



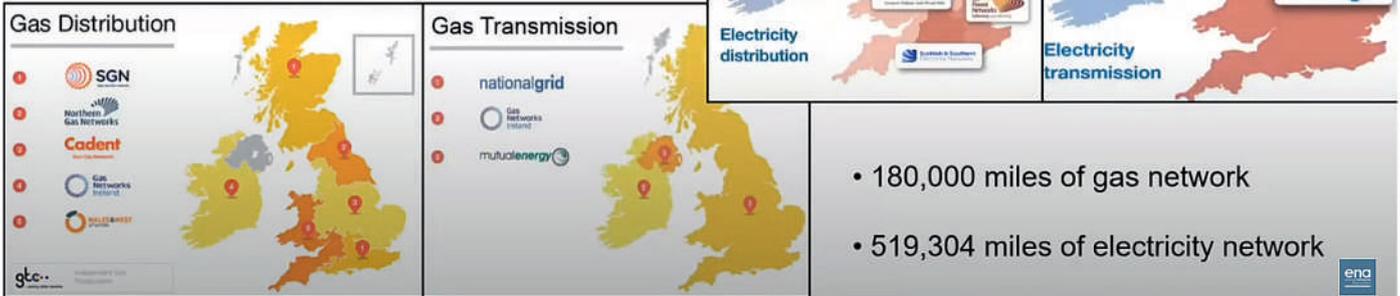
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PUTTING ENERGY ON THE MAP

DAN CLARKE, HEAD OF INNOVATION AT THE ENERGY NETWORKS ASSOCIATION, EXPLAINS HOW HARNESSING THE POWER OF GEOSPATIAL DATA WILL HELP DELIVER ON THE UK'S NET ZERO EMISSIONS TARGET

UTILITIES

- 29 million electricity customers
- 21.5 million gas customers



- 180,000 miles of gas network
- 519,304 miles of electricity network

When combined, the length of the UK's network of electricity cables and gas pipes would circle the Earth 32 times. Source: ENA



challenge in satisfying an ever-growing number and variety of resources seeking connection to the

grid: solar panels, biomethane plants, and electric vehicles to mention just three. That number is growing all the time as we strive to achieve our net zero targets.

The energy networks are central to unlocking Net Zero in Great Britain. They provide the backbone needed for more electric vehicles, heat pumps, hydrogen fuel sources and renewables. As an industry, we are focused on innovation, using infrastructure and new technology in better, smarter ways to unlock benefits for consumers, businesses and society.

While there has been an enormous focus on physical infrastructure and building out the renewables fleet, as we deliver the energy market of the future, data and digitalisation will be crucial to help us reach our Net Zero climate change targets by 2050.

Major transition

The priorities for energy network providers have traditionally been on keeping energy flowing, on customer service, and an uncompromising focus on safety. However, the traditional energy system is undergoing a major transition to a smarter digital energy system, an 'Internet of energy' ... one that is characterised by decarbonised, decentralised and digitalised resources.

The energy sector faces an unprecedented



ena *'We're overhauling systems, processes and policies to make it easier to connect low-carbon electricity generators and green gas producers to the grid and take advantage of new smart technology that is becoming common place in our communities. Technology like solar panels, electric vehicles and battery storage'*

Data challenge

Networks have access to a lot of data that is used to adapt business practices and, ultimately, benefit customers. However, as we look to a low-carbon economy, the data needed to reach Net Zero at the current pace is, in many instances, either not available or not easily accessible.

Deepening digitalisation will ensure that energy networks are in the best possible position to tackle this challenge, by having quality data that can inform investment, optimise processes, and enable innovation to future-proof the whole energy system.

Government and industry both consider digitalisation a huge opportunity. It is a central pillar of a Net Zero energy market, and now is time to start delivering it.

Boosting the power of geospatial

This is where boosting the power of geospatial data comes in. Energy Networks Association (<https://www.energynetworks.org>) has started work with Ordnance Survey and 1Spatial to build an in-depth digital system map of the UK's energy system.

Ordnance Survey has a long history of working with the utility sector, building trust and confidence thanks to its world-class data and expertise to the energy networks. Using 1Spatial's extensive utility data management experience, the OS and 1Spatial teams will collaborate to deliver a trusted digital system for the market.

Network data from all Britain's electricity and gas network operators will be pulled into an integrated, digital energy system map covering the entirety of Great Britain. The map will provide customers with information about energy network assets and where they are located, as well as who owns them.

Making this information available will significantly improve investment decisions, support growing markets such as the UK's world-leading local flexibility markets, and help bring new renewable connections to the energy networks.



REALISING THE NATIONAL ENERGY SYSTEM MAP (NESM)

JESSICA HAMPTON AND CHRIS TAGG REPORT ON PROGRESS TO DATE

The Proof of Concept NESM being developed by Ordnance Survey (OS) and 1Spatial aims to demonstrate integration, visualisation, and controlled access to network data from UK Energy network operators. This is seen as a critical step to unlocking the benefits of a decentralised, digitalised and decarbonised energy system.

Working collaboratively with ENA and Network Operators, the PoC has so far delivered:

- A data model aligned with International Electrotechnical Commission Common Information Model standards, and Open Geospatial Consortium utility network standards, independent of vendor software technology.
- A legal framework enabling each network operator to control the use of their data, through Data Exploration Licence (DEL) and Data Distribution Agreements (DDA).
- A security framework developed in consultation with Centre for the Protection of National Infrastructure (CPNI) and National Cyber Security Centre (NCSC), evaluating security and data sensitivities and ensuring security for the NESM system in the national interest.
- A simple and intuitive data upload portal. This is configured to meet each data providers specification which reduces the burden on data providers.
- A secure technical platform providing simple access to integrated datasets, controlled to protect sensitive data through role-based access and geographical restrictions.

To date, the project has resulted in:

- Executive/board level commitment from each provider, sponsoring internal process change.
- A technology platform proving Findable, Accessible, Interoperable



and Re-usable (FAIR) data designed for ENA member needs.

- Data from 14 network operators integrated and transformed into a common data model.
- Insight and experience that can be applied to subsequent projects facilitating national digital transformation.

As part of the PoC, OS and 1Spatial have integrated 1Spatial's unique rules-based data transformation and management platform with a utility data management platform provided by OS. This seamless solution has proven the successful integration of the UK Energy Systems above and below ground assets.

Early results from the PoC indicate that successful development of a unified digital energy system map will be possible. This digital transformation will deliver increased visibility of infrastructure and assets, enable optimisation of investment, and inform new markets. It will also be a huge step forwards in the UK's Net Zero ambitions by accelerating other agendas such as the transition to Electric Vehicles.

Jessica Hampton is Head of Utilities at Cambridge-based 1Spatial (<https://1spatial.com>), while Chris Tagg is Head of OS Connect at Ordnance Survey, headquartered in Southampton (<https://www.ordnancesurvey.co.uk/>)

