



The cost of power cuts to customers

April 2016

Who's who in the electricity industry?

There are many different types of companies and organisations involved in supplying you with electricity:

- **The National Grid** is responsible for operating the most powerful power lines in the UK and transmitting electricity from power stations around the country closer to homes and businesses. The National Grid is a little like the UK's motorway network.
- **Distribution network operators (DNOs)** maintain many of the UK's electricity power lines, cables and equipment up to 132,000 volts. There are 14 licensed DNOs in Britain and each is responsible for a regional distribution area. The 14 DNOs are owned by six different operators. Electricity North West is the DNO for North West England. The DNOs connect the National Grid's network to individual properties and private networks, a little like the UK's 'A' and 'B' roads.
- **Suppliers** are the final step in the process and send out bills for your electricity usage. These companies include EON, British Gas, EDF and Npower. A proportion of your bill is passed to DNOs to cover their distribution costs.



What does Electricity North West do?

- Electricity North West manages and maintains the electricity distribution network in North West England.
- The network consists of overhead lines, underground cables, substations, transformers and other equipment.
- We are responsible for connecting homes and businesses to the electricity network, repairing the network when things go wrong and investing to replace worn out or old equipment.
- Electricity North West's network is 99.99% reliable. A property in the North West will typically experience a power cut once every three years and, on average, is without power for about an hour. These figures are averages – some properties will experience problems more often and others will never have problems with their power supply.
- Electricity North West was formerly part of United Utilities and before that we were known as Norweb.



Investing in the North West

Electricity North West owns and operates the network in the North West of England. Any money we invest goes right back into the North West region.

We are responsible for planning for the future and making sure the network can cope with any changes in how electricity is used.

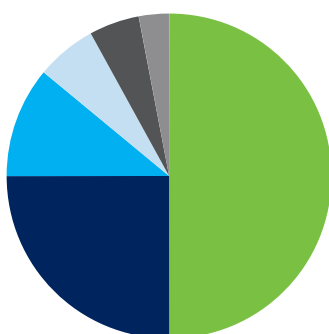
Why have I never heard of Electricity North West?

In many ways, Electricity North West is a 'behind the scenes' company. We don't send you a bill for our services. Instead, your supplier passes on part of what you pay them to us.

2.4 million

We connect 2.4 million households (5 million people) to the National Grid.

How a typical electricity bill is made up



■ Cost of buying electricity	50%
■ Delivering electricity to your home (Electricity North West charge)	25%
■ Government environmental and social schemes	11%
■ Billing, customer service and IT systems	6%
■ VAT	5%
■ Supply business profit	3%

Understanding the cost of power cuts to customers

Electricity North West invests millions of pounds in advanced systems and innovative technologies every year. This ensures your homes and businesses receive a safe and reliable electricity supply now and in the future and helps keep power cuts to a minimum.

Despite this, power cuts can still happen, largely due to circumstances beyond our control, such as severe weather, damaged equipment and vandalism.

Power cuts can be extremely disruptive and can affect different customers in different ways. Loss of electricity supply is always inconvenient and can be costly for businesses and domestic customers. They can also be distressing, particularly for elderly and vulnerable customers who may need additional support during a power cut.

The impact of a power cut can differ, depending when it occurs. For example, loss of electricity on a summer afternoon is likely to be less disruptive to domestic customers than when it occurs on a cold, dark, winter evening. The same scenario might affect a small business very differently, disrupting production on a busy summer afternoon but having little or no impact during the evening when the business is closed.

A power cut generally becomes more disruptive and costly the longer it lasts and its effects can be intensified for customers with no gas supply, who are completely reliant on electricity for cooking and heating.

In the future, power cuts may have more of an impact as the way we use electricity continues to change. Customers are expected to take up low carbon technologies, such as solar panels and electric vehicles. Electric heat pumps will also replace conventional gas central heating in homes. This increased dependency on electricity is likely to raise customers' expectations and make the reliability of their supply even more critical than it is today.



Understanding the cost of power cuts to customers

The problem

The electricity industry uses a financial model to calculate the financial cost and impact of power cuts which guides many important decisions. It is used by our regulator, Ofgem, to impose penalties and incentives on DNOs such as Electricity North West to minimise the frequency and duration of power cuts. It is also used by DNOs in their investment decisions to ensure funds are properly targeted in the right areas.

Although the electricity industry understands that power cuts affect customers differently, the model values one customer's power cut the same as another. For example, the impact of a power cut affecting the home of a working couple is valued the same as a nursing home with 100 residents.

What is Electricity North West doing?

We are conducting an extensive piece of research which will lead to a better understanding of the unique impact of power cuts on a diverse range of domestic and business customers.

This research will help us develop a revised financial model that more accurately reflects specific customer segments. This will ensure that future investments are targeted at the areas of our network which will benefit our customers the most. The new model will be used by other DNOs to ensure that all GB networks meet the future needs of our customers.

The findings may also influence changes in the way customers are compensated after a power cut and the penalties imposed on DNOs to improve the reliability of electricity supplies.

How you can help?

We're asking for your help as we want to understand your views on the value of your electricity supply and the impact of power cuts on your home or business.



Further information on power cuts

On average, customers in the North West will experience a power cut less than once every three years and on average, they are without electricity for about one hour every year. This represents a network that is over 99.99% reliable. However, there is a huge variation in our customers' experience of supply reliability. Some will struggle to remember the last time they had a power cut but others might have been inconvenienced by a higher than average number. We are working hard to improve the experience of these customers.

What causes power cuts?

The following are just a few examples of the kind of problems that can cause power cuts:

Equipment failure

The electricity network is made up of many components and electrical equipment that can fail because of many factors including, age, physical stress and damage. Electrical equipment can be weakened over time by lightning strikes and intermittent power cuts, such as when a tree branch comes into contact with an overhead power line.

Trees and wildlife

Trees can grow near and around our overhead lines. Their branches can drop onto our cables or push them together, causing a power cut. During high winds, it is not unusual for trees to be uprooted and fall across our power lines.

Small animals such as squirrels are more likely to leap onto cables from overhanging branches than climb up our guarded poles. They can then chew through our power lines. Our overhead cables are also extremely susceptible to being struck by large migratory birds such as swans which can bring down the lines.



Weather

Severe weather can result in power cuts, which can last for several days in extreme cases. Lightning strikes, high winds, flooding and heavy snow are the most common causes.

Underground cables

Underground cables most commonly fail because of a problem with their protective outer layer of insulation. This can occur because of age, wear and deterioration. Ground subsidence and movement from the vibration of heavy traffic can weaken cables and the joints connecting them together. These joints can break down, allowing water to get in. Cables are sometimes damaged if people digging near to them have not followed proper guidelines. They are also subject to stress when electricity demand is high and the energy passing through them increases.

Third party damage

Our equipment is sometimes damaged by road traffic accidents and high vehicles can snag and pull down power lines. Both overhead equipment and underground cables are sometimes damaged by construction work going on around them.

Further information on power cuts

Vandalism

Vandalism is an increasing problem for all utilities and can take many different forms, ranging from interference and deliberate acts of damage to professional thieves stealing valuable equipment and wire for scrap metal.

Planned removal of supplies

We try to upgrade and repair our network without any impact on our customers' electricity supplies. We do this by working on 'live lines' or by connecting generators. However, occasionally our engineers cannot work safely without temporarily interrupting supplies. If we need to switch the electricity off, we give our customers at least seven days written notice.

How do we respond to power cuts?

To report a power cut our customers can contact us 24 hours a day, seven days a week through a variety of communication channels.

We then do everything we can to restore power as quickly as possible. We have procedures in place and resources available around the clock to respond to power cuts anywhere in the North West.



Electricity North West invests heavily in the latest technology and systems which enable us to respond to power cuts quickly. We can often restore supplies remotely from our control centre, without the need to send our engineers to site.

Can we prevent power cuts?

No. There are too many factors outside our control to completely eliminate power cuts on our network but we do everything we can to prevent them.

We continuously inspect and assess the condition of our equipment, which means that ageing or deteriorating assets are replaced and our network operates efficiently. This also ensures that the overhead network is more resilient to the effects of high winds, snow and icy conditions.

We have a designated team of tree surgeons and invest more heavily in tree pruning than any other preventative maintenance activity. Over the last few years we have worked closely with the Environment Agency and have made significant investments in flood defences to protect our critical sites.

Our substations are secured and equipment appropriately protected to reduce the risk of malicious damage and vandalism. We also work closely with the authorities to combat this increasing threat to our network.

Our equipment is protected by lightning arrestors to mitigate the worst effects of lightning. In susceptible areas, our overhead cables are fitted with equipment to divert birds and prevent strikes.

We constantly study where and why power cuts have occurred and these investigations influence our decisions when planning which parts of the network need investment.

