centers can make a formal grid-connection application to state utility Tenaga Nasional Berhad (TNB) only after receiving MIDA approval, reducing the likelihood of phantom projects entering the connection queue. Developers report that obtaining a high-voltage connection can nevertheless take three to four years from initial discussions to energization. The first eight to 12 months involve initial discussions, feasibility studies and negotiation of an electricity supply agreement (ESA). Meeting conditions in the ESA and other contractual requirements can take up to another year, followed by up to two years of construction.

Connection timelines vary according to existing network infrastructure. More developed states are more likely to have high-voltage networks with greater redundancy, which can reduce build times. A potential bottleneck is the lack of up-to-date public information on available substation capacity, although technical consultants may have access to older versions of this information from previous government tenders.

Figure 62: Monthly electricity generation in Peninsular Malaysia, by technology



Source: Grid System Operator, BloombergNEF. Note: Chart shows generation from power plants connected to the transmission grid and excludes co-generation plants.

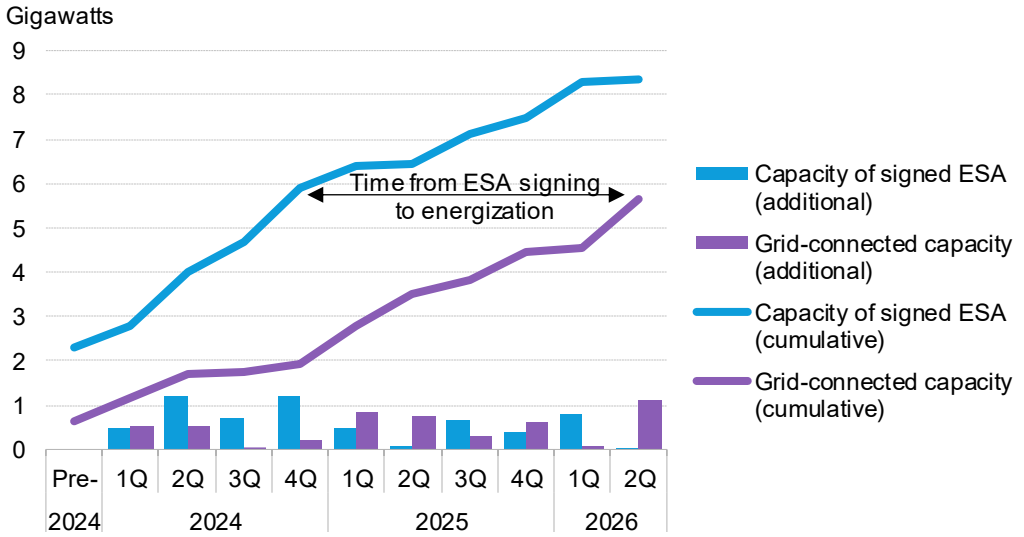
© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

TNB takes about 18 months, on average, to energize data centers after signing electricity supply agreements

Developers can also use TNB's Green Lane Pathway, an accelerated connection process that aims to enable energization within 12 months by expediting approval and setup. TNB reports indicate that data centers take about 18 months on average to energize after signing an ESA. By the second quarter of 2026, TNB had energized 42 projects with total maximum demand of 5.65GW; cumulative signed ESA capacity had reached 5.9GW six quarters earlier (Figure 63).

Figure 63: TNB data center electricity supply agreement (ESA) capacity and completed grid connections



Source: BloombergNEF, Tenaga Nasional Berhad (TNB).

Data centers with a high-voltage connection are classified under TNB's Ultra High Voltage tariff, where energy charges are about 25% higher than for other power consumers at the same connection voltage range. Facilities wishing to purchase bundled renewable energy certificates can do so through TNB's Green Electricity Tariff program at $7.60-12.70/MWh. Subscribers are exempt from the normal tariff's monthly adjustment, which is tied to fuel-procurement costs, and the 1.6% Renewable Energy Fund surcharge.

Grid access and infrastructure

The more material constraints are physical generation and network capacity limitations, which are contributing to tighter project approvals and longer connection timelines

Malaysia differs from markets where speculative connection queues are the main constraint. MIDA screens projects before they can formally enter TNB's connection process, reducing some of the queue-quality risks that other nations suffer. The more material constraints are physical generation and network capacity limitations, which are contributing to tighter project approvals and longer connection timelines. The challenge is less about filtering a large formal connection queue and more about managing and expanding available power-system capacity as data-center demand grows.

Several measures are under way to address different parts of these constraints. The government is procuring new gas-fired capacity and encouraging solar projects to locate near data-center hubs. It also is improving the bankability of corporate clean-power procurement by offering discounted grid-access charges for qualifying projects commissioned by the end of 2028 and

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Table 21: Malaysia's data center grid connection framework

Policy / mechanism	Policy / mechanism status	Relevance for Malaysia	BNEF take
Maturity requirements	Data center projects must be approved by Malaysian Investment Development Authority (MIDA) before submitting a grid connection request to TNB. Maturity requirements are tightening. Developers may be asked to provide evidence of demand for compute capacity and of financial close.	High	Maturity requirements reduce spurious applications. This is very important in Malaysia, which is seeing exceptionally high interest from data center developers. However, regulators need to tread carefully as overly strict requirements could create a chicken-and-egg situation where developers need to secure offtake agreements and reach financial close before having power supply certainty, but potential tenants and financiers would like to see secured electricity supply first.
Financial commitments	In the first four years of operations, data centers are required to use at least 85% of their declared maximum demand each month or pay a penalty of 8.50 Malaysian ringgit ($2.10) per kilowatt of unused maximum demand.	High	Financial penalties encourage prospective developers to book only as much power capacity as they need, improving planning accuracy and reducing the likelihood of infrastructure overbuild. Notably, Malaysia has yet to implement securities for applications or connection offers as is increasingly common in developed markets with large demand queues.
Competitive processes for land or power	Malaysia does not hold land or power tenders for data centers. However, MIDA runs a competitive project approval system which *de facto* functions as rolling tenders. MIDA prioritizes applications based on project maturity, long-term development plans, investment size, expected economic impact and targeted efficiency metrics, among other factors.	Low	MIDA's current project approval system already meets the goal of reducing speculative applications. Scheduled tenders could, in theory, create a more transparent selection process and a more predictable project pipeline for developers and TNB alike.
Cluster studies	Project approval and grid connection applications may be submitted throughout the year and assessed on a continuous basis. Cluster studies of the grid may be done but not required.	Low	Evidence does not yet support whether cluster studies are effective
Special economic zones	Data centers in Malaysia are often built in industrial and special economic zones, which are likely to have sufficient power supply and substation capacity, potentially cutting grid connection lead times.	High	Data center developers are likely to continue favoring industrial zones in Malaysia, both for faster energization and a lower probability of public rejection
Bring-your-own-generation (BYOG)	BYOG is allowed. It is not a requirement in Malaysia's grid connection fast track program, the Green Lane Pathway.	Low	BYOG could accelerate energization, but project developers are favoring off-site corporate clean power procurement at present
Flexibility requirements	The Green Lane Pathway program does not require data centers to exhibit power demand flexibility.	Medium	May be needed if Malaysia sticks to its coal power decommissioning commitments but is unable to build new gas and solar power capacity quickly enough to replace the retiring coal projects

Source: BloombergNEF. Note: MIDA refers to the Malaysian Investment Development Authority. TNB refers to Tenaga Nasional Berhad, Peninsular Malaysia's state-owned power utility.

© Bloomberg Finance L.P.2026
No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

providing greater transparency on how those charges are calculated. TNB is building a new 500kV transmission backbone along Peninsular Malaysia's east coast. This line could help carry clean power from the hydro- and solar-rich northeastern states of Kelantan and Terengganu to data centers in Johor. It also will improve the east coast states' suitability to host hyperscale data centers.

Long-term power supply and demand

Coal and gas remain Malaysia's most affordable options for providing the 24/7 electricity supply that data centers require through 2035 in BNEF's Economic Transition Scenario (Figure 64). Coal is particularly dominant because it offers lower-cost generation than gas.

Figure 64: Malaysia data center power demand, BNEF Economic Transition Scenario

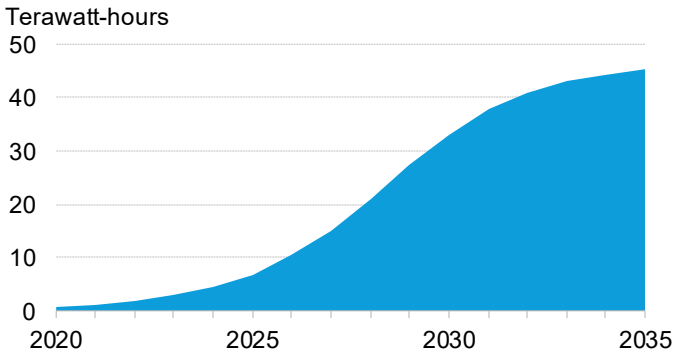
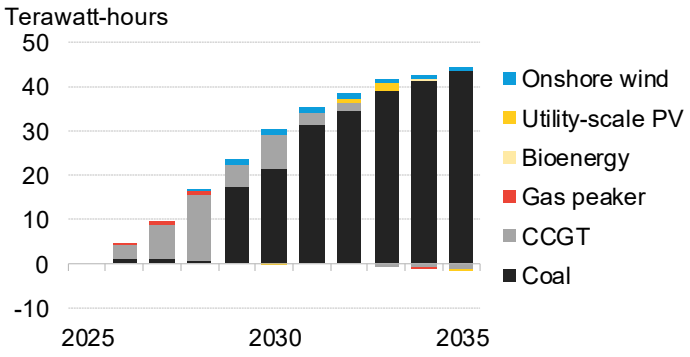


Figure 65: Incremental generation needed to meet Malaysia's data center power demand, BNEF Economic Transition Scenario



Source: BloombergNEF. Note: Data from New Energy Outlook 2026. The Economic Transition Scenario is BNEF's assessment of how the energy economy could evolve due to cost-based technology change to 2050. It combines near-term market activity, the uptake of new consumer-facing energy products, least-cost system modeling and trend-based analysis to describe the deployment of commercially available technologies. CCGT is combined-cycle gas turbine and PV refers to photovoltaic solar. Charts show technologies producing more than 0.1 terawatt-hours.

The government's planned power-sector pathway differs from the economics-led outcome in the BNEF Economic Transition Scenario. Malaysia has committed to building no new coal power plants as part of its net-zero emissions by 2050 target, but this commitment is not included in the New Energy Outlook modeling because it is not legislated. Peninsular Malaysia is also set to lose 59% of its coal-fired capacity by 2033 if plants retire when their existing power purchase agreements (PPAs) expire. The planned capacity outlook therefore relies on substantial additions of gas and solar as coal capacity declines and electricity demand rises (Figure 65).

Data centers can procure clean power from third-party generators in Malaysia, allowing them to accelerate renewable-energy deployment with clear additionality

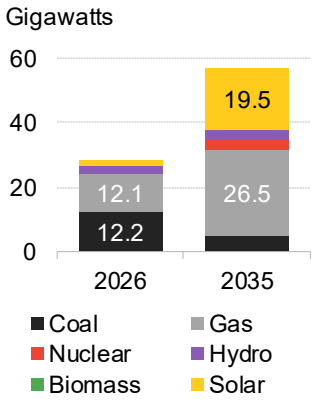
Data centers can procure clean power from third-party generators in Malaysia, allowing them to accelerate renewable-energy deployment with clear additionality. Developers DayOne, Google, Amazon Web Services, AirTrunk and NTT Global Data Centers have signed solar PPAs with a combined capacity of nearly 1.7GW.

For off-site corporate PPAs, the predictability of power wheeling charges over the contract period is important to project economics and bankability. Unpredictable changes to these charges can undermine the economics of corporate PPAs and reduce the benefit to power consumers of renewable energy sources' relatively stable generation costs.

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

Figure 66: Peninsular Malaysia power capacity outlook



Source: Single Buyer, BloombergNEF. Note: Chart includes power plants connected to the transmission grid and excludes co-generation plants.

Fossil-fuel risks

Malaysia's fossil-fuel risk arises primarily from how the power system meets rapidly growing data-center demand, rather than from prolonged reliance on on-site fossil generation while projects await grid connections. In the near term, BNEF expects additional data-center demand to increase utilization of existing coal and gas plants. Over the longer term, the risk shifts toward new gas capacity as Malaysia adds generation to meet demand and replace retiring coal plants.

Peninsular Malaysia's energy regulators project gas capacity rising to 26.5GW by 2035, from 12.1GW in 2026 (Figure 66). At the same time, existing coal and gas plants currently run at about 70-80% and 50-60% capacity factors, respectively. If replacement capacity is not built quickly enough as coal plants retire, rising electricity demand could also increase pressure on the planned timetable for coal retirements.

Corporate clean-power procurement provides a separate pathway for part of this demand. CRESS allows data centers to support new renewable projects, and BNEF estimates that procuring solar power through the scheme can be economically competitive with buying electricity from the grid. Adoption has historically been constrained by uncertainty over long-term system access charges, but the government has announced measures to improve their transparency and predictability. If those reforms improve project bankability and increase CRESS uptake, they could reduce the amount of additional data-center power demand

© Bloomberg Finance L.P.2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

About us

Contact details

Client enquiries:

- Bloomberg Terminal: press <Help> key twice
- Email: support.bnef@bloomberg.net

Mark Daly	Head, Data Centers and Emerging Tech
Musfika Mishi	Associate, Data Centers and Emerging Tech
Felix Kosasih	Associate, South and Southeast Asia Research
Shivam Sharma	Analyst, South and Southeast Asia Research
Vinicius Nunes	Senior Associate, Latin America Research
Rafael Rabioglio	Head, Latin America Research
Raphael Vogeley	Analyst, North America Research
Derrick Flakoll	Senior Associate, North America Research
Peter Richard Wall	Head, Grids
Helen Kou	Head, US Power
Adithya Bhashyam	Head, Europe Research
Luiza Demoro	Global Head of Energy Transitions
Ethan Zindler	Global Head of Countries and Policies
Kamala Schelling	Editor
Reed Landberg	Editor

Copyright

© Bloomberg Finance L.P. 2026. This publication is the copyright of Bloomberg Finance L.P. in connection with BloombergNEF. No portion of this document may be photocopied, reproduced, scanned into an electronic system or transmitted, forwarded or distributed in any way without prior consent of BloombergNEF.

Disclaimer

The BloombergNEF ("BNEF"), service/information is derived from selected public sources. Bloomberg Finance L.P. and its affiliates, in providing the service/information, believe that the information it uses comes from reliable sources, but do not guarantee the accuracy or completeness of this information, which is subject to change without notice, and nothing in this document shall be construed as such a guarantee. The statements in this service/document reflect the current judgment of the authors of the relevant articles or features, and do not necessarily reflect the opinion of Bloomberg Finance L.P., Bloomberg L.P. or any of their affiliates ("Bloomberg"). Bloomberg disclaims any liability arising from use of this document, its contents and/or this service. Nothing herein shall constitute or be construed as an offering of financial instruments or as

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.

investment advice or recommendations by Bloomberg of an investment or other strategy (e.g., whether or not to "buy", "sell", or "hold" an investment). The information available through this service is not based on consideration of a subscriber's individual circumstances and should not be considered as information sufficient upon which to base an investment decision. You should determine on your own whether you agree with the content. This service should not be construed as tax or accounting advice or as a service designed to facilitate any subscriber's compliance with its tax, accounting or other legal obligations. Employees involved in this service may hold positions in the companies mentioned in the services/information.

The data included in these materials are for illustrative purposes only. The BLOOMBERG TERMINAL service and Bloomberg data products (the "Services") are owned and distributed by Bloomberg Finance L.P. ("BFLP") except (i) in Argentina, Australia and certain jurisdictions in the Pacific islands, Bermuda, China, India, Japan, Korea and New Zealand, where Bloomberg L.P. and its subsidiaries ("BLP") distribute these products, and (ii) in Singapore and the jurisdictions serviced by Bloomberg's Singapore office, where a subsidiary of BFLP distributes these products. BLP provides BFLP and its subsidiaries with global marketing and operational support and service. Certain features, functions, products and services are available only to sophisticated investors and only where permitted. BFLP, BLP and their affiliates do not guarantee the accuracy of prices or other information in the Services. Nothing in the Services shall constitute or be construed as an offering of financial instruments by BFLP, BLP or their affiliates, or as investment advice or recommendations by BFLP, BLP or their affiliates of an investment strategy or whether or not to "buy", "sell" or "hold" an investment. Information available via the Services should not be considered as research analysis or research recommendation or an opinion concerning any financial products or securities or entity or as information sufficient upon which to base an investment decision. Bloomberg makes no claims or representations, or provides any assurances, about the sustainability characteristics, profile or data points of any underlying issuers, products or services, and users should make their own determination on such issues. The following are trademarks and service marks of BFLP, a Delaware limited partnership, or its subsidiaries: BLOOMBERG, BLOOMBERG ANYWHERE, BLOOMBERG MARKETS, BLOOMBERG NEWS, BLOOMBERG PROFESSIONAL, BLOOMBERG TERMINAL and BLOOMBERG.COM. Absence of any trademark or service mark from this list does not waive Bloomberg's intellectual property rights in that name, mark or logo. All rights reserved. © 2026 Bloomberg.

© Bloomberg Finance L.P. 2026

No portion of this document may be reproduced, scanned into an electronic system, distributed, publicly displayed or used as the basis of derivative works without the prior written consent of Bloomberg Finance L.P. For more information on terms of use, please contact sales.bnef@bloomberg.net. Copyright and Disclaimer notice on page 75 applies throughout.