An energy sector
for the future

The energy sector is undergoing significant technological and societal disruption.

Innovations like battery storage, electric vehicles, and network flexibility are transforming the energy landscape. Customers are increasingly moving away from centralised energy generation, opting instead for smaller distributed generation and low-carbon technologies. The global push for a clean energy transition aims to achieve Net Zero with secure and affordable energy.

Global instability

Russia-Ukraine conflict and the geopolitical tensions in the Middle East

The ongoing war in Ukraine and unrest in the Middle East continue to destabilise the global energy market. Ukraine's conflict has disrupted energy supply chains, particularly affecting Europe's natural gas imports. Meanwhile, tensions in the Middle East, a critical oil-producing region, exacerbate supply uncertainties and drive up oil prices.

A destabilised energy market leads to higher household energy bills, contributing to the cost-of-living crisis. The instability also drives demand for alternative energy sources, influencing consumer behaviour towards adopting low-carbon technologies to manage costs and ensure energy security.

Our response:
- We delivered £91m benefits to customers by using flexibility to defer distribution network investment. This means 100% of these savings flow to bill-payers rather than shareholders and will result in lower customer bills.
- We successfully challenged industry assumptions about how the grid operates, resulting in access to an additional 700 MW of renewable generation being made available to customers and bringing connection dates forward by years in some cases and at lower costs.
- This year, more than 40,000 domestic solar installations have been connected, benefiting households with lower electricity bills.

£91m
Delivered £91m benefit to customers in 2023/24 by using flexibility

Industry regulation

A framework for Net Zero

Recent regulatory changes in the UK energy sector include the establishment of the National Electricity System Operator (NESO). This change is designed to improve the coordination of the electricity grid, ensuring a more efficient and reliable energy system. The NESO will operate independently from National Grid, focusing on integrating renewable energy sources, improving grid resilience, and facilitating the UK's Net Zero targets. Additionally, regulatory reforms are being implemented to promote grid flexibility, support the deployment of low-carbon technologies, and improve market competitiveness.

Our response:
- We launched an independent Distribution System Operator (DSO) to expand network capacity sustainably and cost-effectively.
- Instead of automatically investing in new infrastructure, the DSO considers the option to buy flexibility to increase network capacity, adapting to the growing demand for EVs and other needs.
- We awarded over 1.5 GW of flexibility contracts, including 14 new providers. We dispatched 7.8 GWh of flexibility in 2023/24, a seven-fold increase on 2022/23.

Cyber security

Protecting national infrastructure

Our Corporate IT and Industrial Control Systems are crucial for keeping electricity flowing for our customers. We are not just keeping the lights on, we are keeping transport running, homes warm and much more. As everyone's reliance on technology grows, so does the impact of a cyber-attack. Given that our area of operation includes the UK's capital city, its primary financial centre and the seat of government, we set ourselves high standards of cyber security that considerably exceed the regulatory requirements.

Our response:
- We comply with the Network and Information Systems Regulations 2018 and use the National Cyber Security Centre's Cyber Assessment Framework.
- We have robust communication programmes to raise cyber-attack awareness among employees, including periodic random tests to identify vulnerabilities.
- Our dedicated cyber resilience programme includes annual cyber crisis exercises to rehearse and refine our response to potential threats, ensuring rapid and effective action.

Tackling climate change

Reducing carbon emissions for ourselves and our customers

Accurate forecasting of future electricity demand, particularly due to decarbonisation efforts, is crucial for efficient network planning. Local authorities play a significant role in achieving Net Zero, influencing over 80% of the UK's carbon emissions. Despite their ambitions, many face challenges like resource constraints and the need for better data and analytical tools.

Our response:
- We collaborate closely with local authorities, providing support and resources to develop robust Net Zero plans.
- We are converting our fleet of vehicles and generators to reduce carbon emissions (see page 23).
- We are adopting a circular economy model (see page 23).
- We have analysed our supply chain to reduce Scope 3 emissions (see page 22).

£2m benefits
in 2023/24 due to 7,397 tonnes of carbon emissions avoided by reduced curtailment of low-carbon generation

Reliability and quality

Ensuring network resilience

There are multiple threats to the reliability and quality of the power network. Growing energy insecurity, increasing demand for electricity to power transport and heating as well as lighting and myriad other devices, combined with the rise in cyber threats and the hazards of increasingly extreme weather, mean that network resilience is more important than ever. Power distributors must anticipate future demand and provide capacity efficiently and cost-effectively while minimising disruption to customers.

Our response:
- We maintain vigilance through horizon scanning to identify and mitigate potential threats, such as the impact of extreme temperatures on the network.
- We are building a culture that understands the role of resilience, for example developing a way to measure and track resilience.
- We continue to plan for expected and unexpected events, integrating stress-testing where possible, and reviewing events afterwards to learn valuable lessons.