

Heat Pack

A simple guide to low carbon heating for domestic customers





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How this guide will help you

We're determined to tackle the climate crisis by facilitating the UK's 'Net Zero' carbon emissions by 2050 target (more on that on page 3). We've put this guide together to provide support to domestic customers who might be interested in learning more about decarbonising heating, or just 'Net Zero' in general.

We also want to listen to you to make sure we are answering the questions you have, so we've written this guide with a wide range of interested parties in mind. We've also teamed up with leading organisations to make sure we're meeting the needs and ambitions of all of our customers and stakeholders. If you have feedback or questions, please get in touch with us at innovation@ukpowernetworks.co.uk.

Our research so far has shown that there is always more support we can offer and that lack of awareness and education is a major barrier to low carbon heating. We hope this guide can act as a resource to equip readers with useful information that can help them in their decarbonisation journey, whatever form that might take.

We surveyed 412 industry stakeholders to understand their views on heating decarbonisation

87%

Said we should focus on supporting customers' decision making process on low carbon tech

75%

Said they would consider a heat pump first if they were to install low carbon heating





Learn more about our company, industry and how we're regulated




About us

We are the UK's largest Distribution Network Operator (DNO). We own, maintain and operate all of the wires, cables and substations of the electricity distribution network across London, the South East and East of England (highlighted orange below).

Our core role is to keep the power flowing safely, efficiently and reliably while providing excellent customer service to more than eight million homes and businesses in our areas.

We're not the same as commercial energy suppliers. We don't generate or buy electricity or sell it to customers. Energy consumers pay a small portion of their monthly bills - on average £6.32 a month - for us to transport energy to them.



92%	Customer satisfaction score 2020
.....	
21p	Per day cost. Industry lowest
.....	
99.99%	Network reliability



Facilitating the 'Net Zero' revolution

In 2019, the UK became the world's first major economy to make a legal commitment to reaching 'Net Zero' greenhouse gas emissions by 2050. The goal aims that by the end of that year, the amount of carbon we emit will be reduced to *almost* zero. Any remaining emissions will be offset by removing carbon from the atmosphere. It is an extensive challenge but we're determined to lead the way in our industry. Our regulator Ofgem has demonstrated leadership with their [decarbonisation action plan](#) and we fully support their approach. Right now, we're focusing our efforts on three main pillars.



Renewable energy

Electricity used to be only produced through high carbon fossil fuels like coal, oil and gas. This has changed dramatically in the last decade. Innovation and smart solutions are helping us connect more renewables than ever at lower cost. So far we've connected enough renewable energy to power a massive 3.5m homes. We forecast this to double by 2030, meaning 80% of the 8 million homes and businesses on our electricity network will be powered by renewable energy.



Electric transport

New technologies have brought electric vehicles (EVs) into the mainstream in recent years. Our latest forecasts predict up to 4.5m on our networks by 2030. Almost all these EVs will charge through our network, which creates some significant technical challenges. Our industry-leading [EV Strategy](#) explains how we are adapting to help facilitate the roll-out of electric vehicle charging in four steps: forecast, monitor, deploy a flexibility first approach and invest strategically in network upgrades.



Heat decarbonisation

Along with electricity generation and transport, heating homes and businesses is one of the largest greenhouse gas emitters across the UK, accounting for about a third of total emissions. We have an established role in enabling renewable energy and electric vehicles, and decarbonising heat is our next area of focus. Through our initial research, we have identified that providing more information and resources to stakeholders is a key role for us. View our [Heat Strategy](#) to learn more about our approach.

Decarbonising heat: vital for 'Net Zero'

When we talk about 'heating decarbonisation' or 'the decarbonisation of heat' we really mean removing a lot of the carbon that is currently emitted supplying heat to homes and businesses. Three quarters of our customers use natural gas for heating, producing significant greenhouse gas emissions. Hundreds of thousands more use oil or diesel, which is even more carbon intensive. There are two main ways to 'decarbonise' heating:

Switch more properties to low carbon heating

More properties using low carbon heating means lower carbon emissions. There are various different types of low carbon heating options, including heating through electricity, biomass, heat storage or hydrogen gas delivered through the traditional gas network. The Government's '[Ten Point Plan for a Green Industrial Revolution](#)' - published in December 2020 - sets out an ambition to drive the growth of low carbon hydrogen gas and scale up the electric [heat pump](#) market in the coming years. Hydrogen gas is not currently commercially available in the UK.

Reduce the overall need for heat

Using less energy for heat will lower carbon too. However, it's not simply about lowering energy demand by having everyone turn down their thermostats. We need to reduce the amount of energy required to achieve the same comfort level of heat - especially important during winter! This can be achieved by making energy efficiency improvements to buildings. There are a whole host of energy efficiency measures, including double glazing or extra loft insulation. The benefits of energy efficiency are long-lasting and there are no ongoing costs to consumers once installation is complete. Energy efficiency measures also go hand in hand with electric heating, as they help lower overall energy demand - taking the pressure of our equipment - while saving people money on their bills.



Commercially available low carbon heating options

Electric heat pumps

District heating with a low carbon source

Immersion boilers

Solar thermal panels

Biomass heating systems

Heat storage (such as a hot water tank)

[Find out more at Which? ▶](#)



Practical steps you can take

Here are some of the practical things you could consider to lower your energy use or your overall carbon footprint through electricity.

- **Install an electric heat pump** | As mentioned on the previous page, electric heat pumps are commercially available to consumers. Electric heating produces lower carbon emissions than using gas. [Read more.](#)
- **Upgrade energy efficiency** | You could consider installing extra insulation, or draught-proofing your windows. Anything that keeps the heat in your property will lower your energy use, and therefore the amount of carbon produced to heat your home. While some involve physical upgrades, other energy efficiency measures are relatively inexpensive. Simple measures like having thicker curtains or draught proofing your door can make a big difference. [Read more.](#)
- **Installing rooftop solar panels** | With solar panels you could generate your own renewable electricity, meaning your property will ‘import’ less energy from the grid. Overall, this means lower carbon emissions. You may even consider pairing home energy generation with a domestic battery. A battery would allow you to store the energy they produce for later, meaning you can be even more carbon and cost efficient. [Read more.](#)
- **Use less energy** | This seems like a simple one, but making sure to turn off your lights before you leave your home, using smart heating controls or having the heating clock on slightly later will help you use less energy, save money and lower carbon emissions. It’s also free! You can also request a free [smart meter](#) from your energy supplier to help you track your energy use more accurately.

How we can help

Generally, we'll help most customers by ensuring the wires and cables feeding their homes are suitable for the new electrical equipment for them should they wish to switch to a low carbon heating source.

For domestic properties, it is likely that your existing electricity connection is sufficient to install an electric heating solution. In some situations your property may require a fuse upgrade. This is free in many cases, but depends on the circumstances. For customers who need some advice, our [Ask the Expert](#) form can be used for ad-hoc or specific enquiries. If you would prefer to speak to someone, our phone lines are open 8:30-17:00 Monday-Friday at 0203 324 1460. If you would prefer to contact us by email, we will respond to queries within 48 hours:

connections.gateway@ukpowernetworks.co.uk.

More detailed information can be found on our [Connections Guides](#) webpage.

A note on costs - these can vary considerably depending on your project. The best way to budget your project is to apply for a connection upgrade and we'll send you a quote.

Pre-application support

If you need support before making a connections application, there are a number of ways we can help you. As well as the contact options above, you can book a one-to-one meeting. Other services are noted [here](#).

If you need to make a connection request, please have the following information available:

- Property and address details
- Reference number if you have received a quote from us previously
- Details of how much power you need
- A location map of where the property or work site is





Financial support and free guidance



Simple Energy Advice

GOVERNMENT ENDORSED ADVICE

The Simple Energy Advice website is an extensive resource which can be used to identify opportunities for financial support grants. New government initiatives and grants are being updated all the time, so we've included some links below that were accurate at the time of publication.

Trials for property owners

Ovo Energy Zero Carbon Heating Trial: the company is running the UK's largest zero-carbon heating trial. They are looking for 250 households in the South East to take part. [Read more](#)

The USER trial is trialling smart hubs in homes to help use energy more efficiently by using smart hot water cylinders. The project is aiming to create a virtual power plant with 350 homes. [Read more](#)

Homeowners are able to apply get to £5,000 of vouchers for energy-efficient home improvement. Double glazing, insulation, energy-efficient doors and heat pumps are among the improvements. [Read more](#)

Communiheat is running in Barcombe, East Sussex, looking at future heat requirements for rural communities. This project is a partnership between us, Buro Happold and local community group Ovesco. [Read more](#)

Advice and free support

HEET (Home Energy Efficiency Training) is a not-for-profit working in the London boroughs of Waltham Forest, Redbridge and Enfield. You can ask for help to save money on fuel bills, stay warm & healthy at home, save energy, and cut carbon emissions. [Read more](#)

Community energy

Community Energy groups are established across the region, they are not-for-profit social enterprises that aim to empower local communities to develop their own renewable energy and provide local energy advice. To find your local groups go to the two regional organisations [Community Energy South](#) and [Community Energy London](#)



Frequently asked questions

Who are UK Power Networks?

We are the UK's largest distribution network operator (DNO). We don't generate or supply electricity. We're responsible for delivering it safely, reliably and efficiently into your home. [Find out more about us.](#)

Am I in UK Power Networks' areas?

We cover London, the South East and East of England. There are six Distribution Network Operators in different areas of the UK. See the [who is my DNO?](#) postcode checker to find out. If you're not in our areas, please contact your regional DNO for support.

How can I reduce my energy bill?

You can reduce your bill through using less energy. You could consider upgrading your home with energy efficiency measures like extra loft insulation, or by using low energy appliances, for example. The [Energy Saving Trust](#) works with consumers to help lower their bills. Please also see more about our [Power Partners](#) Fund, or register for [Priority Services](#) for extra support during power cuts.

What can we do to tackle the climate crisis?

The largest carbon emitters are transport, heating and energy supply. We are working to 'decarbonise' these areas and you can get involved as a consumer. See [pages 3, 4 & 5.](#)

I want to do my bit for climate change and switch to low carbon heating. How do I do that?

There are many ways to switch to a low-carbon heating alternative. See [pages 4 & 5.](#)

What technologies will help me save money?

There are numerous home technology options, such as smart meters, that can help you save money. See [page 5.](#)

Do I need to do anything with my electricity connection if I decide to get electric heating?

You may need to upgrade your main electrical fuse, or take some other steps. Fuse upgrades are free in the majority of cases. See our dedicated [heat pump page](#) for more. There's also more information at our [fuse upgrade](#) page. If you're interested in low carbon technology but the time isn't right, you may consider getting a free fuse upgrade from us now. This can help to 'future proof' your home electricity supply, allowing you to more easily install low carbon technology - like electric heating or an electric vehicle charger - in the future.

What are the up-front costs of switching to electric heating?

There might be some costs to upgrade your property's electrical supply so it can accommodate a low carbon heating source, but these do vary depending on your specific situation. See [page 6](#) to find out how we can help assess your situation.



Frequently asked questions

What about energy efficiency?

Energy efficiency is an important part of decarbonising heat. See [page 4](#).

What if I already have an electric vehicle?

There's no reason people with electric vehicles can't also decarbonise their heating, so long as their property's electrical supply is ready to support it

Why are electricity networks talking about heating?

The climate crisis is one of the most significant issues of our time. As we move towards the 2050 Net Zero carbon emissions target, millions of people across the UK will likely switch from mainly high carbon natural gas to mainly low carbon electric heating. This creates significant technical challenges, meaning the UK's six electricity network operators will play a vital role in making sure the electricity network can facilitate the transition. As outlined in our [Heat Strategy](#), we believe we

will play this role in three key areas: informing government policy through provision of data and evidence, providing a great service experience for people who want to connect low carbon heating, and developing a toolbox of smart solutions that means our network will be prepared.

What is 'Net Zero'?

'Net Zero' refers to the UK Government's Net Zero carbon emissions target by 2050. The goal aims that by the year 2050, the amount of carbon we emit will be offset by removing an equal amount carbon from the atmosphere.

What is low carbon heating?

Low carbon heating is any way to heat a property that emits significantly less carbon emissions than standard alternatives. At the moment, the majority of households use natural gas for heating and cooking. This produces significant carbon emissions and accelerates climate change. There are many different types of low carbon heating

alternatives, including electric heating, some form of energy storage or - in the future - a different type of low emission gas such as hydrogen.

Almost everyone has a gas boiler. Why bother switching to a low carbon alternative?

Gas boilers are currently an efficient and relatively cheap way to heat your home. However, all this gas burning leads to significant carbon emissions which contribute to global warming. As a result, government policy, changing consumer attitudes and new technologies in the future will likely make it more and more attractive to switch to low carbon heating. The Government's recent '[Ten Point Plan](#) for a Green Industrial Revolution' sets out an ambition to support low carbon heating in two major ways in the coming years: driving the growth of low carbon hydrogen gas and scaling up the electric heat pump market.

Further resources

Energy Savings Trust

Advice on saving energy at home

Heat Pump Association

Information about heat pumps

Making the Most of Local Energy

A previous UK Power Networks Publication

Green Homes Grant

Government funding for home improvements

Our Heat Strategy

Published March 2020

Energy Networks Association

EV and Heat Pump notification process

Which? Guide

Heating with renewable energy

Simple Energy Advice

Government-backed resource with advice on low carbon heating options

Domestic RHI Scheme

Renewable Heat Incentive

Non-Domestic RHI Scheme

RHI for businesses

Zero Carbon Heating Trial

Opportunity for free technology

Thank you!

We'd like to extend our enormous gratitude to our collaborators who helped us shape and co-design our Heat Pack. Without your valuable input, it wouldn't have been possible.



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