Energy from Waste:

An Immediate Clean Power Solution for Data Centre Energy Needs

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Executive Summary

The UK is facing a defining moment – to decarbonise the electricity system by 2030 whilst simultaneously positioning itself as a global leader in AI. Yet lengthy grid connection queues, legacy infrastructure and extensive, fragmented regulatory planning processes risk diverting AI-driven economic investment overseas or locking in high carbon energy sources, undermining the UK's Net Zero mission. Thus, a fundamental question arises: how can the UK meet its ambition to be one of the world's leading AI economies whilst supplying energy sustainably, securely, and at scale?

Cultivating an attractive investment landscape for data centres requires a competitively priced, dispatchable and low-carbon energy supply that bypasses the multi-year grid connection queue. Private wire Energy from Waste (EfW) arrangements can serve as an immediate, cost-effective, clean power solution. Energy is recovered through the treatment of residual waste - after economically recyclable materials are removed in line with the Government's Waste Hierarchy – and diverts further waste from ending up in landfill.

Integrated alongside other renewable technologies, EfW serves as a vital clean-power enabler, ensuring rising data centre demand is met with reliable power while supporting the circular economy.

Key Takeaway

As an immediate, clean power solution for data centres, energy from waste:

1. Bypasses grid queues

2. Delivers reliable, dispatchable power

3. Provides price certainty and strengthens ESG credibility

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Barriers to AI-Driven Economic Growth

Key takeaway: Data centres require fast access to competitively priced, clean energy that can support their continuous energy load profiles.

Securing fast access to a reliable, high-capacity power supply remains the principal constraint on UK data centre growth; as demonstrated by the Uptime Institute's 2025 Global Data Centre Survey which ranked power availability and cost among the top five challenges cited by operators.[1] Yet despite recent reforms by Ofgem, a heavily congested grid queue leaves developers waiting 5-10 years for access to electricity. The resulting power uncertainty means energy capacity arrives asynchronously with developer's operational timelines, threatening the commercial project viability through cost inflation and diminished return on investment. Even after securing a connection, developers often face additional grid reinforcement payments and costly use-of-system charges.

These infrastructure constraints are compounded by a planning system that is struggling to keep pace with the scale and technical complexity of modern hyperscale data centre projects.[2] Securing planning consent takes an average of 18 months, with environmental concerns and inadequate community engagement driving opposition.[3] Consequently, developers are left to weigh the costs of waiting in the UK queue and battling complex planning procedures, against transferring their capital overseas - particularly to EU markets with more competitive electricity costs.[4]

Simultaneously, developers must respond to increasingly stringent sustainability disclosure requirements. Frameworks such as the EU Corporate Sustainability Reporting Directive and the UK's Sustainability Reporting Standards have heightened financiers' expectations for transparent, credible Scope 1 and 2 emissions reduction strategies. Thus, conventional routes to power via fossil-fuel based generators are increasingly shunned in favour of robust, clean energy solutions.

Against this backdrop, operators are seeking alternative power solutions capable of delivering immediate, clean energy without lengthy grid connection queues.

How Can Energy from Waste Address These Issues?

Key Takeaway: Private wire EFW offtake agreements - especially when combined with Carbon Capture and Storage (EfW-CCS) - is an immediate, cost-effective energy solution that bypasses grid connection queues.

In light of these challenges and disclosure obligations, EfW excels as an immediate, commercially viable power solution which can strategically accelerate progress towards CP2030 while supporting AI growth targets.

1. Avoid Connection Queues

EfW facilities recover energy as a valuable by-product of managing the UK's residual waste, with the operational capacity of energy recovery facilities forecast to handle 18.8 mega tonnes of rubbish by 2035.[5] Co-locating data centres adjacent to EfW plants via a private high-voltage connection can cut grid connection times by eight years and ease pressure on constrained sections of the grid.[6] Over half of existing data centres are already situated within 10km of an EfW plant, equating to 350MW of reliable power.[6]

2. Dispatchable, Reliable Power

Data centre operators are prioritising resiliency as harsher penalties from outage events are introduced.[1] EfW offers a consistent, reliable 24/7 'baseload' supply profile, and a degree of dispatchability to match data centre demand profiles. Acquiring a behind-the-metre supply offers a resilient solution to developers seeking energy security, flexibility and control whilst also benefiting from reduced grid-associated costs.

3. Cost-effective

EfW private wire connections offer a policy-resilient route to improved price certainty for businesses via long-term bilateral agreements, evading volatile wholesale energy prices. By bypassing the public network, they also lower exposure to costly network and non-commodity charges, which reduces overall energy costs and strengthens project bankability.

4. Strengthens Sustainability Credibility

Amidst tightening sustainability compliance requirements and mounting scrutiny from investors, planners and local communities, developers must be able to substantiate their environmental claims.[3] Co-locating data centres with EfW facilities strengthens a developer's ESG credentials by:

1. Reducing Scope 2 emissions - approximately 50% of residual waste feedstock - that isn't suitable for recycling - is biogenic (paper, wood, etc.), which generates carbon-neutral electricity under GHG Protocol rules and thus lowers standard Scope 2 emissions.[7]

2. Accelerating the circular economy transition - decarbonising and maximising the value from unrecyclable waste will build on the 66% reduction in emissions from the waste sector since 1990, as refuse is diverted from landfill.[8]

3. Unlocking Carbon Capture and Storage Investment - long-term energy contracts from well-capitalised data centre developers provide the

bankability needed for EfW facilities to deploy CCS at scale - mitigating Scope 1 emissions and accelerating the negative-emissions markets via Greenhouse Gas Removals (GGR).[9]

4. Recovering Waste Heat for Local Networks - integrating data centre infrastructure with EfW plants connected to local heat networks allows operators to redistribute waste heat from data centres. This boosts total energy reuse efficiency by up to 20%, providing local communities with cheap, low-carbon heat, overcoming local opposition and accelerating planning consent.[10]

Policy Recommendations to Align AI & Net Zero Ambitions

To strategically harmonise progress towards policy goals that both support renewable energy and economic growth policy commitments, the REA recommends:

1. Prioritise sustainable data centre development

Prioritise data centres that commit to long-term offtake agreements with low-carbon energy generators, co-location with renewables and storage, heat reuse and demand flexibility, ensuring new demand accelerates rather than constrains the energy transition.[11]

2. Aligning energy planning with AI growth targets

Currently, the Governments AI ambitions are not accurately reflected in NESO's strategic energy plans.[12] Accurately incorporating data centre demand projections into the Strategic Spatial Energy Plans, Centralised Strategic Network Plan, and Regional Strategic Energy Plans, will harmonise national and regional planning and reduce the risk of grid constraints deterring AI investment.

3. Incentivise Heat Recovery via the UK Emissions Trading Scheme (ETS)

Amend the UK ETS to ensure EfW facilities supplying heat to networks face reduced allowance liabilities and utilise the scheme to incentivise electricity producers to supply local heating networks.[13] This will formalise the role of digital infrastructure within urban heat strategies, ensuring that waste heat recovery becomes a default expectation of new data centre and EfW planning.

Veolia Group's Data Centre Resource 360 approach

Solutions for Data Centre Energy, Water and Heat

As demand for digital services accelerates, so does the need to ensure infrastructure keeps pace, not solely in performance but in environmental stewardship. From energy and water optimisation to secure waste handling and heat network development, Veolia partner with operators to build resilience into every aspect of their operations, because the future of digital progress depends on how responsibly it is powered.

Through Veolia Group's Data Centre Resource 360 approach, they help datacentre developers achieve:

- 350 MW of off-grid microgrid generation for a site
- ≤20% energy reuse efficiency enhancement
- ≤75% water footprint reduction
- ≤95% waste recycling and reuse

Decarbonising Power & Cooling

Efforts to reduce carbon emissions are accelerating through:

• On-site generation, including combined heat and power (CHP) with Carbon Capture technology, solar Photovoltaics (PV) and Battery Energy Storage Systems (BESS)

• Waste heat recovery to create or support local heat networks or offset cooling needs

• Smart energy management using real-time monitoring and AI analytics.

Advancing Water Stewardship

With water scarcity concerns increasing, data centres can invest in:

• Closed-loop cooling systems to significantly reduce usage

• Recycling and reuse technologies, including greywater treatment

• Real-time water monitoring to detect losses and optimise flow

• Local water resilience strategies, especially in drought-prone areas

Embracing Circular Resource Management

Sustainability doesn't stop with power and water. Veolia offer:

- Secure disposal of confidential waste and IT assets
- Recycling of electronic waste, batteries, and hazardous materials
- Critical raw materials recovery through circular economy models
- Zero-waste-to-landfill strategies with full compliance

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The report is available on the REA website, here
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