

Your guide to electric vehicle charging

Helping you to get connected.

At Northern Powergrid it's our job to keep the power flowing for more than 8 million people across the North East, Yorkshire and northern Lincolnshire. We connect people to the electricity network and if your power is ever interrupted, we'll be there to fix it, 24 hours a day, 365 days a year.

What's driving the EV revolution?

There are already more than 3,000 electric vehicle (EV) chargers installed across our region. With many of our local authorities declaring climate emergencies, net zero targets and the government's ban on diesel and petrol engines by 2035, we expect to see the number of EVs on our roads and motorways increasing substantially over the next 15-20 years.

At Northern Powergrid we have an important role to play in enabling the low carbon transition and supporting the electrification of transport across our region.

We have seen a significant rise in the number of applications we are receiving for new and different types of EV charging installations, driven by the increasing popularity of electric

and hybrid vehicles and net zero targets. We have been working with our customers and stakeholders to understand how we can support them.

***i* DID YOU KNOW?**

Our network spans from the Scottish borders to northern Lincolnshire, from the North Sea coast, across the Yorkshire Dales and delivers power to more than 3.9 million homes and businesses. Our 2,700 employees live and work in the region, powering everyday life for the communities we serve.



We already have more than 3,000 EV chargers connected to our network.



By 2050 there could be 35 million Electric Vehicles on our roads, how many new charging points would be needed to accommodate them?



Helping you to get connected

We will always provide you with a connection when an application is made, but we want to help you make informed decisions and ensure you understand the different types of EV charging solutions currently available.

This guide is designed to help a wide range of our customers - from those seeking to install an EV charger at home to customers looking for commercial solutions to support larger-scale EV charging. Our core aim is to offer practical and straightforward guidance on how to apply for different types of EV connections, as well as signposting additional information that can be found online.


Reading this guide will help you to understand more about:

- The different types of charging most often used for EVs
- What to consider before making an EV connection application on our network
- The anticipated timeframes and potential costs for securing an EV connection

Types of EV chargers

There are three types of charging solutions commonly associated with EVs – Slow, Fast and Rapid. It is important to understand the differences between them to ensure that, when you make a new connection application, you choose the option that best suits your needs.

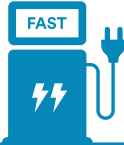
This is how the three different charging solutions stack up in terms of power and charge time:



SLOW CHARGER

Rated power:
3-7kW


Charge time:
(typical daily use)
1.5-3hrs



FAST CHARGER

Rated power:
7kW-22kW

Charge time:
(typical daily use)
0.5-1.5hrs



RAPID CHARGER

Rated power:
43kW-475kW

Charge time:
(empty to full)
As little as 10 minutes

	SLOW	FAST	RAPID
Power Rating	3.5–7kW	7–22kW	43–50kW or more
Charger Type	AC	AC and DC	AC and DC
Time to charge (empty to full)	6–11h	2–6hr	48–56min or less
Time to charge (typical daily use of 10kWh)	1.5–3h	0.5–1.5hr	Less than 15min
Range added in 15 min	3–7miles	7–23 miles	45–53+ miles

A practical example

If you have 50kW of spare network capacity at your site, then you could install 14 Slow, 7 Fast, or 1 Rapid charger. This affects how many vehicles can be charged at the same time.



When making your decision, it's important to think about how long people are likely to be charging for. At an office site, for example, people could be parked up for 4-8 hours at a time and a Slow charger could meet their need and be better for their EV batteries.

You may also want to talk to us about alternative solutions – with solar PV, storage (e.g. onsite batteries) or a flexibility arrangement, you might be able to offset the increase in electricity demand.



Home and residential charging

This section is for anyone thinking of installing an EV charging point at their home.

If you have off-street parking, charging at home is often the most convenient way to charge your EV.

Most homes connected to Northern Powergrid's network can accommodate Slow chargers, which means adding an EV charge point should be relatively straightforward.

Where to start

To get an EV charge point installed at your home, we recommend you appoint a reputable charge point installer, who can take you through the application process from start to finish. A list of authorised installers is published on the government's Electric Vehicle Homecharge Scheme (EVHS) website.

You may also be eligible for some funding towards the cost of installing your EV charge point from the Energy Saving Trust and the Office for Low Emission Vehicles, [page 17](#) of this guide provides links to the relevant websites.

EVHS can provide grant funding of up to 75% towards the cost of installing electric vehicle charge points at domestic properties across the UK, providing it is a smart charge point. Smart charge points coupled with the right electricity tariffs can help you save money and help you to help us better manage our electricity network.

Once you have appointed an installer, they will conduct an assessment of your property to determine whether your property can accommodate an EV charger. During this assessment your installer will look at where your vehicle is usually parked and if there is a power source close by before deciding where to install your charge point.

Your installer will then need to complete the relevant form to notify us of your intention to install an EV charger and email it to getconnected@northernpowergrid.com.

The notification form can be found on the Energy Network Association (ENA) website, there's a link on page 17.

In a very small number of cases and dependent on your location, we may need to undertake some work to upgrade our network so that it can accommodate your charging point. Your installer will identify this during his initial assessment, talk to you about what this means and then make an application to increase the size of your connection via our website.

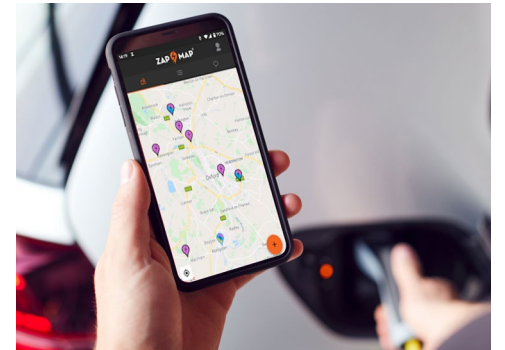


If you don't have any off-street parking, you can apply to your local authority for a charger to be installed on your street. Information on how to do this is available on the GOV.UK website.

If you are building a new home or development, you can include an EV charger as part of your new connections application. To do this, you must use a specific application form, which can be found on our website.

You can find out where your nearest public EV charger is online? If you want to see a list of public EV chargers near you, visit this website:

📄 zap-map.com



Destination and commercial charging

This section is for anyone thinking of installing EV chargers at their business, place of work or other similar locations.

Businesses, retailers and employers can all benefit from installing EV charging at their sites. Whether its for customers who want to charge their EVs while doing the weekly shop or employees charging whilst at work, more and more charging points are being installed at non-domestic or residential properties.

Typically, destination chargers can be Slow, Fast or a mixture of both, depending on the duration of time the cars will likely be standing stationary and charging.



Think about installing Vehicle to Grid (V2G) chargers. If you have a fleet of vehicles, V2G could help you utilise and monetise any spare capacity in your vehicle's batteries. For more information see our [FAQs](#).

Where to start

To retrofit EV chargers to an existing site, you should appoint an accredited installer. They will assess the existing electrical demand on your premises and estimate how much extra power you will require.

If this is more than your existing electricity supply can accommodate, then your installer will need to apply to Northern Powergrid for an increase in the size of your connection. More information is available on our website.

Businesses, charities and public sector organisations should check if they are eligible for government funding via the government's Workplace Charging Scheme. This scheme provides financial support towards the up-front costs of the purchase and installation of EV charge points.

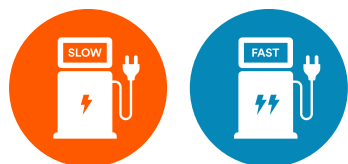
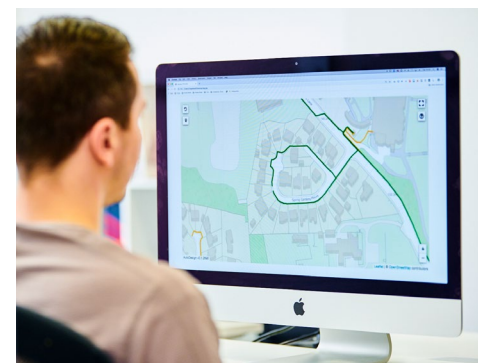
If you are building new premises or a new development, you should include details of any EV charging points you intend to install when you make a new application for your connection. If you need any help or advice designing your scheme, you can [talk to our experts](#) who will be happy to help.



Helping you get connected

Our AutoDesign tool can help you to identify the best locations to install EV charge points using a simple green, amber, red indicator. It gives you full visibility of our low voltage network and allows you generate your own free of charge budget estimates and get an indicative cost for your connection in minutes.

🔗 northernpowergrid.com/auto-design



Charging hubs

This section is for anyone considering installing multiple charging points or building EV charging hubs.



Load sharing schemes can be implemented on your site to make the best use of your connection. These share the available capacity across your site's EV chargers but still ensure your vehicles are charged when required. Some advanced load sharing schemes communicate with the vehicles battery to better optimise charge sharing.



When costly upgrades are required, Northern Powergrid may be able to offer you a flexible connection. At certain times of the year, you may be asked to reduce your demand for short periods to help ease pressure on the network, but in return, this will give you a cheaper connection cost.

Charging hubs are often located at existing petrol forecourts and at motorway service stations and are used by EV drivers in a similar way to conventional vehicles - to fill up quickly.

As a result, Rapid charging is prevalent but can be complemented with Slow and Fast chargers too. The increased size and quantity of the EV chargers installed at charging hubs can mean the size of supply required is measured in Megawatts (MW) rather than Kilowatts (kW).

Where to start

The electricity connections at existing petrol fuel stations were never designed to accomodate the kind of demand EV charging hubs will require. Therefore, we recommend you talk to our team at an early stage and before making an application to explore your options and identify the best solutions.

We publish contact details for all our connections experts on our website, we also hold regular connections surgeries where you can sit down with one of our team to discuss any planned projects.

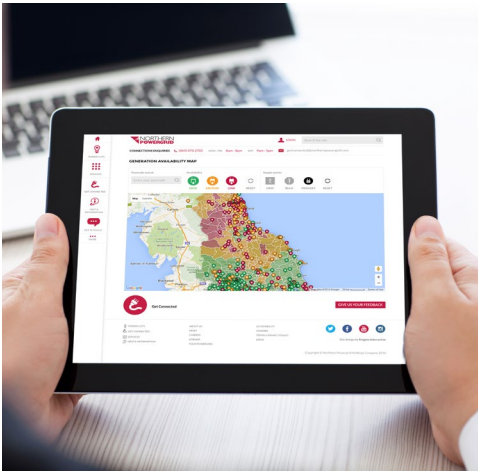
- [northernpowergrid.com/contact-our-connections-engineers](https://www.northernpowergrid.com/contact-our-connections-engineers)
- [northernpowergrid.com/customer-events-and-surgeries](https://www.northernpowergrid.com/customer-events-and-surgeries)



Our demand heat map shows the available network capacity to connect large-scale projects. You can consult this before making an application for a new connection or contact our team for support and advice.

When you're ready to make an new application or increase the size of your connection contact our team who can advise you on the correct application process.

- [northernpowergrid.com/demand-availability-map](https://www.northernpowergrid.com/demand-availability-map)



On-street charging

This section will be useful for local authorities, planners and anyone looking to install on-street charging.

EV charging points can be added to existing unmetered supplies, such as streetlights and telecoms cabinets. This is a solution already being adopted by some local authorities with existing infrastructure, but it is also possible to install ‘pop-up’ on-street columns which are often owned by third party charging companies.

Where to start

You should talk to our team when considering installing on-street charging. We are already working closely with the local authorities in our region to support their EV roll-out plans and help them to identify the right charging solutions.

There are some barriers with on-street charging that should be taken into account before making an application, such as low power outputs (typically less than 1.4kW); the position of the unmetered equipment from the kerb edge, which may be a trip hazard and the possible need for each EV driver to have a smart charge cable in order to meter their usage.

Separate feeder pillars are an alternative option, where Slow and Fast chargers can easily be accommodated. Typically, a new connection is provided to a feeder pillar and from there, several chargers can be made available.

If you do decide to go ahead with installing on-street charging, there may be funding available. You can find more information on the GOV.UK website.

ⓘ DID YOU KNOW?

We are not the only company who can provide a connection to our network. Our customers are free to compare our prices and service with Independent Connections Providers (ICPs) who can also deliver some or all of the work. We are committed to supporting fair and open competition in connections and provide a list of accredited ICPs active in our region on our website.

📄 northernpowergrid.com/alternative-providers



AutoDesign

Our AutoDesign tool can help you identify the best locations to connect new EV chargers and get a free budget estimate cost for your connection in minutes rather than days.

You can also book a surgery with one of our connections engineers who can provide upfront advice and support with your EV project.

📄 northernpowergrid.com/auto-design



Typical costs



The cost of connecting any EV charging infrastructure depends on a number of different factors.

For home or residential charging, things to think about include how quickly you need to charge your vehicle, the wiring in your property and whether you will be charging more than one vehicle, all of these factors can affect the cost and time it will take to secure a new connection.

For commercial or destination charging, the number of vehicles you will be charging at the same time, the number of chargers you require and how fast you need to charge your vehicles are also contributing factors. The cost and timescales to connect could also be affected by any additional works that need to be carried out, such as additional street works, legal costs and need for new infrastructure like substations.

Remember that you may be eligible for a grant towards the cost of installing your new charging point, which could help offset some of the total costs.

The table opposite provides an indicative overview of the cost of securing a new EV connection on our network. This should be treated as a guide only, our team is always will to work with you to help you identify the most viable and cost-effective solutions.

Table 1: Indicative costs for a new connection

	Unmetered	Small	Medium	Large	Very large
Typical for	Street lighting	Domestic property single phase connection	Small commercial property e.g. petrol station, multi-storey car park, three phase connection	Medium commercial e.g. motorway services, future petrol stations and car parks LV current transformer metered connection	Industrial e.g. factories and future motorway services HV current transformer metered connection
Capacity sought	<1.4kW*	<18kW	<55kW	<276kW (fuse) OR <1.1MW (air circuit breaker)	<8MW
Typical charger power rating	<1.4kW*	up to 7kW	up to 43kW	120-350kW	350kW
Average time to quotation	<20 working days	5 to 17 working days	17 working days	24-54 working days	24-54 working days
Average time to connect following payment	5 weeks	10 weeks	19 weeks	19 to 29 weeks	29 weeks
Average price	c.£600 to £3,000	c.£600 to £1,500	c.£11,000	c.£11,000 to £95,000	£95,000+**
Time to charge (for typical daily use of 10kW)***	7¼ hours	1 ½ hours	15mins	2-5mins	2mins

* More capacity may be released following a site specific assessment to determine whether the street light cut-out can safely accommodate the new load under this operating cycle.

** More expensive if the location of the sought connection is far from a primary substation.

*** Based on assumed battery capacity of 40kWh.

Frequently asked questions

Which EV charger should I install?

There are three types of charging solutions commonly associated with EVs, Slow, Fast and Rapid. It's important to understand the differences between them to ensure that when you make a connection application, you choose the option that best suits your needs. Being equipped with this information could help speed up your application and make sure the associated work is completed as cost-effectively as possible.

What will it cost me to install an EV charger?

In many cases installing a Slow EV charger (rated power 3-7kW) at a domestic property will not require a connection upgrade and so there will be no charge from us, although you'll still have to pay your chosen installer. When the connection or network requires an upgrade, you may be charged for some or all of the work involved. For new connections it typically ranges from around £1,500 for a connection suitable for slow chargers to £95,000+ for a connection suitable for Rapid chargers.

What happens if I want to charge two electric vehicles at my property?

Your charge point installer is responsible to make sure that the existing supply is capable of supplying the full property's electrical demand including any planned EV chargers. Where this is not the case, you can have a managed charging system, install smaller chargers or apply to Northern Powergrid for a connection upgrade.

What are my options for on street charging?

In most cases you'll need to apply to your local authority for a charger to be installed on a public highway. However, you may want to consider if there are any destination chargers or charging hubs nearby that you could use instead.

What is smart charging?

Smart charging is where an intelligent system controls when and how much an Electric Vehicle (EV) will charge. This can help the grid better cope with increased demand from new technologies and in turn help you charge at a lower cost.

What is V2G?

V2G stands for Vehicle to Grid and is the next generation of EV charger technology. V2G can take power from certain Electric Vehicle (EV) models and sell it back to the grid at times of high demand, enabling individuals to earn an additional income.

Should I talk to Northern Powergrid before electrifying my fleet?

Talking to Northern Powergrid during the scoping stage can help you to electrify your fleet in a more timely and cost-efficient way. Consider booking one of our connections surgeries where you can sit down with our engineers to discuss your project, we will work with you to identify any challenges ahead of time and support you during the delivery of your connection.

What's the difference between AC & DC power?

Alternating Current (AC) is what the powergrid supplies homes and businesses with. Direct Current (DC) is the type of power that batteries use and supply. Slow chargers are AC with the vehicle converting this to DC to charge the vehicles battery. Rapid chargers convert power from AC to DC to charge the vehicles battery. The reason for the difference is larger powered DC chargers are expensive and better suited to being static rather than part of a vehicle.

Useful links and resources



ENA application form

www.energynetworks.org/electricity/futures/electric-vehicles-and-heat-pumps.html

Electric Vehicle Homecharge Scheme (EVHS)

www.gov.uk/government/publications/electric-vehicle-homecharge-scheme-guidance-for-customers-version-22

EVHS authorised installers

www.gov.uk/government/publications/electric-vehicle-homecharge-scheme-authorised-installers

EVHS eligibility criteria

assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/514339/electric-vehicle-homecharge-scheme-guidance-for-customers-2016.pdf

GOV.UK on-street residential chargepoint scheme guidance for local authorities

www.gov.uk/government/publications/grants-for-local-authorities-to-provide-residential-on-street-chargepoints

Office for Low Emissions Vehicles (OLEV)

www.gov.uk/government/collections/government-grants-for-low-emission-vehicles

Workplace Charging Scheme guidance

www.gov.uk/government/publications/workplace-charging-scheme-guidance-for-applicants-installers-and-manufacturers

Contact us

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 northernpowergrid.com/get-connected