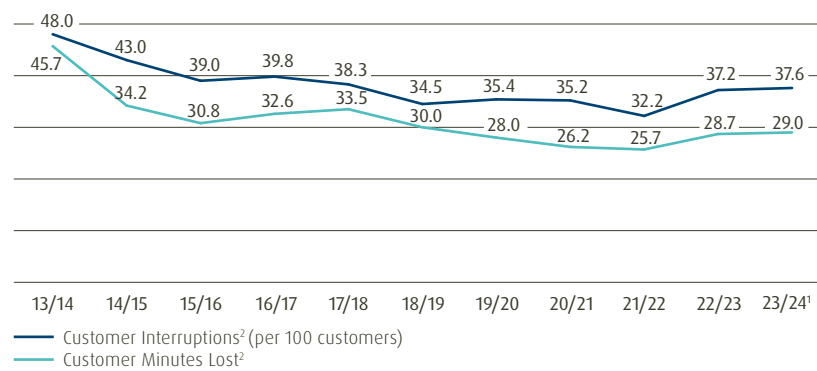


Network reliability

With the growth in low-carbon technologies powered by electricity, our customers are ever-more reliant on a reliable power supply. We are working tirelessly to deliver that.

Our performance highlights



1 2023/24 figures presented are provisional based on our regulatory submission at the date the accounts are signed.
2 Figures are a weighted average of the three licence areas and exclude exceptional events.

37.6 CIs

Our power cut performance has improved by 43% since 2010/11 when our CIs were at 66.1, which means customers now see an interruption on average once every 32 months, compared to an average of once every 18 months in 2010/11.

29.0 CMLs

A customer connected to our network will be off supply on average for less than half an hour per year. This is a 55% improvement over 2010/11, when the average duration was 64 minutes.



At UK Power Networks we pride ourselves on the reliability of our networks. Keeping the lights on is a key priority, whatever the weather or nature throws at us.

Most of our customers had an excellent service from us in 2023/24, but the power supply for a small number of people in our area of operations fell below our usual standard. Some of the interruptions to our service were caused by a small number of large, unrelated events. Other power cuts were caused by equipment malfunctioning. We are taking a careful look at our network and operational processes to find out why these events happened, and why they had such an impact, and to do all we can to ensure our service is back to the excellent levels that we expect.

Our record shows us to be one of the most reliable DNO groups in the country, out-performing Ofgem performance targets by over 30% in the last regulatory period, RIIO-ED1. We are determined to continue to deserve our reputation for reliability in the current period, ED2. Our push for ever-greater reliability continues to focus on two main fronts: finding new ways to prevent faults rather than waiting for them to need to be repaired, and making greater use of remote control to restore customers' supplies more quickly and efficiently.

Automating to improve network reliability

Automation of the network is a crucial element in how we ensure that it runs smoothly and, when there is an interruption, it helps us get up and running again quickly without the need for manual intervention. Our deployment of remote-control technology increased considerably this year, and this is set to continue. We have now fitted over 14,000 of our substations with this kit to restore the electricity network remotely. We have the ambitious target of installing remote control equipment in over 5,000 substations across our area of operation, for both our HV (High Voltage) and LV (Low Voltage) networks. This involves, for example, retro-fitting remote switches on some older HV switchgear, replacing some with newer remote controllable ones and installing LV reclosers.

We have about 3,000 sets of LV reclosers, which we routinely deploy across our LV network. These reclosers quickly restore the power supply after a transient LV fault and collect enough information about the fault to enable us carry out repairs.

On this page you will see how we have performed against the following Sustainable Development Goals:



The next step in our proactive repair strategy is to introduce LV fault monitors. Whereas we use the LV reclosers to target specific LV circuits, we mostly use the LV fault monitors to keep a check on every LV cable coming out of the substation. The LV monitor records any disturbance it detects on the network and identifies where a fault is developing. That means we can find it and fix it before it becomes a problem for customers. The monitors also help us to keep any eye on network loads at any time. That means that when people are connecting low-carbon technology such as EVs and heat pumps, we have a better idea of how this is affecting the network, so we can be better prepared to handle the additional load. We made an important pledge to our customers that they won't see a reduction in the quality of their supply as a result of our Net Zero commitments. The project to install 5,000 LV monitors over the course of ED2 (up to 2028) is central to that promise.

In 2023/24, our LV reclosers were used 2,417 times, which means that we avoided 1.27 Customer Interruptions per 100 connected customers and 2.09 Customer Minutes Lost per connected customer.

Worst served customers

The focus of our programmes to continually improve the reliability of our network tends to be on reducing both the frequency and duration of power cuts for the majority of our customers. Nevertheless, we also want to address the position of the few and far between customers – fewer than 0.3% of them – who experience repeated power cuts. In the previous regulatory period (ED1), customers who had 12 high voltage faults in a three-year period, including a minimum of three faults in each year, were classed as Worst Served Customers according to Ofgem's definition. This criterion has now changed, with the minimum three faults in each year reducing to two.

This change means a 70% increase in the number of customers falling into the 'worst served' category. We have a programme of improvements to address these shortcomings, such as putting overhead lines underground. In the last year we have designed and delivered 40 such initiatives to support these poorly served customers, which is the approximate number we completed in the whole eight-year period of ED1.

Technical innovations supporting network resilience

Our innovations team is always striving to improve the reliability of our network, and 2023/24 has seen the introduction of a range of new technologies designed to make the network more resilient. These include satellite technology (see case study, right), robot dogs, and drones to spot faults on the line.

How we are...

delivering a reliable network

OUR INNOVATION STRATEGY



The results of our trial using satellite technology have proved to be encouraging. We will be able to monitor tree growth and decaying trees much more accurately, this will enable us to manage the tree cutting programme much more effectively by being able to target those trees that are fast growing or in danger of falling over."

Colin Barden
Head of Quality of Supply, UK Power Networks

SATELLITE TECHNOLOGY

In recent years, we have used laser technology to assess the growth of vegetation along our overhead power lines, so we know when it needs cutting back. Climate change has meant that trees and other vegetation grows more quickly than it used to and, in the last year, we have seen infestations of new pests such as the spruce bark beetle that can damage trees and leave them likely to fall. In 2023/24, we are looking to utilise satellite technology to do the same job. It is less carbon-intensive than using drones, and faster and more accurate in delivering the information to our tree-cutting teams.

What this means for our customers

Satellite technology's accuracy delivers great value compared to the existing LiDAR approach. The images can be analysed in a fraction of the time (two weeks compared to more than six months) and we can run spot checks after storms to assess damage. This type of data acquisition is much cheaper so we can do more of it and act on it more quickly. This means our vegetation management is altogether more cost-effective. We think we will save around £25m of customers' money over the next ten years.

Some of the tunnels we need to inspect are too small or unstable to send people into them, so we send the robotic dog, Spot, which is about the size of a Labrador. It goes into these tight spaces to capture camera footage and thermal imaging. These are combined with a new machine-learning platform using historical data to make sure underground cables remain reliable. The data also allow us to assess how quickly the infrastructure's condition changes. Initial results revealed Spot's potential to reduce the time taken to do maintenance inspections by up to 50%.

We are also trialling the use of drones, piloted by trained UK Power Networks specialists, to locate faults on overhead lines. Previously, operational staff walked the length of such lines to find reported faults, and the drones save a great deal of time, meaning we can fix the faults more quickly and it's safer than foot patrols.