JULY 2025
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Sovereignty, Security, Scale: A UK Strategy for AI Infrastructure

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Executive Summary

Countries that lead in artificial intelligence will have a clear advantage in ensuring their future prosperity, but the resources required to do so are already unavailable to most. The requisite combination of capital, compute and power will be out of reach for all but a handful of countries by the end of the decade.

Britain's role in the emerging AI era is not yet determined, but the choices the government makes today will shape its ultimate trajectory. This already transformative technology will reshape how the world operates, how government and society function, how economic value is created, and how security is ensured. The United Kingdom must choose whether to take AI infrastructure seriously, or to continue its current trajectory of being the "largest AI ecosystem in the world without its own AI infrastructure".[1]

There are two ways to ensure that a country remains competitive in the AI era. First, to train the world's most advanced, capable and competitive models. Second, to deploy AI throughout society. In both cases, significant volumes of infrastructure are required: data centres, electricity and computational power.

The UK cannot and should not try to compete in the resource-intensive race to train frontier-AI models. That track is currently dominated by the United States, China and the Gulf states, which are investing hundreds of billions of dollars in the creation of vast, energy-hungry compute clusters. The UK lacks the fiscal headroom, land and energy resources to keep pace. Moreover, the country holds only about 3 per cent of the world's computing power – around 1.8 gigawatts (GW)[2] – and much of this is not even optimised for AI.

The smarter strategy for Britain is to focus on deploying and widely adopting AI, demonstrating to the world how to effectively apply it across sectors including health, education, government, defence and science. This is where the most significant economic gains lie: in boosting productivity, improving public services and driving innovation across the economy.

This strategy will still require more AI infrastructure than currently exists in the country. Britain must build, and the government has already acknowledged this. The AI Opportunities Action Plan – announced by Prime Minister Keir Starmer in January 2025 – emphasises the significance of AI infrastructure and announces the establishment of new "AI Growth Zones" to expedite infrastructure development. Earlier this month, the government also released a new Compute Roadmap, outlining the key steps it will take to scale UK compute capacity.

These early steps, though important, are not enough. The country's AI infrastructure has not historically been given the attention that it deserves. The situation is now dire, and the consequences matter. The UK has placed AI at the centre of its growth and security goals, but without sufficient infrastructure it risks rapidly losing its ability to harness AI securely. At the current construction pace, the country is unlikely to meet its 2030 target of 6GW of AI-ready capacity on UK soil.[3] Planning and permitting delays, grid constraints and soaring industrial-energy costs are preventing progress.

The UK doesn't need to build everything, but it must build enough infrastructure to deploy AI when and where it matters, to protect sovereignty and resilience, and to anchor a domestic ecosystem that delivers for the public and the economy.

Recent industry estimates suggest the private sector will invest up to $5 trillion globally on new AI infrastructure over the next decade. However, due to years of neglect, at present the UK is not set up to be a destination for this investment. The energy system, regulatory environment and planning regime don't allow it. With modest outlays to align the energy system with AI requirements and with reforms to restrictive regulatory and planning requirements, the UK will be poised to capture tens of billions of pounds in investment.

This is a now-or-never moment. Creating the right environment for AI-infrastructure investment will drive innovation and support both the government's current growth agenda and the UK's ambitions to transform into an AI-enabled state. Failing to meet this moment will have significant detrimental impacts on the country's economy and security in the long term.

If Britain waits until demand is high, it will be too late and AI will become yet another area where national ambition outpaces the physical systems needed to realise it.

Recommendations

Pursue a broader AI-infrastructure strategy for AI deployment based upon a strategy of "accelerated diversification". This means quickly building diverse and resilient AI infrastructure for safe and competitive deployment across the economy. This will require the government to drive the necessary changes for attracting new investment in AI infrastructure in a way that reduces risk, spreads capability regionally to improve resilience and supports a strong domestic ecosystem.

Treat AI Growth Zones as only one part of the broader AI-infrastructure strategy. As recognised by the Department for Science, Innovation and Technology (DSIT) in its Compute Roadmap, the UK is likely to develop a serious compute gap over the coming years.[4] This gap cannot be closed through AI Growth Zones alone. The UK's AI-infrastructure strategy must be broader, also incorporating supply-side reforms in planning and energy, without which the private sector cannot invest at the required pace and scale.

In the first instance, this means that the government must create an energy system fit for the AI era. This includes:

- **Aligning the UK's energy strategy with AI needs.** The government must ensure the National Energy System Operator (NESO) integrates AI-data-centre demand as estimated by DSIT into national plans and builds in dynamic updates, with dedicated AI expertise inside NESO.
- **Making the electricity system supportive of AI data-centre growth now and in the future.** This includes ensuring that connections reform delivers for AI data centres, through the Connections Accelerator Service, and investing in clean baseload capacity to create an attractive energy environment for AI data centres.

- **Enabling energy and data-centre co-location** through reforming rules to allow data centres to develop on-site generation and access the grid flexibly, including introducing viable business models for on-site energy investment.

Second, the government must reform the planning system to unleash AI-infrastructure development. This includes:

- **Accelerating and improving Nationally Significant Infrastructure Project (NSIP) reform.** This includes passing the Planning and Infrastructure Bill without amendments that will water down reforms, finalising a National Policy Statement (NPS) for data centres before the end of the year and creating a national Environmental Delivery Plan (EDP) backstop.
- **Making the local planning system work for data centres,** by using ministerial call-in powers for high-investment data-centre projects and grid investments, and incentivising local support by allowing councils to retain a portion of business rates from data centres and small modular reactors (SMRs).
- **Unlocking land for fast-track development, by identifying and publishing** suitable public land for data-centre development.

Third, AI Growth Zones must be treated as a delivery engine and should not be seen as a workaround for systemic barriers or a label for projects that would happen anyway. Instead, they should be used to overcome market failures, coordinate infrastructure and unlock builds that would not otherwise proceed. This includes:

- **Enabling fast, centralised designation of AI Growth Zones (AIGZs).** Amend the Planning and Infrastructure Bill to give the secretary of state for science, innovation and technology powers to designate zones, and legislate for a bespoke consenting and environmental process alongside the NSIP that includes issuing decisions within an eight-month period.
- **Prioritising zones that support clustering.** Site selection should focus on high-impact corridors – such as Slough to Cardiff or West Midlands to South Wales – where shared infrastructure, pooled investment and interdependencies can support scalable delivery.

- **Establishing a dedicated AIGZ Authority.** Create a central delivery body to coordinate planning, shared infrastructure and private investment.
- **Designing AIGZs to support flexibility and innovation.** Ensure zones can accommodate experimental infrastructure – including UK-developed chips, cooling systems and compute architectures – as technology evolves.
- **Creating demand signals and expanding access.** Pilot advance purchase commitments to de-risk early-stage infrastructure, and launch a competitive compute-access programme for UK researchers, startups and mission-aligned firms.

Fourth, the government should address the misaligned incentives within government by establishing a dedicated AI Infrastructure Delivery Group within DSIT, reporting directly to the prime minister to ensure the full machinery of government is mobilised behind delivering this national priority. This group would be responsible for:

- **Unblocking planning and grid-connection delays** for critical AI-infrastructure projects within six to 12 months.
- **Maintaining a system-wide pipeline view** of land, power, fibre and project milestones to anticipate and manage delivery risks.
- **Aligning departmental and regulatory actions** with projected AI-infrastructure demand and use cases.
- **Reporting regularly to the prime minister and Cabinet Office** on delivery progress, risks and where further intervention is needed.

01

The AI Era Is Here – And It Needs Infrastructure

As the adoption of increasingly capable artificial-intelligence systems increases, the world is transforming. From the automation of software development to the creation of new "AI agents",[5] AI is making its impact on the world known. Recent estimates suggest that the global productivity boom currently underway, driven by the widespread adoption of generative-AI systems, could add up to 7 per cent to global GDP over the next decade, equivalent to nearly $7 trillion.[6]

Governments, too, will be transformed by AI. In the UK alone, the technology has the potential to drive vast productivity gains, potentially saving the public sector £10 billion annually by the end of this parliament and £34 billion by the end of the next.[7] In health care, education, science and other sectors, similar AI-driven advancements are also emerging, providing significant fiscal room for governments that successfully leverage the technology.

Behind this AI boom is a surge in private investment, along with an understanding that the capabilities of AI models increase as the amount of compute used to train them also grows. Since 2010, the compute used to train frontier models has grown at an average rate of four-and-a-half times per year.[8] Every model, both trained and deployed, requires chips, energy and real-world infrastructure. In the AI era, infrastructure matters. This is driving the demand for larger training clusters, more power and significantly expanded infrastructure.

New models are already being trained at a cost exceeding $1 billion; by 2030, some models may cost as much as $100 billion to train.[9] Companies – and increasingly governments[10] – are investing vast resources into AI, because they see its already significant impacts and expect these capabilities to continue to improve. Some investments are also being driven by the belief that the creation of artificial general intelligence (AGI), "AI that is at least as capable as a skilled adult at most cognitive tasks",[11] is near.

Whether or not AGI is possible remains fiercely debated,[12] but what is known, however, is that highly capable AI systems are already here and they will not go away.

The UK has taken notice of AI's potential and has placed widespread adoption of the technology at the core of its economic and national-security agenda, featuring it heavily in the Digital Government Blueprint, National Security Strategy and Industrial Strategy. Furthermore, as part of the AI Opportunities Action Plan, the government has announced its intention to increase the country's total public compute capacity 20-fold by 2030, committed to create new AI Growth Zones (AIGZs) and released a new Compute Roadmap.

The Compute Roadmap states that "without urgent action, the UK risks being left behind, over-reliant on foreign infrastructure and missing the opportunity to embed AI capability into our economy and to anchor the next generation of AI companies here at home". It further predicts that the country will require at least 6GW of AI-compute capacity by 2030;[13] this is more than three times the current total and approximately a quarter of the UK's projected electricity generation in that year.[14]

AIGZs could be an important vehicle for helping meet the country's AI-infrastructure needs, but there remains significant uncertainty about exactly what they are and what role they should play in the country's emerging AI-infrastructure strategy.

The unfortunate truth is that the UK is not an attractive place to build AI infrastructure. Numerous structural barriers deter investment. The UK has industrial-electricity prices four times higher than the US and 46 per cent higher than the International Energy Agency (IEA) median, decade-long grid-connection times and a connections queue of 771GW.[15,16,17] There are also concerns surrounding land use, lengthy permitting processes, a regulatory regime that is not conducive to training large AI systems and a lack of fiscal headroom for serious investment.[18,19] Moreover, AI deployment across the

UK economy remains modest, with many firms yet to adopt even earlier generations of the technology despite it having been available for decades.[20]

These are the barriers the UK must now confront if it wants to secure its economic and national security in the age of AI. As billions of pounds continue to flow into new AI-infrastructure projects, the UK risks missing a golden opportunity to capture a portion of this investment. AI's future will ultimately be shaped by those who can build and control its infrastructure. Without bold action, the UK could find its long-term economic and national security at risk, dependent on the whims of foreign servers.

02

Infrastructure Is Power: The Emerging Geopolitics of AI

The resources required to sustain global leadership in AI infrastructure are already well outside the reach of all but a small handful of countries, and this trend is accelerating. Some of the most aggressive estimates predict that by the end of this decade the world will already see the construction of the first $1 trillion AI clusters,[21] which will require up to 100GW of power. That is more than the UK's entire grid-generating capacity. Even for countries that are not training frontier-AI systems, any significant deployment of AI will still require infrastructure to serve and deploy models at scale.[22]

FIGURE 1

AI data centres and how they compare with traditional data centres

Traditional data centres	AI data centres	
Traditional data centres provide IT infrastructure used for general-purpose computing such as data storage, application hosting and cloud computing. They are less energy intensive and generally use standard CPUs. Many countries have existing data-centre ecosystems.	AI data centres are different from traditional data centres in that they are facilities designed to handle AI workloads using specialised chips for more complex and computationally intensive tasks. These facilities require greater energy capacity, increased bandwidth and advanced cooling capabilities.[1]	
	Training • Require more computationally expensive, power-demanding and high-bandwidth GPUs[2] • Can be built away from existing data-centre clusters • Provide the basis for training large frontier-AI models • Generally have a greater one-time cost[3] • The current AI paradigm has seen model-capability improvements scale together with growth in the amount of compute used	**Inference** • Used in model deployment and the everyday use of AI tools • Must be located in clusters, usually near existing cloud infrastructure to ensure resilience • Chips usually require less power for initial construction and are optimised for efficiency • In anticipation of broader AI adoption, AI startups are moving towards focusing on inference over training compute[4, 5]

[1] https://www.datacenterdynamics.com/en/opinions/how-does-ai-data-center-infrastructure-differ-from-traditional-data-center-workloads
[2] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5312977
[3] https://www.cloudflare.com/learning/ai/inference-vs-training
[4] https://apnews.com/article/ai-inference-chips-nvidia-dmatrix-corsair-groq-914b9a33faf865080eaf7d9ca4096de3
[5] https://www.ft.com/content/d5c638ad-8d34-4884-a08c-a551588a9a28

Source: TBI

McKinsey forecasts that global demand for data-centre capacity could grow by between 19 and 22 per cent annually between 2023 and 2030, with 70 per cent of this demand coming from data centres equipped to host advanced AI workloads. The IEA predicts that electricity demand from data centres worldwide will more than double by 2030, twice what was forecast only last year, positioning AI to account for around 3 per cent of global power demand by 2030.[23] These energy requirements, combined with the high costs associated with constructing data centres and the required chips necessary for running them, are driving centralisation. This transformation is happening rapidly.

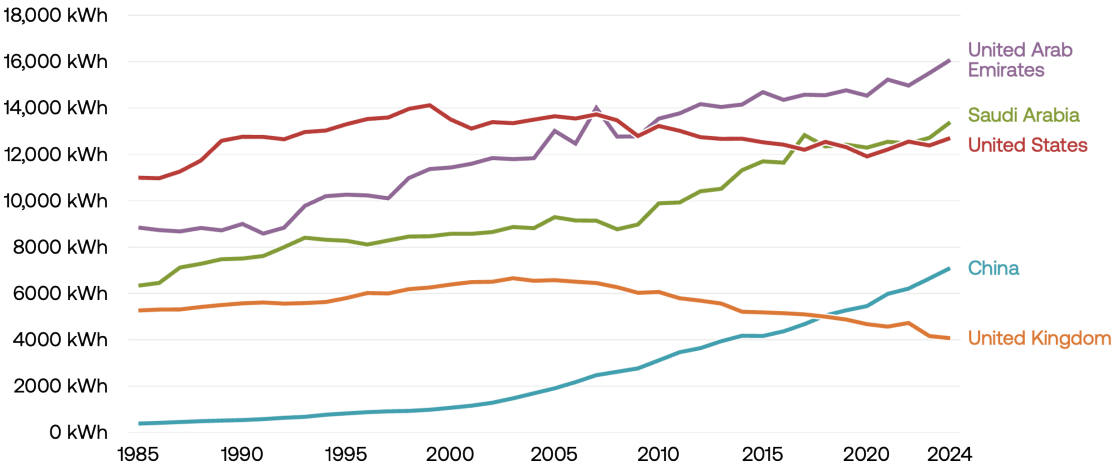
In 2019 industry owned 40 per cent of the world's AI supercomputers; today that number is 80 per cent.[24] The same study found that the US currently owns around 75 per cent of the world's AI supercomputers, China about 15 per cent, with the remaining 10 per cent distributed elsewhere. A previous TBI paper, *State of Compute Access 2024: How to Navigate the New Power Paradox*, provides similar results, finding that the US has built more data-centre capacity than the rest of the world (excluding China) combined.

By the end of the decade fewer than five countries will likely be able to meet the combined requirements of capital, compute and power needed to train and deploy the most advanced AI models.

Countries that are emerging as leaders in AI infrastructure are also those that have robust domestic energy-generation capabilities, such as the US, China, Saudi Arabia and the United Arab Emirates (UAE).

FIGURE 2

Per-capita electricity generation



Source: Our World in Data

As these countries mobilise substantial resources to attract investment in energy and AI infrastructure, they continue to expand their influence over AI. The UK, in contrast, is moving in the opposite direction. To grasp the urgency of reversing this trend for Britain, we provide a brief overview of the strategies that leading countries in AI infrastructure are currently pursuing.

The United States

The United States is the world leader in AI infrastructure, and both the Biden and Trump administrations focused on sustaining and expanding this dominance. Under President Joe Biden, the country leveraged its control of the AI semiconductor supply chain to restrict access to critical components for training advanced AI systems. The Biden administration also issued an executive order (EO) enabling non-federal entities to lease federal land for frontier-AI data centres and co-located clean energy.[25]

President Donald Trump has pursued similar goals through EOs such as "Unleashing American Energy", aimed at unlocking new energy sources (including on federal lands), expediting permitting and cutting red tape, all to ensure a reliable energy supply to power competitive growth and support national security.[26]

These efforts are all oriented towards a single goal: to sustain and enhance the US's global AI dominance. By controlling access to key technologies, promoting its AI abroad and creating an attractive environment for infrastructure investment, the US is positioning itself as the global partner of choice for AI. As a result, the country has been able to attract billions in AI infrastructure investment.[27]

At the frontier, no other country is close, and that is unlikely to change. Most countries will remain dependent on the US for their AI needs.

China

China has set out to become the world's leading digital superpower by 2030,[28] and AI plays a crucial role in this strategy. One recent analysis suggests total investment could exceed $1.4 trillion by 2030.[29] Leading Chinese technology firms such as Alibaba, ByteDance and Huawei will spend nearly $100 billion on AI investments alone,[30] while the government is allocating similarly large sums into AI infrastructure, including creating new venture-capital funds.[31,32]

The country has built or announced the intention to build more than 250 AI data centres across all regions of China.[33] A flagship programme, "Eastern Data, Western Computing" aims to shift data processing from the country's energy-intensive eastern provinces to the sparsely populated, renewables-rich west.[34,35] Backed by $6 billion in public investment and nearly $30 billion in private capital, the initiative will develop eight national data-centre hubs and is expected to consume "nearly 6 per cent of the nation's total electricity demand by 2026".[36]

In contrast to many countries, China boasts a new and highly efficient grid and readily available, cheap electricity, and is a global leader in building out new renewable-energy sources.[37,38,39]

Saudi Arabia and the UAE

Saudi Arabia and the UAE are emerging as ambitious challengers in the global AI-infrastructure race. Their goal is not just domestic modernisation but to become pivotal players in the AI-enabled global economy.

The UAE has positioned itself as a growing AI hub,[40] home to AI institutions like G42 and backed by government plans for widespread AI adoption across the economy by 2031.[41] It has supported the creation of local large language models such as Falcon[42] and is seeking partnerships with Microsoft, Oracle and AWS to co-locate data centres, train models in-country and develop sovereign compute initiatives.[43]

Saudi Arabia's approach to AI is closely tied to its Vision 2030 strategy.[44] Through entities like Aramco, the Saudi Data & Artificial Intelligence Authority and the Public Investment Fund, it is investing in new cloud regions, national data centres and AI research hubs, as well as securing access to high-performance compute and AI intellectual property. Special economic zones providing tax benefits and streamlined regulations have been established to attract foreign investment in data centres.[45]

Both countries benefit from significant strategic advantages, including low-cost land, high connectivity, permissive regulation, growing domestic demand and deep capital reserves.[46] Saudi Arabia has the fifth-largest and the UAE holds the seventh-largest natural-gas reserves in the world,[47] but both are also investing heavily in clean energy to meet growing AI demand and decarbonisation goals. Masdar's record-breaking 1GW solar-plus storage project[48] and new interest in nuclear, including SMRs,[49] demonstrate this shift.

Although they may not yet rival the US or China in scale, the Gulf states are positioning themselves as future leaders in global AI infrastructure.

In the emerging AI era, countries that are unable to develop AI will rely on those that can. Countries including the United States, China, Saudi Arabia and the UAE show that early decisive action on AI infrastructure can help secure geopolitical influence, resilience and security. Without taking the AI-infrastructure race seriously, the UK risks falling behind in the new geopolitical landscape.

03

Finding the UK's Place Within the Race for AI Infrastructure: A Different Path to Success

Given the high costs and barriers to building AI infrastructure in the UK, the country should not try to outbuild the US or China. Instead, it must decide whether to develop its own computing capacity or collaborate with international partners to acquire it. The AI Opportunities Action Plan recommends a three-tiered AI infrastructure comprising sovereign, domestic and international compute. The key question now is how much of each is necessary.

FIGURE 3

Three-tiered AI infrastructure recommended by the AI Opportunities Action Plan

Tier	Purpose	Share of total supply	Why it matters
Sovereign AI compute	A core reserve of UK-owned compute, ring-fenced for sensitive data, defence, scientific emergencies and safety R&D	Smallest, but indispensable	Guarantees the government can deploy or audit critical models on its own terms – giving the UK "skin in the game" when shaping global rules
Domestic commercial compute	Privately funded data-centre capacity located in the UK and open to universities, startups and public agencies	Mid-sized backbone	Keeps inference and fine-tuning affordable onshore, anchors talent and provides resilience if overseas access is disrupted. It also caters to some workloads, such as highly regulated finance and national security, which must happen onshore
International partnerships	Access to frontier-scale clouds and specialised hardware abroad	Largest overall share	Allows researchers and firms to tap hyperscale resources without bearing the full capital or energy burden at home

Source: TBI

While the UK is likely to continue relying on international partnerships for a substantial part of its AI compute needs, there are at least four compelling reasons why the government must make obtaining significant domestic AI infrastructure a national priority.

1. **Some sensitive and valuable data must remain within the UK's borders.** For example, data related to national security, health care, finance or nuclear power might be too sensitive to be sent abroad or handed over to an AI system operated by a foreign government. These data have the potential to create considerable value, but without domestic sources of compute, this value will remain elusive.

2. **Operational continuity requires local control.** The government, via the AI Opportunities Action Plan and the Digital Government Blueprint, has signalled that AI is key to achieving its growth agenda. If AI-enabled services become essential to the country's operations, efforts must be made to ensure that these services can continue to operate under all circumstances. In a future where access to compute becomes a usage constraint, otherwise trusted partners could prioritise their own national usage to protect their own economies, leaving the UK at risk.
3. **Credibility in governance depends on capability**. The UK has led global conversations on AI evaluation, regulation and governance, from the AI Safety Summit at Bletchley Park to the world-leading AI Security Institute.[50,51] It is in the country's interest to continue influencing emerging global norms surrounding the development and deployment of AI, but without a credible amount of local compute, it will be challenging to maintain its position as a leader in these conversations.
4. **Positive exposure to a potential future AGI scenario.** The UK's conservative AGI predictions differ considerably from those in Silicon Valley. Nonetheless, in five years, the world could face anything from routine AI applications to the full-scale deployment of AGI. Preparing for all potential outcomes is prudent, and the UK's AI strategy should not be influenced by how confident the government is in an AGI-dominated future. In any future scenario where highly capable AI systems, up to and including AGI, emerge, computing infrastructure will be vital for ensuring that they can be deployed with safety, alignment and national benefit in mind.

04

What to Build: The Importance of Compute on UK Soil

A variety of stakeholder groups have proposed different strategies the government could adopt to build the requisite AI infrastructure. Based on these, we outline three illustrative options, representing the main schools of thought.

FIGURE 4

Three illustrative strategies for compute in the UK

Approach	Description	Opportunities	Risks
Slow rollout	The UK moves ahead with minimal public and private funding for a small number of small (<100MW) data centres	• Minimal financial risk • Low grid load	• Little opportunity to build resilience in any aspect of the tech stack • AI inference and fine-tuning still expensive on domestic soil • The UK slips into "AI-taker" status
Accelerating diversification	The UK plans about 10 medium-sized (300MW–1GW) AIGZs, starting with a >100MW data centre in Culham, Oxfordshire, and others aiming to come online by 2030	• Serious compute capacity for AI for science, fine-tuning and secure data • Long-term-demand planning allows a domestic ecosystem to grow • Opportunities to diversify the compute stack	• Regulatory changes may not be enough on their own to attract new investment, but any government investment needed would be small compared to private-sector investment • Will still lag behind countries that are investing more in compute specifically for training frontier-AI models
Shoot for the moon	The UK invests around £40 billion to build multiple 1GW–5GW data centres over this parliament, making the UK one of the leading compute countries in the world	• UK can pre-train foundation models, allowing it to compete with the US, China and the Middle East • The UK has technical autonomy	• Requires the government to rapidly expand energy output and make a number of new connections available for data centres within the next six to 12 months • Data centres will (in the short term) depend on the US tech stack

Source: TBI

The "slow-rollout" strategy would let AI-infrastructure development proceed as it currently does, relying on industry to invest according to its interests. Supporters might say demand will drive supply, the current compute model is overhyped or that cheaper compute can always be sourced from countries like the UAE or Saudi Arabia.

The risks include the UK becoming an "AI taker", developing dependencies on other countries' compute. These countries may not share the same commitment to the UK's net-zero agenda, and using overseas data centres offers little resilience for critical AI services and risks the security of sensitive data. It would also prevent the UK from competing at the forefront of AI research and lead the country to forfeit any ability to influence emerging AI systems.

A strategy focused on "accelerating diversification" would see the UK reach 3 to 5GW of compute within a decade by supporting the construction of around ten new AI-specific data centres of 300MW to 1GW each. By the end of 2030, Goldman Sachs estimates that there will be around 122GW of data-centre capacity online,[52] and McKinsey estimates that the number will be just over 150GW.[53] If the UK succeeds in building 5GW by 2030, it will maintain around 3 per cent of global AI computing power. This will not make the UK an AI superpower for training but will keep it competitive among middle powers. Failing in this endeavour would see the country potentially fall to less than 1 per cent of the world's total AI compute.

Accelerating the buildout of AI infrastructure would guarantee compute availability for academia and industry, enhance resilience for government and national-security applications, and establish the foundation for new domestic AI-innovation ecosystems. This strategy would require the government to implement critical changes in planning, energy and regulation to attract investments that might not otherwise occur. Importantly, this approach would likely need only minimal financial investment from the government.

The UK could adopt an ambitious "shoot-for-the-moon" approach, investing more than £40 billion to establish itself as a global AI leader by building new data centres in the next five years, offering a total of 15 to 30GW of computing power. This approach is especially appealing to those who think AGI could be developed within the next ten years. Even if you don't see AGI as a possible milestone,[54] the rapidly advancing capabilities of AI and the related economic and national-security implications mean this strategy could still be sensible, especially considering increasing defence budgets.[55]

However, getting it right would be a national endeavour reliant on the government's ability to invest the necessary resources, radically deregulate, engage in strategic global partnerships and mobilise the economy to support the initiative. This strategy is the only one that would ensure the UK can train large frontier-AI models and compete with countries such as the US and China.

Accelerating diversification is the best option among the three. The UK is unlikely to raise the funds for a moonshot approach to AI infrastructure, and constraints like land and power significantly limit what is achievable. As a result, the UK cannot compete with countries that have more computing power for training frontier-AI models.

Recommendation: *The UK should pursue an "accelerating-diversification" strategy, rapidly building enough distributed, resilient AI infrastructure over the next decade to support safe, sovereign and competitive deployment across the economy.*

05

Delivering the UK's AI-Infrastructure Strategy

For the UK to succeed in the AI era, it must treat physical infrastructure not as an afterthought, but as a first-order strategic priority. The Technology Adoption Review, AI Opportunities Action Plan and the Future of Compute Review establish a strong basis for delivering the UK's AI infrastructure strategy.

Initial measures taken by the government, such as setting up the Sovereign AI unit within the Department for Science, Innovation & Technology (DSIT), launching the new AI Energy Council, preparing the Compute Roadmap and issuing the Expression of Interest for new AI Growth Zones, are all positive steps in the right direction.

Although recent government announcements have helped set the direction of travel, they do not yet constitute a comprehensive delivery strategy. While DSIT shows significant ambition, the tools to implement change largely reside in other departments, most notably the Department for Energy Security & Net Zero (DESNZ) and the Ministry of Housing, Communities & Local Government (MHCLG). Each of these departments has conflicting mandates and objectives, which weaken their ability to collectively deliver an ambitious agenda.

If implemented well, the AIGZs announced in the AI Opportunities Action Plan could be a cornerstone of an effective AI-infrastructure strategy. However, these zones should not be seen as a workaround for systemic barriers or a label for projects that would happen anyway. Instead, they should act as a targeted delivery tool: used to overcome market failures, coordinate infrastructure and unlock builds that would not otherwise proceed.

The government must therefore undertake bold action in four core ways:

1. **Creating an energy system fit for the AI era**

2. **Reforming the planning system to unleash AI-infrastructure development**
3. **Leveraging AI Growth Zones to drive innovation and delivery**
4. **Driving effective delivery of AI infrastructure by aligning political priorities and incentives across Whitehall**

Creating an Energy System Fit for the AI Era

Without a secure energy connection, there is no data centre. Energy access remains a top priority for the industry, not only to ensure round-the-clock reliability but also because electricity is a major driver of operational cost, accounting for between 40 and 70 per cent of operating expenses.[56]

This is why other countries, such as the US and China, are taking decisive steps to ensure they can generate sufficient baseload electricity to power new AI data centres.

The UK has successfully increased renewable-energy capacity to decarbonise the economy, but limited efforts to expand the transmission network, ensure reliable baseload power and develop efficient energy storage have rendered the UK less attractive to AI-data-centre providers. This situation presents crucial challenges to the country's ability to remain competitive in the AI era.

Given the scale of the problems, creating a low-cost power system where clean, abundant electricity can be quickly and easily accessed from anywhere in the country will not happen overnight. The government must take immediate steps to make the electricity system a platform for AI-infrastructure delivery by crafting a clear, dedicated strategy for the AI era. Three core actions should be taken:

1. Integrate AI requirements into energy-system planning
2. Make the electricity system supportive of AI-data-centre growth now and in the future
3. Unleash co-location of AI data centres and energy assets to increase the speed of connections

INTEGRATE AI REQUIREMENTS INTO ENERGY-SYSTEM PLANNING

The UK is currently undergoing a large-scale transformation of its electricity system, transitioning from a gas-based system to one primarily driven by renewables. To manage the transition, the government has emphasised the need for better central control and planning of the nation's energy infrastructure. In response, NESO was established in 2024 and tasked with planning the UK's transition to clean power by 2030, as well as developing the country's Strategic Spatial Energy Plan (SSEP).[57] It is essential that, as these plans are developed, NESO considers the imperative for the UK to build domestic AI infrastructure alongside system decarbonisation.

However, currently, there are reasons to suspect that NESO is underestimating the power demand from AI. The Clean Power 2030 plan prepared by NESO did not assume the delivery of any new data centres other than those that were already in the pipeline at the time the plan was created in 2024,[58] with Secretary of State for Energy and Net Zero Ed Miliband confirming NESO's view that demands of data centres can be accommodated within the Clean Power 2030 plans.[59]

Furthermore, the Future Energy Scenarios,[60] developed by NESO, see data-centre demand well below DSIT projections included in its recent Compute Roadmap.[61] DSIT notes that its current demand projections represent a "compute gap" and has set a target for 6GW of AI-ready capacity by 2030. NESO's assumptions may not be sound given the rapid development of AI and the evolution of technical constraints.

FIGURE 5

Projections for AI-ready capacity

	NESO projection[1]	Compute Roadmap projections	DSIT target
2030	1.6–3GW		6GW+[2]
2035	2.5–5.2GW	5.4–11GW	

[1] Converted using 90 per cent load factor.
[2] Note that this is AI-ready capacity so doesn't include traditional data centres.

Source: UK Compute Roadmap, DSIT; Compute Evidence Annex, DSIT; NESO

In addition to underestimating aggregate demand, existing energy plans also overlook the volatility of AI power usage, especially for training clusters, which can cause short, high-intensity spikes that are difficult for the grid to forecast or balance. This creates new stability challenges that are not yet reflected in current planning standards or NESO's published guidance.

There is a considerable risk that the system planner is unprepared for the upcoming AI-data-centre electricity demand, let alone finding ways to accommodate or even encourage new connections. This illustrates an important point: without a more detailed and dynamic picture of AI's power demand, the UK's energy-system plans will be inaccurate.

The AI Energy Council, established in 2024, will therefore serve as an important forum to ensure that the energy and AI industries gain a shared understanding of their needs and projections. However, as a strategic advisory body that meets only periodically, it is not designed to respond to the ongoing delivery demands of building infrastructure at pace. NESO must acquire adequate AI expertise within the decision-making core and establish a dedicated AI team staffed with specialists sourced from the AI sector, who can assist in shaping plans, forecasts and enabling policy.

Recommendation: *Form a new team of AI and data-centre experts within NESO to support both the organisation's AI-demand planning and accelerate AI integration in the energy system.*

This team could also provide an important missing function of helping guide AI-data-centre developers through the process of identifying and accelerating grid connections. As highlighted by Energy UK, data-centre developers can find it hard to access consistent information on network availability, connection times and costs until they have already applied.[62] These barriers make siting less strategic and more difficult, reducing the number of people looking to invest in the UK market.

MAKE THE ELECTRICITY SYSTEM SUPPORTIVE OF AI-DATA-CENTRE GROWTH NOW AND IN THE FUTURE

Today, the UK is at a disadvantage. High electricity prices, limited firm power capacity and slow grid connections are already deterring major investments in AI. By contrast, countries with cheap, reliable baseload power, particularly from hydro and nuclear, are emerging as global magnets for AI infrastructure. France, for example, is benefiting from its deep nuclear fleet, attracting attention and investment from companies like NVIDIA. Norway, powered largely by hydroelectricity, offers some of the lowest industrial electricity prices in Europe and ranks among the world's most electrified economies – enabling large-scale compute with a low-carbon footprint.

The UK does not have these advantages now, but that does not mean that the country cannot change its energy system for the future. The need for AI infrastructure will not go away; in fact, it will only get more significant as adoption scales up. Moreover, lowering energy costs and bolstering supply will be important for the economy beyond AI infrastructure. The UK must act decisively to ensure that its energy system can support the next wave of AI growth, not just in the next few years, but for the decades ahead.

Ensure Connections Reform Delivers for AI Data Centres

The move to a "first ready and needed, first connected" regime is a major step forward,[63] allowing the system operator to prioritise viable projects and finally tackle the backlog of so-called zombie projects that have long

blocked progress. However, the reforms are primarily focused on clean-power generation to support the government's Clean Power 2030 Action Plan. This risks overlooking the needs of large-scale electricity consumers such as AI data centres.

The recently announced Connections Accelerator Service,[64] outlined in the government's Industrial Strategy, could offer a useful tool to address this gap. While the details of the service remain under development, its stated goal is to support demand-led infrastructure projects that can deliver high-value employment opportunities and generate strong economic returns. This function would be particularly valuable if applied to critical growth infrastructure, including data centres, where timely grid connections are essential to unlocking private investment, enabling innovation and maintaining the UK's global competitiveness. Prioritising these projects through the Accelerator could help ensure AI infrastructure is treated as an economic enabler, not an afterthought.

In parallel, DESNZ, NESO and Ofgem should monitor closely how many data centres retain positions in the queue as the current reforms are implemented. If evidence emerges that the new regime creates systematic disadvantages for strategically important data-centre infrastructure or fails to accelerate their connections, Ofgem should consider further reforms tailored to the requirements of AI data centres. This should be done through DESNZ directly instructing NESO and Ofgem about the strategic importance of data centres, and the need to ensure this strategic importance is given due consideration in the process this autumn. The Planning and Infrastructure Bill contains powers to make directions which should be utilised in this context.

Recommendation: *DESNZ should instruct NESO and Ofgem to treat transmission-connected data centres as a strategic priority within the connections process. This includes explicitly monitoring how these projects are performing under TMO4+ reforms and using the new powers in the Planning and Infrastructure Bill to issue directions where necessary to prioritise connections for data centres. The forthcoming Connections Accelerator Service should also be targeted at AI data centres.*

Invest Now in the Baseload Energy Capacity the Country Needs for the Future

Although vital, renewables alone cannot supply the constant, high-density electricity required for AI infrastructure. To remain competitive, the UK must adapt its energy strategy towards long-term, reliable generation.

Including AI's energy demands in national and regional energy plans is an essential initial step but achieving this will necessitate targeted investment. The UK should look beyond short-term objectives and invest in the long-term baseload capacity crucial for supporting the AI economy.

To do this, the government should also adopt a strategy to develop a series of new gigawatt nuclear projects, in addition to approving Sizewell C.[65] In *Revitalising Nuclear: The UK Can Power AI and Lead the Clean-Energy Transition*, TBI has written about how the UK can unlock opportunities from SMRs, which should be another core priority.

Recommendation: *The government should develop a series of new GW-scale nuclear projects, in addition to giving final approval to Sizewell C, and expand the pipeline of SMR projects beyond the Great British Energy competition.*

Large nuclear reactors, in particular, will require some government investment but should be prioritised within energy budgets. Importantly, the government can also take essential steps to reduce costs and attract private investment into new nuclear. The UK needs ambitious reform of how the planning and regulatory system treats nuclear power. The nuclear regulatory taskforce will provide a reasonable basis for understanding what changes are needed.[66] In TBI's paper *Revitalising Nuclear: The UK Can Power AI and Lead the Clean-Energy Transition*, we also outlined some of the key changes that need to happen in planning and nuclear regulations to create a faster, more standardised system.

Recommendation: *Reform the way nuclear is regulated in the UK both to increase the speed and scale of build while also reducing costs, as outlined in TBI paper Revitalising Nuclear, through:*

- *Recognising nuclear energy – including SMRs – as an "existing practice" under current regulations to remove duplicative, time-consuming approval hurdles.*
- *Introducing a two-year limit for the Office for Nuclear Regulation (ONR), the Environment Agency and Planning Inspectorate to approve nuclear-reactor construction if the proposed reactor is similar to previously licensed designs.*
- *Recognising new-design approvals for nuclear technology from trusted international regulators such as the US, Canada, France and South Korea, to enable faster approvals of new designs through the UK regulatory process.*
- *Requiring the ONR to regard approval of a single reactor as the basis for fleet approval as standard, to standardise design across deployment. Additionally, the new nuclear taskforce should consider the cost-benefit analysis of nuclear energy, including the limitations of the as-low-as-reasonably practicable principle, and explore ways to improve political oversight of the nuclear regulatory process, perhaps by relocating the ONR from the Department for Work & Pensions to the Cabinet Office.*

UNLEASH CO-LOCATION OF AI DATA CENTRES AND ENERGY ASSETS TO INCREASE THE SPEED OF CONNECTIONS

A short-term change that would help to accelerate the buildout of new AI infrastructure is to modify the rules surrounding connection and co-location. According to the AFCOM 2025 *State of the Data Center* report, 62 per cent of data centres are already exploring this option, and nearly one-fifth of those surveyed said they were already implementing some form of behind-the-meter power.[67]

More behind-the-meter connections have several potential benefits for the UK. First, they can ensure new projects can connect to power more rapidly than they would through a normal connection. Second, they reduce strain on the national grid and decrease the need for grid upgrades. And finally, they also enable further investment in energy generation. This could become an immediate powerful pull mechanism for new energy solutions

from SMRs to geothermal and new forms of battery technology.[68,69,70] Giving the data-centre industry a direct stake in energy-generation technologies could help drive the solutions needed for achieving net zero.

Shape Short- and Long-Term Co-Location Options

Round-the-clock demand limits AI data centres' energy options. Solar and batteries are showing promise globally,[71] but may be more difficult to implement in the UK due to land and weather constraints. Offshore wind is promising but requires expensive backup or grid draw, often when the system is under the most strain. While nuclear energy provides reliable, low-carbon baseload power, the UK has a limited existing supply, and new options will not be operational for five to ten years. To meet the UK's short-term demand for AI infrastructure, bridging measures are necessary.

One bridging approach gaining traction internationally is the use of natural gas. Several countries are now seeking to build new gas generation to enable data-centre construction, notably in the US, but also in Ireland.[72] Even some UK data-centre developers are now looking at gas to power their data centres.[73]

Given the UK's ambitious climate targets, building a fleet of new gas power stations would not be desirable for the government. The buildout of new gas infrastructure would involve substantial upfront investment in assets with long lifespans, creating incentives to continue relying on gas. The government should therefore take an active role in ensuring that its investment strategy aligns with the country's broader energy-system ambitions to avoid long-term lock-in to gas.

The UK could therefore pursue what the Rocky Mountain Institute calls "power couples".[74] This involves siting data centres alongside new clean-generation facilities (for example, wind, solar, storage) located near existing gas plants that already have grid connections. This co-location enables a fast-tracked connection process while protecting system stability and avoiding wider grid costs.

Several combined-cycle gas turbines have already been downgraded to flexible open-cycle gas turbines. Locating data centres near these and supporting their uprating could unlock co-located capacity. Utilising modular fuel cells, like solid-oxide systems used in the US, offers another potential option. They emit less CO_2, can be deployed in under 90 days and have no refurbishment process, avoiding fossil lock-in. They are ideal for short-term supply while clean generation scales.

For the UK this could help drive investment in the infrastructure that it needs.[75] Even in a clean-power scenario, the UK will require some gas at peak capacity, around 35GW according to NESO modelling.[76] But investment is often unattractive due to low utilisation and policy risk.

In the longer term, these facilities could be paired with low-carbon generation such as solar, offshore wind or SMRs, eventually shifting to private-wire nuclear or full grid connection, with the gas assets being used for grid flexibility. This approach would serve both to reduce immediate connection strain and provide the flexible thermal generation the UK will need well into the 2030s.

Recommendation: *DESNZ should review the case for data-centre developers to be allowed to co-locate with existing or modular gas-based capacity – including uprated peaking plants and fuel cells – with agreements that these assets can be transferred to grid ownership or repurposed as backup in due course.*

Create Conditions For Flexible Grid Connections

On-site energy solutions remain difficult to implement in practice. While data centres typically rely on diesel backup, some with on-site generation may prefer to use the grid. However, current NESO rules require firm grid connections, which are often hard to secure.

Firm connections are essential for residential areas, but some AI data centres may be able to tolerate periods of curtailment, especially when they have on-site generation or can shift workloads that are low-priority or not time-sensitive.[77] Yet there is no structured route to request flexible grid

access, even for operators willing to accept curtailment or power risk. Nor is there any incentive for facilities to be designed (or financed) to reduce grid pressure through flexibility.

To address this, NESO should create a structured and transparent framework that supports alternative grid-access models. This could include phased connections, beginning with non-firm access and transitioning to firm upgrades, or voluntary curtailment agreements, where operators opt into flexible terms in exchange for accelerated access.

Recommendation: *NESO should ensure its policy on grid connections is more flexible for data-centre providers, supporting solutions that allow for small back-up connections combined with on-site generation.*

One mechanism to deliver this kind of flexible access would be through a modernised Active Network Management (ANM) system. A "Firm-Flex" model could formalise non-firm connections with predictable curtailment and automated fallback to on-site generation (such as batteries or fuel cells), improving both viability and bankability. With 95 per cent guaranteed availability and access to curtailment forecasts, developers could confidently invest in more responsive, behind-the-meter infrastructure.

Recommendation: *Ofgem and NESO should improve the transparency and predictability of Active Network Management arrangements by introducing a Firm-Flex model, making ANM-based connections a more viable and attractive route for data centres and other large, flexible loads.*

Reform Connections Charges

Financial barriers still restrict co-location and private wires, despite their grid and economic advantages. Data centres that operate off-grid could be exempted from certain network charges, while those with backup connections might pay reduced rates. In the future, AI data centres co-located with generation, such as SMRs or battery storage, could operate independently and even enhance grid flexibility through the capacity market. Policy should promote this transition by allowing such facilities to earn flexible revenues and access equitable network charges.

Recommendation: *DESNZ and Ofgem should review how data centres participate in the capacity market and ensure co-located energy assets, including those with demand-side response capabilities, can fully access flexibility revenues. Ofgem should also assess whether network charging frameworks appropriately reflect the benefits of co-location and behind-the-meter generation, while preserving cost recovery for grid-readiness services.*

Create Viable Business Models for Energy and AI Data-Centre Co-Investment

A major barrier to co-locating energy and data centres is offtaker risk: uncertainty around who will buy the energy, at what price and for how long.

This risk is worsened by the UK's Contracts for Difference (CfD) scheme, which guarantees a price in the wholesale market but discourages private Power Purchase Agreements (PPAs) that offer long-term clean-energy alignment for corporate buyers.

By contrast, countries including Spain, the Netherlands and parts of the US have introduced more flexible support mechanisms that allow developers to combine subsidy support with private PPAs. This has made it easier for major energy users, including AI companies, to contract directly with clean generators and pursue always-available carbon-free electricity. Globally, nearly 120GW of operational renewables capacity has been procured through corporate PPAs.[78] Without reforms, the UK risks falling behind.

One step is to improve the certification process for clean energy. The UK's Renewable Energy Guarantees of Origin (REGO) system lacks the granularity needed to support real-time carbon tracking and excludes nuclear.[79] The Fuel Mix Disclosure regime is also outdated and unhelpful for investment decisions.

Recommendation: *DESNZ should reform the REGO system to enable 30-minute time-matched certification of low-carbon electricity and include nuclear generation within its scope. It should also modernise the Fuel Mix Disclosure framework to reflect real-time consumption and generation.*

The UK should also implement an industry-growth CfD model that enables generators, especially those working on capital-heavy or riskier projects like new nuclear or long-duration storage, to contract directly with named industrial offtakers, with the option to revert to a standard CfD strike price if the private contract underperforms. This hybrid approach would minimise the risk of stranded assets and help developers secure financial close with greater certainty.

To render this commercially viable, co-location is key. If generation and offtake are co-located, the offtaker can avoid policy and network costs associated with grid-delivered electricity. By reducing transaction costs and policy overheads, co-located industry-growth CfDs can drive both private investment and grid stability. They also offer AI companies a practical route to meet clean-energy targets within the UK, as they already can abroad.

Recommendation: *DESNZ should develop a co-located industry-growth CfD model that enables private contracts between clean-energy developers and industrial users, with the option to revert to a standard CfD where needed to ensure project viability.*

Reforming the Planning System

The country must reform its slow and cumbersome planning system, which is delaying critical projects, inflating budgets and sometimes preventing projects from being built at all. Several data-centre projects across the UK have already been rejected on environmental grounds, particularly due to concerns about developing the green belt.[80,81]

The UK is also relatively densely populated,[82] with unusually fragmented wildlife. This means that the construction of AI data centres should be considered carefully, but where construction makes sense, obtaining permission must become a fast and straightforward process.

To enable the construction of AI data centres at the speed and scale needed to support the UK's ambitions in AI, further reforms to the system will be needed, including:

1. Ensure nationally significant infrastructure can be developed at speed
2. Streamline the local planning system for data-centre build
3. Make suitable government land available for data-centre development

ENSURE NATIONALLY SIGNIFICANT INFRASTRUCTURE CAN BE DEVELOPED AT SPEED

The government has rightly decided to include AI data centres in the Nationally Significant Infrastructure Planning (NSIP) regime and is committed to radical reform of the system through the Planning and Infrastructure Bill currently being considered by Parliament.[83] These are necessary steps forward, but the speed and scale at which the UK must now build is likely to require even more significant moves, both in terms of the reforms and the speed at which the legislation is passed and implemented.

Placing data centres under the NSIP regime could be a promising step, but as TBI has previously outlined in *Building the Future of Britain: A New Model for National-Infrastructure Planning*, the NSIP system has been plagued by growing delays and complexity. It is essential that the reforms being made to the system represent truly radical change.

For data centres to enter the NSIP regime, they must have a National Policy Statement (NPS) approved by Parliament. This process must be expedited. Given the evolving nature of the technology and shifting requirements, while updates every five years may be sufficient for some infrastructure, the government should implement annual internal reviews of the NPSs on AI infrastructure to ensure that the conditions remain appropriate.

Recommendation: *MHCLG should prioritise finalising an NPS for AI before the end of the year, to clarify the NSIP route for data centres. This NPS should designate data centres as a "critical national priority" in the way that the energy NPSs create strong policy support for low-carbon infrastructure.*

The Nature Restoration Fund presents a second promising opportunity: instead of developers undergoing separate, project-by-project environmental assessments, they can contribute to a central fund, provided a government-approved Environmental Delivery Plan (EDP) is in place. In

exchange, site-specific legal constraints under the Conservation of Habitats and Species Regulations 2017 can be waived. This model could overcome issues that have historically caused lengthy delays, but its success relies entirely on the timely development and implementation of EDPs.

Without sufficient strategic plans in place, the system risks becoming a new chokepoint, prompting precisely the kind of delay that today's reforms are designed to eliminate. The government should therefore consider the creation of a national EDP as a backstop for critical national infrastructure (like data centres) when site-specific EDPs have not been put in place, as suggested by Sam Dumitriu, the Head of Policy at Britain Remade.[84]

Recommendation: *MHCLG should create a national EDP as a backstop for NSIP reforms to work, while also ensuring that Natural England has the tools necessary to quickly and comprehensively put in place site-specific EDPs.*

STREAMLINE THE LOCAL PLANNING SYSTEM FOR DATA-CENTRE BUILD

It may not always make sense for data centres to go through the NSIP process. For smaller projects, local plans remain inconsistent, slow or even completely silent on data-centre development.

To address this, the government has already made changes to the National Planning Policy Framework, placing requirements on local planning authorities to identify sites for data-centre development in their local plans.[85] This system should be further encouraged and, as TBI has previously described in our paper *Governing in the Age of AI: Reimagining Local Government*, there are opportunities to utilise AI to enable better spatial planning and more frequent updates to local plans.

To further expedite the local process, at least in the period before the NSIP changes are implemented, the secretary of state can also issue a written ministerial statement saying that they will use call-in powers to approve data-centre development over a certain threshold of investment, including associated grid-upgrade needs or potential onsite clean generation.[86] This would provide developers with the certainty that their project will receive planning permission, even if the local council is against it.

Recommendation: *The secretary of state for housing, communities and local government should issue a written ministerial statement saying that they will use call-in powers to approve data-centre development over a certain threshold of investment, including associated grid-upgrade needs or potential onsite clean generation.*

Further steps could be taken to create the right incentive structures for local authorities to support and usher through data-centre development. One option that has been proposed is allowing councils to retain a portion of the business rates generated by new data centres, giving them a direct fiscal stake in enabling this type of growth.[87] This kind of incentive could help align national infrastructure needs with local delivery priorities. Without such alignment, even reformed planning rules risk being undermined by institutional hesitation or lack of local capacity.

Recommendation: *The Treasury should allow councils to retain a portion of the business rates generated by new data centres and SMR development, giving them a direct fiscal stake in enabling this type of growth.*

MAKE SUITABLE GOVERNMENT LAND AVAILABLE FOR DATA-CENTRE DEVELOPMENT

In April, the US released federal land for AI-data-centre development.[88] In February, France's EDF put out an expression of interest for building on four EDF-owned sites.[89]

The UK should take a similarly pragmatic approach, identifying public land suitable for data centres, especially near the grid, transport links or industrial activity. The government should quickly assess and publish information about appropriate locations, which could include ministry-of-defence land.

Recommendation: *The government should proactively identify government land that can be used for data-centre development and offer this up to private developers.*

This task could be led by the Cabinet Office, working in partnership with the Government Property Agency, DSIT and the MHCLG. The One Public Estate programme, which has successfully identified surplus land for housing and regeneration, could also be adapted to include digital infrastructure as a new priority.

Crucially, this does not need a new bureaucratic programme, just an open door. The government should publish information on suitable land, as France has done.[90] If developers or tech firms have plans to use public land for AI infrastructure, the government should listen and act quickly. With proper coordination, government land can help build more data centres faster.

Leveraging AI Growth Zones to Shape the UK AI Infrastructure Market

AIGZs, first announced in the AI Opportunities Action Plan, mark a significant shift from abstract national strategies to tangible infrastructure delivery. The first site at Culham in Oxfordshire, backed by fusion expertise and spare grid capacity, is a promising start, but since it was initially announced, little progress appears to have been made.

For AIGZs to succeed, the government must demonstrate that the UK is willing to build quickly, efficiently and at scale. To realise this ambition, the government must first be clear about what the AIGZs are and what they are not.

AIGZs represent an opportunity to deliver critical infrastructure for the country. However, they are not a mechanism for creating science or startup clusters, generating significant employment or driving regional economic growth. Hyperscale AI data centres are highly automated, employing as few as 20 to 30 people for smaller facilities and 200 people for large ones.[91,92,93]

AIGZs must instead be viewed as a vehicle that the state can use to shape markets, overcome coordination failures, accelerate investment and protect public value. There are five clear ways that this can be done:

1. **Overcoming clustering effects**: Data centres are concentrated in regions like Slough and London with good infrastructure. This risks bottlenecks, grid overload and space constraints. AIGZs can help coordinate infrastructure development in new areas, promoting geographically distributed growth.
2. **Kickstarting and experimenting with energy buildout**: Clean, dispatchable energy projects often stall due to uncertain timelines and fragmented demand signals. While the regulatory changes set out in this paper may boost investment, AIGZ can help clarify demand, accelerate grid connections and unlock earlier investments in generation and co-location.
3. **Unlocking infrastructure investment**: The physical infrastructure needed for AI requires coordinated long-term planning. Left to the market, it will not emerge organically at the right scale or speed. AIGZs offer a way to align public planning with private capital, unlocking faster and more strategic buildout.
4. **Securing public-access compute**: Growth zones can enable sovereign or public-interest compute and provide a natural platform for coordinated government procurement to secure fair, reliable access. This also complements the government's AI Research Resource (AIRR) initiative by creating dedicated capacity for researchers, SMEs and public bodies to access the compute they need without being priced out by commercial demand.
5. **Creating demand pull**: Infrastructure won't be built without credible demand. Fragmented, uncertain or weak signals undermine investment. AIGZs provide a platform to aggregate public compute needs, issue advance purchase commitments and anchor early-stage data-centre buildout with guaranteed demand. This can also unlock investment across the broader UK data-centre value chain.

USING AIGZS TO BUILD FASTER AND MORE STRATEGICALLY

For AIGZs to be able to achieve these aims, they must be accompanied by the regulatory changes necessary to drive meaningful impact. In essence, they should be a testbed for regulatory reform of how the UK delivers nationally significant infrastructure. While the wider planning system must become markedly more permissive, AIGZs should go even further.

This could be undertaken by establishing an accelerated model in which the government drives site selection from the centre, rather than relying on a reactive Expression Of Interest process or being dictated by local-authority bids. While this differs from the current government model, it would be more effective in aligning consent at the start and remove the "one-project-at-a-time" grind that continues to erode investment confidence.

The sites can most effectively be decided through conversations with the industry and effective spatial planning from the centre, drawing together land, energy and connectivity data.[94,95] But to help catalyse and organise data-centre cluster-formation through shared infrastructure, pre-consented expansion rights and pooled investment,[96] one approach would be to not treat AIGZs as isolated sites, but as connected corridors of infrastructure activity. For example, the government should prioritise areas like the M4 corridor from Slough to Cardiff or the West Midlands to South Wales where land availability, grid access and industry interdependencies can support a new generation of data-centre clusters.

To make this possible, the government should add an amendment to the Planning and Infrastructure Bill giving the secretary of state for science, innovation and technology the power to designate areas around the country as AIGZs. This designation would mean that standardised, zone-wide guidance would replace piecemeal local negotiations, removing the procedural friction that currently undermines investor confidence. The purpose is not to eliminate scrutiny altogether, but to provide it through Parliament and the designation process itself.

An amendment should also be passed to grant powers to address the mismatched timelines of data-centre developers and power-generation developers, particularly on co-located projects. Larger AIGZs are especially vulnerable to "salami-slicing" constraints, which means that one part of a proposal cannot proceed until all related components are ready, leading to a delay in overall development. This necessitates a new consenting model wherein environmental assessments are replaced by bright-line rules on environmental contributions.

This would prioritise real-world environmental outcomes over procedural hurdles while enabling critical infrastructure to move forward. There have been proposals that would do this for nuclear and data centres,[97] but these could be supplemented to require local-authority consent to minimise political backlash. In Germany and Spain, there have been proposals to streamline environmental processes in exchange for bright-line rules that outline environmental standards. A similar approach in the UK would provide a genuine win-win for both environmental protection and infrastructure delivery. This process should not substitute the NSIP process but exist alongside it.

Recommendation: *The government should amend the Planning and Infrastructure Bill to give the secretary of state for science, innovation and technology powers to designate AI Growth Zones with full development consent embedded in the designation. Government should also legislate for a bespoke, streamlined consenting and environmental process for AIGZs to sit alongside the NSIP process, including a statutory presumption in favour of the development and limited judicial review, while aiming to issue decisions within an eight-month period.*

Once Growth Zones are designated, delivery follows. The government should establish a dedicated AIGZ Authority with powers to oversee and coordinate AIGZ-wide planning, infrastructure delivery and shared services. This body would mirror successful models like the Olympic Delivery Authority but focus on delivering digital industrial capacity.

To make this model attractive to investors, the AIGZ Authority should not only coordinate infrastructure but also take a proactive role in enabling private-sector delivery. In some cases, this might involve running competitive tenders for shared assets, similar to offshore transmission. In others, it may act as a broker, connecting credible developers with high-potential sites or curating opportunities for anchor tenants. The aim is not central planning but curated deal-making: providing private capital with the confidence that these zones are investable, well-coordinated and ready for development.

Recommendation: *The government should establish an AIGZ Authority to coordinate zone-wide delivery, broker shared infrastructure investments and ensure alignment with energy and grid strategy.*

USING AIGZS TO CATALYSE MARKETS

The development of new AI data centres in the UK will take several years, even if projects were started today and could proceed with minimal resistance or regulatory hurdles. Meanwhile, innovations in AI continue to occur at a rapid pace. This rapid pace creates a disconnect between the technology and the infrastructure required to run it, with the available infrastructure almost always lagging behind the technological advancements.

The impact of this is already playing out in the real world. In the UK, data-centre developers struggle to secure financing for new projects that focus on AI training, as the long-term necessity of large training data centres remains uncertain. Microsoft CEO Satya Nadella echoed this sentiment on a global scale in a recent interview, stating that “there will be an overbuild” of compute capacity, adding that the company planned to lease a significant amount of capacity.[98] In contrast to the uncertainty surrounding AI data centres for frontier training, there is more certainty regarding the importance of inference as the AI paradigm shifts towards test-time compute and user demand continues to grow.[99]

AIGZs should be designed with this context in mind: flexible and able to adjust to changing conditions and innovations in both the hardware and the technology. Beyond being designed with flexibility in mind, AIGZs should be viewed as tools to support innovation and experimentation, catalysing new markets as a result.

Recommendation: *DSIT should ensure Growth Zones are designed to enable flexibility and innovation, including the ability to support experimental deployment of UK-developed hardware and emerging infrastructure.*

By leveraging advance purchase commitments, AIGZs could be used to de-risk early-stage investments and give less well-resourced firms the confidence to scale and compete. Similarly, these commitments could help attract investment from larger anchor tenants. As the amount of compute increases in the UK with more data centres coming online, the government could partner with universities or startups to offer discounted compute to the most innovative projects – for example through hosting mission-aligned competitions. Compute could also serve as a tool to attract talent to the UK, providing access or discounted rates to firms or startups that relocate their operations here.

Recommendation: *DSIT should pilot the use of advance purchase commitments within AIGZs to de-risk investment in early-stage UK infrastructure technologies, including AI chips, cooling systems and other critical components, and to attract anchor tenants by guaranteeing long-term demand.*

Recommendation: *DSIT and UK Research and Innovation should establish a competitive compute-access programme within AIGZs, offering discounted capacity to UK-based research, startups and mission-aligned innovation, and using access as a tool to attract firms and talent to the UK.*

By leveraging AIGZs to develop national expertise in AI infrastructure, hardware and supporting technologies, the UK can enhance its technical capabilities, industrial base and delivery system across a spectrum of fast-growing, strategically vital markets. This includes data-centre construction, power, cooling, chip integration and software. These skills are crucial for

domestic needs and global competition, laying a foundation for a domestic industry that can compete internationally based on specialised infrastructure.

Driving Effective Delivery

Currently, the process for delivering AI infrastructure in the UK is fragmented, passive and slow. The lack of visible progress at Culham has made this clear. Despite its designation as the UK's flagship AIGZ, receiving early political backing, key planning and infrastructure decisions remain unresolved, and it is unclear who is ultimately responsible for delivery. If this becomes the norm rather than the exception, the UK's AI-infrastructure agenda risks becoming a symbol of ambition without follow through.

The current distribution of responsibilities between DSIT, DESNZ and MHCLG is failing to drive delivery at pace and scale. This failure is not simply one of coordination, but of misaligned mandates and weak delivery mechanisms. DSIT is tasked with championing AI but lacks control over the infrastructure levers; DESNZ prioritises decarbonisation but is not treating AI infrastructure as a national strategic asset and energy use case; and MHCLG's planning regime continues to roll out approvals for data centres and grid upgrades far too slowly, often deferring to local opposition. These tensions are stalling projects and eroding the UK's ability to deliver on its AI ambitions.

This agenda should be a national priority, and must be treated as such across the system. This cannot be managed as an offshoot of existing programmes or scattered across departments. Instead, it requires visible and sustained engagement from Number 10 to ensure that the full machinery of government is mobilised behind delivering this vision.

The government should therefore establish a dedicated AI Infrastructure Delivery Group, officially sitting within DSIT, but with a clear mandate to lead implementation of this agenda across the system. It should report directly to the prime minister to ensure cross-government traction, not through weekly political intervention, but through formal authority to escalate barriers, align departmental efforts and maintain delivery momentum. Modelled on the

successful Vaccine Taskforce, the group should combine ministerial authority with dedicated delivery capacity, bringing together officials seconded from across Whitehall and industry, planning, energy and infrastructure experts. It should include officials from DSIT, DESNZ, MHCLG and the Treasury, as well as Ofgem, National Grid and other relevant bodies, along with private-sector stakeholders involved in AI and infrastructure development.

Its goals should be specific, time-bound and outcome-driven. These should include:

- **Unblocking planning and grid-connection delays** for critical AI-infrastructure projects within six to 12 months.
- **Maintaining a system-wide pipeline view** of land, power, fibre and project milestones to anticipate and manage delivery risks.
- **Aligning departmental and regulatory actions** with projected AI-infrastructure demand and use cases.
- **Reporting regularly to the prime minister and Cabinet Office** on delivery progress, risks and where further intervention is needed.

Recommendation: *Number 10 should establish a dedicated AI Infrastructure Delivery Group within DSIT, reporting directly to the prime minister, with the authority to align departments, drive delivery and ensure the full machinery of government is focused on accelerating the UK's AI-infrastructure ambitions.*

06

Building the AI the UK Needs

If the UK is to remain relevant in the age of AI, it must treat physical infrastructure as a first-order strategic priority. Fixing this requires addressing systemic problems that cannot be resolved overnight. It costs money, it takes time and it will require the government to make building AI infrastructure a national strategic priority.

The UK is not going to lead in training the world's largest AI models – the scale of investment, land and energy required puts that beyond reach. But it can lead in how AI is deployed: safely, credibly and at scale across public services, science, defence and the wider economy.

That means delivering the core infrastructure to support deployment – reliable, clean power; affordable compute; fast-tracked planning; and resilient supply chains. It means ensuring that the UK can host sensitive workloads, secure public-sector services and remain relevant in shaping global standards. And it means acknowledging that AI infrastructure is now a question of national security as well as industrial strategy.

The UK has a real opportunity to lead – not in size, but in trust; not in training, but in deployment. That opportunity rests on building the right infrastructure. Data centres must be connected to power and lengthy planning processes must be radically shortened. The government must remove market failures that block investment through the AI Growth Zones and build the delivery capabilities needed to make this happen.

It is not necessary for the UK to build everything – but it must build enough. The government does not need to pour trillions into fully publicly owned compute – but it must set a direction for private-sector deployment. It must ensure that the UK can deploy AI when and where it matters, avoid long-term dependence on infrastructure it cannot control, and anchor a domestic ecosystem with resilience, flexibility and strategic purpose.

If the UK fails to build, it will fall behind. If it gets this right, it can lead – not by doing what everyone else is doing, but by doing what only the UK can: delivering the trusted, high-impact AI infrastructure that the next decade will depend on.

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