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Data centres in Wales

How will Wales manage a rapidly growing industry?

July 2026

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Data centres are the physical infrastructure which support digital services used every day, from sending emails and searching the internet to artificial intelligence (AI), making most jobs in the UK reliant on them.

As Wales becomes an increasingly significant location for data centres, it will need to balance economic opportunities with mounting resource pressures.

This briefing explains what data centres are, how they support everyday digital services, and why they are becoming increasingly important to Wales. It summarises the current and planned data centre landscape in Wales, including the role of AI growth zones and the wider strategic importance of digital infrastructure. The briefing outlines opportunities data centres bring, including jobs, investment, skills development and support for innovation, while also considering the significant resource and policy questions they raise. These include electricity demand, grid capacity, water use, land requirements, biodiversity, planning policy, transparency, and impacts on local communities.

Contents

1. Overview

Data centres are the physical infrastructure that house computing and networking equipment, such as servers, which are used to store, process, and share data.

Wales is emerging as a significant location for data centre development. The UK Government Department for Science, Innovation and Technology (DSIT) estimated that **Wales had the highest data centre capacity outside London in Great Britain in 2024**, with 154 megawatts (MW) capacity in Wales and 1,048 MW in London.

The data centre industry is **growing fast** in Wales with major planned developments in **North** and **South Wales**. Analysis from Department for Energy Security and Net Zero (DESNZ) found that data centre electricity consumption in the South West and Wales **doubled between 2020 and 2024**.

The scale of proposed developments raises important questions for Wales around energy demand, grid capacity, sustainability, water use, planning policy and community impacts. These issues will become increasingly significant as data centres **expand to support AI technologies**.

Planning policy is devolved and plays a central role in determining where and how data centres are developed. **Welsh planning policy does not currently explicitly reference data centres**, unlike planning frameworks in England and Scotland. This means that planning authorities are not required to give specific weight to data centre needs when preparing policies or deciding applications.

A central policy challenge is how Wales balances the **economic and strategic benefits of attracting digital infrastructure** with the significant demands that data centres place on **electricity networks**, **water resources**, **land**, **biodiversity** and **local communities**. Cabinet Minister for Enterprise, Connectivity and Energy Adam Price MS **has said that**:

> *(...) we have much of the hard infrastructure through the data centres that are going in, but we don't just want to host hard infrastructure... we want to get the benefit of it. That's the kind of strategy that will be the driving force for our Government.*

Future decisions will need to consider whether planning and infrastructure systems are **adequately equipped** to manage developments that are increasingly national in significance.

2. What are data centres and what might they mean for Wales?

This section summarises what data centres are, the different types of services they offer, and what the data centre industry in Wales looks like.

What are data centres?

A **data centre** is a physical location storing computing machines and related hardware equipment, such as **servers** which are devices that provide services, data, or resources to other computers over a network. Servers could be used to deliver web pages, send emails, or store files, for example.

Data centre capacity is **typically measured by the maximum power it can draw** which determines how much IT equipment it can support (see note 1 below).

> **Note 1.**
>
> **IT load** is the **maximum electrical power available for relevant IT equipment**. The greater the power demand, the more capacity for providing services.

A **2026 UK Parliament POSTnote** outlines types of data centres, explaining that what counts as a data centre is not clearly defined, but their size is "typically measured in their IT power capacity" (IT load). In general:

- **A "hyperscale" data centre** is one with large-scale and distributed computing services using multiple computers to complete various tasks. "Hyperscale" refers both to the data centre's size and ability to scale up capacity in response to demand. An average hyperscale data centre has an **IT load of 20 to 100 MW**
- **An "enterprise" data centre** is one that is owned and operated by an organisation for its own needs. An enterprise data centre has an **IT load of more than 10 MW**

Today, every email sent, online search made, or webpage scrolled is processed in a data centre, **making most jobs in the UK reliant on them**. Data centres differ in the services they provide (see note 2 below).

Note 2.

Data centre services fall into two main categories:

AI, **a field of technologies** that can perform tasks generally believed to require intelligence. Popular AI methods include **machine learning (ML)**, which uses statistical analysis to find patterns in data and make predictions, and **generative AI**, which applies ML to produce content such as text, images, audio, or videos.

Cloud computing, the provision of computational resources (e.g. data storage and processing) as a service over the internet.

What's the relevancy for Wales?

DSIT estimates that data centre capacity in Wales was the **highest outside of London** in Great Britain in 2024, with 154 megawatts (MW) capacity in Wales and 1,048 MW in London. The data centre industry is **growing fast** in Wales with multiple planned developments and two AI Growth Zones (AIGZs) in North and South Wales (see note 3 below). Analysis from the Department for Energy Security and Net Zero (DESNZ) found that data centre electricity consumption in south-west England and Wales **doubled between 2020 and 2024**.

Note 3.

AIGZs are a **UK Government initiative** to accelerate development of AI infrastructure, which includes data centres, and encourage private sector investment by streamlining access to power and planning approval.

Wales hosts two AIGZs: one in North Wales and one in South Wales.

The North Wales AIGZ **has a base on Anglesey and another in Gwynedd**. It will be accompanied by the UK's **first small modular reactor project** sited at **Wylfa, Anglesey**.

The South Wales AIGZ **stretches along the M4 corridor from Newport to Bridgend**.

The UK government argues that AIGZs can be used to channel investment into areas with existing energy capacity, such as post-industrial towns and coastal areas.

£5 million has been allocated to each AIGZ for local level business adoption and skills. **£4.5 million** has been allocated to an AIGZ planning team for supporting local councils with expert advice.

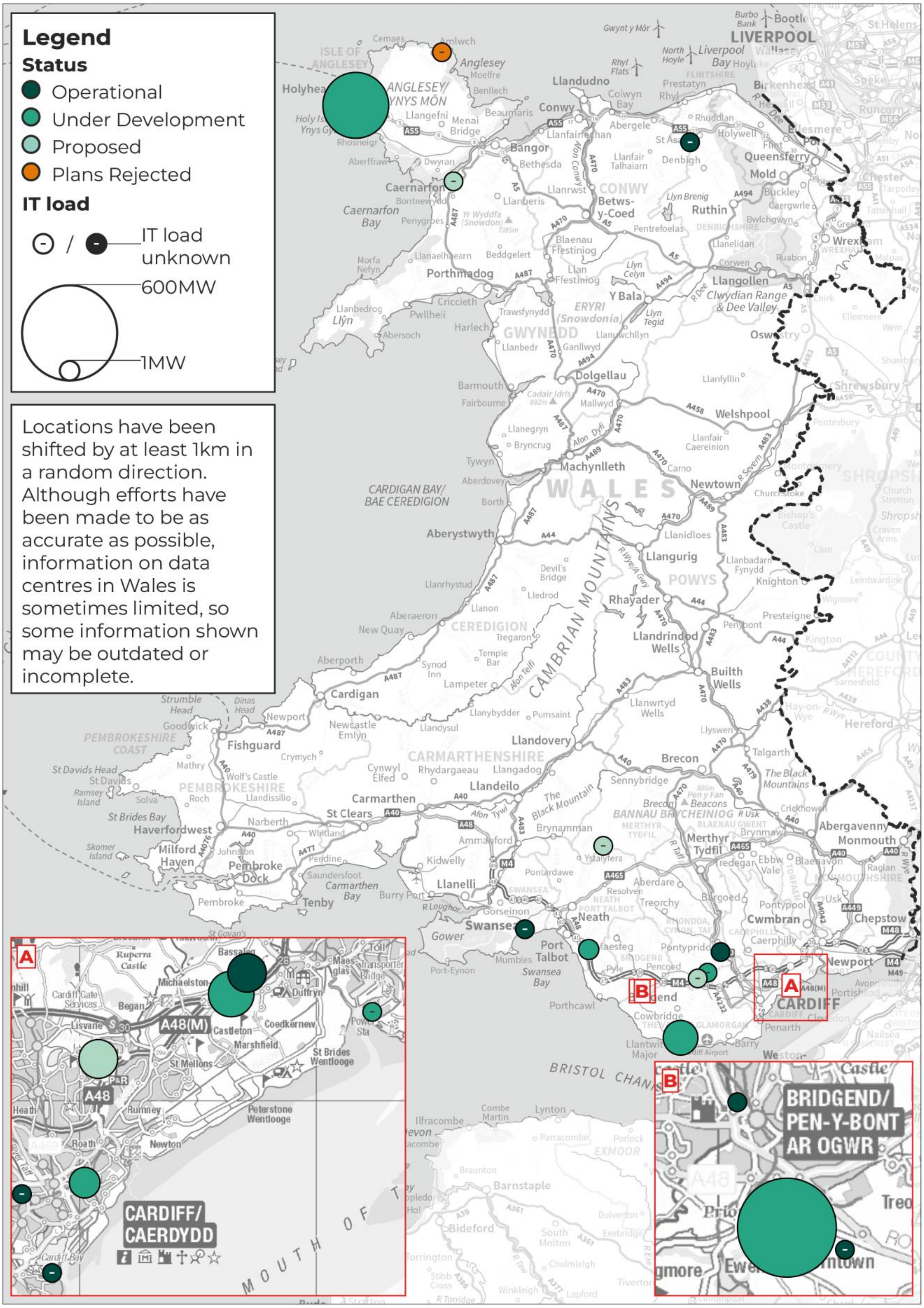
DSIT estimated that the total IT load of data centres in Wales was **154 MW in 2024**, compared to 1,048 MW in London. Figures from planned developments suggest data centre capacity in Wales is hugely increasing, with two developments in Cardiff proposing **148 MW** and **150 MW**, one in Newport **200 MW**, and another on Anglesey **349 MW**.

South Wales hosts one of Europe's largest data centre campuses, **Vantage's CWL1**, which will have 148 MW capacity across 3 data centres when fully developed. Vantage has plans accepted for another campus in Bridgend (CWL4) which "**will be approximately four times the capacity and size**" of CWL1 and have 10 data centre buildings.

As there is not a formal accepted definition of a data centre, it is **difficult to be certain** about how many data centres are in Wales. DESNZ found **15 operational data centres** in south-west England and Wales, where one site can contain multiple data centre buildings:

- South Wales has at least 7 active data centre sites and **several planned**
- North Wales has **1 active data centre in St Asaph**, 1 site planned in **Anglesey** and 1 planned in **Caernarfon**. Plans for **another in Anglesey** have been **rejected**

Map of data centres in Wales



Caption: Data centres in Wales are mainly clustered in North and South Wales, where there are AIGZs. The map displays planned and operational data centres scaled by capacity.

Wales has the strategic benefit of being located **between data clusters in London and the Republic of Ireland**, with additional proximity to transatlantic data which lands in Devon and the Gower.

South Wales has **offshore wind projects** in Pembrokeshire as well as **access to tech industry clusters along the M4 and its own tech industry**. This includes an established **semiconductor** industry, which are essential parts of computer chips. The **UK compound semiconductor cluster** in South Wales is a centre of excellence in semiconductor research, innovation and manufacturing.

North Wales has energy generation sites such as the **Wylfa nuclear reactor**, **offshore wind projects, and hydropower generation**.

Caption: The North Wales AIGZ is co-located with the UK's first small modular reactor (SMR) nuclear project at Wylfa, Anglesey.

3. What are the opportunities for the Welsh economy?

This section looks at the economic opportunities offered by data centres in Wales such as job creation and investment.

Jobs

Once operational, data centres are **highly automated** and have a permanent on-site workforce which is **smaller** than might be expected even for hyperscale data centres, given the **huge areas of land** and **significant amounts of power** that they require. **Permanent positions** include managers and engineers. During development, temporary construction and commissioning jobs are also created.

Data centres have been compared to infrastructure projects like roads, rather than ongoing "**job creation engines**". **TechUK explains** that:

> *The primary economic value of data centres is their role in enabling digital transformation across all sectors of the economy, allowing businesses to benefit from digital products and services that allow them to operate and be more efficient and productive.*

The UK government estimates the Welsh AIGZs will add **3,400 jobs in North Wales** and at least **5,000 jobs in South Wales**, which includes both temporary and longer term jobs. Plans approved in 2024 for a data centre at the **Tremorfa Energy Park** in Cardiff suggest 1,000 construction jobs and 200 jobs during the operational phase.

Data centres in Wales can be used to **propel growth** in research, development, and innovation for sectors that rely on digital technologies. Data centres can also **provide education opportunities** such as apprenticeships and skills programs, and support careers in AI research and development. The UK Government has set aside **£5 million in support** of each AIGZ for business adoption and skills at a local level.

However, a report from Action to Protect Rural Scotland (APRS) published in March 2026 suggests that the **UK Government is not estimating potential job creation from data centres accurately**, finding that "most data centres employ around 20-50 people" in permanent roles. There is evidence from the US that data centres **do create local jobs but less than is claimed by industry advocates**, with hyperscale data centres driving more job growth than other types of data centres.

A **2026 survey** by consultancy firm SEC Newgate into UK public perceptions of data centres found that 65% of respondents believed available land should prioritise developments that create large numbers of local jobs above data centres which create fewer jobs.

Caption: Data centres create many temporary construction jobs, however the permanent workforce is much smaller.

Investment

The **Wales Economic and Fiscal Report 2025** suggests that data centres will become increasingly important to the Welsh economy by supporting the digital operations of businesses. This includes AI adoption, which the report states is "widely identified as one of the key potential drivers of economic and social change in the coming decades". The **Office for National Statistics (ONS) found** in June 2025 that 49% of businesses in Wales reported not using AI technologies, which is lower than the corresponding proportion in the UK (56%).

Investment in the data centre industry has grown rapidly in recent years. The UK Government expects **£10 billion of investment** in the South Wales AIGZ and up to **£100 billion overall** from all AIGZs. Driven by investments in data centres, the **capital expenditure of five large technology companies**, surged

to more than $400 billion globally in 2025 and is set to increase by a further 75% in 2026.

The IEA's 2026 "**Key Questions on Energy and AI**" report argues that:

> *Data centre investments have grown too large to be funded from company balance sheets alone, and large amounts of funding from capital markets will be critical for their buildout.*

This means that the costs of data centre development have reached a level where internal financing is insufficient and external investors will be needed to advance developments. Because of this, the IEA says that the pace of data centre growth "will be sensitive to market sentiment".

Future growth of data centres **may face bottlenecks** as supply chains for energy technologies, as well as advanced IT hardware components, are tightening. Industry experts have suggested that the **biggest hurdles for Wales** could be power availability, planning timelines, and regional skills gaps.

4. What are the resource implications of data centres in Wales?

This section outlines resource requirements of data centres in Wales for electricity and water, sustainability implications and transparency concerns.

Energy

Electricity considerations of data centres can be looked at through **data centre capacity, measured in watts (MW or GW), and consumption, measured in watt-hours (MWh or GWh)** (see note 4 below).

Note 4.

Capacity is the maximum instant pull of electricity rather than a source. IT load (see note 1) is the capacity of IT equipment specifically.

Consumption is a continuous measure across a period of time.

Capacity

Data centre capacity in Wales is set to rapidly increase, growing from an estimated **154 MW** total capacity in 2024 to potentially "**over 1 GW by early 2030s**" in the South Wales AIGZ alone. 1 GW is a significant proportion (13%) of **Wales's total electricity capacity in 2024** (7.9 GW). All AIGZs in the UK are **estimated** to enable up to 4 GW additional data centre capacity.

Figures for individual sites suggest that some data centres in Wales will have very high capacity. An **average hyperscale data centre** has 20 to 100 MW IT load. The proposed Cardiff East data centre is **"expected to require around 150 MW to run under normal conditions"**, equivalent to **all of Wales's solar electricity generation capacity** in 2024. **Vantage's Newport CWL1 campus**, the most powerful data centre campus in Europe, will provide 148 MW of IT load; a planned **Vantage Bridgend CWL4 campus** will be "approximately four times the capacity and size of the existing Newport Campus"; the planned **Microsoft Newport site** will have around 200 MW IT load; and **Prosperity Parc in Anglesey** has a target capacity of 349 MW.

Consumption

Data centres consume **an estimated 1.8% of Great Britain's electricity** in 2024. The National Energy System Operator (NESO), which plans the UK energy system, **estimates** that UK data centre demand (defined as demand from dedicated buildings for computing) was 7.6TWh in 2025, which is about 4% of global data centre demand. Research briefings from the **House of Commons Library** and **POST** outline energy, sustainability and resilience implications of data centres in the UK generally.

Analysis published by the DESNZ finds that data centres in south-west England and Wales consumed **about 1.1% of total electricity consumption from the grid** in these areas in 2024. The analysis found that between 2020 and 2024, data centre electricity consumption in south-west England and Wales doubled from 0.18 TWh to 0.37 TWh.

Data centre growth is **one of the key influencers** of change for electricity demand in the UK commercial sector. Electricity demand from data centres globally **soared by 17% in 2025**, outpacing overall electricity demand growth of 3%. NESO **estimates** that the projected growth of data centres in the UK could add between 30-71 TWh of electricity demand by 2050, equivalent to **9-22% of UK Government estimates for total UK electricity consumption in 2024 (319 TWh)**. NESO acknowledges that uncertainty about demand over future growth makes it challenging to forecast reliably.

Roadblocks with overstraining the grid came to a head in Ireland, where data centres accounted for **23% of the country's metered electricity consumption** in 2025. Ireland introduced **a moratorium** between 2021-2025 on the building of new data centres around Dublin which was **lifted in December 2025**.

Data centres consume energy for a variety of processes with different energy demands (see note 5 below).

Note 5.

Energy used by data centres can be mapped to three key applications:

Servers and computational equipment use **most of the energy** consumed by data centres.

Cooling requires **around a third** of the energy consumed by data centres.

> **AI servers** typically **draw more power and fluctuate more** than those used for data storage or other computing tasks.

Developing and using AI technologies is energy intensive. NESO **expects** future data centres to be increasingly utilised for AI. Globally, electricity demand from AI-focussed data centres **surged by 50%** in 2025.

Energy demands from AI data centres **can significantly vary** depending on the tasks. During **training**, which is when AI models are being developed, power demand can **swing within fractions of a second**. The energy consumption from using AI models that have already been trained also **depends** on the tool being used (e.g. how large the model is) and what it is being used for (e.g. making simple predictions, which is relatively energy cheap, or generating videos and audio, which is more expensive).

Cloud computing is used by most UK organisations and can offer energy savings compared with on-premise facilities, although **efficiency gains may lead to increased computation overall**. Data centres used for cloud computing **generally have stable energy demands**.

Renewable energy

Planned developments need to consider long term sustainability goals. Wales is **legally committed** to reach "net zero" greenhouse gas emissions by 2050. The Welsh Government **has an ambition** to achieve this by 2040 and substantive nature recovery by 2050. Acknowledging the role of human activity **in climate change and biodiversity loss**, the **Welsh Government declared a climate emergency** in 2019, followed by the **Senedd declaring a nature emergency** in 2021.

A May 2025 **report** from the Sixth Senedd's Economy, Trade and Rural Affairs Committee suggested that **renewable energy could be used** to power data centres in Wales. Where data centres are connected to the grid, the percentage of clean energy that they consume reflects the percentage of total clean electricity production. In Wales, around **36% of electricity was produced from renewable sources** in 2024.

Data centres will need to be considered in Wales's **carbon budgets**, which cap maximum permitted emissions across five-year periods. **The IEA projects** that emissions associated with data centres globally will double by 2035, reaching around 350 million tonnes and making up about 2% of global electricity sector

emissions. Data centres could account for between **0.9% to 3.4% of the UK's greenhouse gas emissions between 2025 and 2035**, primarily due to the use of non-renewable electricity sources to power data centres.

Power requirements for data centre developments **increase the need for** developing Welsh renewable energy sources. The last Welsh Government **set a target** for domestic renewable electricity generation to be equivalent to 70% of consumption by 2030, and 100% by 2035. By increasing total electricity demand, Welsh data centres would increase the amount of renewable electricity generation needed to meet these targets. A 2022 report from the UK Parliament's Welsh Affairs Committee found that Wales is "**uniquely well-placed to play a leading role in the renewal of the UK energy system**".

Industry experts suggest building data centres in regions of Wales with high availability of wind, hydro, nuclear and other low-carbon energy sources. Locating data centres close to large generation sources can improve efficiency by reducing **losses during transmission**. The North Wales AIGZ is co-located with the nuclear **small modular reactor project** at **Wylfa, Anglesey**. North Wales currently has **three** offshore wind farms, and there are proposals to develop new floating wind farms, including **Equinor, Gwynt Glas, Ocean Winds**, **Llŷr** and **Erebus**, off the Pembrokeshire coast. Mid- and South Wales also host **several large onshore wind farms**.

There are additional concerns with the sustainability of data centre components, discussed in a **2026 POSTnote**. Manufacturing components depend on a complex supply chain with **significant environmental impacts**. Many critical components, including servers, network equipment and batteries, have a **lifespan of around 3-8 years**.

Caption: Renewable energy sources such as windfarms could help power Wales's growing data centre sector, but developments will still need reliable grid connections and careful planning.

Connecting to the grid

Grid connections policy is reserved to the UK Government and is managed by **NESO**.

The **UK Government lists** lengthy connection queues to the electricity grid for AI data centres as the biggest road blocker for establishing AIGZs. **Plans** for Vantage's CWL4 site state that only around 20% of the development will be operational before 2032 due to power availability.

In May 2026, NESO had around **173 grid connection requests** for new data centres equating to **over 100 GW** in the UK grid connection queue. Ofgem has said that there are **too many data centre projects in the queue** to connect to the grid, finding that

> *(...) initial evidence suggests they account for a large proportion of projects in the demand queue, far beyond forecast future need and*

> *what the system can reasonably support, and their connection requirements have large system impacts.*

Developers may be attracted to Wales in order to locate projects close to large energy generation sources with faster grid connections. Areas such as **North Wales** with energy sources like **Wylfa**, may have faster grid connections than densely populated areas such as London, where data centres are being delayed because of **increasing pressure on London's electricity grid**. In the US, **data centre clusters are being built outside cities** in areas close to energy resources and infrastructure.

However, existing evidence suggests the Welsh electricity network is already under pressure and considerable grid reinforcement may be necessary to accommodate future growth. A **2022 report from the House of Commons' Welsh Affairs Committee** inquiry into grid capacity found the grid to be significantly constrained and incapable of facilitating the decarbonisation of heat and transport across Wales, given the projected increase in demand for electricity. The chief technology and operations officer of Welsh broadband provider Ogi has also said that "**historically, some sites have struggled to get the right energy mix or network redundancy**." **Network redundancy** is adding backup components, resources, or processes to a system to ensure it continues to operate even when failures occur.

A delivery pipeline for streamlining grid connections in the UK was **announced by NESO** in December 2025, promising 283 GW more energy generation and storage and 99 GW of transmission connected demand. The old queue system included **over 700GW of projects**, which was four times what was needed to meet **UK Government 2030 targets for clean power**. Included in the new process is a transition from the previous first-come-first-served queue to connect to prioritising projects that "are aligned to national energy targets and are ready-to-build - such as those having planning permission or land rights".

Data centres can create particular challenges for managing electricity grids. **The IEA highlights** that the actual peak consumption from data centres is often uncertain as they are progressively filled with servers and often initially oversize their grid connections. This can create risks of misalignment between electricity system investment and data centre demand that could raise electricity prices.

On-site energy generation

To navigate challenges with energy infrastructure, strain on the grid, and variability in demand for AI services, **operators are increasingly looking to on-site power generation**. News outlets **reported** in May 2026 that around 100 proposed UK data centre sites were exploring on-site gas power.

The Welsh Government is **responsible for consenting energy generation projects** between 50 MW and 350 MW in size. Smaller projects are considered by Local Planning Authorities, which must have regard to Welsh Government policy. Larger projects are the **responsibility of the UK Government**. **Welsh Government policy** favours renewable power and opposes unabated new power from fossil fuels, which **emit greenhouse gases** and contribute to climate change.

On-site electricity generation using unabated fossil fuels could impact **Wales's legal decarbonisation targets**. In the US, data centre developers constrained by slow grid connections have been **pushing forward projects with on-site natural gas-based power generation**. Backup on-site generators are included in the **Cardiff East data centre**, **DC8 in St Asaph** and Vantage's **CWL2**, **CWL3** and **CWL4** sites.

Battery storage

One of the key challenges for data centres focusing on AI is that **there are rapid and large swings in demand**. Onsite batteries can help manage variable power demand and support a reliable supply of electricity, making battery storage important for AI data centres. The **IEA estimates** that around 20-25 GW of battery storage could be installed in data centres globally by 2030.

By providing power back to the grid during periods of high demand, on-site battery storage at data centres **could become an asset** if the right incentives are in place, the IEA suggests. Operators in Ireland are **required** to provide power back to the national grid when needed.

Battery storage is included in planned developments in Wales such as **Anglesey**, **Tremorfa Energy Park and Data Centre** in Cardiff, **DC8 in St Asaph** and **Microsoft's Newport data centre**.

Power purchase agreements (PPAs), private wires and direct connections

A data centre development may choose to meet most of its electricity needs through **PPAs**, in which a consumer agrees to buy a fixed amount of power from a generator. This may also involve a "**private wire**" connecting the two sites, meaning a consumer does not rely on the wider electricity grid. A Microsoft site planned in Newport, for example, **will use PPAs** to match the electricity it obtains from the grid with renewable electricity. The tech sector accounts for **around 40% of all corporate renewables PPAs signed globally in 2025**. Plans for the Vantage's CWL4 campus state that it will "**aim to achieve net zero operational carbon emissions by 2030**".

A **private wire** is when a development has a contracted power agreement with a generator (which could be fossil or renewable), rather than relying on the public grid. It provides a direct link between a generator and a consumer. A private wire can involve building the infrastructure needed for power generation alongside the development itself. Private wires can have the advantage of providing electricity at a fixed price, rather than the variable price of the public supply. The Welsh Government has published **guidance on private wires for renewable generation projects**.

Private wires may be used for data centres in Wales. For example, **a data centre planned in Port Talbot by Western Bio Energy** proposes to power the site by an existing biomass plant, which could be via private wire. Another development under construction which could have a private wire is the **data centre co-located with the Tremorfa Energy Park**.

The UK Government's "**Delivering AI Growth Zones**" White Paper discusses the potential of developers constructing and connecting to their own high-voltage lines and substations. **Vantage's CWL1 campus** has its own substation that connects it to the National Grid and provides a dedicated high-voltage link (400kV SuperGrid Connection) to facilitate its large power demand.

Cooling

Computing equipment generates heat as it is being used, so data centres need to have cooling systems. The **type of cooling** used by a data centre (see note 6 below) depends on **data centre size, local climate** and the kind of computing equipment it has.

Note 6.

Air cooling is effectively the same as conventional **air conditioning**, and tends to be used for equipment applied to general computational tasks like cloud computing, such as the site in **St Asaph**.

Liquid cooling means using liquids (often water) to absorb heat. **Liquid cooling** is much **more efficient than air cooling**. It is used for AI because AI computing equipment includes high-density chips which get hotter than those used for cloud computing.

Water consumption

Data centres **consume water** indirectly, through **electricity generation or supply-chain manufacturing**, or directly, through cooling.

Liquid cooling can reduce energy consumption and therefore increase efficiency, although, there is an **inverse relationship** between energy efficiency and water efficiency with one worsening as the other improves. Estimates of cumulative water consumption from **users interacting with OpenAI's GPT-4o model** in 2026 range from about 1.3 to 1.6 million kilolitres, which exceeds the annual drinking water needs of 1.2 million people.

As AI data centre developments get underway in Wales and projects grow larger in size, the use of liquid cooling is likely to increase. Six of the largest data centres in England, all of which have come online since 2020, accounted for **65% of the sector's water consumption**. **Vantage's CWL1 campus** uses liquid cooling and a Microsoft data centre **under construction** in Newport will also **use a combination of air and liquid cooling**.

Wales's local climate means that its data centres may have **less direct water consumption** than other parts of the world as the cooler the climate, the less additional cooling is needed. A Google data centre in Dublin **consumes 400,000 litres of water per year whilst another in Idaho consumes 3.4 billion litres of water per year**. Vantage's CWL1 campus claims the "**prevailing climate supports free air cooling throughout much of the year**".

However, maintaining a stable temperature inside data centres will become more difficult **as heatwaves increase in frequency and temperature** due to climate change, which could increase demand for cooling.

There have been multiple critical incidents due to data centre failures at NHS hospitals during heatwaves, such as at **Guy's and St Thomas' NHS Foundation Trust** in July 2022, costing an estimated **£1.4 million**, and also in **Portsmouth in June 2026**.

Caption: Some data centres consume significant amounts of water to cool computational equipment.

Water supply

Concerns have been raised about the efficiency of water cooling and possibility of burdening local resources, especially as data centres tend to be clustered around major population centres. The **House of Commons briefing** notes that the majority of data centres use the public water supply rather than alternative sources. **Plans for Vantage's CWL4 site state** that water providers "have confirmed that the water supply system in the immediate vicinity of the site has limited capacity to serve the development".

Public water infrastructure may need developing to accommodate data centres. For example, included in the **plans for CWL4** are that "if necessary, a scheme to reinforce the existing public water supply network in order to accommodate the development shall be delivered prior to the occupation of any building".

Guidance for managing water resources in Wales has been published by NRW, however, does not have explicit mention of data centres. The Environment Agency **advises** that "water availability needs to be considered

when data centres are being planned, and consideration given to the water requirements of the cooling technology selected as well as where the data centre is being located."

There may be options for data centres in Wales to source their own water supply. A 2026 **report from the European Datacentre Association** found that data centres collected approximately 9.6% of the water they consumed from rainwater and extracted 3.6% from surface water (excluding rainwater). The Environment Agency's **National Framework for Water Resources 2025** suggests that data centres can abstract water directly from the environment, recycle water, or collaborate with other water users. In Wales, water abstraction is managed by the environmental regulator **Natural Resources Wales (NRW)**.

Water and sustainability

Water is a finite resource that should be used sustainably. A 2025 **report** by the Sixth Senedd's Economy, Trade and Rural Affairs Committee recommended that water costs of AIGZs should be addressed by the Welsh Government.

The **World Economic Forum (WEF) suggests** that water management solutions supporting the **circular economy** are needed to cut consumption. Data centres could potentially re-use water within their own operations. In **closed loop** cooling systems, water is recycled to continuously circulate and transfer heat, reducing water loss. Some data centres are being used to **treat wastewater** and could contribute excess water back into the system for others to use.

Smart water management systems that continuously monitor and adjust water usage could help optimise water usage. **Cold thermal storage**, which stores cooling energy for later use, **can allow cooling demand to shift away** from peak times. **Liquids other than water** can also be used such as **coolant**, which carries heat but has lower conductivity for electricity than water. **Direct-to-chip cooling** runs a flow of liquid coolant onto the computer elements that generate the most heat.

Plans for Vantage's CWL4 site claim that several of the company's campuses have "**net-zero water usage effectiveness**". Net-zero water use could involve data centres **replenishing as much water as they use annually**. Companies such as Amazon have **pledged** to be "water positive" by 2030, returning more water to communities than data centre operations use.

Water offsetting, however, **needs to be carefully considered** as it is conceptually different to **carbon offsetting**. Whilst for carbon, a tonne of

pollutants removed from the atmosphere can cancel out a tonne emitted elsewhere, water availability is more localised. A community that has lost access to water will not be benefitted by a different community far away gaining water.

It may be technically **feasible to recover waste heat from** liquid cooling systems in data centres. **Deep Green** is a datacentre company that recycles heat, for example, to warm swimming pools. Deep Green **claim** that if just 1% of the datacentre demand in the UK operated on their servers, they could deploy every public pool in the country.

Heat reuse **raises practical challenges** as it needs to be considered from the build stage and excess heat from datacentres tends to have relatively low temperature. Other **issues** with heat reuse include seasonal changes, infrastructure proximity, and varying occupancy levels. However, **some data centres are already integrated** into UK heat networks.

Energy, water and transparency

Data centre developers have been criticised by environmental campaigners for a lack of transparency in decision-making processes related to **water consumption** and **energy use**. The **National Engineering Policy Centre has called for** environmental reporting mandates to manage environmental risks of data centres in the UK. The **IEA also emphasised the need for** close monitoring, frequent updates, and cooperation with the tech sector to improve the robustness of predicting the energy demand of data centres.

The Environment Agency have emphasised that data about the water consumption of data centres is **crucial to model and predict future water needs**. The Environment Agency is working with **Market Operator Services Limited** (MOSL), which oversees the non-household water market in England, to access **water usage information** and produce a dashboard to display data centre water consumption.

In England, the **Environment Agency says** that it is:

> *…experiencing barriers in gaining information about water consumption. Other sectors who are working with data centres have reported the same issues*.

The UK Parliament Environmental Audit Committee is conducting an **inquiry into the sustainability of data centres in the UK** to examine growing data centre demands and impacts to resource consumption as well as progress towards net zero goals.

Internationally, the European Commission **amended legislation** in 2026 to remove requirements for data centres to report key metrics such as energy efficiency and water consumption, classifying this information as **confidential and commercially sensitive**.

5. What physical and environmental factors are relevant for data centre locations?

Decisions about where to locate data centres involve considering internet connectivity, access to suitable land and impacts to biodiversity.

Internet connectivity

Many data centres in Wales are clustered around places that have access to existing internet connectivity infrastructure so that data can be easily transferred. The majority of data centres in Wales, for example, are close to cities such as Cardiff and Newport. This is to reduce **latency** (see note 7 below).

> **Note 7.**
>
> **Latency** is the delay between when an instruction is sent to a computer and when a response is received. The further data has to travel between a data centre and a user, the higher the latency will be.

Wales has a significant difference in full fibreoptic coverage between urban and rural areas, with an Ofcom reporting **83% coverage in urban areas versus 59% in rural areas** in 2025. The highest levels of broadband coverage by local authority in Wales are Flintshire, Bridgend, and Caerphilly.

Future data centres are **expected to be increasingly utilised for AI**, which may reduce the importance of location and latency issues. This is because the **majority of AI data centre compute workload is training AI models**, which is not latency sensitive as training does not involve rapid back-and-forth communication between the system and an end user.

Latency becomes more important after training when AI models are being used (also known as "**inference**"), **depending on what the models are being used for**. If a model is being used by a person, differences in latency are not very

noticeable. However, if a model is being used by a machine, such as for self-driving cars, **low latency is vital**.

Land use

Data centres occupy large areas of land, with the average data centre covering **100,000 square feet**. AIGZ application sites **must demonstrate** access to at least 500MW of power capacity by 2030 and have a minimum of 100 acres of land available for construction of AI infrastructure by 2028.

Many data centres **have been built on former industrial land**. Brownfield sites can be utilised for developments to leverage existing land and grid assets.

The **Microsoft data centre in Newport**, for example, is located in a 1.1 million square foot building on 40 acres which was **previously a Quinn Radiators factory**. **Vantage's CWL4 data centre** occupies a 1.7 million square foot **former Ford engine plant** on a 150 acre site in Bridgend. **Vantage's CWL1 campus**, which will contain 3 data centres when fully developed, is on a 46 acre plot of land leased from the Welsh Government. The planned **Cardiff East data centre campus** is on 58 acres of land which was previously a **900 space park and ride facility**.

Residents in Pontyclun have voiced worries about large data centre sites being **located too close to communities**. Land use of data centres has also been criticised elsewhere. Scottish residents have raised **concerns about data centre developments** outsizing villages that are located nearby. Residents in Australia have **criticised** the "sheer scale" of data centres not being adequately taken into account in planning processes, and sites that have continued to be expanded into increasingly large areas of land.

Biodiversity

Developments must balance the benefits of proximity to resources such as water and renewable energy sources with impacts to biodiversity, given the Welsh Government's targets to reverse biodiversity decline. The targets were given a legal footing through the **Environment (Principles, Governance, and Biodiversity Targets) (Wales) Act 2026**.

Industry experts have **suggested** that data centre site selection should avoid ecologically valuable areas. Projects also need to consider how local nature can be supported during construction, operational, and decommissioning stages.

Most data centres are likely to require an **Environmental Impact Assessment**, which would detail any expected biodiversity impacts of a development and mitigations. Future large-scale projects may require extensive environmental

assessments if they are considered to be **Significant Infrastructure Projects (SIPs)** particularly where sensitive habitats or natural resources are affected.

Caption: Data centre developments need to consider biodiversity impacts and support local nature during construction, operation and decommissioning.

6. What are the impacts on local communities?

This section examines some of the ways that data centres affect local communities through noise pollution and social acceptability.

Noise

Data centres can cause noise pollution from **energy generation, construction, computing equipment and cooling**.

The Ada Lovelace Institute's **consultation response** to the UK Parliament Environmental Audit Committee **inquiry on data centre sustainability** cites ongoing noise pollution as a significant issue for residents living near data centres.

Gas turbines are one source of noise pollution from data centres. Turbines must be run constantly because data centres require consistent and steady power to avoid service disruption, as service disruption could raise **cyber security risks**.

Noise pollution is also caused by cooling systems, which get louder when they are operating more intensely, such as when **weather is hotter** and **when data centres have higher workloads**. Servers tend to produce more heat, for example, in the daytime when people are using them. **Computing equipment** makes noise as it runs, which compounds when many individual servers are running together.

Noise pollution has impacts on **health and the environment**. In Wales, the environmental regulator NRW is responsible for issuing and enforcing permits related to pollution, including noise pollution. Permit holders may need to **assess noise impacts and implement noise management plans**. Local authorities must have regard to the Welsh Government's **national strategy on soundscapes** when making decisions about data centres.

Social acceptability

Social acceptability of data centres is a growing issue as communities push back against projects amid concerns about noise, affordability, and environmental impacts. SEC Newgate found that **4 in 10 UK respondents would not find it acceptable** for more data centres to be built in their local

area. Similarly, **polls conducted by Reuters** in the US found that 2 out of 3 respondents disapproved of AI data centre construction, and most opposed building one in their own community.

Plans under consideration to turn a **900 space park and ride facility** into a **new data centre campus** in Cardiff East have generated **backlash** from residents. Public bus services were **withdrawn** from the site in 2023 due to low demand and council budget pressures. However, residents say that the park and ride service was a "lifeline" connecting people from Cardiff East to University Hospital of Wales.

A **petition** was submitted to the Senedd to stop the development in Cardiff East, however it was rejected as "a matter for the local authority". Another **petition** has also been created by residents opposing a planned data centre in Pontyclun.

Communities in England have also raised concerns about many proposed data centre developments including **Kent**, **Norwich**, **Devon**, **Hertfordshire**, and **Berkshire**.

7. What is the policy landscape for data centres in Wales?

This section outlines policy for data centres in Wales, including the current planning framework, relevant authorities, and UK Government policy.

Existing planning framework

Planning policy is devolved and plays a central role in determining where and how data centres are developed. **Welsh planning policy does not currently explicitly reference data centres**, unlike planning frameworks in **England** and **Scotland**. This means that planning authorities are not required to give specific weight to data centre needs when preparing policies or deciding applications.

Planning decisions in Wales should be determined in accordance with policies set out in the 'development plan', which currently consists of **Future Wales: the National Plan 2040** and the **Local Development Plan (LDP)** for the area, unless material considerations indicate otherwise.

The development plan also includes any **Strategic Development Plan (SDP)** for the region, but no SDP has yet been produced in Wales.

Material considerations must be planning matters and include, **Planning Policy Wales (PPW)**, the Welsh Government's national planning policy, which is supported by a suite of **Technical Advice Notes (TANs)**.

Expansions in data centre development may require a more structured policy framework in Wales. Both the Sixth Senedd's **Economy, Trade and Rural Affairs Committee** and the **Independent Advisory Group on the Future Electricity Grid** have called for clearer approaches to assessing costs, impacts and benefits of major infrastructure developments.

AI growth zones

The UK Government's plans for developing AI, outlined in **the AI Opportunities Action Plan (2025)**, establishes AIGZs to accelerate the build out of AI data centres. **Two AIGZs are located in Wales**. Locations for AIGZs have been selected as places which the UK Government has identified as suitable for hosting AI data centres and where common barriers to developing AI infrastructure, such as slow planning processes and delays in connecting to power, **can be best addressed**.

A **report** from the Sixth Senedd's Economy, Trade and Rural Affairs Committee published in May 2025 recommended that:

> *The Welsh Government should set out how it intends to support any AI growth zones that are developed in Wales, including how it will help to address potential consequences around higher energy and water use.*

In **response**, the previous Welsh Government outlined that it was working with the DSIT and industry partners to issue AIGZ bids. It argued that whilst data centres require large amounts of power, data centre developments would support "additional power infrastructure for Wales from the national grid that would not, without these data centre investments, be attained for many years if at all".

Cabinet Minister for Enterprise, Connectivity and Energy **Adam Price MS has emphasised** that Wales should ensure it benefits from the AIGZs it is hosting, saying that:

> *We have two AI growth zones, we have much of the hard infrastructure through the data centres that are going in, but we don't just want to host hard infrastructure, in the same way that we don't just want to host energy infrastructure; we want to get the benefit of it. That's the kind of strategy that will be the driving force for our Government.*

Some powers relevant to AIGZs, such as planning, the environment, and the economy, are devolved whilst other powers, such as energy and home affairs (including national security, **cyber security** and **telecommunications**) are reserved. The water industry is a complicated area of devolution undergoing significant structural changes. Senedd Research's "**The Water Industry in Wales**" briefing provides an overview of the industry in Wales.

The UK government has pledged to give data centres in AIGZs **priority access** to available capacity on the energy grid. Where AIGZ projects are located in areas that could help reduce pressure on the energy network, such as in places with excess wind generation, they will be **given significant discounts on their electricity bills**.

Alongside its plan to deliver AIGZs, the UK Government is emphasising the need to **streamline planning procedures** for data centres. It has allocated £4.5 million to a dedicated **AI planning team** to help local councils in planning and approving new AI infrastructure.

For planning policy in England, the UK Government issued a **statement on National Infrastructure Planning for data centres** in October 2025 and is **consulting on changes to the National Planning Policy Framework**.

UK policy

Current regulation of data centres in the UK **is limited**. **Ofcom** has been designated as the **operational regulator for data centres**. A 2026 **House of Commons Library briefing** outlines planning policy for data centres in the UK and a **2026 POSTnote** maps out UK data centre regulation.

The UK Government designated data centres as **Critical National Infrastructure (CNI)** in 2024, putting them on an equal footing to water, energy, and emergency services from a security and resilience perspective.

CNI status allows the UK Government to support the sector in the event of critical incidents so as to minimise impacts on the economy. **Critical incidents** include **cyberattacks**, power failures and **natural disasters**. The UK Government's **designation of data centres as CNI was cited in planning reports of Cardiff Council** for data centre development at Rover Way approved in March 2026.

8. Acronyms

Acronym	**Name**
APRS	Action to Protect Rural Scotland
BNG	Biodiversity Net Gain
DEFRA	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
DSIT	Department for Science, Technology and Innovation
EIA	Environmental Impact Assessment
IAG	Independent advisory group
IEA	International Energy Agency
MOSL	Market Operator Services Limited
MW	Megawatts
NESO	National Energy System Operator
NRW	Natural Resources Wales
ONS	Office for National Statistical
PPA	Power Purchase Agreement
WEF	World Economic Forum