



Net Zero Consultancy

The Drive to Achieve Net Zero

By working collaboratively with clients and partners from all sectors we want to accelerate the transition towards clean growth, innovative adaptation and cost-effective resilience.

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Achieving Net Zero is a complex global challenge that demands innovative solutions and multidisciplinary expertise.

The Net Zero Transition Team brings together years of experience across a range of sectors to help businesses navigate the energy transition. Whether supporting electricity networks, local authorities, or commercial enterprises, we deliver tailored insights and practical strategies to enable the decarbonisation journey.

Through comprehensive analysis, innovative problem-solving, and strategic consultancy, our team works to remove barriers, enabling a sustainable and resilient energy future.

Meet the Team



David Mills
Head of
Net Zero Transition



Tim Butler
Capacity
Team Lead



Ben Taylor
Decarbonisation
Team Lead



Waqas Javed
Network Reliability
Team Lead

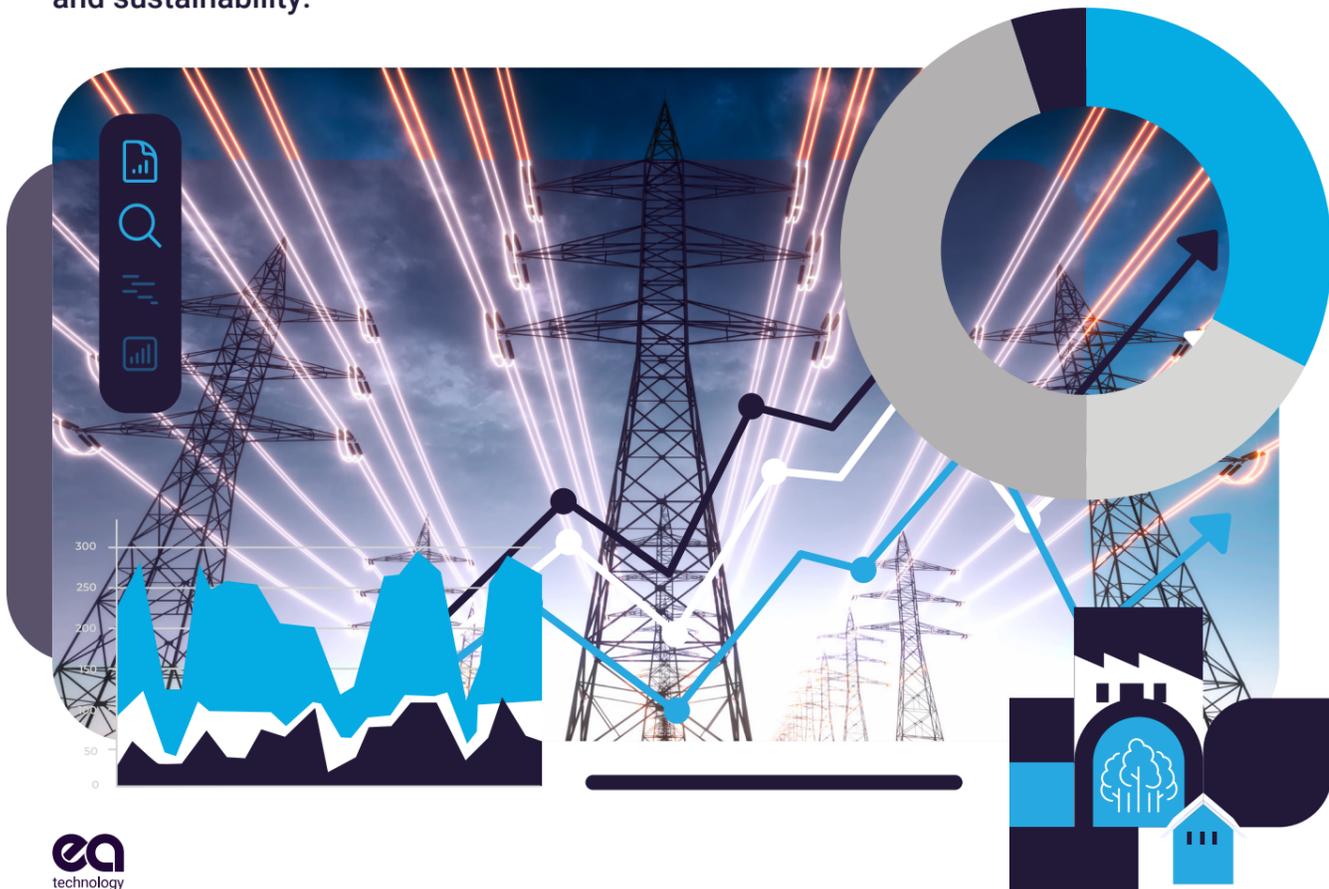


Analysis

Achieving Net Zero is a critical step towards a more sustainable future. Decarbonising heat and transport, alongside integrating distributed energy resources (DER), is essential to reaching this goal. However, these changes bring a complex array of challenges, particularly in understanding and managing their impact on energy networks.

The Net Zero Transition Team leverages expertise in energy systems, industrial practices, and policy frameworks to comprehensively analyse these challenges. Our work includes evaluating the impact of DER on network capacity, reliability, and operability. By modelling scenarios for renewable energy integration, electrification of heat and transport, and the deployment of flexibility solutions, we provide actionable insights to deliver the network of the future.

Through advanced analytical tools and methodologies, we assess future capacity requirements, identify potential constraints, and propose strategies to enhance network resilience and reliability. This targeted analysis enables organisations to navigate the transition efficiently while maintaining a focus on cost-effectiveness and sustainability.



Example Projects

Distribution Network Investment Analysis

Through the Electricity Distribution Network Capacity Analysis project for the UK Government we delivered strategic insights to guide government, regulators and key stakeholders in the electricity network's decarbonisation journey. Modelling the impact of low carbon technologies at national and local levels, we identified future investment needs and innovative solutions to address capacity constraints.

Using a combination of inhouse tools such as Transform Model® and VisNet® Design, we evaluate scenarios for electric vehicles, heat electrification, and renewable energy integration. Our cost-benefit analyses explored different reinforcement strategies along with demand side flexibility options to determine the most cost-effective outcomes. Engaging with DNOs and other stakeholders, we delivered evidence-based recommendations that will inform policy and infrastructure planning to support the transition to net zero.

Whole System Thinking

The Whole System Thinking project delivered for National Grid Electricity Distribution investigates the value of increasing distribution network capacity to reduce curtailment of renewable energy generation. Through advanced modelling techniques, the project evaluated forecast curtailment levels across different voltage tiers and their implications for system-wide costs. Key areas of focus included optimising the integration of distributed generation, such as solar and wind, and understanding the evolving role of technologies like battery energy storage and vehicle to grid systems.

The findings aim to inform network reinforcement strategies in a way that can enable greater renewable energy utilisation at lower cost to consumers, minimising carbon emissions, and delivering whole-system benefits for the electricity grid.

Unlocking capacity with analysis of LV network data

The growth in LV network monitoring is enabling distribution networks to have more visibility of their networks. However, to leverage maximum value the data needs to provide clear insights for both the networks and interested stakeholders. Through a series of projects analysing this data we've developed actionable insights that support better planning, optimise network capacity, and enable efficient customer connections. By analysing demand variability, network constraints, temperature sensitivity, and supplier-driven impacts, we help networks develop toolsets to make informed investment decisions.

Through collaboration with local authorities and communities, we are demonstrating the best practices in facilitating decarbonisation. These efforts drive low carbon connections and empower communities to take greater control of energy generation and use, enabling more sustainable and resilient energy solutions.



Innovation

Decarbonisation requires bold, innovative solutions that address the energy system's evolving challenges. Our team combines cutting-edge technologies with deep industry expertise to tackle complex issues, including enhancing network reliability, optimising capacity, and integrating low-carbon solutions.

Through collaboration with distribution networks, communities, and businesses, we empower stakeholders to adopt smarter, more resilient systems that drive progress towards Net Zero. Our work highlights the transformative potential of data-driven strategies, advanced monitoring, and practical tools to create a sustainable and reliable energy future.



Innovative Hardware Solutions

LV De-Mesh

Through innovative projects like LV De-Mesh, we deliver and trial cutting-edge technologies to assess their applicability for the energy industry. Working with a UK DNO, we are adapting the ALVIN Reclose² device to autonomously manage meshed low voltage networks during fault conditions, enhancing reliability and resilience. This involves custom firmware development and rigorous testing across varied network scenarios. Our innovation activities provide practical insights into new product performance, enabling informed decisions on their adoption. This approach demonstrates how innovation drives smarter, more reliable solutions for the future energy system.



Open LV/VisNet[®] Hub

The OpenLV project tested the LV-CAP[®] platform in 80 low-voltage substations across the Midlands, South-West, and Wales.

This innovative platform enabled real-time data collection and analysis, enhancing network management and transparency. A standout feature was the trial of autonomous network reconfiguration, which allowed the platform to predict future loads

on local networks and balance these loads between neighbouring substations. It also demonstrated the potential for self-healing networks by automatically identifying and isolating faults to improve reliability and minimize outages.

The project fostered collaboration with community groups, businesses, and academic institutions, empowering them to create and deploy applications within local substations. This approach delivered valuable insights into electricity consumption, supported the integration of renewable energy, and advanced the path to Net Zero. Importantly, the project also prioritized cybersecurity, ensuring secure data access and protecting system integrity.



Examples of Delivering Innovation

Improving network reliability and resilience

EA Technology collaborated with National Grid Electricity Distribution (NGED) and Scottish and Southern Electricity Networks (SSEN) to enhance grid reliability and resilience using our proprietary, Target Model[®]. By simulating various failure scenarios and analysing their impacts, we provided data-driven insights to quantify potential threats and reliability issues across their networks.

This approach enabled the identification and prioritisation of key feeders for technological enhancements, optimising the deployment of automation devices and ensuring targeted investments in high-impact areas. The outcomes included identifying options for improved operational efficiency, reduced power outages, and enhanced infrastructure resilience. Ensuring the delivery of a consistent, reliable service to customers while supporting the transition to a robust, future ready energy network.



Proactive Fault Management

EA Technology collaborated with Northern Powergrid to enhance fault management across low-voltage (LV) networks, focusing on both underground cables and overhead lines. By deploying low-cost monitoring devices across substations, the project was able to proactively identify and address potential failures, known as pre-fault events, before they resulted in customer supply interruptions.

For underground networks, the analysis of data collected over four years enabled the development of a proactive fault management methodology, including prioritising circuits for intervention, deploying fault management equipment,

and conducting planned repairs. For overhead networks, monitoring devices were tested for their ability to detect and locate pre-fault and fault events, demonstrating resilience during severe weather and adaptability for pole mounted transformers.

This work provided valuable insights into the health of ageing assets, significantly reduced unplanned outages, and improved network reliability. The findings support wider deployment of LV monitoring methodologies, offering a scalable solution to enhance resilience and ensure a more reliable energy supply.

Road to Power

The Road to Power project aims to tackle the future challenges from electrifying construction equipment in large infrastructure works. As non road mobile machinery shifts to battery power, ensuring reliable, flexible, and temporary charging infrastructure becomes crucial. High energy demands, variable locations, and evolving project sites complicate distribution network planning. By assessing future energy demands and exploring new connection methods, the proposed tool will guide network operators in securing temporary grid connections. Leveraging existing tools and expertise, it will model load impacts, evaluate technology options, and streamline connections. Ultimately, the project aims to lower costs, accelerate decarbonisation and deliver cost savings to consumers.



Strategic Consultancy

The Net Zero Transition team draws on their multidisciplinary expertise to provide valuable insights across a range of sectors, empowering clients to achieve their goals. Working with network owners, operators, government bodies, and service providers, the team delivers tailored solutions that address the challenges of decarbonisation.

By leveraging advanced data analysis, stakeholder collaboration, and innovative approaches, the team supports efforts to optimise network utilisation, integrate renewable energy, and future-proof infrastructure. Their work includes modelling future energy scenarios, identifying investment opportunities, and developing strategies that enhance reliability, efficiency, and sustainability. With a focus on collaboration and actionable results, the team helps stakeholders navigate the complexities of the energy transition, delivering practical pathways to a resilient, low-carbon future.

Example Projects

The Future of EV Charging

NIE Networks' forecasts suggest that by 2030 there will be in the region of 300,000 electric vehicles (EVs) registered in Northern Ireland. It is expected that 80% of these EVs will likely be charged primarily at home. This increase in demand combined with an increase in the electrification of heat and industry is expected to add significant stress to the distribution network.

One avenue to relieve this increase in demand is the concept of intelligent charging; altering the charging profile of EVs to optimise available electricity network capacity whilst minimising the impact on EV drivers. This can in turn lead to the deferral of costly network reinforcement.

EA Technology have been delivering the NIEV project which seeks to develop a viable approach to managing the load, maximising the utilisation of the network, and ensuring customers vehicles always have sufficient charge when required.



Innovation Strategy

Delivering the future electricity networks requires innovation and trials to understand and test new approaches. To deliver an effective pipeline of innovation activity it is essential that a robust strategy is developed.

The Net Zero Transition team work with several DNOs to support the development of leading innovation strategies. This focuses on identifying critical gaps and investment opportunities to future-proof the electricity distribution network. Through comprehensive data analysis and stakeholder engagement, this approach evaluates areas such as network reliability, asset aging, operational technology advancements, and the integration of flexibility services. This is built on to identify disparity between current performance and future customer expectations across key dimensions, including decarbonisation, network growth, and climate resilience. The insights developed inform the innovation strategies, prioritising targeted investments and address evolving regulatory and customer demands, ensuring a sustainable and resilient energy network.



Decarbonisation Complex Industries

Through projects such as Rural Electrification and Road to Net Zero, we provide strategic consultancy to accelerate energy industry decarbonisation. By integrating expert knowledge and stakeholder insights, we develop actionable solutions to overcome challenges in electrification and carbon reduction. These include modelling future energy scenarios, designing innovative tools for emissions management, and identifying cost-effective pathways for Net Zero transitions.

Our work enables clients to make informed investment and policy decisions that support their customers decarbonisation journey. This will enhance electricity network efficiency while supporting environmental goals. By addressing sector-specific needs, we deliver tailored strategies that promote collaboration, minimise costs, and support a fair and sustainable energy future.



Team Capabilities

-  Scenario Analysis
-  Network Analysis
-  Delivering High Impact Innovation
-  Independent Advisors

Key Clients

Utility Networks

- Northern Powergrid
- National Grid Electricity Distribution
- Northern Ireland Electricity Networks
- SP Energy Networks
- ESB Networks
- Scottish & Southern Electricity Networks
- UK Power Networks
- National Gas
- ESP Utilities Group
- Northern Gas Networks
- Orion
- TasNetworks
- South Australia Power Networks
- TEPCO

Government / Trade Bodies

- Energy Networks Association
- National Infrastructure Commission
- Department for Business, Energy and Industrial Strategy
- Cheshire & Warrington LEP
- Ambition North Wales
- Marches LEP
- Gwynedd Council
- Isle of Anglesey County Council
- Denbighshire County Council
- Wrexham County Borough Council

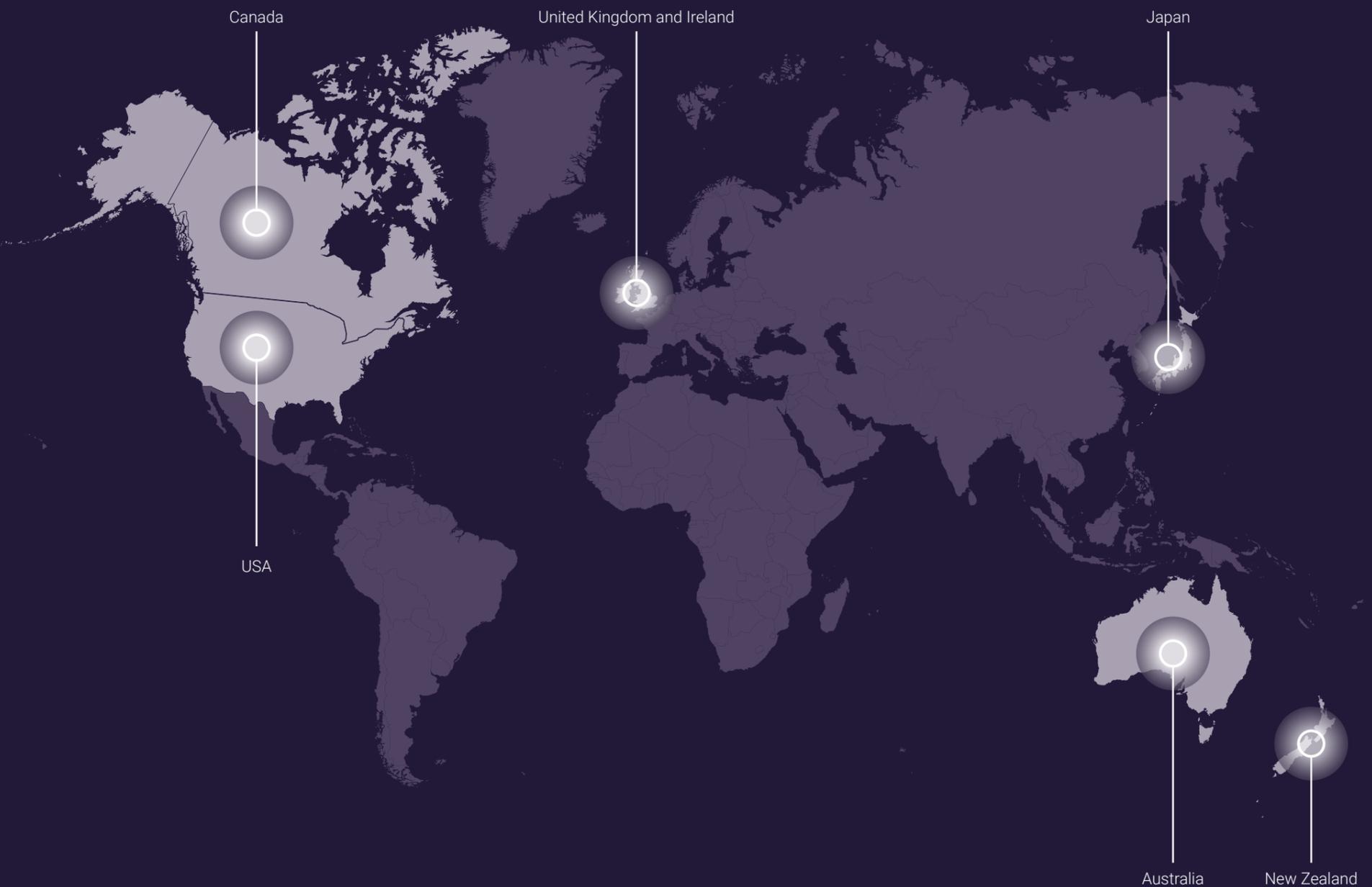
Other

- Transport for London
- GeoPlace
- HAUC (UK)
- Regen
- LCP Delta
- Frontier Economics



Key Countries

A range of countries in which we have completed research and analysis projects.





For further information and advice please contact us on
+44 (0) 151 339 4181 or email info@eatechnology.com / www.eatechnology.com



EA Technology Limited
Capenhurst Technology Park
Capenhurst, Chester CH1 6ES
PUBLIC

t +44 (0) 151 339 4181
e info@eatechnology.com
www.eatechnology.com
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