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Research Briefing

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Data centres: planning policy, sustainability, and resilience

Summary

1 Background
2 The UK data centre sector
3 Planning for data centres
4 Energy consumption
5 Water consumption
6 Resilience of data centres

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Contents

Summary **5**

1 Background **8**

1.1 The role of data centres 8

1.2 Types of data centre 9

1.3 UK Government policy on data centres 12

2 The UK data centre sector **14**

2.1 How many data centres are there in the UK? 14

2.2 Where are the UK's data centres located? 15

2.3 The economic impact of data centres 18

2.4 Do data centres need to be located in the UK? 20

3 Planning for data centres **25**

3.1 Data centres and planning in England 25

3.2 Data centres as nationally significant infrastructure projects 27

3.3 AI Growth Zones 29

3.4 Devolved administrations 31

4 Energy consumption **33**

4.1 How much energy do data centres consume? 33

4.2 Energy prices 36

4.3 Electricity grid connections and capacity 40

4.4 Data centres and decarbonisation 42

4.5 Energy efficiency 52

5 Water consumption **57**

5.1 How much water do data centres use? 57

5.2 Impact on water supply and resilience 61

6 Resilience of data centres **65**

6.1 Who is responsible for the resilience of data centres? 66
6.2 Critical national infrastructure designation 67
6.3 Industry resilience measures 68
6.4 Regulatory framework 69
6.5 Government proposals for reform 71

Summary

Data centres are warehouse-like facilities that house the information technology (IT) equipment upon which almost all digital activity relies. The UK Government says that they "underpin almost all economic activity and innovation, including the development of AI [artificial intelligence] and other technology, public service delivery, and how we interact with one another".

In September 2024, the UK Government designated data centres as part of the country's critical national infrastructure.

The UK data centre sector

Data centres can be categorised by their use and ownership:

- Enterprise data centres: owned and operated by a single organisation for internal purposes.
- Co-location data centres: the facility is operated by a third party that rents space to customers.
- Hyperscale data centres: massive facilities built by major cloud providers like Amazon, Microsoft and Google.
- AI data centres: facilities specialised for the high-performance computing needs of AI development.

A data centre's capacity is usually expressed as the maximum power it can draw, which determines how much IT equipment it can support. The UK had approximately 1.6 gigawatts (GW) of data centre capacity in 2024.

Most UK data centres are concentrated in Greater London, which is Europe's largest data centre market. However, new hubs are emerging in places such as Manchester and South Wales.

Economic impact

As data centres do not have an industrial classification in the UK, it is difficult to identify their economic impact. techUK estimates that UK data centres have an annual gross value added (GVA) of £4.7 billion. This is based on an average from a range of international studies.

Data centres also support other sectors that benefit from data processing and storage services, including AI, cloud computing, and financial services.

Data centres are highly automated facilities and the number of jobs they create is relatively modes, particularly given their size and cost. A £10 billion campus in Blyth, Northumberland, which could house up to 10 data centres, is expected to directly create 400 full time on-site jobs.

Why have data centres in the UK?

Preliminary analysis for the government found that UK data centre capacity could rise to between 3.3 GW and 6.3 GW by 2030, depending on policy interventions, but that this may not be enough to meet demand.

Although data can in principle be stored and accessed from anywhere in the world, there are several reasons for expanding data centre capacity within the UK, including:

- to make it easier for UK organisations to access high-quality data processing power, enabling them to conduct research and develop new products and services.
- to support the deployment of AI technologies: data needs to be processed close to the user for AI applications that require real-time decision-making, such as autonomous vehicles or remote healthcare. The government sees data centres as a key part of its proposed AI Growth Zones (AIGZs), through which it aims to establish AI innovation hubs across the UK.
- to allow the UK Government to regulate data centres, such as by requiring them to meet cybersecurity standards and reduce their environmental impact.

Policy issues for data centres

Planning policy

Following December 2024 reforms to the government's National Planning Policy Framework, which applies in England only, local authorities are required to consider the need for data centres when setting local policies and deciding planning applications. This change was welcomed by industry stakeholders, who had previously faced challenges getting approval for new developments. Additionally, AIGZs will have fast-track planning and infrastructure support for AI data centres.

Data centres will also be able to opt into the Nationally Significant Infrastructure Projects (NSIP) regime. NSIP applications are determined by the Secretary of State, rather than local planning authorities.

Planning policy in Scotland is supportive of data centres that utilise renewable energy produced in Scotland. Data centres are not mentioned in planning policy in Wales or Northern Ireland.

Energy consumption

Data centres currently consume around 2.5% of the UK's electricity. The sector's electricity consumption s expected to rise four-fold by 2030.

This has led to concerns about the sustainability of data centres. Major data centre operators have committed to achieving voluntary sustainability targets by 2030. They support renewables projects through power purchase agreements (PPAs), although some studies have questioned whether PPAs contribute to decarbonisation. Data centre operators are also exploring nuclear power, including small modular reactors, as a source of clean, reliable power.

Industry stakeholders and commentators have pointed to high energy price and grid capacity constraints as factors limiting the growth of the UK data centre sector. The Social Market Foundation, a think tank, has found that powering a data centre in the UK is more expensive than in other European markets, and four times more expensive than in the United States. This has led to calls for data centres to be included in energy-intensive industry support schemes and for reforms to electricity pricing.

Limited grid capacity means it can take years to get permission to connect to the national grid. The government has tried to improve the situation by reforming the connections process and prioritising strategically significant projects.

Water consumption

Cooling is essential to data centre operations, as they generate heat, and many facilities use water for cooling. Depending on the size and the cooling method used, data centres can consume large quantities of water.

The Environment Agency has criticised the lack data on how much water UK data centres consume. However, industry groups argue that water consumption is much lower in the UK than in the US, because UK data centres tend not to use water-intensive cooling methods. The government is working with the industry to improve transparency and efficiency.

Resilience

As data centres become more critical, their resilience to cyberattacks, power outages and climate risks is increasingly important. techUK argues that data centres designed in accordance with international standards are highly resilient.

The government has taken steps to enhance resilience by designating data centres as critical national infrastructure and proposing new cybersecurity standards under the forthcoming Cyber Resilience Bill.

1 Background

1.1 The role of data centres

Modern society relies on digital information: data. All digitised processes, from accessing social media to developing cutting-edge artificial intelligence (AI), involve the creation, processing, sharing and storage of data. All of this happens somewhere in the physical world.

Data centres are physical spaces that house the information technology (IT) equipment, such as servers, used to process, share, and store data. They are a core part of the infrastructure underpinning all digital activity: "every email sent, online search made, or webpage scrolled is processed in a data centre".[1] Microsoft, which owns hundreds of data centres around the world, has published a virtual tour of a data centre which allows users to explore how they operate.[2]

The importance of data centres is only expected to increase with the adoption of emerging technologies such as AI, which relies on the large-scale data processing and storage capacity they provide.[3] According to real estate consultancy JLL, consumers and organisations are "expected to generate twice as much data in the next five years as all the data created over the past 10 years".[4] They expect global data centre capacity to increase by 15% per year up to 2027, but that this will not be enough to keep up with demand.[5] The consultancy McKinsey expects global demand for data centres to almost triple by 2030, primarily due to AI.[6]

1 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024, p12
2 Microsoft, We live in the cloud, 20 April 2021
3 PoliticsHome, UK Google Interview: We Need Data Centres And Grid Connections, Fast, 25 March 2025
4 JLL, Growth of AI creates unprecedented demand for global data centers, 31 January 2024
5 JLL, 2025 Global Data Centre Outlook, not dated [accessed 18 July 2025]
6 McKinsey, The cost of compute: A $7 trillion race to scale data centers, 28 April 2025

1 Data centres and the cloud

Data centres are the physical manifestations of the cloud. They are the spaces that host the servers and other hardware that enable cloud computing.

Cloud computing is the delivery of IT resources and services on-demand, over the internet rather than on the user's physical device.[7] It enables individuals and organisations to access computing power, storage, and databases as and when they need them without having to own the required hardware.

Advances in internet speeds and reliability mean that data does not need to be stored and processed locally on a specific device. These tasks can be done virtually and the output sent to the device over the internet. This is why individuals can access email and social media accounts, for example, using different devices.

The largest cloud services providers (CSPs) are companies that host 'public' clouds, which are intended to be accessible to anyone who wants to use them. These include Amazon Web Services, Microsoft Azure, and Google Cloud Platform.[8]

CSPs enable mainstream services such as media streaming, file storage, and office applications. Organisations can also use cloud platforms to access the computing power needed to develop and deploy AI models, without the significant upfront cost of building data centres and purchasing IT equipment themselves.

1.2 Types of data centre

From server rooms to data centres

Server rooms are spaces where an organisation houses its computer servers and associated IT equipment, usually located on-premises (within the organisation's office building, for example). With the increasing demand for and importance of data, some organisations opted to house the IT equipment they need in dedicated, off-site buildings instead, leading to the development of data centres.

The benefits of using an off-site data centre rather than (or alongside) an on-site server room include:

7 Parliamentary Office of Science and Technology, Cloud computing, 22 June 2020
8 Data Centre Magazine, Top 10 data centre companies, 3 October 2023

- Reliability: as data centres are dedicated facilities they can be optimised for IT equipment. This can include back-up power supply and improved temperature control.
- Redundancy: an off-site data centre allows an organisation's data to be held in multiple physical locations. This provides backups in case equipment is damaged.
- Security: data centres can offer specialised digital and physical security controls.
- Efficiency: data centres are a way of consolidating multiple server rooms (from one or multiple organisations) into a single physical space. This is more efficient in terms of cost and energy.

In the 1990s and 2000s, there was a rise in third-party data centre provision, which is where a company offers space in a data centre as a service to other organisations.[9] Apart from specialisation and cost effectiveness, third-party data centres offer another key benefit: scalability. A growing organisation can easily purchase additional data centre space to meet their data needs.

The modern data centre landscape

Data centres can be differentiated by their ownership, size, and use:

- Enterprise data centres: data centres owned and operated by the organisation using it, for internal organisational purposes.
- Co-location data centres: a third party owns and operates the physical data centre facility and provides the auxiliary infrastructure (power, cooling, connectivity, security). The data centre provider rents space to customers who use the facility to house their own IT equipment.
- Co-hosting data centres: as well as the facility itself, the data centre provider owns the IT equipment. It offers the storage and processing capacity as a service to customers.
- Hyperscale data centres: differentiated from traditional data centres primarily by their size and computational capacity, hyperscale data centres can cover hundreds of thousands of square metres and consume over 100 megawatts (MW) of power.[10] Among the main builders of hyperscale data centres are major cloud services providers, such as Amazon, Microsoft, and Google (see box 1 above). Hyperscale data centres can also offer the computing capacity needed for complex AI workloads.[11]

9 European Data Centre Association, State of European data centres 2025, p9
10 IBM, What is a hyperscale data center?, 21 March 2024
11 European Data Centre Association, State of European data centres 2025, p10

- AI data centres: large facilities specifically designed to house, power, and cool the specialised IT equipment needed to train large AI models.
- Edge data centres: smaller data centres located close to their end users to minimise latency (see box 2). Industry observers expect edge data centres to become more important as AI is adopted more widely (see box 3).

These data centre types are not mutually exclusive. A co-location data centre may be hyperscale in size and house AI-capable equipment, for example.

2 What is latency?

Users experience latency as a delay between sending an instruction on a computer device (to load a website, for example) and receiving a response. Latency is the delay caused by the time it takes for data to travel from one point to another (to and from the server hosting a website, for example) rather than the time it takes to process the data.

If data has to travel to a data centre further away from the user, it will take longer to get there: the latency will be higher. The closer the data centre to the end user, the lower the latency will be.

Organisations may use different types of data centre for different purposes. For example, an enterprise data centre might be used to store sensitive data while emails are hosted by a hyperscale cloud data centre. The government's UK Business Data Survey 2024 found that, among UK businesses:

- 35% used a server room or data centre that they owned directly (68% for large businesses of over 250 employees).
- 4% rented space in a data centre to house their server equipment (31% for large businesses).
- 5% used server equipment provided by a third party (29% for large businesses).
- 19% used a public cloud provider such as Amazon Web Services, Microsoft Azure, or Google Cloud Platform (48% for large businesses).[12]

[12] DSIT, UK Business Data Survey 2024: data tables, 27 June 2024, Table 13. Based on 1,670 respondents. As businesses can use multiple data storage methods, the percentages do not add up to 100.

1.3 UK Government policy on data centres

The government has said that additional data centre capacity "is essential to enabling economic growth and to reap the transformational productivity benefits of digitalisation and the adoption of AI".[13] Announcing private investment in UK data centres following its October 2024 investment summit, the government said:

> These new data centres will provide the UK with more computing power and data storage, so that Britain has the necessary infrastructure to train and deploy the next generation of AI technologies, such as complex machine learning models and algorithms. This in turn will help us roll out AI faster in areas like healthcare, which will help everyone live better and healthier lives.[14]

Shortly after the July 2024 General Election, Angela Rayner, Secretary of State for Housing, Communities and Local Government, stepped in to determine two planning applications for hyperscale data centres on green belt land. Both proposals had been blocked by the local planning authority. Both were subsequently granted by the Secretary of State, with ministers citing demand for data centre capacity and the risk of investment being lost to other European markets instead.[15]

In September 2024 the government designated the data centre sector as part of the UK's critical national infrastructure, alongside sectors such as energy, water, and telecommunications.[16]

The government is not providing direct financial assistance for the construction of data centres. Instead, it is "encouraging growth in the data centre sector by addressing barriers to building".[17] This includes:

- Reforms to planning policy in England that require local planning authorities to consider the need for data centres in their decision-making (see section 3.1 below).
- Allowing data centre projects in England to opt in to the nationally significant infrastructure projects (NSIP) regime, where development proposals are considered by the government rather than local planning authorities (see section 3.2).

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13 Department for Business and Trade (DBT), Invest 2035: the UK's modern industrial strategy, 14 October 2024

14 Department for Science, Innovation and Technology (DSIT), Tech Secretary welcomes foreign investment in UK data centres which will spur economic growth and AI innovation in Britain, 14 October 2024

15 BBC News, Rejected data centre gets approval after appeal, 20 December 2024; Data Center Dynamics, Angela Rayner overturns decision to block data center planned for Hertfordshire, UK, 13 May 2025. This decision has since been challenged by campaigners on the grounds that the Secretary of State failed to consider the scheme's environmental impact.

16 HCWS9, 12 September 2024

17 HL8342, 25 June 2025

- Inviting applications for AI Growth Zones, where AI data centres will have streamlined planning processes and access to supporting infrastructure (see section 3.3).

- Introducing reforms in Great Britain to enable data centres to access energy grid connections (see section 4.3).

Data centres also present some policy challenges:

- Data centres consume significant amounts of energy, which has led to concerns about sustainability and the impact on the electricity grid (see section 4).

- Data centres may also consume large amounts of water. While this is reportedly not typical in the UK, the government has limited information on the sector's water use (see section 5).

- As data becomes more critical to the modern economy, the potential impact of losing access increases. The government is therefore considering additional regulation to ensure data centres are resilient against issues such as cyberattacks (see section 6).

The Financial Times has reported that there are "tensions" within government between the Department for Science, Innovation and Technology (DSIT), which is in favour of more data centres, and the Department for Energy Security and Net Zero (DESNZ), which "is concerned about how the energy and water consumption of projects such as big data centres will have an impact on its climate goals".[18]

[18] FT, UK picks Teesworks site for AI data centre, 23 July 2025

2 The UK data centre sector

2.1 How many data centres are there in the UK?

It difficult to know how many data centres there are in the UK. There is no formal definition of what a data centre is, they do not have a standard industrial classification code (used in economic statistics), and operators are not required to register with a regulator.

techUK estimated in a November 2024 report that there are 450 data centres in the UK.[19]

As data centres can vary greatly in size, total data centre capacity is usually measured in terms of their maximum energy capacity (which determines how much IT equipment can be powered at the facility). The government does not routinely collect figures on data centre capacity.[20] However, it has estimated that there was 1.6 gigawatts (GW) of co-location data centre capacity in Great Britain in 2024.[21]

This is expected to grow considerably in the coming years. The government has said that £45 billion of private investment has been committed to the sector since July 2024.[22] Analysis of planning applications, shared with BBC News, found that almost 100 new data centres could be built in the next 5 years.[23] A preliminary estimate for the government found that the UK could have between 3.3 GW and 6.3 GW of capacity by 2030, depending on the policy environment, although this may still not be enough to keep up with demand.[24]

Who builds data centres in the UK?

The most high-profile builders and users of data centre capacity globally are US technology companies involved in cloud computing and AI development, including Amazon, Microsoft, Google and Meta.

19 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024

20 PQ 39954, 28 March 2025. In theory, this capacity translates to annual electricity consumption equivalent to around 5.2 million households (based on Ofgem's assumption of 2,700 kilowatt hour per year for the average household). However, in practice data centres will not draw their maximum power capacity throughout the year.

21 DSIT, Estimate of Data Centre Capacity: Great Britain 2024, 1 May 2025

22 HL8423, 26 June 2025

23 BBC News, Data centres to be expanded across UK as concerns mount, 15 August 2025

24 DSIT, UK Compute Roadmap: evidence annex, 17 July 2025, p13-14

Amazon and Microsoft both have UK data centres, and have committed to further investment.[25] Google is building its first UK data centre at Waltham Cross, Hertfordshire.[26]

More commonly, data centres are built by co-location providers, who construct the physical data centre then rent out space to other companies. Major tech companies purchase space in co-location data centres as well as building their own.

Co-location providers with a presence in the UK include CyrusOne, Digital Realty, Equinix, Kao Data, Vantage, and Virtus, among others.

International comparisons

In terms of capacity, a report by real estate services company JLL estimated that in the third quarter of 2024, there was 1,048 MW of data centre capacity in the London area, with a further 475 MW in development and 684 MW in the planning process.[27] By comparison, Europe's other major data centre hubs include:

- Frankfurt: 805 MW capacity, plus 1,531 MW in construction or planned.
- Amsterdam: 576 MW, plus 336 MW in construction or planned.
- Paris: 446 MW, plus 522 MW in construction or planned.
- Dublin: 254 MW, plus 469 MW in construction or planned.

2.2 Where are the UK's data centres located?

The ideal location for a data centre is based on three main factors:

- Power: data centres operate 24/7 so they need a reliable supply of energy. To meet climate targets, data centre providers may specifically choose areas with lots of available renewable energy.
- Position: data centres benefit from access to sufficient and suitable land, a skilled workforce, supply chain organisations and customers.
- 'Ping': data centres need high speed, high capacity internet connectivity to transfer large volumes of data quickly.

25 Data Center Dynamics, AWS to invest £8bn in UK data centers over five years, 11 September 2024; Data Center Dynamics, UK: Microsoft plans £2.5bn investment in AI data centers, 28 November 2023

26 BBC News, Google starts building £790m site in Hertfordshire, 19 January 2024

27 JLL, EMEA Data Centre Report Q3 2024, 13 June 2024

How these 'three Ps' interact to guide a data centre developer's decision-making depends in part on the purpose of the data centre. For example:

- Data centres whose customers need low latency for very fast data transfers, such as financial services, need to be located close to those customers.

- Data centres designed to host cloud services benefit from clustering together in Availability Zones (AZs). The proximity offers redundancy: if one data centre fails, another can step in to enable the cloud service to continue operating without any impact on end users. Evidence submitted as part of a planning application for a data centre in Buckinghamshire advised a distance of eight kilometres between data centres in an AZ.[28]

- Data centres used for training AI models are less latency-dependent so can be more flexible in terms of location. These facilities, which consume vast amounts of energy, may prioritise locations with abundant energy supply.[29]

London and the South East

As shown in the chart below, most of the UK's data centre capacity is in London and the South East of England. Europe's largest data centre cluster is in Slough, which is reportedly home to 30 to 35 data centres.[30] Slough is easily accessible for potential employees; sits along high-speed fibre-optic cables connecting London with Ireland and the United States; and is close enough to London to provide the City's financial institutions with the extremely low-latency connectivity they need.

According to techUK the west London data centre market is "beginning to reach saturation point", with limited land and electricity grid capacity.[31] Data centre operators have therefore turned to other parts of the UK.

Data centres outside London

The UK's second largest co-location data centre hub is Greater Manchester, with an estimated 24 MW capacity in 2024. techUK states that this is because Manchester is "one of the fastest growing digital and tech hubs in Europe" and has access to a skilled workforce.[32]

Cardiff and Newport in Wales are also emerging as data centre locations. Like Slough they benefit from access to trans-Atlantic internet cables and

28 MHCLG, APP/P1940/W/24/334606 [PDF]1, 12 May 2025, p51

29 Latitude Media, Survey: 27% of data centers are expected to run entirely on onsite power by 2030, 14 July 2025

30 BBC News, Why is this town Europe's largest data centre hub?, 21 May 2024

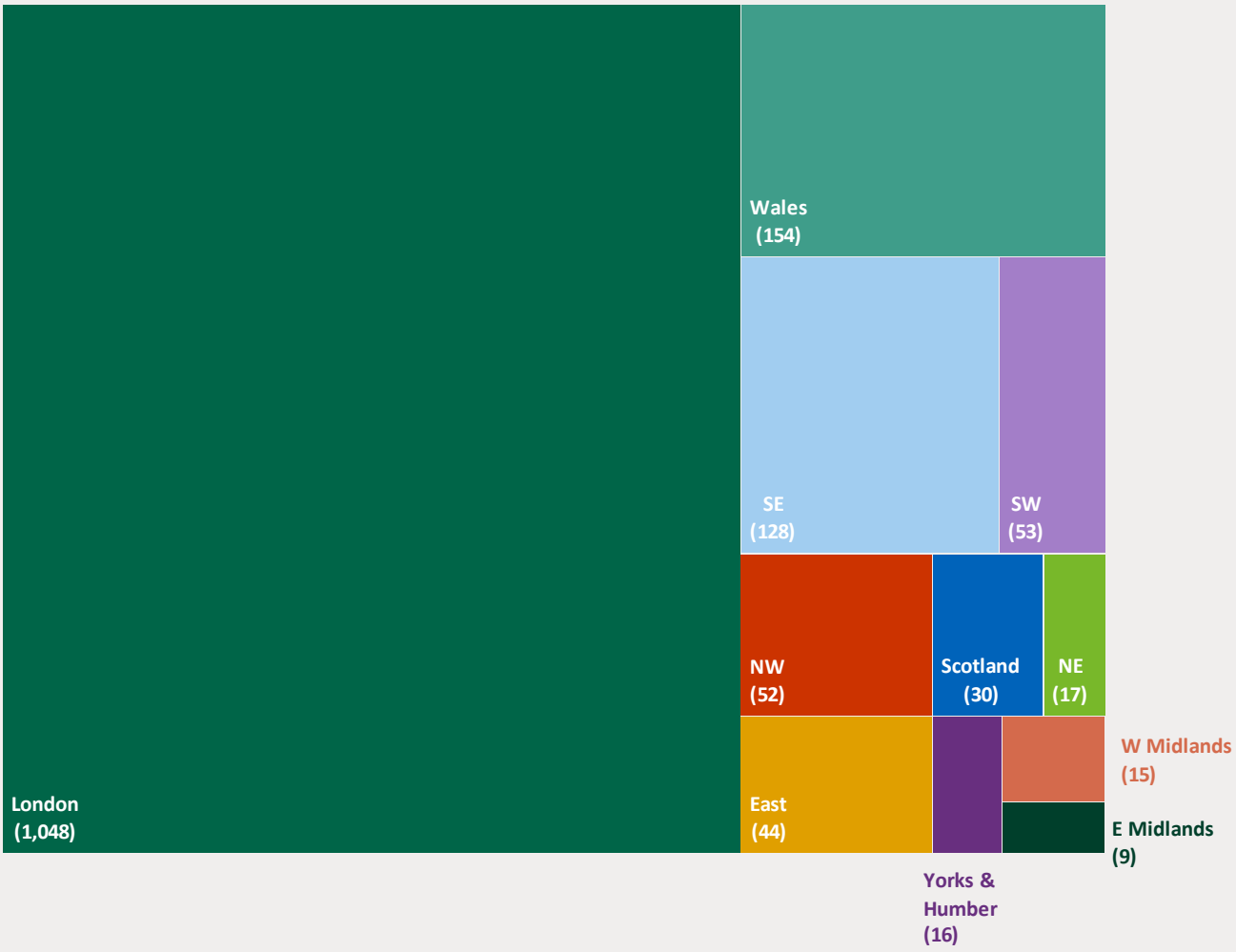
31 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024

32 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024

tech industry clusters along the M4 corridor, as well as South Wales' own tech industry. Data centre provider Vantage operates one of Europe's largest data centre campuses in Cardiff, and has plans to build another at a former Ford factory in Bridgend.[33]

Estimate of Great Britain's data centre capacity, defined as the maximum rated Information Technology (IT) load of colocation data centres

Information Technology (IT) power (MW)



Source: Department for Science, Innovation & Technology, Estimate of Data Centre Capacity: Great Britain 2024, 1 May 2025

Recently announced large data centre projects outside these older clusters include:

[33] Vantage Data Centres, Cardiff (CWL1) Data Center Campus, not dated [accessed 8 July 2025]; Data Center Dynamics, Vantage reveals plans for 10-building campus at former Ford car factory in Bridgend, Wales, 7 January 2025

- A £10 billion, 720 MW data centre campus near Blyth, Northumberland.[34]
- A £7.5 billion, 1 GW data centre campus near Elsham, Lincolnshire.[35]
- A £3 billion, 386 MW data centre campus at Humber Tech Park near Grimsby, Lincolnshire.[36]
- A £3.75 billion, 321 MW data centre campus in Hertfordshire.[37]
- A £3.9 billion, 500 MW data centre campus near Motherwell, North Lanarkshire.[38]

The BBC has published a map of planned new data centres, using figures provided to it by Barbour ABI, a construction market intelligence company.[39]

2.3 The economic impact of data centres

As data centres do not have an industrial classification it is difficult to identify their direct contribution to the UK economy. Based on an average from a range of international studies, techUK estimates that data centres directly contribute £4.7 billion in annual gross value added (GVA) to the UK economy.[40] Assuming an annual growth rate in data centre capacity of 10% to 15%, the report estimated that data centres could generate an additional £44 billion in GVA and £9.7 billion in tax revenue between 2025 and 2035.

This is the estimated direct economic contribution of data centres. Data centres can also draw in (or enable the expansion of) organisations that benefit from the services they offer. The consultancy Oxford Economics pointed to this agglomeration effect in a report supporting a proposed data centre in Havering, east London:

> It is no coincidence that London's leading digital sector is supported by a cluster of data centres. … The provision of additional digital infrastructure through the proposed development can further the wider agglomeration effects across the users of data centres across London. Through adding to London's data centre capacity, the proposed development is contributing to attracting firms to start-up or locate in London to avail of this infrastructure,

34 Data Center Dynamics, Blackstone gets green light for £10bn QTS data center in Northumberland, UK, 5 March 2025
35 Data Center Dynamics, Plans submitted for 1GW data center in North Lincolnshire, UK, 30 May 2025
36 Data Center Dynamics, Green light for 386MW data center campus in Lincolnshire, UK, 2 August 2024
37 Data Center Dynamics, 320MW data center campus planned for Hertfordshire, UK, given the go-ahead, 24 January 2025
38 Data Center Dynamics, Apatura plans 500MW data center campus in Scotland, 27 June 2025
39 BBC News, Data centres to be expanded across UK as concerns mount, 15 August 2025
40 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024, p18-20

who may otherwise locate elsewhere without the same provision of data centre services.[41]

While this wider impact is harder to quantify, techUK notes that key productivity-enhancing technologies such as AI and cloud computing need "a thriving digital ecosystem that has data centres at its heart".[42] Data centres are for this reason a core part of the government's proposed AI Growth Zones programme, through which it aims to establish clusters of AI research and innovation (see section 3.3 below).[43]

Employment

Data centres are highly automated facilities, and the number of jobs directly created is relatively modest, ranging from a few tens to a few hundreds. An article in Forbes states that data centres should be viewed as infrastructure projects, like new roads, rather than as "permanent and ongoing job creation engines".[44]

According to techUK, the estimated 450 UK data centres support around 43,500 full time equivalent (FTE) jobs. Of these, approximately 24,300 are directly created at data centres.[45] The report's modelling found that with 10 to 15% annual growth, data centres could support an addition 40,200 direct FTE jobs by 2035.

TechTarget has published an article exploring the types of role created at data centres, such as engineers and IT project managers. The job figure also includes non-technical roles in, for example, administration and security.

As with the economic impact estimates, the number of people employed at data centres is uncertain due to a lack of official statistics. The annex to techUK's report notes that its modelling is based on jobs figures provided to it by two UK data centre operators who estimated between 20 and 88 FTE jobs per site.[46] The calculations use the mid-point between these two figures (54 FTE jobs per site).

Jobs are also created in the construction phase, and a data centre will generate some indirect employment through its supply chain, for example in professional services, utilities, and facilities. The impact on local job creation therefore depends in part on whether the supply chain is local.[47] Estimates of

41 Oxford Economics, The local impact of a proposed data centre campus in Havering [PDF], August 2022, p29

42 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024, p14

43 Data Centre Magazine, Data Centres at Heart of UK's AI Growth Zone Ambitions, 30 April 2025

44 Forbes, Tax Breaks For Data Centers Bring Few Jobs, 13 August 2024

45 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024, Chart 2

46 techUK, Foundations for the future: Annex I, 4 November 2024, p3

47 Oxford Economics report, The economic impact of Google data centers in Europe, November 2022, p13

data centre job creation may also include 'induced' jobs, which are created when the people employed at the data centre spend their wages.

techUK estimates that each job created by data centre operations supports between 1.4 and 2.5 jobs in the wider economy.[48]

Some commentators have expressed concern about how data centre operators and others represent the number of jobs that data centres will support.[49] For example, a government press release in 2024 stated that a proposed £10 billion campus in Northumberland, which could house up to ten data centres, would support 4,000 jobs.[50] The government later clarified in response to a parliamentary question that the figure included 1,200 construction jobs and 2,700 indirect and induced jobs.[51] Planning documents estimate that the site will create up to 400 permanent, onsite jobs.[52]

2.4 Do data centres need to be located in the UK?

Data centres are used to remotely process and store data, so in principle they can be located anywhere in the world. However, there are benefits to having data centre capacity in the UK besides the estimated economic benefits just discussed. Data centre capacity is necessary for the UK to develop and deploy technologies using AI,

A DSIT research report, published alongside the government's July 2025 UK Compute Roadmap, summarises the main issues. It highlights the role of UK-based data centres in data security and the development and deployment of AI:

> By 2030, limited domestic … capacity could seriously affect the UK economy. It may prevent the country from meeting sovereign needs like NHS or national security use cases that require secure, local data processing. Latency-sensitive technologies, such as autonomous vehicles and high-frequency trading, may be held back because they rely on real-time compute that can't be outsourced. A growing dependence on foreign infrastructure could increase exposure to global supply chain risks, potentially disrupting access and raising costs. It would also weaken the UK's ambition to be an "AI maker, not an AI taker," by limiting its ability to develop and deploy advanced AI models.[53]

48 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024, p16

49 Financial Times (FT), Anatomy of a jobs promise, 21 January 2025

50 Prime Minister's Office, PM tells US investors "Britain is open for business" as he secured major £10 billion deal to drive growth and create jobs, 25 September 2024

51 PQ 23743, 22 January 2025

52 Northumberland County Council, Application 24/04112/OUTES – Committee Report [PDF], 28 November 2024

53 DSIT, UK Compute Roadmap: evidence annex, 17 July 2025, p15

Access to UK-based advanced compute capacity

Data centres are a core part of providing 'compute', which refers to computer systems that combine processing power and data storage and transmission capacity at scale.[54] Large amounts of compute are needed to carry out tasks that involve the processing and storage of data at scale, notably the development and deployment of AI models.

The advanced compute capacity needed for AI is not evenly distributed around the world: just 32 countries (including the UK) have access to AI data centres in their own borders.[55]

US thinktank the RAND Corporation states that the success of a country's AI industry, and its ability to deploy AI models, "relies on access to specialized compute and the infrastructure needed to host it".[56] Without sufficient compute, "there are experiments one simply cannot run, and products (and services) one cannot build".[57] Companies developing AI technologies therefore have an incentive to locate in countries where compute is available cheaply and easily.[58] Lack of compute capacity could mean that "countries fall behind in AI development, scientific research, and even economic competitiveness".[59]

The government's 2023 AI Sector Study found that limited AI data centre capacity was a key barrier to AI development and deployment in the UK.[60] The House of Lords Communications and Digital Committee heard that lack of compute capacity hampered the ability of UK AI companies to scale up.[61]

The government estimates that the UK will need at least 6 GW of AI-capable data centre capacity by 2030.[62] Its July 2025 UK Compute Roadmap stresses the importance of being able to meet compute demand in the UK:

> Hosting large-scale AI infrastructure … on UK soil strengthens the economy and enhances our strategic and economic resilience. [It] will ensure we are not reliant on overseas providers and insulate key elements of our economy from global shocks.[63]

54 DSIT, Independent review of the future of compute, 13 June 2022
55 Zoe Hawkings and others, AI Compute Sovereignty: Infrastructure Control Across Territories, Cloud Providers, and Accelerators, 20 June 2025, p8
56 RAND Corporation, AI's Power Requirements Under Exponential Growth, 28 January 2025
57 Girish Sastry and others, Computing Power and the Governance of Artificial Intelligence, February 2024, p13
58 Social Market Foundation (SMF), How to power AI: Boosting compute capacity for UK AI, 10 February 2025, p14
59 Tech Republic, Global AI Divide: Only 32 Countries Host AI Data Centers, Leaving Many Behind, 23 June 2025
60 DSIT, AI Sector Study 2023, 23 October 2024
61 Communications and Digital Committee, AI and creative technology scaleups: less talk, more action, Second report of Session 2024-25, HL71, 3 February 2025
62 DSIT, UK Compute Roadmap: evidence annex, 17 July 2025, p13
63 DSIT, UK Compute Roadmap, 17 July 2025

An article in the New York Times notes that renting compute power from overseas data centers "can lead to challenges, including high costs, slower connection speeds, compliance with different laws, and vulnerability to the whims of American and Chinese companies".[64]

The thinktank Demos has argued that the government should set up a public cloud computing company which could strategically allocate compute to UK researchers and startups.[65]

Latency and AI deployment

Latency is the time delay (measured in milliseconds) between sending an instruction on a computer device and receiving a response. Data centres that are close to their end users can offer lower latency.

Not all data centre services need low latency. However, low latency is vital for the deployment of AI (called 'inference') and the technologies it enables. Driverless vehicles, drones, remote healthcare, and automated manufacturing, for example, all rely on AI making decisions in near real-time if they are to be safe and effective. For driverless vehicles, for example, "a couple of extra milliseconds of delay could literally be a matter of life and death".[66]

Data centre capacity for latency-dependent uses, which also includes financial trading, "can't be outsourced", according to the government.[67]

Some industry experts expect the increasing deployment of AI technologies to necessitate having data centres close to population centres, in addition to the large data centres used to train AI models.[68]

64 New York Times, The Global A.I. Divide, 21 June 2025
65 Demos, GB Cloud: building the UK's cloud computing capacity, May 2024
66 Equinix, Network Latency vs. Compute Latency, 27 March 2024
67 DSIT, UK Compute Roadmap: evidence annex, 17 July 2025, p15
68 Infrastructure Masons, State of the digital infrastructure industry 2025, p13

3 Edge data centres

An ‘edge’ data centre is a data centre that is located close to its end users; that is, at the edge of the network. Being close to end users means that they benefit from lower latency.

The European Data Centre Association (EUDCA) foresees a growing role for edge data centres, with “smaller facilities positioned at the network edge and hyperscale centres handling more extensive computational tasks”.[69]

The increasing importance of edge data centres is due to the wider adoption of AI technologies, which benefit from extremely low latency. According to Infrastructure Masons, a global forum for digital infrastructure providers, 90% of AI compute workload is currently used for training AI models rather than inference.[70] Training is not latency-sensitive, so AI training data centres can in principle be located anywhere.

However, they expect this to ratio to “flip” by the end of the decade as AI is adopted more widely, potentially necessitating large numbers of small data centres “in the tens of kilowatts to tens of megawatts range” near population centres.[71]

Regulatory oversight

Having jurisdictional control over data centre capacity could help governments regulate the things data centres are used for, such as AI. One group of researchers has argued that because data centres are physical spaces they increase the ‘visibility’ of AI, helping policymakers understand how AI is being developed and deployed, and by who.[72] The think tank Demos, for example, states that “the UK government could enforce ‘know your customer’ requirements for UK based data centres, requiring that for large [AI] training runs, only known and vetted customers are granted access”.[73]

The UK Government is seeking to influence how data centres operate by, for example, introducing cybersecurity regulations for data centres. It said that this would give it “the levers to steward the sector in the face of an evolving threat landscape”.[74] Similarly, by designating data centres as part of the UK’s critical national infrastructure, the government was able ensure that they are

69 European Data Centre Association (EUDCA), State of European data centres 2025, p10
70 Infrastructure Masons, State of the digital infrastructure industry 2025, p22
71 Infrastructure Masons, State of the digital infrastructure industry 2025, p22
72 Girish Sastry and others, Computing Power and the Governance of Artificial Intelligence, 13 February 2024
73 Demos, GB Cloud: building the UK’s cloud computing capacity, May 2024, p11
74 DSIT, Cyber Security and Resilience Bill: policy statement, 1 April 2025

protected from emergency power cuts in the event of a large-scale electricity grid instability.

Resilience

techUK notes that, despite having some operational advantages, the present clustering of data centres around London is problematic in terms of resilience (as multiple data centres could be affected by the same event) and local resource impact (as data centres place demands on land use, energy grids, and water supply).[75] Building up data centre capacity in different parts of the UK would mitigate these risks while still allowing capacity to increase in line with demand.

[75] techUK, Future-Proofing Digital Infrastructure: Climate Resilience in the Data Centre Sector, November 2024, p30

3 Planning for data centres

As with most types of development, building a data centre requires planning permission. Currently planning permission must be sought from the local planning authority (LPA). Planning applications are decided on a case-by-case basis. LPAs must make planning decisions in line with published local planning policies, unless material considerations relevant to the application justify deviating from those policies.[76]

Planning is a devolved matter. Sections 3.1 and 3.2 below cover the UK Government's policies for planning in England. AI Growth Zones, discussed in section 3.3, are a UK Government policy and apply UK-wide. Planning policies in Scotland, Wales, and Northern Ireland are covered in section 3.4.

3.1 Data centres and planning in England

One of the ways central government influences local planning decisions in England is through the National Planning Policy Framework (NPPF). Local planning policies must be consistent with the NPPF. The NPPF is also a material consideration that needs to be taken into account by planning decision-makers.

December 2024 NPPF reforms

The Labour Party's 2024 manifesto promised an industrial strategy that "removes planning barriers to new datacentres".[77]

A consultation on the NPPF took place in 2024, with an updated version published in December 2024.

Since December 2024, the NPPF has specifically referenced the need for data centres. [78] Paragraph 86 of the NPPF states that when formulating planning policies LPAs must:

> pay particular regard to facilitating development to meet the needs of a modern economy, including by identifying suitable locations for uses such as

[76] Common Library, Overview of the planning system (England), 31 August 2023
[77] Labour Party, Labour's Manifest – kickstart economic growth, 13 June 2024
[78] Ministry for Housing. Communities and Local Government (MHCLG), Proposed reforms to the National Planning Policy Framework and other changes to the planning system, 30 July 2024

> laboratories, gigafactories, data centres, digital infrastructure, freight and logistics.[79]

In addition, LPAs should "recognise and address the specific locational requirements of different sectors". This includes making provision for "clusters" of industries such as data centres, and the infrastrcture needed to support their growth (such as electricity grid upgrades).[80]

Rationale for the reforms

Before December 2024, data centres were not specifically mentioned in the NPPF. techUK argued that without a clear national policy direction, LPAs struggled to appreciate the importance of data centres in the digital economy.[81]

For example, Buckinghamshire Council and the Secretary of State refused an application for a 147 MW data centre near Slough on the grounds that it would harm the green belt.[82] The LPA argued that as there is "no national policy for data centres or any Government guidance at all about where they should be located", it could not accept the developer's claim that it was necessary to build on green belt land in the Slough Availability Zone, rather than elsewhere in the country.[83]

The built environment consultancy Ridge notes that data centres can easily be viewed in a negative light: they tend to be large facilities with an "often-austere building aesthetic" that consume lots of power and water (see sections 3 and 4 below) for a limited local economic impact.[84] Proposals are often subject to local opposition, as reported in the national press.[85]

An article by planning consultancy Lichfields noted that, for these reasons, getting data centre projects through the planning system has historically "not been an easy gig".[86]

Response to the reforms

Commentators generally welcomed the reforms. An article in Data Center Dynamics concluded that the "specific reference to data centers in the NPPF should now remove planning as a barrier to the growth of the industry in

79 MHCLG, National Planning Policy Framework, December 2024, para 86
80 MHCLG, National Planning Policy Framework, December 2024, para 87
81 techUK, Issues statement: data centres and strategic planning policy, April 2021 [PDF]
82 Planning Law Blog, Data centre refusal highlights challenges, 1 November 2023
83 DLUHC, Woodlands Park landfill site, land south of Slough Road, Iver, Buckinghamshire, APP/N0410/W/22/3307420, 30 October 2023 [PDF], p11
84 Ridge, The National Planning Policy Framework – does it go far enough?, 6 August 2024
85 BBC News, Data centre plans spark fury among residents, 11 June 2024
86 Lichfields, Data centres: no longer the ugly duckling of planning, 14 March 2025; Guardian, Capacity crunch: why the UK doesn't have the power to solve the housing crisis, 4 May 2024

England".[87] JLL said that the proposals would give the sector a "huge boost of confidence" by providing it with a "long overdue policy backbone".[88]

However, Ridge questioned how some LPAs would be able balance finding land for data centres and other large commercial uses while also meeting housebuilding targets.[89]

techUK said that the success of the reforms would depend in part on ensuring that local planning departments have the funding and expertise to handle data centre planning applications consistently.[90]

An article on the Royal Town Planning Institute's (RTPI) blog criticised the government for not allocating data centres a planning use class. The article stated that data centres are typically classified as an 'employment use'.[91] It noted that despite the reforms there may be limited incentives for planning authorities to approve data centres given that they generate a small number of jobs and could therefore be seen as an "inefficient" use of land allocated for employment.

The AI Opportunities Action Plan (an independent review commissioned by the government) also recommended considering a specific planning use class for data centres.[92] The government's response did not address this point.[93]

3.2 Data centres as nationally significant infrastructure projects

The government's 2024 NPPF consultation sought views on whether data centres should be brought into the nationally significant infrastructure projects (NSIP) regime (see box 3). This is a separate planning process for developments deemed to be of national importance. Developers apply to the Planning Inspectorate (acting on behalf of the Secretary of State) rather than the LPA.

87 Data Center Dynamics, Planning reform is a major opportunity for UK data centers, 9 September 2024
88 JLL, NPPF View – A policy revolution for UK Data Centres, 30 July 2024
89 Ridge, The National Planning Policy Framework – does it go far enough?, 6 August 2024
90 techUK, Future-Proofing Digital Infrastructure: Climate Resilience in the Data Centre Sector, November 2024, p27
91 Royal Town Planning Institute (RTPI), Data centres: essential digital infrastructure – not just employment use?, 10 April 2025
92 DSIT, AI Opportunities Action Plan, 13 January 2025
93 DSIT, AI Opportunities Action Plan: government response, 13 January 2025

4 The NSIP regime

The Planning Act 2008 introduced a separate planning application process for nationally significant infrastructure projects (NSIPs) in England.

NSIPs are proposed developments in the sectors specified in part 3 of the 2008 act (currently energy, transport, water, and waste) that meet certain criteria. In addition, under section 35 the Secretary of State can, on request from a developer, direct a specific project to be treated as an NSIP. Only developers in specified sectors have this option.

Projects in the NSIP regime must apply to the Planning Inspectorate for a development consent order (DCO). They do not need to apply separately for planning permission.[94] The aim is to streamline the planning process for large, complex projects of national importance.

The government publishes National Policy Statements for each of the sectors designated in the 2008 Act. These set out the government's objectives for NSIPs in those sectors. Applications for DCOs must be decided in line with the relevant policy statement(s).

For further information see the Library briefing, Planning for nationally significant infrastructure projects.

The consultation proposed that data centres could be added to the list of sectors where developers are able to ask for their project to be considered under the NSIP process.[95]

The government has confirmed that it will take forward this proposal, allowing data centre operators to opt in to be designated as an NSIP.[96] It will also publish a National Policy Statement for data centres, which will set out the criteria proposals will be judged against.[97]

Developers would still be able to choose to put data centre projects through the local planning process instead.[98]

94 MHCLG, Planning Act 2008: Content of a Development Consent Order required for Nationally Significant Infrastructure Projects, 30 April 2024
95 MHCLG, Proposed reforms to the National Planning Policy Framework and other changes to the planning system, 30 July 2024
96 DBT, The UK's Moden Industrial Strategy, 23 June 2025, p82
97 HL9858, 6 August 2025
98 PQ 23808, 27 January 2025

Response to the reforms

techUK welcomed the proposal to allow data centres to go through the NSIP process.[99] They argued that it was important that this should be an option for developers rather than compulsory.

The Social Market Foundation (SMF) thinktank argued that the government should go further and introduce a 'planning passport' for data centres.[100] The proposed scheme would offer an expedited consent process for projects that meet certain criteria, such as being energy efficient, using renewable energy, and reusing waste heat.

Further reforms to the NSIP regime

Separately from the question of whether to bring data centres into scope, the government said in the 2024 King's Speech that it would legislate to "accelerate the delivery of high quality infrastructure".[101] The government set out some of the issues with the existing NSIP process in a working paper on planning reform:

> In 2021 it took on average 4.2 years for a project to secure development consent, compared to 2.6 years in 2012. The documentation underpinning consents has been getting longer and in too many instances now runs to tens of thousands of pages. Alongside increased uncertainty that statutory timescales will be met, increased litigation has caused further delays and introduced additional risk and costs for developers.[102]

The government is intending to address these issues through the Planning and Infrastructure Bill 2024–25. The bill would, among other things, streamline consultation requirements and prevent repeat judicial reviews of planning decisions for claims deemed totally without merit.

Further information can be found in the Commons Library research briefings on the bill.[103]

3.3 AI Growth Zones

In July 2024 the Labour government commissioned Matt Clifford, the chair of the Advanced Research and Invention Agency (ARIA), to develop an AI Opportunities Action Plan. The terms of reference stated that the Action Plan

99 techUK, techUK's response to the Ministry of Housing, Communities and Local Government's consultation on the proposed changes to the National Planning Policy Framework, 27 September 2024

100 SMF, How to power AI: Boosting compute capacity for UK AI, 10 February 2025, p49-50

101 Gov.uk, The Kings Speech 2024, July 2024

102 MHCLG, Planning Reform Working Paper: Streamlining Infrastructure Planning, 26 January 2025

103 Commons Library, Planning and Infrastructure Bill 2024-25, 21 March 2025; Commons Library, Planning and Infrastructure Bill 2024-25: Progress of the bill, 5 June 2025

would set out a roadmap for the government to "strengthen the enablers of artificial intelligence adoption", including data and associated infrastructure.

The AI Opportunities Action Plan was published in January 2025.[104] One of its recommendations on laying the foundations of AI, was for the government to establish "AI Growth Zones (AIGZs) to facilitate the accelerated build out of AI data centres". AGZs would have a streamlined planning approval process and accelerated access to "clean power".

In its response to the Action Plan, the government confirmed it would create AIGZs.[105] The first will be at Culham, Oxfordshire, which houses the UK Atomic Energy Authority's headquarters. The site has access to a large amount of power because it hosted the Joint European Torus, an experiment nuclear fusion reactor decommissioned in 2024.[106]

Applications for AI Growth Zones

In April 2025 local authorities and industry were invited to submit applications for sites across the UK to be designated as AIGZs. The government sought proposals for sites that could deliver at least 500 MW of AI infrastructure. The government said sites would be assessed against four criteria:

- Capacity: sites will need to have sufficient power, water, land, and internet connectivity to deliver at least 500 MW of AI infrastructure, as well as a clear plan to obtain planning consent by 2028.
- Deliverability: sites in areas with lower electricity grid congestion (see section below) and with local authority support will be favoured.
- Local impact: sites will be favoured that are within an existing innovation ecosystem, such as clusters of AI-related industries and local policy and funding support, and close to low carbon electricity generation capacity. Sites should also demonstrate their impact on the local economy in terms of jobs, skills, and regeneration.
- Government support: applicants should be clear about the extent to which the viability of their site depends on government support.

The government reportedly received over 200 applications.[107] The first set of AIGZs will be announced in summer 2025, although the application system will remain open "indefinitely".

104 DSIT, AI Opportunities Action Plan, 13 January 2025

105 DSIT, AI Opportunities Action Plan: government response, 13 January 2025

106 UK Tech News, 'Exciting plans' ahead for Culham, Britain's first AI growth zone, says UK Atomic Energy Authority CTO, 4 February 2025

107 Computer Weekly, Government bags 200 bids from local authorities wanting AI growth zones in their areas, 30 April 2025

Planning consent in AI Growth Zones

As noted above, the AI Opportunities Action Plan recommended that data centres in AIGZs have access to a streamlined planning approval process.

At the time of writing it is not clear whether this will be a bespoke process or be part of wider planning reforms. In response to a parliamentary question in June 2025, the government pointed to the reforms to the NSIP regime being introduced through the Planning and Infrastructure Bill.[108]

The Social Market Foundation has called for AIGZs to come with Special Development Orders (which grant planning permission for specified types of development) and simplified environmental standards.[109]

3.4 Devolved administrations

Scotland

The Scottish Government's National Planning Framework 4 (NPF4) lists green data centres as a national development by virtue of their contribution to digital connectivity.[110] National developments are "significant developments of national importance that will help to deliver the spatial strategy".[111]

Planning authorities are required to "identify and support" proposals for national developments in their area.[112] Designation as a national development also means that the need for green data centres does not need to be agreed as part of the planning consent process.[113]

The NPF4 specifically refers to 'green' data centres. These are data centres that use renewable energy generated in Scotland.[114] The Scottish Government has published a shortlist of 20 sites suitable for data centres.[115]

Wales and Northern Ireland

Planning policy in Wales and Northern Ireland does not explicitly mention data centres. This means that, unlike in England and Scotland, planning authorities do not have to give any weight to the need for data centres when setting local policies or deciding planning applications.

108 PQ 54307, 6 June 2025
109 SMF, How to power AI: Boosting compute capacity for UK AI, 10 February 2025
110 Scottish Government, National Planning Framework 4 [PDF], 13 February 2023, p112
111 Scottish Government, National Planning Framework 4 [PDF], 13 February 2023, p97
112 Scottish Government, National Planning Framework 4 [PDF], 13 February 2023, p4
113 Scottish Government, National Planning Framework 4 [PDF], 13 February 2023, p97
114 Scottish Government, Green industrial strategy, 11 September 2024, p35
115 Host in Scotland, Shortlist for data centre site development, June 2023

However, the UK Government's designation of data centres as critical national infrastructure (see section 5.2 below) has been cited in recent planning reports as a sign of national policy support.[116]

[116] Cardiff Council, Planning application 24/00624/FUL – Committee report, 17 October 2024, para 8.126

4 Energy consumption

For data centre operators, energy is a significant cost. They also potentially face delays in obtaining power as electricity grids around the world struggle to cope with demand. Operators have sought to allay climate concerns by promising to become carbon neutral (see box 4).

techUK has argued that the government's ambitions for the UK's digital economy will be "dangerously underpowered" if it does not "reckon with the energy foundations".[117]

UK Government policies regarding the energy grid cover Great Britain. Energy policy is largely devolved to Northern Ireland, which shares an electricity grid with the Republic of Ireland. Northern Ireland is included in UK-wide energy price statistics (section 3.2).

4.1 How much energy do data centres consume?

Data centres consume an estimated 2.5% of the UK's electricity.[118] The National Energy System Operator expects annual electricity consumption by data centres to rise from 5 terawatt hours today to 22 terawatt hours by 2030.[119]

Other regions with lots of data centres are seeing similar, or even higher, demands on their energy grids. In the US, a study for the Department of Energy (DOE) predicted that data centres could use up to 12% of the country's electricity by 2028, up from 4.4% today.[120] In Ireland, which is home to the European headquarters of some major US technology companies, a fifth of annual energy demand comes from data centres. In the Dublin area, data centres were responsible for 48% of electricity consumption in 2023.[121]

Globally, the International Energy Agency (IEA) has estimated that in 2024 data centres accounted for 1.5% of global electricity demand. Its report,

117 techUK, Industrial Strategy 2025: What it means for the Energy Infrastructure and Digital Tech Sector , 26 June 2025

118 HL Deb 27 January 2025 vol 843 c12

119 National Energy System Operator (NESO), Clean power 2030 – Annex 1: Electricity demand and supply analysis, 5 November 2024 p4

120 US Department of Energy (DoE), DOE Releases New Report Evaluating Increase in Electricity Demand from Data Centers, 20 December 2024

121 Commission for Regulation of Utilities, Review of Large Energy Users Connection Policy, 18 February 2025, p51

Energy and AI, predicted that this could double to just under 3% of global demand by 2030.[122]

The IEA has emphasised that the growth in electricity demand from data centres, though significant, is lower in absolute terms than that of other sectors such as industry and transport.[123] techUK argues that electricity demand "should not be perceived as a problem unique to data centres" but as part of a broader challenge in enabling "technology-led growth".[124]

However, the IEA's report notes that data centres tend to cluster in certain areas, placing greater demands on local electricity grids than more dispersed technologies such as electric vehicles.[125]

Future energy demand is uncertain

Predictions about the future energy consumption of data centres are uncertain. Much of the demand for new data centres comes from emerging technologies, notably AI, for which the rate of adoption is uncertain. The energy efficiency of data centres and the computer equipment they house is constantly evolving. The capacity of energy grids to absorb additional data centres may also constrain energy consumption in practice. The IEA's predictions for 2030 range from 2% of global electricity demand to 4.4%, depending on these factors.[126]

In addition, there are questions about how much data centre capacity will be needed for AI. In January 2025, the Chinese company DeepSeek released an open-source AI large language model which was reportedly trained using a fraction of the resources needed for US competitors, such as ChatGPT. This led some commentators to suggest that AI's "appetite for energy may not be as insatiable as previously thought".[127]

Others argued that greater efficiency would lead to greater adoption, cancelling out any benefits in terms of energy demand.[128] Some experts warned that the DeepSeek approach to AI could actually increase energy

122 IEA, Energy and AI, April 2025, p63

123 IEA, What the data centre and AI boom could mean for the energy sector, 18 October 2024; Savills, The energy conundrum, 30 May 2024

124 techUK, Foundations For The Future: How Data Centres Can Supercharge UK Economic Growth, 4 November 2024, p22

125 IEA, Energy and AI, April 2025, p38

126 IEA, Energy and AI, April 2025, p66-67. The 2% figure is under the 'headwinds' scenario, with limited AI uptake and grid capacity constraining the approval of new data centres. 4.4% is the 'lift-off' scenario, where AI take-up is high and electricity grid can handle demand from data centres. The 3% figure cited above is the 'base' scenario.

127 FT, DeepSeek threat exposes guesswork on AI power demand, says IEA, 29 January 2025; Kleinman Center for Energy Policy, Load Growth Irrational Exuberance Crashes into DeepSeek, 31 January 2025

128 Politico E&E News, 'Game changer'? What 'DeepSeek' AI means for electricity, 29 January 2025; S&P Global, Potential impacts of DeepSeek on datacenters and energy demand, 27 February 2025

demand, as it appears to use more energy than US rivals when producing responses.[129]

A review article published for the IEA's Technology Collaboration Programme on Energy Efficient End-use Equipment noted that widely-reported studies have historically over-estimated the future energy use of data centres and IT more generally.[130] It concludes that "more conservative, lower estimates" of energy use have been more accurate, although it leaves open the "possibility, perhaps even a large likelihood, that AI might indeed induce a sharp growth in data centre energy demand".

5 Climate Neutral Data Centre Pact

The Climate Neutral Data Centre Pact was launched by data centre operators and trade associations, including techUK, in 2021.[131] It is a self-regulatory initiative in support of the European Union's Green Deal.

Signatories include major US technology companies, as well as data centre operators with a UK presence, including Digital Realty, Equinix, Kao Data, Vantage, and Virtus. They have committed to sustainability targets across various metrics:

- By January 2025, new data centres operating at full capacity will meet an annual energy efficiency target of 1.3 power usage effectiveness (PUE) in cool climates, and 1.4 in warm climates (where more cooling is needed). Existing data centres will achieve these same targets by January 2030. Energy efficiency is discussed in section 4.5 of this briefing.
- Data centre electricity demand will be matched by 75% renewable energy or hourly carbon-free energy by December 2025 and 100% by December 2030. This is discussed in section 3.4 of this briefing.
- By January 2025 new data centres at full capacity in cool climates that use potable water will be designed to meet a maximum water use effectiveness (WUE) of 0.4 litres per kilowatt hour in areas with water stress. Water use is covered in section 5 of this briefing.
- Data centre operators will increase the quantity of server materials repaired or reused and will create a target percentage for repair and reuse.

129 MIT Technology Review, DeepSeek might not be such good news for energy after all, 31 January 2025

130 4E-TCP, Data centre energy use: critical review of models and results [PDF], March 2025. See, for example, Guardian, 'Tsunami of data' could consume one fifth of global electricity by 2025, 11 December 2017

131 Data Centre Magazine, Data centre, cloud leaders announce sustainability pledge, 22 January 2021

Signatories also agreed to "explore the recovery and reuse of heat from new data centres". There is no associated target due to regulatory barriers and uncertainty about end user demand. [132]

Looking at the sustainability record of five major US tech companies, the New Climate Institute has said that "soaring demand" for data centres "calls into question whether companies can really deliver significant emission reductions this decade".[133] Microsoft's Chief Sustainability Officer acknowledged the impact of AI data centre demand in a blog post: "In 2020, Microsoft leaders referred to our sustainability goals as a "moonshot," and nearly five years later, we have had to acknowledge that the moon has gotten further away".[134]

4.2 Energy prices

Energy is a key component of data centres' costs. techUK states that for data centres, "energy is not just another input cost; it's the heartbeat of their operations".[135] The UK has comparatively high energy prices, affecting its attractiveness as a market. Data centre operators cannot necessarily move to locations with cheaper energy: proximity to customers and connectivity may be considered more important.

However, data centres used for purposes that do not require low latency, such as AI training, can be more flexible. Major US tech companies have all invested in data centres in Nordic countries in recent years, due in part to the favourable climate and supply of cheap, renewable energy.[136]

One tech investor told the Times that the UK would see an "exodus" of AI startups unless it can achieve "globally competitive energy costs".[137]

Non-domestic energy prices in the UK

Average non-domestic electricity prices in the UK had been gradually increasing for most of the 2010s before rising at a faster rate at the end of the decade and much faster still in 2022 and 2023. The annual average electricity price for this sector in 2024 was 25.8 pence per kilowatt hour (p/kWh), or more than double its 2020 level.

132 Climate Neutral Data Center Pact, Working Groups, not dated [accessed 18 July 2025]
133 New Climate Institute, Corporate climate responsibility monitor 2025: tech sector, 26 June 2025, p7
134 Microsoft, Progress on the road to 2030, 13 February 2025
135 techUK, Industrial Strategy 2025: What it means for the Energy Infrastructure and Digital Tech Sector , 26 June 2025
136 Pexapark, Breaking down the data center surge in the Nordics: Key players, trends and PPAs, 16 April 2025
137 Times, UK electricity grid delays push data centres towards gas, 28 April 2025

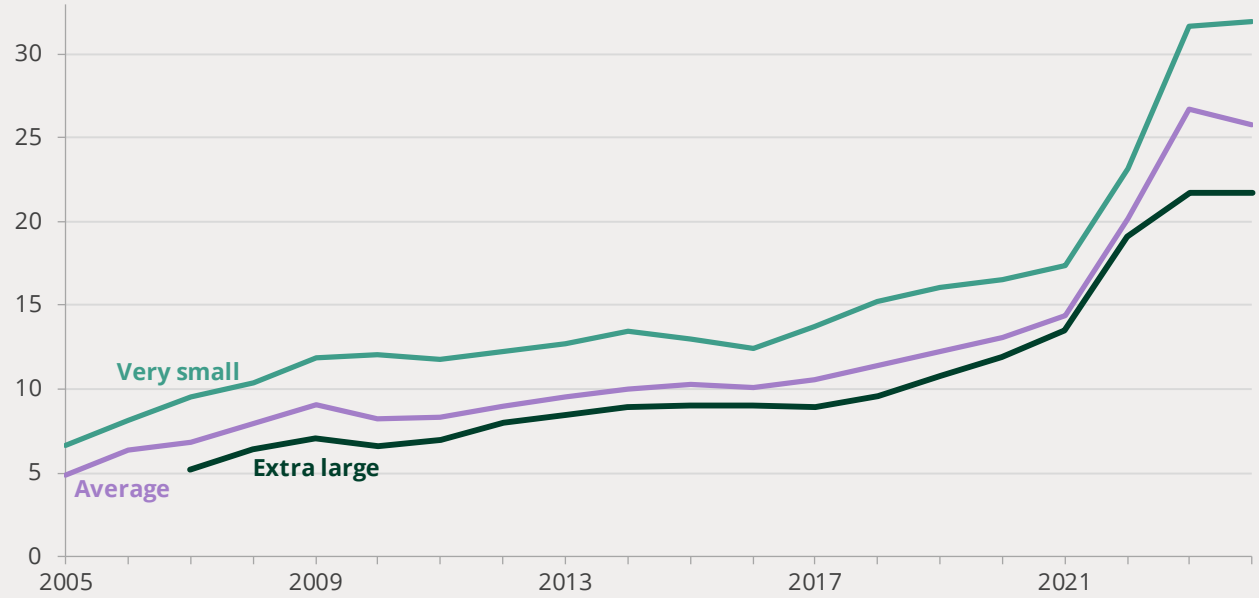
The average price paid per unit of energy tends to be much lower for larger consumers. In 2024 prices varied from 32.0 p/kWh for very small consumers to 21.7 p/kWh for extra large consumers.

The chart below looks at average prices for non-domestic consumers at both ends of the consumption size scale, plus the average for all non-domestic consumers.[138]

An 'extra large' customer is defined as a consumer using over 150 GWh per year (150,000 MWh), In theory, a 17 MW data centre would meet this threshold (17 multiplied by 8,760, the number of hours in a year, is approximately 150,000 MWh). In practice, however, data centres will not draw their full capacity across a year.

UK electricity prices paid by different sizes of non-domestic consumers

Pence per kWh in cash terms, excluding the Climate Change Levy



Source: DESNZ, Gas and electricity prices in the non-domestic sector, 3.4.1

International comparisons

In 2024 the UK had higher industrial electricity prices, including tax, than anywhere in the EU for all sizes of consumer.[139]

The chart below shows average annual electricity prices (including tax) across all sizes of industrial consumers in the IEA in 2023. The pre-tax figures

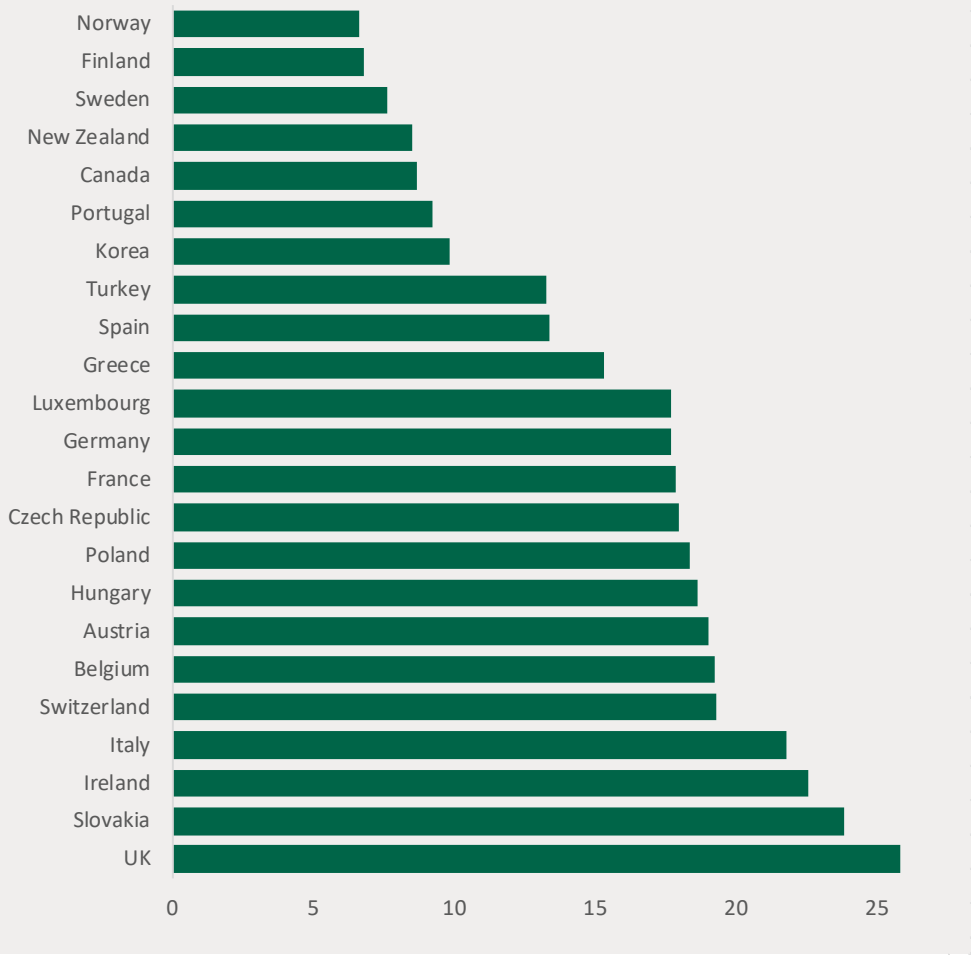
[138] A very small electricity consumer means less than 20 MWh per year, an extra large consumer means more than 150 GWh per year.

[139] Department for Energy Security and Net Zero (DESNZ), International industrial energy prices, Tables 5.4

are very similar. The UK had the highest prices at 25.9 pence per kWh including taxes for electricity.

Industrial electricity prices including tax in the IEA, 2023

Pence per kWh



Source: DESNZ, International industrial energy prices, Tables 5.3.1

According to the Social Market Foundation, what this means in practice is that powering a 100 MW data centre in the UK would cost around £226.5 million per year.[140] Annual costs in France were estimated at £156.3 million, and in Sweden at £67 million. The report also found that annual electricity costs were almost four times higher in the UK than in the United States (£56.8 million).

[140] SMF, How to power AI: Boosting compute capacity for UK AI, 10 February 2025

Proposals for reform

Reducing the cost of electricity

In its Modern Industrial Strategy, published June 2025, the government committed to introducing a scheme to reduce energy costs for businesses. The British Industrial Competitiveness Scheme will exempt eligible businesses from paying the costs of certain government energy policies through their bills. According to the government this will reduce electricity costs by £35 to £40 per MWh, which will "bring GB electricity costs more in line with other major economies in Europe".[141]

The scheme is set to launch in 2027. However, it is not clear whether data centres will be eligible for support. techUK noted that there was no mention of data centres in the examples the government provided of businesses that would benefit, "despite their energy intensity and high economic value".[142]

The government says that eligibility will be determined following a consultation to be published "shortly".[143]

There are existing schemes that similarly remove the policy costs from the electricity bills of businesses in specified energy intensive industries (EIIs). techUK has called for data centres to be designated as an EII so that operators can benefit from these schemes.[144]

In April 2025 Ofgem launched a broader review into how the costs of maintaining the energy system are recovered from consumers.[145] It published a call for inputs in July 2025. No specific policies proposals have been put forward yet.

Locational pricing

In Great Britain there is one national market for electricity which sets one national price. Wholesale electricity prices are the same across Great Britain, regardless of the location of the buyer. One consequence of this is that the wholesale price provides no incentive for energy consumers to base themselves close to energy generators. The varying cost of transmitting electricity to consumers in different parts of the country is not reflected in a national wholesale price.

Some stakeholders have argued that this is inefficient. An explainer by Octopus Energy argues that it results in higher costs and wasted energy because the transmission network sometimes lacks the capacity to carry

141 DBT, The UK's Modern Industrial Strategy, 23 June 2025, p30
142 techUK, Industrial Strategy 2025: What it means for the Energy Infrastructure and Digital Tech Sector, 26 June 2025
143 DBT, Powering Britain's future: Electricity bills to be slashed for over 7,000 businesses in major industry shake-up, 22 June 2025
144 techUK, Data centres and electricity market reform: position statement [PDF], March 2022
145 Ofgem, Recovering the costs of energy infrastructure investment from customers, 3 April 2025

electricity from areas of high supply, such as northern Scotland, to areas of high demand, such as southern England.[146]

One proposed solution to this is zonal pricing whereby Great Britain would be divided into regional electricity markets with their own wholesale price. Electricity would be cheaper in regions where supply is high, giving large energy users an incentive to move there.[147]

The government was considering zonal pricing as part of the wider Review of Electricity Market Arrangements, initiated by the previous government. The government announced in July 2025 that it would retain the GB-wide wholesale electricity market and not introduce zonal pricing.[148] However, it proposed measures to reform national electricity pricing to "provide stronger signals for efficient siting of new assets and improve overall operational efficiency".

A key aspect of the government's proposal is reforming the Transmission Network Use of System (TNUoS) and connections charging regimes. These charges support the construction and maintenance of the high-voltage transmission network that carries electricity from where it is generated to where it is needed. Ofgem suggested in an open letter on network charging reform that data centres:

> could be rewarded for locating in Scotland (where they can soak up excess wind power) rather than in the south of England. This could be done for instance through a system of transmission or connection charge premia and discounts depending on connection location.[149]

techUK commented that it hoped to receive "more clarity" about how the reformed national pricing system will work in practice.[150]

The government says that it will publish detailed plans later in 2025, and deliver the reforms "within this Parliament".[151]

4.3 Electricity grid connections and capacity

Organisations need to apply to the National Energy System Operator (NESO) if they want to connect to the electricity grid. Applications go into NESO's connections queue, which has historically worked on a first come, first served basis. This has led to long delays in securing grid connections.

146 Octopus Energy, Zonal energy pricing explained, not dated [accessed 10 July 2025]
147 Octopus Energy, Case Study: how regional pricing could save businesses (and everyone) on bills, not dated [accessed 10 July 2025]
148 DESNZ, Review of electricity market arrangements (REMA): Summer update, 2025, 10 July 2025
149 Ofgem, Open Letter: Reforming network charging signals to align with the Government's decision on the future design of Great Britain's electricity system [PDF], 21 July 2025
150 techUK, Government Confirms Direction of Electricity Market Reform in REMA Update, 10 July 2025
151 DESNZ, Review of electricity market arrangements (REMA): Summer update, 2025, 10 July 2025

Connections delays affect data centres in two ways. Data centres themselves need to connect to the electricity grid if they are to draw power from it. In addition, data centre developers need new supply-side projects to connect to the grid at a sufficient pace so that grid capacity can keep up with the demand from new data centres. Supply-side projects include new generation capacity, such as wind farms, and upgrades to the transmission network so that the grid can carry electricity from where it is generated to where it is consumed.

Industry commentators have described the availability of electricity grid capacity as a "critical bottleneck" to the expansion of data centres in the UK.[152] techUK cites an example of one data centre developer whose grid connection date was postponed to 2038.[153]

Grid capacity is particularly limited around west London, where most of the UK's data centres are clustered. In 2022 it was reported that housing developers had been told not to expect new grid connections in Hillingdon, Ealing or Hounslow until 2035.[154] The Greater London Authority said that new data centres projects had absorbed spare grid capacity in West London "for the remainder of the decade".[155]

Reforms to speed up grid connections

First ready and needed, first connected

In November 2023 the previous government published its Connections Action Plan.[156] This set out actions to improve the connections process, including by prioritising projects that are ready to use grid capacity rather than considering all applications on a first come, first served basis.

NESO wants to build on these reforms by also prioritising energy generation projects for which there is a strategic need, in terms of the Clean Power 2030 strategy.[157] Projects that can demonstrate they are both 'ready' and 'needed' will go into a priority queue called Gate 2.[158]

152 Data Centre Review, Power and planning constraints threaten UK data centre growth, 10 January 2025

153 techUK, Foundations For The Future: How Data Centres Can Supercharge UK Economic Growth, 4 November 2024, p22

154 Data Center Dynamics, Report: Home building to halt in West London, due to data center power demands, 28 July 2022

155 Greater London Authority (GLA), West London electricity capacity constraints – July 2022 background document, July 2022

156 DESNZ, Electricity networks: connections action plan, 22 November 2023

157 NESO, Connections reform, not dated [accessed 11 July 2025]

158 Norton Rose Fullbright, "First Ready, First Connected": Reform to GB Electricity Grid Connections, March 2025

The current government has said that this could release over 400 GW of stalled projects from the connections queue, freeing up space for new data centres.[159]

All demand projects are considered 'needed' for the purpose of the Gate 2 criteria. However, Ofgem, the energy regulator, reported that some respondents to a consultation on the reforms had argued that data centres could be negatively affected by the 'ready' criteria.[160] Data centre developers acquire land later in the project timeline compared to other types of project, potentially making it difficult for them to demonstrate readiness. Respondents argued that being moved out of Gate 2 could result in lost investment.[161]

Ofgem rejected calls for data centre-specific readiness criteria. It said that it was "exploring" whether additional reforms are required to facilitate demand-side projects such as data centres.[162]

Demand-side connections

The Energy Minister, Michael Shanks, told the House of Lords Industry and Regulators Committee that the government was looking at how to address the grid connections queue for demand-side connections such as data centres. He noted that this was more complicated than for supply-side connections "because you do not have an objective analysis of which demand projects are more valuable than others".[163]

In its June 2025 Industrial Strategy, the government announced that it would introduce a Connections Accelerator Service by the end of the year. The service is intended to help demand projects get grid connections, "prioritising those that create high-quality jobs and bring the greatest economic value". The government is also proposing to use the Planning and Infrastructure Bill to grant powers to speed up connections for designated strategic projects, including by reserving grid capacity.[164]

4.4 Data centres and decarbonisation

Energy grid decarbonisation

An article in The Conversation argued that given data centres' large and rising demand for energy, "it's AI or the climate".[165] Non-profit campaign

159 HL6380, 14 April 2025
160 Office of Gas and Electricity Markets (Ofgem), TMO4+ Impact Assessment, 15 April 2025, pp49-50
161 Ofgem, TMO4+ Impact Assessment, 15 April 2025, p142
162 Ofgem, TMO4+ Impact Assessment, 15 April 2025, p50
163 House of Lords Industry and Regulators Committee, Oral evidence: The energy grid and grid connections, 25 March 2025, Q110
164 For information about the bill, see the Library briefings, Planning and Infrastructure Bill 2024-25, 21 March 2025; and Planning and Infrastructure Bill 2024-25: Progress of the bill, 5 June 2025
165 The Conversation, Data centre emissions are soaring – it's AI or the climate, 2 October 2024

group Foxglove calculated that a proposed data centre in Elsham, Lincolnshire, would emit five times more greenhouse gases than Birmingham Airport, based on the current mix of energy sources in the electricity grid.[166]

Decarbonising the energy grid – using clean, renewable sources of generation rather than fossil fuels – is a core part of reducing greenhouse gas emissions. However, integrating data centres into a decarbonised electricity grid is a challenge not just because they are large energy users. Data centres need consistent power delivery, while the main sources of renewable energy (wind and solar), are intermittent. That is, they do not produce electricity when the wind is not blowing or the sun is not shining.

An article in The Conversation argued that given data centres' large and rising demand for energy, "it's AI or the climate".[167] The Times suggested that Britain's AI ambitions could be "on a collision course with its decarbonisation goals", amid reports that data centre developers were seeking to use gas for power rather than wait for an electricity grid connection.[168]

This is a challenge being experienced in other countries where the electricity grid is struggling to cope with rising demand for electricity. For example:

- The Irish Times reports that there are 11 data centres in Ireland connected to the gas network, with four more awaiting a connection.[169] Friends of the Earth Ireland has called for a moratorium on data centres, arguing that the sector's growth is deepening the country's reliance and fossil fuels.[170]

- In the US, Data Center Dynamics reports that natural gas has come to be seen as the "only viable and rapidly deployable power source capable of meeting the soaring energy demands of AI-driven data centers". An article in the MIT Technology Review states that this could keep the country "dependent on natural gas for decades to come".[171] In states where there are a large number of data centres, such as Washington, press reports state that their power demands threaten decarbonisation efforts by monopolising renewable sources.[172]

Government policy on grid decarbonisation

The Labour Party made a 'national mission for clean power by 2030' a key part of its manifesto for the 2024 general election. Its Clean Power 2030

166 Guardian, New UK AI datacentre could cause five times emissions of Birmingham airport, 6 June 2025

167 The Conversation, Data centre emissions are soaring – it's AI or the climate, 2 October 2024

168 Times, UK electricity grid delays push data centres towards gas, 28 April 2025

169 Irish Times, 15 data centres awaiting decision on gas network connection, 9 June 2025

170 Irish Times, Data centre boom under AI growth in Ireland threatening climate targets, report warns, 10 December 2024; Irish Times, Let's get real: Ireland's data centre boom is driving up fossil fuel dependence, 2 January 2025

171 MIT Technology Review, AI could keep us dependent on natural gas for decades to come, 20 May 2025

172 Seattle Times, Data centers guzzle power, threatening WA's clean energy push, 28 July 2024

Action Plan sets a target for 95% of Great Britain's power to be generated through clean sources by 2030.[173] The government defines 'clean' power as generation from renewables and nuclear plus future low carbon technologies such as gas with carbon capture and storage.[174]

The government says its forecast for data centre growth to 2030 is "consistent" with the Clean Power 2030 Action Plan, and that it "expects to be able to meet this demand through its plans to increase renewable power capacity, other low carbon generation and flexible and dispatchable power".[175]

Data centre demand forecasts were included in NESO's advice to the government on the feasibility of decarbonising the grid by 2030, although the advice states that achieving this will be a "huge challenge" requiring "significant investment" in energy infrastructure. [176]

Strategic energy planning

techUK and EnergyUK have both argued that better strategic planning could accommodate the energy demands of data centres in an efficient way. EnergyUK argues that the government and NESO should "establish clarity over the optimal locations and likely energy impacts of additional data centre investment in the UK". This would enable the energy sector to anticipate where future demand for data centres is likely to arise, and plan accordingly. techUK argues that data centres should be considered a "priority demand sector" for the purpose of energy infrastructure planning.[177]

The Tony Blair Institute (TBI) has argued that the rise of AI training data centres means that there is greater scope for strategic planning, because they are more flexible in terms of location.[178]

In October 024 the government tasked NESO with developing a Strategic Spatial Energy Plan (SSEP).[179] The document will set out what types of energy generation and network infrastructure need to be built, when and where. The government said this would help NESO prioritise grid connections, while also providing developers with greater confidence.

Witnesses speaking to the Lords Industry and Regulators Committee were broadly supportive of the SSEP proposal.[180] The committee's June 2025 report concluded that "strategic planning of energy generation and networks should

173 DESNZ, Clean Power 2030 action plan, 13 December 2024
174 For further information see Commons Library, Clean power targets, 28 March 2025
175 PQ 64931, 11 July 2025
176 NESO, Our Clean Power 2030 advice to Government, 5 November 2024
177 EnergyUK, Powering the Cloud: How data centres can deliver sustainable growth, 17 June 2025
178 Tony Blair Institute, Greening AI: How the UK Can Power the Artificial-Intelligence Era, 16 September 2024
179 DESNZ, Strategic plan for long-term energy infrastructure, 22 October 2024
180 House of Lords Industry and Regulators Committee, Power struggle: Delivering Great Britain's electricity grid infrastructure [PDF], HL Paper 132, 4 June 2025, pp40-42

help to provide a clearer signal to the industry, investors, regulators and the planning system about what the energy system needs, and in which regions".[181]

Data centres in the SSEP

The SSEP will mainly focus on the energy network. However, data centres are explicitly mentioned in NESO's methodology document because of the sector's potential impact on energy demand, particularly in regions with clusters. The SSEP will therefore seek to identity optimal locations for 1 to 2 GW of data centre capacity.[182]

Only this "small amount" of capacity will be considered because not all data centres can be flexible in terms of their location (for example because they need to be close to customers who need low latency).

The TBI suggested that that the SSEP could integrate data centres by, for example, identifying sites for small modular reactors (SMRs; see box 6 below) and places where data centres could support heat networks.[183]

The draft SSEP will be published for consultation in "the second quarter of 2026".[184]

AI Energy Council

Separately, the government has set up the AI Energy Council to facilitate collaboration between the AI and energy sectors. The council will be jointly chaired by the Secretaries of State for SIT and ESNZ. Its remit is to:

> provide expert insight on the energy needs of AI, opportunities to accelerate investment in the development of renewable and innovative energy solutions, including Small Modular Reactors (SMRs) and the role of AI in a modern, efficient and sustainable energy system.[185]

The council met for the first time in April 2025.[186]

The government says that, through the AI Energy Council, it is working with industry stakeholders to:

> ..look at where best to locate AI data centres to ensure the growth of AI and data centres in the UK is done in a way that supports our clean power mission and longer-term decarbonisation goals. For example, looking to seize

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181 House of Lords Industry and Regulators Committee, Power struggle: Delivering Great Britain's electricity grid infrastructure [PDF], HL Paper 132, 4 June 2025, pp42

182 NESO, SSEP methodology, May 2025, p23-24

183 TBI, Greening AI: How the UK Can Power the Artificial-Intelligence Era, 16 September 2024

184 Cabinet Office, Letter from Lord Wilson of Sedgefield to Baroness Coffey regarding issues raised in the debate on energy National Policy Statements (NPSs) EN-1, EN03 and E-5, DEP2025-0543, 22 July 2025

185 DSIT, AI Opportunities Action Plan: government response, 13 January 2025

186 DSIT and DESNZ, AI Energy Council to ensure UK's energy infrastructure ready for AI revolution, 8 April 2025

opportunities that support grid balancing, reduce network costs, and utilise excess renewable energy.[187]

Supporting new low-carbon generation capacity

Power purchase agreements

In pursuit of their decarbonisation targets, data centre operators have become among the world's largest corporate purchasers of renewable energy. One way data centre operators do this is though power purchase agreements (PPAs). These are long-term agreements whereby an organisation agrees to purchase an agreed amount of electricity, at a set price, from a specific source (such as a wind farm). If the amount of clean energy purchased is equal to the amount of energy the operator consumes, then it can be said to have 'matched' 100% of its energy consumption with clean sources.

The data centre may be connected to the energy source directly, via a private wire. Alternatively, power might be transmitted to the data centre indirectly via the national grid.[188]

For energy developers, PPAs offer a guaranteed price for a potentially significant part of the energy they generate. For example, Google and Amazon have agreements in place to purchase 65% of the power produced by the 882 MW Moray West wind farm off the coast of Scotland.[189] This revenue certainty helps the developer finance the project. Amazon claims that its first UK wind farm, on the Kintyre Peninsula in Scotland, was "one of the largest unsubsidised onshore wind projects in the UK".[190]

techUK states that, through PPAs, data centre operators are giving energy project developers the "confidence" to bring new renewables capacity to the grid.[191] Modelling by Aurora Energy Research suggests that projected growth in the data centre sector could help to "provide a route-to-market" for 19 GW of renewable energy projects by 2035.[192]

187 HL9205, 21 July 2025

188 There is a third type of PPA called a 'virtual PPA' in which no power is physically delivered from the energy source to the data centre. This is widely used in the US but is reportedly not common in the UK (Crown Commercial Services, Introduction to Power Purchase Agreements [PDF], accessed 17 July 2025)

189 Data Center Dynamics, Amazon strikes PPA with Moray West wind farm in Scotland, 30 January 2024

190 Amazon, Amazon's first Scottish wind farm project comes online, 28 October 2021

191 techUK, Foundations for the future: how data centres can supercharge UK economic growth, 4 November 2024, p23

192 Aurora Energy Research, Impact of datacentres on the GB power system [PDF], 5 June 2025, p12

Google has argued that corporate PPAs play a particularly important role in the commercialisation of emerging energy technologies, including geothermal, advanced nuclear, and long-duration storage.[193]

Criticisms of PPAs

Critics have argued that corporate PPAs are only meeting part of the additional energy demand from data centres: they are not actually displacing fossil fuels. Research for Friends of the Earth Ireland found that corporate PPAs financed 500 GWh of renewables in Ireland between 2020 and 2023, but that data centres' energy demand rose by over 3,000 GWh over the same period.[194]

Moreover, PPAs do not necessarily reflect the energy consumption patterns of a data centre. Over the course of a year the energy output of a wind farm may match the volume of energy consumed by a data centre. The data centre operator can then be said to have 'matched' 100% of its energy consumption with clean sources. However, wind farms produce energy intermittently depending on how windy it is, while data centres need a constant supply.

A study by Princeton University concluded that so-called volumetric matching displaces competing clean energy projects and has "zero or near-zero" impact on the amount of energy generated by fossil fuels. [195] It found that by purchasing renewable energy regardless of when it is produced or needed, PPAs reduce the incentive for energy projects that supply the grid when the sun is not shining, or the wind is not blowing.

The Sustainable Digital Infrastructure Alliance (SDIA) argues that PPAs therefore do not address the "real challenges" of decarbonisation, such as integrating intermittent renewable capacity into the grid.[196] If the data centre is connected via the grid, then grid still needs to find a way to store the renewable energy when supply exceeds demand, and to transmit it to where it is consumed.[197]

193 Google, The Corporate Role in Accelerating Advanced Clean Electricity Technologies, updated December 2024

194 Hannah Daly, Data centres in the context of Ireland's carbon budgets [PDF], December 2024

195 Qingyu Xu and others, System-level Impacts of Voluntary Carbon-free Electricity Procurement Strategies, Joule, Volume 8, Issue 2, 21 February 2024, pp 374-400; Data Center Dynamics, Let's stop pretending that volume-based PPAs are a net-zero strategy, 16 February 2024

196 SDIA, Why PPAs don't make data centres more sustainable, 8 March 2022

197 Data Center Dynamics, ScottishPower opens Amazon-funded wind farm in Kintyre, Scotland, 29 October 2021

6 Temporal matching PPAs

An alternative to volumetric matching is called 24/7, or temporal, matching. The data centre operator purchases enough renewable energy to match its consumption hour by hour. This provides a closer link with consumption patterns. A Princeton University study found that temporal matching supported additional renewables capacity, rather than crowding out other investments.[198]

In principle, temporal matching supports a broader mix of low-carbon technologies because meeting the data centre's energy demands needs to account for the intermittency of wind and solar. Renewables need to be combined with energy storage technologies, such as batteries, and reliable 'baseload' power from sources such as nuclear, geothermal and tidal.

This makes temporal PPAs more expensive than traditional PPAs, by around £10 per megawatt hour.[199]

However, the Sustainable Digital Infrastructure Alliance cautions that operators with a large, global portfolio of PPAs could claim to have achieved 24/7 matching "simply because there is always a wind or solar farm somewhere which is running".[200]

Google and Microsoft are both signatories to the 24/7 Carbon Free Energy Compact, which commits them to hourly temporal matching within local energy grids.

The Social Market Foundation think tank suggests the government should develop a standard method for determining whether a PPA has added renewables capacity that otherwise would not have existed, or displaced non-renewable energy sources. Qualifying PPAs could be incentivised through tax credits. An article in Nature similarly argued that the government should use standards to limit "ineffective" renewables purchases that do not reduce emissions.[201]

The government has said that it wants to "support large users of electricity such as data centres in developing the power infrastructure they need". It said in July 2025 that it intends to issue a call for evidence on the corporate PPA market "in due course".[202]

198 Qingyu Xu and others, System-level Impacts of Voluntary Carbon-free Electricity Procurement Strategies, Joule, Volume 8, Issue 2, 21 February 2024, pp 374-400

199 Capacity Media, Data centre power costs, the PPA market, and a move to 24/7 power matching, 26 March 2025

200 SDIA, Why PPAs don't make data centres more sustainable, 8 March 2022

201 Nature Climate Change, Renewable energy certificates allow companies to overstate their emission reductions, 9 June 2022

202 DESNZ, Review of electricity market arrangements (REMA): Summer update, 2025, 10 July 2025

Reducing data centres' demands on the grid

On-site generation and storage

Building clean energy capacity on or near a data centre can provide power to it directly without going through the national grid. Even if this additional capacity cannot completely power the data centre, it can reduce the demands placed on the grid. EnergyUK argues that the government should "immediately" encourage data centre operators to install on-site capacity.[203]

In the Republic of Ireland, the utilities regulator has proposed that new data centres will only be allowed to connect to the grid if they have sufficient on-site or nearby energy generation capacity to meet their energy demand in full.[204]

Similarly, on-site energy storage (using batteries or fuel cells, for example) can help data centres deal with the intermittency of renewables. Batteries store energy when supply is plentiful and discharge it when supply is low. This also helps the grid balance supply and demand from intermittent renewables.

On-site power and storage are becoming more attractive to data centre operators considering the grid capacity issues seen in many traditional data centre markets, including the UK. A 2025 survey of US hyperscalers and co-location providers by Bloom Energy found that 27% of data centres are expected to be fully powered by on-site generation by 2030. In the previous years' survey, the expectation was just 1%.[205] As noted above, this will not necessarily be renewable generation, with some data centres turning to gas power.

One factor limiting on-site generation in densely populated regions is space. An article in Data Center Dynamics estimates that powering a 20-acre (81,000 square metre) data centre campus with renewables and energy storage would require "at least" another 200 acres (810,000 square metres).[206]

The government says that it will explore on-site low-carbon generation, including small modular reactors (SMRs, see below), and battery storage for its AI Growth Zones.[207]

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203 EnergyUK, Powering the Cloud: How data centres can deliver sustainable growth, 17 June 2025

204 Data Center Dynamics, Ireland's energy regulator proposes policy requiring data centers to match load with new power generation, 19 February 2025; Commission for Regulation of Utilities, Review of Large Energy Users Connection Policy, 18 February 2025

205 Latitude Media, Survey: 27% of data centers are expected to run entirely on onsite power by 2030, 14 July 2025

206 Data Center Dynamics, The challenges and opportunities of onsite power generation for data centers, 7 November 2023

207 DSIT, UK Compute Roadmap, 17 July 2025

The role of nuclear energy

Microsoft announced in 2024 that it had agreed a deal to reopen and purchase all the power from the Three Mile Island nuclear facility in Pennsylvania, the site of the worst nuclear accident in US history.[208] In June 2025 Meta announced that it had signed a deal to keep a nuclear power plant in Illinois operational for another 20 years.[209]

Nuclear is an attractive option for data centre operators because it provides a reliable and constant supply of carbon-free power.[210] In addition to large conventional facilities, data centre developers are also exploring advanced nuclear technologies such as SMRs.

The Tony Blair Institute called the Microsoft deal a "symbolic announcement" ushering in a "new dawn" for nuclear power.[211] It called on the government to enable nuclear to be deployed more quickly and cheaply, to provide the power AI needs.

The government published a draft national policy statement (NPS) for nuclear generation in February 2025, which will guide decisions on planning consent for nuclear projects.[212]. It would remove current restrictions on where nuclear facilities can be built, which the government says will make it easier to deploy SMRs close to where they are needed.[213]

Part of the remit of the AI Energy Council is to look at novel energy solutions, including SMRs. The government intends to deploy a 'first-of-a-kind SMR (an SMR not based on a scaled-down conventional reactor design) by the early 2030s.[214]

208 BBC News, Microsoft chooses infamous nuclear site for AI power, 20 September 2024
209 Guardian, Meta signs deal with nuclear plant to power AI and datacenters for 20 years, 3 June 2025
210 JLL, 2025 Global Data Centre Outlook, not dated [accessed 18 July 2025]
211 Tony Blair Institute, Revitalising Nuclear: The UK Can Power AI and Lead the Clean-Energy Transition, 2 December 2024
212 DESNZ, Government rips up rules to fire-up nuclear power, 6 February 2025
213 DESNZ, Draft National Policy Statement for nuclear energy generation (EN-7), 6 February 2025
214 DESNZ, Advanced Nuclear Technologies, 6 December 2024

7 Small modular reactors: On-site nuclear power

Apart from cost, the main limiting factor to installing renewable on-site generation and storage is space.

For this reason, nuclear power, including from on-site small modular reactors (SMRs), is emerging as an option in the industry. According to Schneider Electric, a nuclear facility uses 360 time less land than wind and 75 times less than solar to produce the same amount of power.

Small Modular Reactors (SMRs) are nuclear reactors with a capacity under 300 MW. Much smaller than conventional reactors, they can be manufactured off-site at a lower cost. Some SMRs designs can be scaled up, meaning they can grow to meet an expanding data centre's additional demand.[215]

Some data centre operators have shown considerable interest. In the US, Google, Amazon and Oracle have all signed agreements to power data centres with SMRs.[216]

However, SMRs are not a commercially proven technology. A report by the Institute for Energy Economics and Financial Analysis looked at existing SMRs under construction and in development and concluded they are "still too expensive, too slow and too risky".[217] British data centre developer Kao Data told the BBC that it does not expect to see nuclear powered data centres in the UK in the near future.[218]

There are also questions about how to manage waste and security at an SMR, as well as public acceptability.[219]

Demand flexibility

EnergyUK has called on the government to require data centre operators to engage in demand-side response (DSR).[220]

215 Bird & Bird, Reflections on the U.K. government's pledge to turbocharge the data centre industry, 17 January 2025

216 Google, New nuclear clean energy agreement with Kairos Power, 14 October 2024; Amazon, Amazon signs agreements for innovative nuclear energy projects to address growing energy demands, 16 October 2024; The Register, Oracle wants to power 1GW datacenter with trio of tiny nuclear reactors, 11 September 2024

217 Institute for Energy Economics and Financial Analysis (IEEFA), Small Modular Reactors: Still too expensive, too slow and too risky, 29 May 2024

218 BBC News, Future data centres may have built-in nuclear reactors, 15 February 2024

219 Raconteur, Culture, security and radioactive waste: challenges abound for nuclear-powered data centres, 10 June 2025

220 EnergyUK, Powering the Cloud: How data centres can deliver sustainable growth, 17 June 2025

DSR involves the energy consumer shifting their energy demand away from peak times to reduce pressure on the grid.[221] The grid needs sufficient capacity to meet peaks in demand, so reducing the 'height' of those peaks frees up capacity.

A study by Duke University found that flexible energy usage by data centres in the US could free up 100 GW of additional capacity in the country's electricity grid.[222] The report suggested that data centres could schedule periods of reduced energy use into their AI training runs to coincide with peak demand, and shift workloads between data centres in different parts of the country.

Analysis by the IEA found that if data centres around the world could be flexible for 0.1% to 1% of the time, this would free up enough grid capacity to integrate all new data centres anticipated up to 2035. However, while this equates to just a "limited number of hours per year", it would still require the deployment of technologies (such as on-site generation and storage) that have not yet been developed at scale.[223]

EnergyUK suggests that data centres that support DSR should be recognised as placing a lower demand on the grid, and therefore be prioritised for connections.[224]

techUK argues that data centres would struggle to participate in "arbitrary demand-response services" because they need consistent power delivery and typically only have enough backup power for emergencies.[225] However, it adds that with greater use of on-site generation and storage capacity there are "several promising avenues by which they may be enabled to participate in elective demand-response".

4.5 Energy efficiency

Data centres' energy efficiency is typically expressed as their power usage effectiveness (PUE). It is calculated by dividing a data centre's total energy use (including IT equipment, cooling, lighting) by the energy used for IT equipment. Data centres are more efficient the closer they get to a PUE of 1, which would mean all the energy being used was for IT equipment.

According to industry think tank the Uptime Institute, which conducts regular surveys of the sector, in 2023 the global average annual PUE was 1.56.[226] This

221 Parliamentary Office of Science and Technology, Demand side response: A tool for lowering household energy bills, 20 February 2024

222 Tyler H. Norris and others, Rethinking Load Growth: Assessing the Potential for Integration of Large Flexible Loads in US Power Systems, February 2025

223 IEA, Energy and AI, April 2025, p100-101

224 EnergyUK, Powering the Cloud: How data centres can deliver sustainable growth, 17 June 2025

225 techUK, Foundations For The Future: How Data Centres Can Supercharge UK Economic Growth, 4 November 2024, p24

226 Uptime Institute, Global PUEs: are they going anywhere?, 4 December 2023

figure has improved from around 2.50 in 2007, but the Uptime Institute's survey suggests that PUE has been "stuck" between 1.55 and 1.59 since 2020. It put this down in part to diminishing returns on energy efficiency investments, and in part to a higher number of data centres in warmer climates outside Europe and North America, which need more energy for cooling (see section 5 below).

The IEA's estimates are slightly lower, with a global average PUE of 1.41 in 2024.[227] Data centres in the US were found to be more efficient (1.32 PUE) while European data centres were slightly above the average (1.45 PUE). It expects PUE to fall to 1.29 by 2030.

Newer, larger data centres tend to be more efficient than older and smaller ones, especially on-premises enterprise data centres.[228] The Competition and Markets Authority (CMA), the UK's competition watchdog, found that the major cloud providers all have PUE ratings below the industry average across their UK data centres.[229] Precise figures were not published in the CMA's report due to confidentiality, but Google claims an average PUE of 1.09 across its global data centres.[230]

Data about small enterprise data centres is rare, but a 2018 European Commission report found that public sector on-premises data centre had an average PUE of 5.0.[231]

Part of the reason for this difference in PUE is cooling efficiency. According to the IEA, 7% of a hyperscale data centre's energy goes to its cooling system, compared to over 30% for an enterprise data centre.[232]

UK energy efficiency standards and regulation

There are no statutory energy efficiency obligations specifically for data centres in the UK. However, data centres must comply with energy efficiency standards and building regulations that apply to all commercial buildings (see box 8).

Many data centre operators have made commitments under the sector's Climate Change Agreement.[233] This is a voluntary government scheme whereby data centre operators agree to individual energy efficiency targets (expressed as a reduction in PUE) in return for a discount to their Climate Change Levy charges. According to techUK 225 data centres are covered.[234]

227 IEA, Energy and AI, April 2025, p259
228 Uptime Institute, Large data centers are mostly more efficient, analysis confirms, 7 February 2024
229 Competition and Markets Authority (CMA), Cloud services market investigation: provisional decision report, 28 January 2025, p186
230 Google, Growing the internet while reducing energy consumption, not dated [accessed 13 June 2025
231 Capacity Media, Does the EU's approach to regulating data centres make sense?, 10 June 2024
232 IEA, Energy and AI, April 2025
233 techUK, Climate Change Agreements (CCA) for Data Centres, 14 November 2023
234 techUK, Foundations for the future: Annex I, 4 November 2024, p3

A new iteration of the scheme is due to start in January 2026 and will set efficiency targets to 2030.[235]

Data centres may also voluntarily choose to seek certification against green building rating systems, which will include standards on energy efficiency and related metrics. The most prominent are BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design).[236]

8 Efficiency standards for commercial properties

Under the minimum energy efficiency standards (MEES) regulations, landlords cannot let out "sub-standard" commercial properties. A property is sub-standard if it has an energy performance certificate (EPC) rating of F or G. Properties may be exempted from this requirement if the landlord can demonstrate that they have made "all the relevant energy efficiency improvements for the property".[237]

In March 2021 the previous government consulted on raising the MEES requirement to EPC B by 2030.[238] It did not respond to the consultation before the July 2024 General Election. The current government has said that it will publish a response in 2025 "when we will set out the updated standard and date for non-domestic buildings".[239]

In a joint report, the Royal Academy of Engineering, Chartered Institute of IT, and the Institution of Engineering and Technology called on the government to mandate environmental reporting, set energy efficiency standards, and mandate the recovery of waste heat (see box 8).[240]

EnergyUK, the energy sector representative body, has also called for mandatory energy efficiency standards for data centres.[241]

Energy efficiency regulation in the EU

The EU's revised Energy Efficiency Directive (EED) came into effect from September 2023. It requires data centres with a capacity over 500 KW to report annually on environmental performance, including energy efficiency, renewable energy use, and heat re-use.

235 DESNZ, Climate Change Agreements: consultation on a new scheme, 16 October 2024
236 techUK, Future-Proofing Digital Infrastructure: Climate Resilience in the Data Centre Sector, 4 November 2024, p23-24
237 Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015, reg 29
238 DESNZ, Non-domestic Private Rented Sector minimum energy efficiency standards: EPC B implementation, 17 March 2021
239 PQ 35693, 13 March 2025
240 National Engineering Policy Centre. Foundations for environmentally sustainable AI, February 2025
241 EnergyUK, Powering the Cloud: How data centres can deliver sustainable growth, 17 June 2025

The EED states that the European Commission should assess the information received under the reporting obligations. It must then report to the European Parliament and, "where appropriate", bring forward legislative proposals to improve energy efficiency.[242]

Member states can go further than the EED and Germany has introduced mandatory energy efficiency standards for data centres.[243] All new data centres that become operational from July 2026 must achieve a PUE of 1.2. Existing data centres must achieve 1.5 PUE by 2027 and 1.3 PUE by 2030.

The legislation also requires new data centres to reuse at least 10 to 20% of their waste heat (depending on when the data centre was commissioned), although there are exemptions if there is no demand for the heat.

9 Reusing waste heat from data centres

Data centres produce a lot of heat, making them a potential source for waste heat reuse. Data centre operator Equinix estimates that a 20 MW data centre could heat 4,500 homes.[244]

Heat networks are heating systems where multiple properties are connected to a central heat source (as opposed to the more conventional setup where each property has its own boiler). The government states that heat networks are "vital to making net zero a reality in the UK", particularly in urban areas where they can use waste heat produced by industrial and commercial processes.[245]

The UK's first data centre-powered heat network is being developed in the Old Oak and Park Royal area of west London. The heat network is expected to provide heating and hot water to over 9,000 new homes and businesses.[246]

techUK has highlighted some challenges in incorporating data centres into heat networks, including:

- Co-location data centre providers cannot necessarily predict their data centres' occupancy level or IT load (which determine how much heat they will produce).
- Data centres produce heat throughout the year, while demand fluctuates.

242 Directive (EU) 2023/1791, Article 12

243 Taylor Wessing, Waste heat from data centres - new reporting obligations under the EnEfG, 6 February 2025

244 Equinix, What Is Data Center Heat Export and How Does it Work?, 5 June 2024

245 DESNZ, Heat networks, updated 10 July 2025

246 Data Center Dynamics, Hemiko to develop UK's first data center waste heat network, 1 April 2025; Data Center Dynamics, UK district heating networks look to data centers for waste heat, 9 June 2025

Data centre operators try to reduce the heat they lose by improving energy efficiency. Requiring them to contribute to heat networks could detract from these efforts.[247]

[247] techUK, Warming Up to Efficiency: Understanding the Potential Benefits and Pitfalls of Data Centre Heat Export in the UK, February 2024

5 Water consumption

Data centres need extensive cooling systems to keep their information technology (IT) equipment at a safe and efficient operating temperature. They also benefit from consistent humidity as dry air can damage IT equipment.

Water can used for both processes, which has led to concerns about the impact of data centres on local water resources.

5.1 How much water do data centres use?

Water consumption by data centres occurs primarily through evaporation, which can be used to cool the air or water in the data centre's cooling system and to maintain humidity in drier climates. Some data centre operators report water consumptions figures across their global operations. [248]

The amount of water used by a specific data centre depends on its size, the local climate, and in particular the design of its cooling system (see box 10). This can result in large differences in how much water different data centres consume. For example, Google's data centre in Dublin consumes 400,000 litres of water per year while its most 'thirsty' data centre at Council Bluffs, Idaho, consumes 3.4 billion litres per year.[249]

Water use will also depend on the safe operating temperature of the data centre's IT equipment. According to techUK, it takes twice as much water to maintain servers at 26 degrees Celsius compared to 35 degrees.[250] The safe operating temperature is primarily determined by the manufacturer and the customer rather than the data centre operator.

The Uptime Institute cautions that because water is a local issue, assessments of a data centre's water use should consider local factors:

> [W]ater use does not fit into a standard template — each data center location has a distinct water signature. ...
>
> An accurate assessment of a data center's water use — and its effects on communities and the environment — must examine local restrictions on water

[248] Google, 2025 Environmental Report, 27 June 2025; Microsoft, Environmental Sustainability Report 2025, May 2025; Meta, For a better reality: 2024 sustainability report, August 2024; Equinix, Sustainability: water management, not dated [accessed 3 June 2025]

[249] Dgtl Infra, Data centre water usage: a comprehensive guide, 17 January 2024

[250] techUK, Future-Proofing Digital Infrastructure: Climate Resilience in the Data Centre Sector, November 2024, p34

use, competition for water, the watershed's safe withdrawal rate, the cooling system type, and climatic conditions at a given location.[251]

Data centre operators have noted that there can be a trade-off between water and energy consumption: evaporative cooling uses lots of water but little energy, while methods that use no water may use lots of energy.[252]

10 Water use in data centre cooling systems

Data centre cooling systems need to move heat away from the IT equipment (called heat transfer) then dissipate the heat into the outside environment (heat rejection). Water can be used for both parts of the system.

In a water-based heat transfer system, cool water is circulated through the data centre in pipes, where it absorbs heat and returns to the chiller. Alternatively, air can be used to transfer heat. Cool air is blown over the IT equipment then extracted. These systems can be closed loop (meaning that the heat transfer medium is re-circulated) or open loop (meaning that it released into the outside environment)

Water is a more effective heat transfer medium than air. It is also easier to target at the heat source. The latest water cooled designs use 'on-chip' or 'direct-to-chip' cooling, where water is circulated to cold plates on top of each piece of equipment.[253] By directly targeting the equipment that needs to be kept cool, the cooling system overall can run at a higher temperature.

Water consumption is determined primarily by the heat rejection system.[254] The most water-intensive systems use water-cooled chillers to reject heat from inside the data centre. According to Microsoft, its data centres that use water-cooled chillers consume 2.3 to 2.8 litres of water per kilowatt hour (l/KWh).[255]

'Adiabatic' systems also use evaporation to chill the air in an air-cooled system:

- Indirect evaporative cooling uses evaporation to cool water, which is then used to cool the air being pumped into the data centre. According to Microsoft this uses between 0.8 and 2.1 l/KWh.
- Direct evaporative cooling (DEC) draws outside air over a wet medium, which cools their air through evaporation. According to Microsoft this uses between 0.02 and 0.7 l/KWh.

[251] Uptime Institute, Water is local: generalities do not apply, 28 May 2025

[252] Google, 2024 Environmental Report, July 2024, p44; Equinix, What Is Water Usage Effectiveness (WUE) in Data Centers?, 13 November 2024

[253] Data Center Dynamics, Microsoft's upcoming data centers to use closed loop, zero-water evaporation design, 9 December 2024

[254] Equinix, How data centres use water, 19 September 2024

If the local climate is cool enough, data centres may be able to use outside air alone to cool their IT equipment (called 'free air' cooling) with another system such as DEC employed on the hottest days of the year.

Estimates of water use in the UK

Data centres in the UK do not have to report how much water they use, so there are no official figures.[256] Industry groups have argued that UK data centres consume less water than is commonly assumed. The Data Centre Alliance told BBC News that fears about water consumption are based on figures from the United States, where data centres more commonly use evaporative cooling methods and water is also used more extensively in electricity generation.[257]

In 2025 techUK and the Environment Agency surveyed data centres in England to understand their water use.[258] It found that 51% of sites used a waterless cooling system, 5% used water-based cooling, and 44% used a hybrid system. Of the sites who provided information about their water consumption:

- 33% used less than 1 million litres of water per year.
- 31% used between 1 million and 10 million litres per year.
- 14% used between 10 million and 100 million litres per year.
- 4% used over 100 million litres per year.

The average UK household uses around 137 litres per person daily, or around 50,000 litres per year.[259] A data centre that consumes 1 million litres of water per year would use the same as 20 people.

However, the survey did not collect any other information about the data centres it covered. It is therefore not possible to draw conclusions about how water use varies by the size and age of data centres, or what impact the trend towards hyperscale AI data centres might have.

The report also acknowledges that the survey was conducted on a voluntary and anonymous basis, meaning that the results may be skewed by who chose to respond.

256 PQ 54718, 9 June 2025

257 BBC News, 'Cool data centres with treated sewage' - water firm, 18 June 2025; Business Green, UK data centres and water use: What you need to know, 2 January 2025; USC School of Engineering, How much water is used to fulfill the energy needs of the US?, 29 August 2018

258 techUK, Understanding data centre water use in England, 18 August 2025

259 Environment Agency, Water resources 2023-2024: analysis of the water industry's annual water resources performance, 7 October 2024

Estimates from water company figures

Environmental Information Requests (EIRs) submitted by campaign group Foxglove and the Times revealed that water companies in England and Wales supplied almost 10 billion litres of water per year to data centres.[260]

For context, the Department for Environment, Food and Rural Affairs (Defra) estimated in 2023 that England uses 5,110 billion litres of water per year.[261] This suggests that data centres account for a small proportion of water consumption. However, as with electricity consumption, the fact that data centres' water use is concentrated in specific areas can raise concerns about local water supplies (see section 5.2 below).

As noted in the Times article, the 10 billion litres figure is almost certainly an underestimate as it only covers 231 data centres (compared to techUK's estimate of 450). Not all water companies responded to the requests, and it would not always be possible for them to identify whether a particular customer was a data centre operator.

The largest water supplier by far was Thames Water, which covers major data centre clusters around London. It supplied 9.95 billion litres to 140 data centres, according to the figures it provided to the Times.

Thames Water's 2025–2030 business plan states that a large data centre that uses water for cooling "might use anywhere between four and 19 million litres of water per day", equivalent to the daily demand of 50,000 households.[262] It is not clear whether this is based on actual experience with data centres it supplies. Thames Water said in response to another EIR that its "initial investigations have shown that many data centres are not huge water consumers".[263]

The main concern expressed in the EIR response was that water demand from data centres peaks on the hottest days, when the water network is already "stretched".[264] Thames Water said that it was engaging with data centre operators to mitigate this, including by encouraging the use of on-site water storage systems and installing flow restrictors to prevent data centres from drawing more water than agreed.

Use of drinking water

One controversial aspect of data centres' water consumption has been their use of potable (drinking) water. Data centres typically get their water from the public water supply, the same supply that is used for household drinking

260 Times, Thirsty data centres are sucking up Britain's scarce water supplies, 27 June 2025
261 Department for Environment Food and Rural Affairs (Defra), Plan for Water: our integrated plan for delivering clean and plentiful water, 4 April 2023
262 Thames Water, PR24 Business Plan, October 2023, p43
263 Thames Water, EIR-23-24-469, 13 December 2023
264 Thames Water, EIR-23-24-469, 13 December 2023

water. Google has reported that, in 2023, 78% of its global data centre water withdrawal (excluding seawater) was potable water.[265]

There are no figures on how common this is in the UK. However, techUK states that "potable water is often the only available option, as other water sources aren't offered by providers".[266]

In the EIR mentioned above, Thames Water said that it was "discussing opportunities for alternative water supplies with a number of proposed data centres" so that they could avoid using potable water. Anglian Water has suggested that data centres should be built near water recycling plants and use treated sewage water for cooling.[267]

The government has said that it encourages data centre developers to "consider use of non-potable water, to embed water efficiency or water use in their design, and contact their proposed water and wastewater supplier early in the planning process to understand and plan for any potential water restrictions".[268]

5.2 Impact on water supply and resilience

Major data centres have been criticised for their high water consumption in parts of the world that are water stressed. In 2023, Microsoft reported that 42% of its water consumption globally was in water stressed areas. Google reported that 15% of its consumption was in areas of water scarcity. Equinix has said that in 2024, 34% of its sites were in highly water stressed areas and that 43% of these sites used evaporative cooling.[269]

An investigation by SourceMaterial and the Guardian found that Google, Amazon and Microsoft collectively have 38 data centres in water scarce areas around the world, such as Arizona in the US and Aragon in Spain. They have plans to build 24 more in water scarce areas, according to the report.[270]

In 2024, courts in Chile ordered Google to revise plans for a water-intensive data centre amid a severe, long-term drought in the country.[271] Lack of transparency about how much water data centres actually use has led to local opposition to data centre developments around the world.[272]

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265 Google, 2024 Environmental Report, July 2024, p44

266 techUK, Future-Proofing Digital Infrastructure: Climate Resilience in the Data Centre Sector, November 2024, p34

267 BBC News, 'Cool data centres with treated sewage' - water firm, 18 June 2025

268 PQ 56838, 11 June 2025

269 Equinix, Sustainability Report 2024, July 2024

270 SourceMaterial, Big Tech's data centre push will take water from the world's driest areas, 9 April 2025

271 Data Center Dynamics, Google pauses Chilean data center project to rethink water use, 20 September 2024

272 Context, As AI fuels growth of data centres, critics fight back, 9 June 2025

Major data centre operators, including Google, Amazon, Microsoft and Meta have said that they are aiming to become "water positive" by 2030, meaning they will return more water to the environment than they consume. Their annual environmental and sustainability reports contain examples of the water restoration projects they are involved in around the world. They also discuss efforts to use AI to monitor and manage water more efficiently.[273]

The SourceMaterial article is critical of some of these efforts, noting that because water is a "localised" issue it cannot be offset at a global level, like carbon offsetting. Amazon's water positive methodology states that it "prioritises" water replenishment projects close to where it operates.[274]

Data centres and water scarcity in the UK

Water supply and scarcity

The security of water supply in the UK is subject to long term resilience risks. The Commons Library research briefing paper, Future water resources, sets out some of the challenges behind water supply alongside the wider UK policy context.

Growing demand for water (from population growth, industrial use and a commitment to increase the percentage of water returned to the natural environment) is coupled with decreasing supply (climate-related scarcity, increased rainfall variability, over-abstraction of aquifers, limited large-scale water storage and transport infrastructure).

In England, the Environment Agency (EA) models that this supply-demand gap will create a shortage of around five billion litres per day in public water supply by 2055. In addition, pressure from other sectors (such as energy, food and data centres) could increase this shortage by an additional 1.09 billion litres per day.[275] In its second National Infrastructure Assessment, the National Infrastructure Commission (NIC) highlights the role of new infrastructure demand in driving this supply-demand gap.[276]

Water demand and supply is also inherently regional. Generally, the highest demands for water (and the greatest need to return water to the natural environment) correspond with areas of higher population density, where the EA assesses that demand has "outstripped sustainable capacity". These

273 See for example Google, 2024 Environmental Report, July 2024; Microsoft, Environmental Sustainability Report 2025, May 2025 ; Amazon, Water stewardship, not dated [accessed 1 July 2025]; Meta, 2024 Sustainability Report, August 2024

274 Amazon, Water positive methodology [PDF], not dated [accessed 1 July 2025

275 Environment Agency (EA), 3. How much additional water we need: National Framework for Water Resources 2025, 26 June 2025, [accessed July 2025]

276 National Infrastructure Commission (NIC), Second National Infrastructure Assessment, Chapter 4: Improving resilience, 18 October 2023.

areas of high demand are not always the regions with largest water resources.[277]

The EA produces water situation reports that assess the availability of water resources on a national and regional scale, and advises water companies where their areas are classified as 'water stressed'.[278] In the most recent 2021 assessment, almost all of the South of England (home to the majority of UK data centres) is classified as being in an area of serious water stress.[279]

techUK has argued that the Environment Agency should publish data on water supply and abstraction for each river basin district in England, to help developers understand local water constraints.[280]

Water use data and water supply planning in England

In its National Framework for Water Resources (a five-yearly review of England's long-term water needs and supply) the Environment Agency said that reliable data on data centres' water use was "vital for long term planning" and that "without it we are unable to accurately model or predict future water needs".[281] The Environment Agency noted that despite the data collection work it was undertaking with techUK (as discussed above), it was still "experiencing barriers in gaining information about water consumption". It added that other sectors working with data centres had reported similar issues.

In a joint report, the Royal Academy of Engineering, Chartered Institute of IT, and the Institution of Engineering and Technology called on the government to mandate water consumption reporting to address this data gap and drive efficiency.[282] One of the contributors, John Booth of the Chartered Institute of IT, told environmental news organisation ENDS Report that he believed the sector had gone as far as "they're able to – or want to – voluntarily".[283]

The government has said that it is working with the sector to "identify opportunities to improve reporting".[284] techUK has called on the sector to commit to measuring their water use and reporting WUE.[285]

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277 EA, 2. Current and future pressures on water resources, an overview: National Framework for Water Resources 2025, 26 June 2025, [accessed July 2025]

278 Where water companies operate in an areas of 'water stress' or 'extreme water stress', they have the option to introduce compulsory metered billing for customers

279 EA, Water stressed areas – 2021 classification, Fig. 1: Map showing results of water stress classification, p. 8, 1 July 2021, [accessed July 2025]

280 techUK, Understanding data centre water use in England, 18 August 2025, p19

281 Environment Agency, National Framework for Water Resources 2025: taking action on other significant water-using sectors and emerging demands, 17 June 2025; Guardian, AI boom means regulator cannot predict future water shortages in England, 17 June 2025

282 National Engineering Policy Centre. Foundations for environmentally sustainable AI, February 2025

283 ENDS Report, Thirsty AI is coming to water-stressed UK regions. Do the tech industry's solutions hold water?, 23 April 2025

284 PQ 54718, 9 June 2025

285 techUK, Understanding data centre water use in England, 18 August 2025, p20

In Europe, the EU's revised Energy Efficiency Directive requires data centres with a capacity over 500 KW to report annually on their water consumption.

Water scarcity in AI Growth Zones

Applications for AI Growth Zones, which the government expects to house at least 500 MW of data centre capacity, must be accompanied by a statement from the local water supplier that the site has sufficient access to water. Cambridge Water has said that it would only provide a statement if it believes that water "could be supplied sustainably" and without impacting "existing customer supplies and resilience".[286]

The first AI Growth Zone will be at the UK Atomic Energy Authority's (UKAEA) headquarters in Culham, Oxfordshire, which is in a 'seriously water stressed' area. Joe Milnes, executive director for engineering and computing at the UKAEA, told ENDS Report that the UKAEA had "conducted a thorough evaluation, informed by expert insights, on the potential impact of a state-of-the-art, closed-loop, on-chip water-cooled data centre" and concluded that "Oxfordshire's water supply will experience negligible effects".[287]

[286] BBC News, 'Cool data centres with treated sewage' - water firm, 18 June 2025

[287] ENDS Report, Thirsty AI is coming to water-stressed UK regions. Do the tech industry's solutions hold water?, 23 April 2025

6 Resilience of data centres

Resilience refers to a data centre's ability to protect the services it offers and the data it holds in the event of incidents such as cyberattacks, power failures, and natural disasters. Resilience measures may be applied at a specific data centre and across the data centre operator's service as whole (for example, enabling the service to continue operating by shifting data workloads to different data centres).

The resilience of data centres is a topic of increasing political interest given the importance of data to the economy and daily life, as highlighted in the Ministry of Defence's Global Strategic Trends 2050 report:

> In the future, the ability of governments and businesses to make decisions will depend even more fundamentally on their access to data, and the quality of their decisions will be determined by their ability to make sense of the information they access. The physical and digital protection of data centres will consequently become more critical.[288]

There is no UK-specific data on data centre resilience. The Uptime Institute, an industry thinktank, undertakes annual surveys to understand the prevalence, causes and costs of outages at data centres across the world. In its 2023 survey, 60% of data centre providers worldwide said they had experienced an outage in the past three years, of which around 14% had a 'severe' or 'serious' impact (the top two categories on a scale of one to five). This may not reflect the UK experience as the survey will include data centres in countries with, for example, less reliable energy systems or more extreme weather conditions.

11 Resilience tiers

The Uptime Institute has developed a classification system for data centres which is widely used in the sector.[289] It primarily assesses how resilient a data centre is.[290]

- Tier I data centres are the most basic. They have an uninterruptible power supply and dedicated cooling system capable of keeping the IT systems running at maximum load. However, they have no redundancy, so the data centre will be unavailable even during routine maintenance.

288 Ministry of Defence, Global Strategic Trends 7: Out to 2055, 27 September 2024, p301
289 Uptime Institute, Tiers classification system, not dated [accessed 20 September 2024]
290 CoreSite, Breaking down data center tier level classifications, not dated [accessed 20 September 2024]

To meet the Tier I standard, data centres can have a maximum downtime of 28.8 hours per year.

- Tier II data centres have some redundancy built into their power and cooling systems. They can have a maximum downtime of 22 hours per year.
- Tier III data centres have 'N+1' redundancy, meaning that they have capacity to support the IT system at full load (N) and a separate backup (+1) capable of doing the same if the main power and/or cooling systems fail or need to be shut down for maintenance. This makes them much more reliable than Tier II data centres: they can have a maximum downtime of 1.6 hours per year.
- Tier IV data centres have independent backups for all critical components, meaning that they have twice the required capacity (2N redundancy). They may also have an additional backup for when the secondary systems are being used (2N+1 redundancy). To meet Tier IV classification, data centres can have a maximum downtime of just 26 minutes per year.

6.1 Who is responsible for the resilience of data centres?

Data centres are not a distinct sector with a single regulator. Responsibilities for ensuring resilience can lie with different organisations, depending on the data centre's operational model and customer type.

In a co-location data centre, where customers rent out space in a data centre for their IT equipment, the data centre operator would be responsible for the resilience of the site, such as physical security and power supply resilience. The customer would be responsible for the resilience of their IT equipment, for example against cyber attacks.

The data centre's customers may have legal or contractual obligations to ensure their services are resilient. This can impact how they interact with the data centre sector. techUK notes that best practice in digital service design involves replication, redundancy and backup, meaning services should be designed so that the failure of a single data centre would not impact its availability.[291]

For enterprise data centres, resilience is up to the organisation that runs it. In regulated sectors such as telecommunications, cloud services and financial

[291] techUK, Response to the DSIT consultation "Protecting and enhancing the security and resilience of UK data infrastructure, 1 March 2024

services the organisation may be subject to legal obligations designed to ensure continuity of service (see section 6.4 below). Otherwise, enterprise data centres are not likely to be subject to regulatory obligations and may also lack commercial incentives to demonstrate resilience.

techUK states that the resilience status of enterprise data centres is unknown, "both in terms of power and cooling continuity, and the ability to redirect workloads to other locations".[292] It notes that anecdotal evidence, "particularly from the public sector, is not encouraging".

6.2 Critical national infrastructure designation

In September 2024 the government announced that it had classed data centres as part of the UK's critical national infrastructure (CNI), alongside sectors such as water, energy, telecommunications, and healthcare.[293] Some data centres that hosted sensitive data had already been designated as CNI, although this happened on a case-by-case basis.

The announcement was broadly welcomed by the industry as a recognition of the important role data centres play in the UK economy and society.[294]

The government explained that the CNI designation will see the creation of a dedicated team of senior officials who will "monitor and anticipate potential threats, provide prioritised access to security agencies including the National Cyber Security Centre, and coordinate access to emergency services should an incident occur". In addition, CNI sites are exempt from emergency planned power cuts, which electricity grid operators implement if there is a risk of energy demand outstripping supply.[295]

Designation as CNI does not, in itself, introduce any new requirements on data centres. Law firm Mishcon de Raya said that the government's claim that the move would protect data centres from cyber attacks was therefore "somewhat optimistic".[296] Commentators noted that designation could be a sign that additional regulation was "on the horizon".[297] The government has

292 techUK, Future-Proofing Digital Infrastructure: Climate Resilience in the Data Centre Sector, November 2024, p29

293 DSIT, Data centres to be given massive boost and protections from cyber criminals and IT blackouts, 12 September 2024

294 techUK, The era of cat videos has ended data centres are rightly designated as critical infrastructure (a blog written by Kao Data), 26 September 2024; Computer Weekly, UK government adds datacentres to CNI regime: Why did it take so long?, 19 September 2024; Mishcon de Raya, Data centres as critical national infrastructure: a new era for digital resilience, 16 September 2024

295 Energy Networks Association, How planned emergency power cuts would work if they are needed this winter, 7 October 2022

296 Mishcon de Raya, Data centres as critical national infrastructure: a new era for digital resilience, 16 September 2024

297 Pinsent Masons, Value of data centres to UK economy highlighted by government action, 16 September 2024

announced plans for a Cyber Resilience Bill, which would impose cybersecurity requirements on data centres (see section 6.5 below).

6.3 Industry resilience measures

Design standards

Widely used industry standards include EN 50600, which covers the design and operational aspects of data centres, such as physical security and the availability of supporting utilities. Generic standards not specifically designed for data centres are also regularly followed in the UK. These include ISO 27001, which sets requirements for information security management.

Both sets of standards include measures designed to ensure resilience. For example, ISO 27001 states that organisations should take "appropriate measures and controls to ensure continuous operations of supporting utilities. The purpose is to ensure that the failure of these utilities does not affect the availability and integrity of information assets".[298]

Data centres may also be certified against green building assessment frameworks, such as BREEAM (Building Research Establishment Environmental Assessment Method). The BREEAM framework assesses a facility's resilience to climate change-related risks.

12 Climate risks for data centres

techUK's report, Future-Proofing Digital Infrastructure (November 2024), assesses how climate-related risks could impact the UK data centre sector.

The report states that UK data centres are at high risk from:

- Water stress, as some use water for cooling.
- High temperatures and heatwaves, which place greater demands on cooling systems. This in turn means that data centres would need additional water or energy to achieve sufficient cooling, placing strain on local capacity.

UK data centres were assessed to be at low risk from events such as flooding and landslides primarily because operators can consider these risks in the site selection process. Storms and high winds are also considered a low risk because data centres are regularly inspected for structural and operational issues.

[298] Annex A to ISO 27001

Industry group techUK argues that data centres designed in line with industry standards are highly resilient:

> Data centre sites are specifically designed with increased resilience built in, so in very few cases does an outage of a particular piece of infrastructure result in the complete loss of availability of the site. In addition, any applications and services designed to best practice in resilience would utilise several different physical sites, meaning that even a compete loss of a single physical site would not impact the service availability (and data can be migrated).[299]

However, techUK has acknowledged in relation to climate risks that the adoption of relevant standards "can vary significantly across the industry. For some, the process appears more like a routine formality rather than a substantive commitment". It notes there is room for developing standards tailored to data centres, with "effective regulation" to ensure they are consistently applied without "stifling innovation or imposing undue restraints".[300]

Service level agreements

Service level agreements (which are performance requirements included in contracts between data centre operators and their customers) are a commercial incentive to improve resilience. techUK states that certification against the standards mentioned above is already a requirement in most data centres' customer contracts.[301]

The National Protective Security Agency and National Cyber Security Centre (NCSC), the UK's technical authorities on physical and cyber security respectively, have published joint guidance for data centre customers. The guidance contains some key questions customers should ask about data centre security, including "Can the data centre demonstrate that they have diverse power supply and backup power options?".[302]

The NCSC's guidance to critical national infrastructure organisations states that they should set minimum security requirements for their suppliers, which may include third-party data centre providers.

6.4 Regulatory framework

Data centres are not currently regulated as a distinct sector. There is, for example, no requirement for data centres to be registered with or licenced by

299 techUK, Response to the DSIT consultation "Protecting and enhancing the security and resilience of UK data infrastructure, 1 March 2024, p22

300 techUK, Future-Proofing Digital Infrastructure: Climate Resilience in the Data Centre Sector, November 2024, p27

301 techUK, Response to the DSIT consultation "Protecting and enhancing the security and resilience of UK data infrastructure, 1 March 2024

302 NPSA and NCSC, Data centre security: Guidance for users, 28 February 2023

a regulator. Consequently, there are no legal obligations specific to data centres that require them to meet certain resilience standards. However, more general legislation may apply to data centres.

Sectoral regulation

Data centres that are operated directly by the business they serve are subject to regulations that apply to that business. For example, data centres directly operated by critical national infrastructure organisations (such as telecoms, transport, and utilities) are covered by security requirements under the Network and Information Systems (NIS) Regulations 2018.

Providers of some digital services (online search engines, online marketplaces, and cloud computing services) are also covered by the NIS regulations and they may operate their own data centres.

Organisations designated under the NIS regulations must take "appropriate and proportionate" actions to manage risks posed to the security of their systems and minimise the impact of incidents. They are subject to oversight by a regulator and must report incidents to the regulator.

Digital service providers in scope of the NIS regulations are regulated by the Information Commissioner's Office. In explaining how organisations can meet their obligations, it points to technical guidance produced by ENISA, the European cyber security agency. For example, ENISA's guidance requires digital service providers to have appropriate policies and security measures to protect their data centres, including supporting utilities such as electrical power and fuel.

An overview of the NIS regulations can be found in section 3.2 of the Commons Library research briefing Cybersecurity in the UK (May 2025).

Data protection law

Resilience measures may also be required because of data protection law.

The processing (sharing) and retention of personal data by organisations including data centres must comply with the Data Protection Act 2018 and the UK General Data Protection Regulation (UK GDPR).[303] How a particular data centre fits into this framework will depend on its business model: in a co-hosting data centre, for example, the customer rather than the data centre operator may be the responsible party under data protection law.

Under the legislation, personal data can only be processed if there is a lawful basis for doing so.

[303] The UK GDPR is the retained version of the EU General Data Protection Regulation which came into force on 25 May 2018

Data processing must be in accordance with seven principles. One of these principles is security, and requires that personal data is processed in a way that:

> ensures appropriate security of the personal data, including protection against unauthorised or unlawful processing and against accidental loss, destruction or damage, using appropriate technical or organisational measures.[304]

There are additional protections for special category data – personal data that reveals, for example, a person's racial origin, political opinions, health data or sexual orientation.

Further detail on the above is available in Information Commissioner's Office (ICO) guidance on the UK GDPR.

6.5 Government proposals for reform

Cybersecurity requirements

The government has proposed to use the forthcoming Cyber Resilience Bill to impose statutory cybersecurity duties on data centres.[305] The bill would bring data centres into the scope of the Network and Information Systems (NIS) Regulations 2018.

As noted above, the NIS regulations apply to operators in designated sectors (such as energy, water and telecoms) and providers of certain digital services (cloud services, search engines and online marketplaces) that meet certain thresholds. Duties include taking "appropriate and proportional" steps to manage and mitigate risks to IT systems, and to notify the relevant authority (either a regulator or a government department) of incidents affecting their service.

The government is proposing that data centres over 1 MW will be in scope, or 10 MW for enterprise data centres. The rules would apply regardless of the data centre's ownership or the type of service it offers.

Reforms to the NIS regime

The government is also proposing to strengthen the duties placed on organisations under the NIS regulations. The bill would:

- Expand the types of incidents that regulated organisations have to report. Incidents that could have affected service provision will need to be reported, even if they did not actually have an impact.

304 UK GDPR, Article 5(1)(f)

305 DSIT, Cyber Security and Resilience Bill: policy statement, 1 April 2025

- Require data centres that experience a "significant" incident to alert customers who might be affected.

- Enhance the Information Commissioner's Office's powers so that it can proactively monitor and enforce cybersecurity standards for digital service providers.

A regulatory framework for data centres

The previous government published a call for evidence in July 2022 that sought views on how to protect data infrastructure from unwanted access to data (for example by cyber attacks) or other disruptions to services associated with data centres (for example due to extreme weather events).

In December 2023 the government consulted on a proposed regulatory framework for co-location and co-hosting data centre providers. It argued that while commercial incentives often result in high security and resilience standards, these were not necessarily sufficient or consistently applied across the sector:

> Whilst commercial drivers often result in high security and resilience standards, corporate and commercial interests are not always aligned with, or do not go far enough to reflect, national interests, including protection of the UK's national security. The criticality of data centres to our economy means that the national harm resulting from significant security or resilience shocks could be far greater than commercial harm to any one operator, and thus commercial drivers are not sufficient to drive the level of security/resilience standards required in the national interest.
>
> Whilst some oversight of risk mitigation exists through security and resilience-focused regulation of certain sectors within the economy which have a dependency on data centres within their supply chains, this does not account for systemic risk and cross-economy dependency on data centres.[306]

techUK said in its response to the consultation that it disagreed with the government's view, arguing that "the sector is adequately addressing risks" through existing regulation and commercial service level agreements.[307]

The proposed regulatory regime

Under the previous government's proposals, data centre providers in scope of the new regime would:

- Be required to register with the designated regulator for data centres.

- Have a duty to take "appropriate and proportionate technical and organisational measures to protect and enhance the security and resilience of their services". Indicative baseline measures are listed on

306 DSIT, Protecting and enhancing the security and resilience of UK data infrastructure, 14 December 2023

307 techUK, Response to the DSIT consultation "Protecting and enhancing the security and resilience of UK data infrastructure, 1 March 2024

pages 45 and 46 of the consultation document. Resilience measures include protecting against the impact of human error, malicious actions and natural hazards. The regulator would have powers to "mandate assurance, conformity assessment processes, and testing".

- Report incidents to the regulator.

techUK noted that there were potential overlaps between this proposed regime and updates to the NIS regulations.

A response has not yet been published and it is not clear whether the current government intends to take the proposals forward.

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