Environment and climate change

We are key contributors to the UK's journey toward a Net Zero economy, making sure our network supports the decarbonisation of power, heat, and transport. Further, we are committed to reducing our operational carbon emissions, managing resources responsibly, enhancing biodiversity, and minimising pollution.

Who is responsible

Mark Adolphus

Director of Health, Safety, Sustainability and Connections

Targets

- **Overall Net Zero target:** We are committed to reaching Net Zero greenhouse gas (GHG) emissions throughout our supply chain by FY 2040.
- **Near-term targets:** We intend to reduce our Scope 1 and 2 GHG emissions 53.1% by FY2029 from a FY2019 base year. We also commit to reducing Scope 3 GHG emissions 25% within the same timeframe.
- **Long-term targets:** We are committed to reducing Scope 1 and 2 GHG emissions 90% by FY2040 from a FY2019 base year and to reducing Scope 3 GHG emissions 90% within the same timeframe.
- Recycle 80% of office, depot and network waste and re-use 99.5% of streetworks material by the end of the RIIO-ED2 period, with no recoverable waste to landfill by 2025.
- Reduce NOx emissions by 33% over the RIIO-ED2 period, improving air quality for our customers.

As a major player in the energy business, UK Power Networks has an important role in decarbonising the energy network and the economy. Our initiatives to reduce carbon emissions and support the Net Zero transition have most impact in the work we do for our customers.

Whether it is related to maintaining continuity of supply, ensuring we can accommodate greener power generation, or the connection of heat pumps or EV charging infrastructure, we have a pivotal role to play. Although our primary focus is on these areas, we nevertheless have an important obligation to address our own environmental impact alongside reducing that of our customers.

Our direct Scope 1 and 2 carbon emissions from our day-to-day operations relate to fuel consumption, Sulphur hexafluoride (SF_6) gas leaks in our switch gear and the energy we purchase to run our substations, depots and offices. Since 2018/19 we have reduced these emissions by 19% and made good inroads in starting to tackle the difficult-to-abate sources of carbon.

An important part of our overall carbon footprint, however, is the Scope 3 indirect emissions associated with our supply chain. For most companies these are often the largest part of their footprint (around 80%), and are also the most difficult to measure and manage.

At UK Power Networks we recognise our influence on these indirect emissions and decided to tackle them head on. In partnership with our suppliers, we have set about identifying where these emissions sit across Scope 3 categories, and more importantly who our most material suppliers are.

Our initial screening exercises, using average spend-based carbon factors, enabled us to clearly see that our Scope 3 emissions were concentrated in Purchased Goods and Services and Capital Goods. We have over a thousand suppliers and could see that around 100 of them accounted for 80% of the Scope 3 emissions.

Working with our partner, the Minimum Consultancy, we have now completed more detailed assessments of our top 160 suppliers, so we have a better understanding of their contribution to our Scope 3 footprint. In addition, over the last year we have worked with our suppliers to adopt Science Based Target initiative (SBTi) validated carbon reduction targets and have developed bespoke carbon reduction plans for the goods and services with which they supply us. This has enabled us to measure these emissions more accurately and identify both carbon savings and opportunities for change. To date we have seen our Scope 3 emissions decrease by 19.6% from our baseline but there is more work to do.

In 2021, we were the first UK DNO to have our carbon reduction targets validated by the Science Based Target initiative (SBTi) for all carbon scopes, aiming for 'well-below 2°C' equivalent reduction (a 25% reduction from 2018/19 with a target year of 2028/29). In 2022/23, we committed to upgrading our Scope 1 and 2 targets to 1.5°C in recognition of the success we had achieved in the previous five years and these new upgraded near-term targets at 1.5°C, as well as a Net Zero target, have been validated by the SBTi.

The Science Based Targets initiative (SBTi) Net Zero Standard provides companies with a clear blueprint on how to bring their Net Zero plans in line with the science. It requires companies to have short-term carbon reduction targets and a long-term Net Zero standard, with the ultimate aim of achieving a 90% reduction in emissions before 2050. The remaining 10% can be neutralised through high-quality carbon offsets that permanently remove and store these residual emissions.

Circular economy

We are committed to taking a sustainable approach to the management of our infrastructure in support of the nation's progress towards a circular economy. For the second year UK Power Networks has submitted its data to the Ellen MacArthur Foundation for assessment against the Circulytics criteria. We received an individual performance assessment which recognised that our efforts so far have resulted in an increase in our scoring, specifically in the 'Enablers' category. This marks a significant improvement in our approach to setting up the right conditions for a circular transition. Since the Circulytics toolkit is no longer available we are now on our way to developing our own tailored circular economy assessment tool to continue to monitor and measure our performance in this area.

Projects such as using low-carbon concrete made with waste materials, including fly ash where it is suitable, are part of our continued drive to eliminate waste and pollution, and to drive down carbon emissions. By adopting a circular economy model, we will help achieve a market in which products are re-designed to drive out waste, reduce the use of virgin materials, can be repaired, reused or dismantled for strategic spares and fed back into our large supply chain that we can influence positively.

Electrifying our fleet

UK Power Networks runs a fleet of over 3,100 vehicles, ranging from cars to vans and HGVs as well as specially modified vehicles required of an electricity network provider. We aim to have an integrated fleet that works throughout the company, and this year we have been doing the groundwork to enable that to happen. As well as making sure that the infrastructure is there to enable the uptake of EVs across the company, we must also ensure that the relevant support contracts are in place. This includes having procedures and policies set up in a way that will allow a streamlined and joined up vehicle fleet to operate smoothly and procuring practical solutions to make it easier for staff to change to an EV, such as partnering with a fuel card provider that covers both home and public charging costs. Our first priority was to identify the UK Power Networks' employees whose role, duty cycle, business mileage and access to home charging made it appropriate for them to have an EV allocated to them. It was important to identify which roles required which type of vehicle; for example, a conventional passenger EV is likely to be right for a field engineer whereas a jointer needs a panel van sized EV. Alongside the contract work and with the help of our associated company UK Power Networks Services, we also began work on establishing the right infrastructure, such as charging facilities. The carbon emissions relating to the UK Power Networks' vehicle fleet have reduced considerably since 2018 and this is in part a result of the introduction of EVs as well as the greater fuel efficiency of our conventional vehicles.

We want to encourage all employees to switch to EVs wherever possible so in 2023/24 we introduced a scheme to allow all employees to apply for an EV through our leasing partners, Tusker. Employees, including those who do not need a vehicle for their role, can opt to lease an EV or a hybrid vehicle. Tusker manages the administration and financing for the lease on our behalf.

What we've achieved

24%
reduction in our CO_2 emissions since our baseline year 2018/19, which includes our Scope 1, 2 and 3 emissions

1st UK DNO
to have all Scope 1, 2 and 3 emission targets validated by SBTi

DORMICE AND ORCHIDS PROTECTED IN NATURE RESERVE

UK Power Networks' tree cutters, TreeSmiths, worked with experts at Happy Valley and Farthing Downs to protect dormice and other vulnerable species, while keeping overhead power lines safe and reliable for residents.

Low undergrowth was preserved, where possible, to maintain the leafy corridors used by dormice, and scrub was cut to provide dappled shade for fly orchids. Logs were stacked, rather than chipped, to avoid smothering flowers, use of machinery was minimised and air was let out of tyres to minimise the impact of vehicles.

How we are...

reducing our emissions

OUR INNOVATION STRATEGY

EMBODIED CARBON

UK Power Networks has developed a tool to monitor and report on embodied carbon in all new projects. This allows us to establish a baseline and commit to a target percentage reduction, to help us to achieve our Science Based Target commitments. The tool measures the embodied carbon of all major projects (we have defined these as projects valued at over £1 million) at both concept and developed design phases. The tool is aligned to the PAS 2080 international standard for Carbon Management in Infrastructure. It focuses on those key elements of the project that can be influenced through detailed design and which make a significant difference to the project's carbon footprint.

What this means for our customers

Since its launch in mid-Jan 2024, the Supply Chain Carbon Reporting tool has been used in 24 major projects, 12 of which have been completed resulting in approximately 15% total carbon saving.

"The embodied carbon tool allows us to challenge the scope, design and material used in the delivery of our major projects, lowering carbon impact and providing sustainable solutions, for UK Power Networks and our customers."

Allan Ponsonby
Head of Engineering, UK Power Networks

Converting our in-house generators

Our temporary generator fleet is essential for maintaining continuity of electricity supply in both planned works and emergencies. We utilise both in-house and rented generators to meet our requirements and have been exploring opportunities to reduce the use of diesel. Clearly minimising use is the priority, but we have also trialled hybrid engines (battery with diesel engine) with low-carbon fuels.

Hybrid generators typically provide much better load management than diesel ones as they adapt and manage peaks and troughs of demand. Diesel generators tend to be highly inefficient compared to hybrid ones in cases of low demand, such as overnight.

In 2023/24, we began converting some of our in-house generators to hybrids and this will bring fuel efficiency benefits, improve air quality and reduce noise. The advantage of a hybrid engine is that it switches to battery during low load periods, such as at night when power demand is low.

Working to reduce sulphur hexafluoride on our network

Sulphur hexafluoride (SF_6), a potent greenhouse gas (23,500 times the warming potential of carbon dioxide), is used across the electrical industry as the main method of insulation in high voltage electrical equipment. Our key actions are to engage in research to develop low-carbon alternatives and to improve our leak management.

Over the last two years, where appropriate, we have installed alternative low-carbon options, such as Clean Air, which utilises a mix of dehumidified oxygen and nitrogen and g3 which utilises a fluoronitrile for our 132kV switchgear. At the 36kV level, we have installed Air Plus circuit breakers, which also utilise fluorinitrile compounds in a different gas mix to g3. We also continue to engage on research with our partner bodies such as the Energy Network Association who are currently working with Nuventura on their new 33kV dry air circuit breakers.

The management of leaks is a vital part of our work in minimising SF_6 fugitive emissions. We have piloted a new adhesive-based leak sealing solution for one of our 132kV circuit breakers. This has been developed in conjunction with the Electric Power Research Institute and has proved successful. We subsequently used it to successfully repair a significant leak on a busbar at one of our 11kV primary substations.

Biodiversity

Alongside the strategic, technical approach to protecting the environment, we also take care of the local flora and fauna in our area of operation. Biodiversity is crucial to the health of the planet, and projects such as helping to install nest boxes for swifts and kestrels in West Sussex and rescuing and re-siting a wild bee colony from the walls of a substation in Norfolk contribute to it. When we were cutting back trees in Surrey, our contractors were careful to preserve low undergrowth where possible, to maintain the leafy corridors used by dormice, and the scrub was kept, providing dappled shade for fly orchids.

This year, 27 employees volunteered to work on improving the biodiversity at our Addington Grid site. This large site is in a semi-rural location in Croydon and is quite unusual as a large proportion of this secured site is made up of ancient woodland and chalk grassland, both of which are now rare habitats that should be preserved in the UK.

With repeat visits from volunteers the condition of this land is changing for the better. The woodland has been improved by tackling invasive species on site and the chalk grassland, that was heavily overgrown, is being restored by scraping back the topsoil and reseeding with a specific chalk grassland seed mix. Chalk grassland scrapes are well known for attracting and supporting a remarkable array of butterfly and moth species, as well as other wildlife.

Our approach to climate change

UK Power Networks continues to play an essential role in facilitating Net Zero for our customers and the UK economy, as we all look to decarbonise our lifestyles, transport, commerce and industry. We will ensure that the electricity network can accommodate low-carbon generation, EV infrastructure charging, energy storage, heat pumps and so on. We must also prepare the network to be climate resilient through our climate adaptation plan and ensure that this plan remains current and viable so that the network remains robust. At the same time we are committed to reducing our own daily operational carbon emissions in line with our Science Based Targets, as well as addressing our wider environmental impacts.

	Description
Governance **The governance around climate-related risks and opportunities**	As a regulated high-performing business, our operations and activities are open to rigorous scrutiny from both our regulator Ofgem and wider stakeholders. In addition, our environmental management system (EMS) certified to ISO 14001 requires us to undergo independent third-party audits from a UK Accreditation Service certified body. Our Environment, Social and Governance (ESG) Board sub-committee, formed in 2021, has continued to meet three times a year to review our progress against key ESG metrics. The issuance of green bonds also continues to bring external scrutiny to our operations and our actions in reducing our carbon emissions and environmental impacts. We will also be looking to formalise our external monitoring and verification of our carbon reporting in line with our Science Based Target reporting. All these actions and oversight of our activity will continue to drive the ESG performance of this company, holding us to account for any underperformance.
Strategy **The planning and organisation needed to achieve our overall goals under conditions of uncertainty**	Our business plan for RIIO-ED2 has clear commitments to ensure we reduce our operational carbon footprint, support vulnerable customers and ensure that our network is not an impediment to the transition to Net Zero. Our objective is to achieve this at the lowest cost to the customer and we have adopted a flexible plan to avoid saddling our customers with large upfront and potentially unnecessary costs. We are actively targeting flexibility through our DSO, building our market intelligence, upskilling our workforce, investing strategically and engaging widely with key stakeholders, including Ofgem, local authorities, domestic and business customers and non-governmental organisations. We will regularly review and track our strategy and our approach across our business functions to address shortcomings and seize opportunities to go further where it makes strategic sense to do so.
Risk management **The processes used to identify, assess and manage climate-related risks**	UK Power Networks has a mature and well-embedded risk management process that continually reviews current risks against our existing operations, business plans, stakeholder expectations and changing regulatory environment. The threat of climate change is an area of growing concern to our society and economy. As an operator of the UK's largest electricity network, it is imperative that we have a robust climate adaptation plan in place. This aspect only grows in importance as we consider the changes that progressing to a Net Zero economy present, such as domestic heating switching to heat pumps or transport to EVs. Reliance on electricity is therefore growing. We have, under our current plan, made excellent progress protecting substations at risk of flooding in the future and updated our model to identify additional sites to address in RIIO-ED2. In addition, we have made improvements to our vegetation management, enhanced our capability to identify high impact rainfall events and significantly stepped up our storm response and enhanced our call handling capability.
Metrics and targets **The metrics and targets used to assess and manage relevant climate-related risks and opportunities**	Over the last seven years UK Power Networks has been proactive in improving the resilience of its network to climate change. We protected over 135 substations that were identified as being at risk of various types of flooding. This reduced the risk of flooding at these sites from 70% to 13%. In the first year of RIIO-ED2 we have continued this work, successfully delivering 16 mitigation projects as planned. Other additional measures include: • Improving vegetation management, using Light Detection and Ranging (LiDAR) assessments to target tree cutting activities more accurately around overhead lines; • Improving modelling and analytical tools to identify high impact rainfall accumulation that may affect infrastructure five days in advance; and • Improving storm response of the business to ensure call handling centres are not overwhelmed, storm roles of staff are embedded, and vulnerable customers are supported.