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Press release

techUK launches new whitepaper on how AI can deliver consumer benefits in the UK energy sector

[London, UK] 13 April 2026 – techUK today publishes a new whitepaper, *"How Can the Energy Sector Leverage AI to Deliver Consumer Benefits?"*, setting out how artificial intelligence (AI) can play a central role in transforming the UK's energy system while delivering tangible benefits for consumers.

The UK energy sector is undergoing a period of structural change. As the system becomes more decentralised, digitalised and increasingly reliant on variable renewable energy generation, complexity is growing across generation, networks, and supply. The report highlights AI, underpinned by high-quality data, as a critical enabler in managing this complexity and supporting the transition to a cleaner, more efficient energy system.

As AI infrastructure faces growing scrutiny, the paper focuses on targeted, high-impact applications already delivering measurable value. Across the energy system, AI is improving forecasting, optimisation and automation, leading to lower system costs, better customer experience, enhanced reliability and more efficient utilisation of clean energy assets and grid infrastructure.

Supportive policy and regulatory momentum

The paper comes at a time of increasing policy focus on AI in energy. The UK Government's AI Opportunities Action Plan has set a clear ambition for global leadership, now extending into the energy sector. Alongside this, the Department for Energy Security and Net Zero (DESNZ) is conducting a Review of AI Deployment in Electricity Networks, with a dedicated AI for the energy system strategy expected in Autumn 2026.

The whitepaper identifies near-term forecasting and asset optimisation as the most mature and impactful use cases.

In renewable generation, AI is improving how assets are designed, operated and maintained. For example, AI-enabled optimisation of wind farms could increase output by 3-5% - enough to power around one million UK households. AI is also accelerating innovation in emerging technologies such as batteries, nuclear and green hydrogen.

In system operations, AI-driven forecasting is already delivering results. By improving solar generation forecasts, the National Energy System Operator (NESO) has reduced balancing costs by around £30 million annually and cut approximately 300,000 tonnes of CO_2 emissions.

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AI is also enabling smarter, more responsive networks. From predictive maintenance - potentially saving £5.5 billion by 2030 - to "smart substations" and real-time control room decision-making, AI is helping to build more resilient and efficient infrastructure.

At the consumer level, AI is supporting the shift toward active energy participation. Through smart tariffs and automation, households can optimise when they use, store or export energy. Trials managing electric vehicle charging across 13,000 customers have reduced peak demand by 42% and saved households around £650 per year. AI is also improving customer service, informing dynamic tariffs by analysing consumption data and helping identify vulnerable consumers for more targeted support.

Addressing barriers to scale

Despite clear opportunities, the paper stresses that an outcomes-based approach is essential to ensure AI deployment delivers system-wide value.

Key barriers remain, including limited access to high-quality, interoperable, real-time data; concerns around trust, privacy and cybersecurity; and wider issues such as high energy costs and skills shortages.

To address these, techUK sets out a series of recommendations, including:

- Accelerating architectural oversight of energy data and digital services
- Partnering DESNZ with the Institution of Engineering and Technology on training programmes specifically designed to equip engineers with energy-specific AI skills
- Establishing a central AI assurance hub to test and verify algorithms, with strong human oversight

By focusing on practical, high-impact applications and addressing key barriers, the UK has a significant opportunity to harness AI to reduce costs, improve reliability and accelerate the transition to net zero, while ensuring consumers remain at the heart of the energy system.

Katie Davies, Head of Energy and Infrastructure Policy, said:

"AI is already delivering real, measurable benefits for consumers today. From reducing system costs to improving reliability and enabling smarter energy use, AI has a critical role to play in the transition to a cleaner, more flexible energy system.

"But unlocking this potential at scale will depend on getting the fundamentals right, particularly around data, trust and regulation. With the right frameworks in place, as outlined in our paper, the UK can lead in deploying AI to deliver a more efficient, resilient and consumer-focused energy future."

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Notes to Editors

The full report can be downloaded here.

About techUK

techUK is the technology trade association that brings together people, companies and organisations to realise the positive outcomes of what digital technology can achieve.

With over 1,100 members (the majority of which are SMEs) across the UK, techUK creates a network for innovation and collaboration across business, government and stakeholders to provide a better future for people, society, the economy and the planet.

By providing expertise and insight, we support members, partners and stakeholders as they prepare the UK for what comes next in a constantly changing world.