

# Electric vehicle guide

Helping you understand the electric vehicle infrastructure

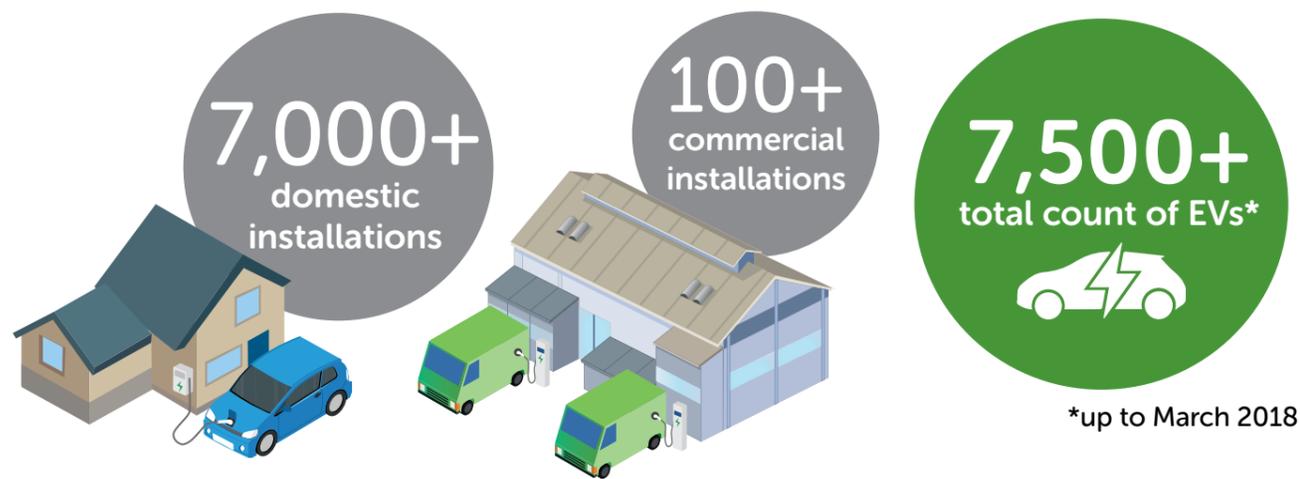


**Scottish & Southern**  
Electricity Networks

# The growth of electric vehicles

The last four years have seen a remarkable surge in demand for electric vehicles in the UK – new registrations of plug-in cars increased from 3,500 in 2013 to more than 160,000 by July 2018.

The UK Government has set out clear expectations in their 'Road to Zero' strategy that Electric Vehicles (EVs) are to contribute towards reducing carbon emissions. Our innovation project, **My Electric Avenue**, highlighted the anticipated impacts from rising uptake of EVs and charging points, based on effect 'clusters' of EV drivers have on electricity demand.



Customers now have more options when it comes to choosing how to charge their EV. Now, drivers can install 7kW chargers, delivering a faster charge but with a greater impact on the network.

Average households would usually consume 2kW, therefore with an EV charger households across GB have the potential to triple the load at a local level.

## What's driving the change?

- UK Government policies: ending sale of petrol and diesel cars in 2040 and investment in EV charging infrastructure to reduce carbon emissions and improve air quality
- Improvements in battery technology and longer 'range' from charge
- Consumer experience and community influence
- Vehicle manufacturers offering more pure-electric and hybrid models, some making commitments to stop manufacturing petrol and diesel cars after 2019 (Volvo) and 2020 (Jaguar Land Rover) with commitments from Volkswagen and Mercedes-Benz to release many more EV models by 2025

## Our guide helps you to understand

- The different types of charging and impact they can have on the electricity network
- Approximate timings and cost for getting your EV charging point connected
- Step by step process on how to get your EV charging point connected

## How can SSEN help?

Scottish and Southern Electricity Networks (SSEN) owns, operates and maintains the electricity cables and lines that bring electricity to more than 3 million customers across central southern England and 770,000 customers across north of Scotland.

To help us manage the network it's important for us to know when customers are installing EV charge points, so that we can continue to make sure we keep the lights on in your area.

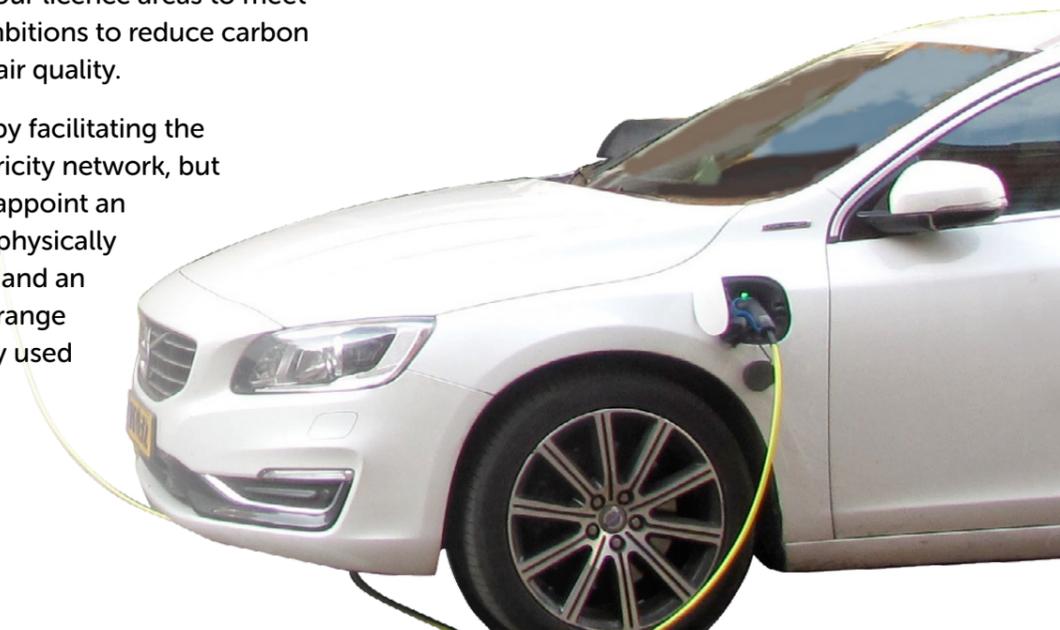
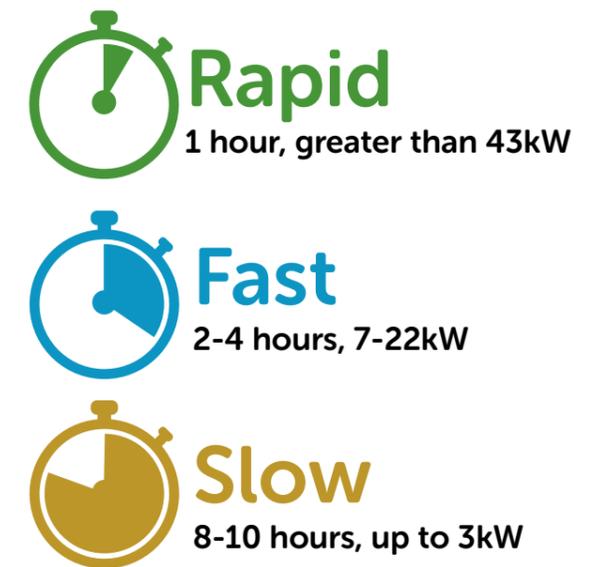
We are keen to work with customers, businesses and local authorities in our licence areas to meet the UK governments ambitions to reduce carbon emissions and improve air quality.

We support customers by facilitating the connection to the electricity network, but customers will need to appoint an electrical contractor to physically install the charge point, and an electricity supplier to arrange payments for the energy used by the EV charge point.

## Types of EV charging

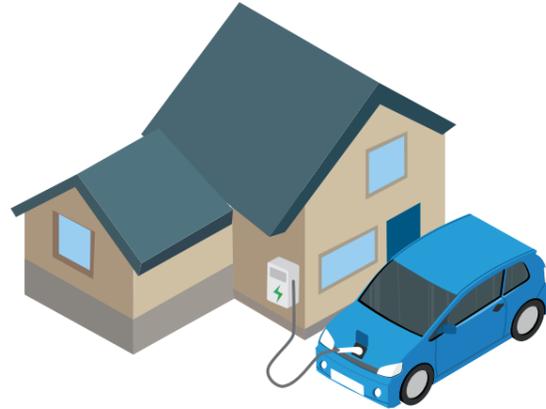
EVs can be charged using public charging points, on street, at workplaces (if provided by employers) and at home. The length of time it takes to charge an EV depends on how much electrical power (kW) the charge point delivers. Currently there are three types of charging points, each requires a different amount of electrical power and so each varies in time taken to charge.

Based on a standard 30KWh EV battery, your charging point could be:



# Charging at home

If you are thinking of getting an EV charging point installed in your home, this section highlights important information for you to consider.



## Key items to consider

### Electrical wiring

Your home wiring will need to be checked by an approved electrical contractor to make sure that it is suitable to support the extra power required to charge an electric vehicle. Some older properties may not have sufficient wiring to support an EV charging point.

### Housing type

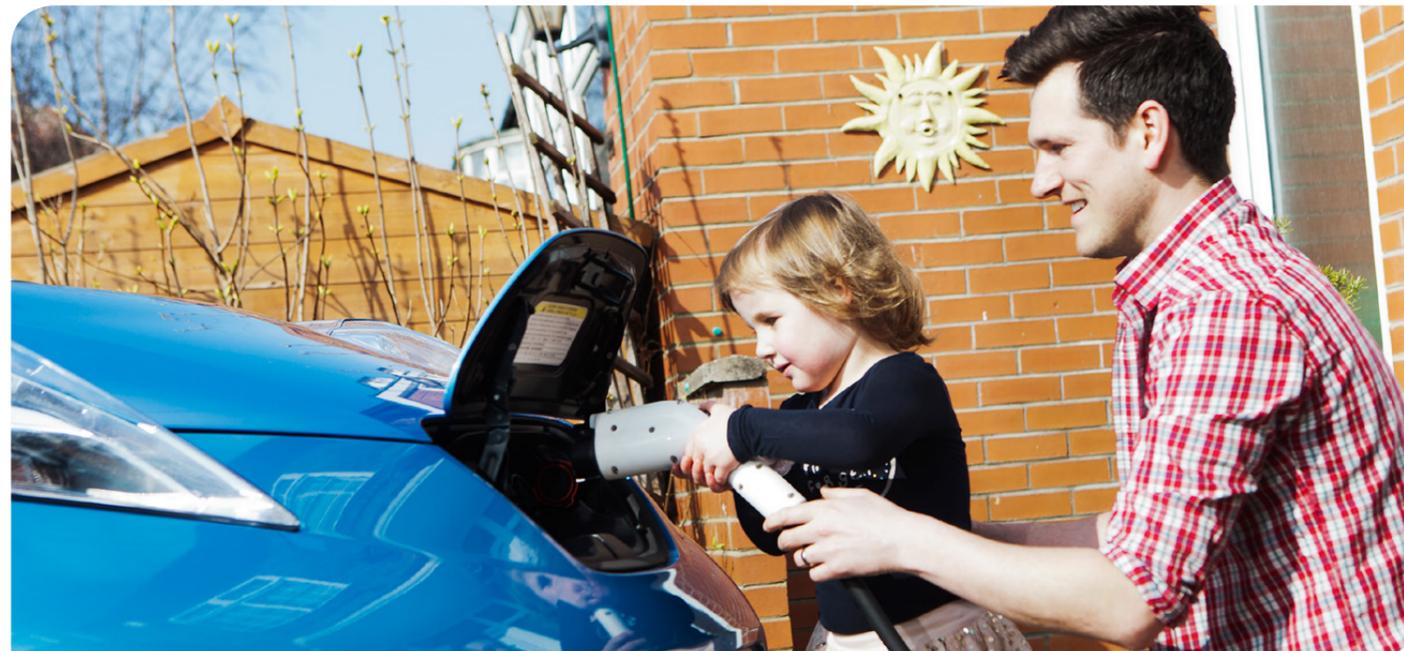
This will have an impact on how you can park, and therefore what options you have to charge your EV. Living in a semi or detached house with parking adjacent or near your home is ideal for a charging point. If you live in a terraced house, or high rise building/flat it is unlikely you will be able to connect your charging point to the wiring in your home (under your electricity meter). In these scenarios, you may need to apply for an electricity connection to be able to charge your EV from your parking space (away from your home).

### Off-road parking

Your charge point will need a power source, therefore parking close to your home or a building with power (i.e. garage) is ideal. If you don't have parking next to your home or a garage, then we recommend you speak to an approved electrical contractor. EV charging is still possible where you have an allocated car space in a car park, though it is not guaranteed; as securing a power source for your charging point can be complicated. In some cases this may require that you apply for a new connection to our network.

### Renting your home

As a tenant it's important to understand your rights when it comes to installing a charging point. It is widely recommended that you have the home owner's permission to install a charging point. If you have this, please note that you will still need to pay for the charging point yourself (unless agreed otherwise with the homeowner). If you are unable to connect your charger to your home wiring (living in terrace or flat) then you will also be liable for the cost of a new connection, to deliver power to your allocated parking space.



## What's the process?

For EV charge points being installed in domestic properties, you will need to:

### Step 1

Contact an accredited electric vehicle charging point installer to confirm if your home electricity supply is able to support a charging point. If they confirm that the equipment that joins your home to the electricity network (your 'cut out') can support the connection, then you can arrange to have the charging point installed. If you need an upgrade, your installer can contact us for a quote.

### Step 2

Your appointed electric vehicle charging point installer installs your chosen charge point.

### Step 3

Your installer should notify SSEN that you have installed an EV charge point by completing the ENA form and sending to [connections@ssen.co.uk](mailto:connections@ssen.co.uk)



## How much would it cost?

If you are installing a domestic EV charging point, you will need to find an accredited electric vehicle charging point installer to buy the charging point and install it for you. SSEN does not provide or install domestic charging points.

Depending on your electrical wiring, you can choose to have a fast charger or a slow charger, both of which will be available from installers at various prices.

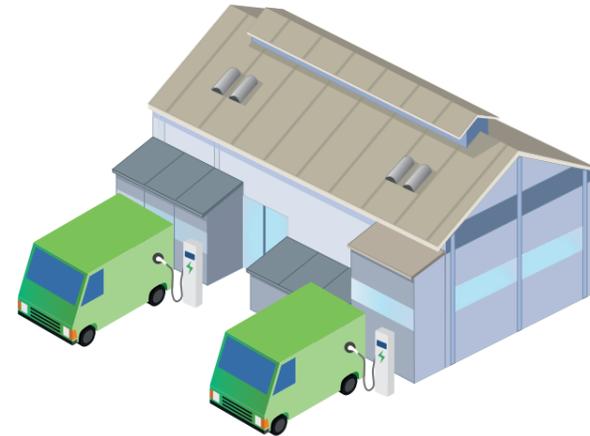
The cost of connecting your EV charging point depends on how quickly you want to charge, your home's wiring, how much electricity your home uses, and if you have multiple EVs at one household then how many charging points you want to have.

You may be eligible for a grant towards the cost of a charging point. Find out more on page 11.

# Charging at Work

## Slow, fast or Rapid Charging

If you are interested in installing EV charging points at a place of business, this section outlines key information for you to consider.



### Overall site load

- If you're looking to connect your charging points to the electricity infrastructure already supplying your site, you'll need to check if it will be sufficient to meet your charging needs. Charging electric vehicles will mean your site will need more power than it does currently. If it doesn't, we will need to reinforce the network to facilitate your connection, or you will need to investigate options for managing the load within existing limits. We advise getting in touch with us to discuss your site with your initial plans (i.e. when you have decided how many and what type of charger you would like) and we can discuss the most efficient way of connecting your charging points.

### Agreements (load and wayleave – wayleave also applicable to domestic)

- If your workplace is on an industrial or business park where you share the electrical load with other companies, you may have legal agreements in place based on how much electricity your office uses. If this is the case you will need to check these documents to see if they will impact on your plans. For more advice we would recommend you contact an electrical contractor and if relevant, a legal representative.

- You may also need to consider whether the land owner will need to be contacted to provide permission for the charging points to be connected. The electricity cables that we install to power your charging points may cross land owned by different landowners. We need legal agreements (i.e. wayleaves or easements) with landowners to allow us to maintain those cables after they have been installed.

### Location on site

- You may find that an area which appears to be convenient for the charging points, may not be for the electricity cables that will need to be connected to power them. Get in touch with us for a pre-application meeting (at [connectionsfeedback@sse.co.uk](mailto:connectionsfeedback@sse.co.uk)) and we can help you identify the most efficient place to install your charging points.

### Future-proofing your site

- The infrastructure needed to deliver your slow chargers today, will likely not be sufficient to supply rapid chargers in future. We will only provide the infrastructure appropriate for what you apply for, so it is worth considering long term plans to save the need to apply and pay again for new connections or upgrades in future.

## Did you know you have a choice?

You can choose who you want to complete your EV installation connection, whether it's for your home, business or local area. There are Independent Connection Providers (ICPs) or Independent Distribution Network Operators who can carry out the works for you. Find out more on our website:

[www.ssen.co.uk/ConnectionsYouHaveaChoice/](http://www.ssen.co.uk/ConnectionsYouHaveaChoice/)



## How much could it cost?

The cost of connecting your EV charging point depends on:

1. How many EV charging points do you want to connect?
2. How many vehicles you want to charge at the same time?
3. How quickly do you want to charge?

Other factors that could affect the overall cost could be additional costs of street works to provide your connection (i.e. road closure and excavation – particularly due to ground types), and legal costs for easements or wayleaves, if they are required. Finally, if you're looking to install charging points that will require a lot of electrical power (i.e. several rapid chargers) your connection may need a new substation which will need planning permission. You may be eligible for a grant towards the cost of a charging point. Find out more on page 11.

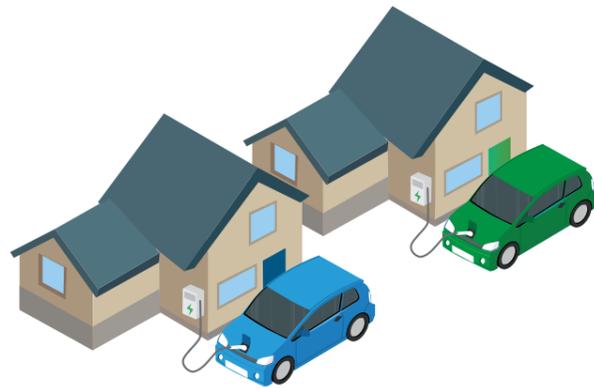


# What's the process and how long will it take?

This section explains the step by step process, approximate costs and time for the power supply to be connected.

## Residential charging

You can contact us for information before applying for any of the connections described above. If you are installing a domestic charger behind existing connections then often you will need to just notify us, but in some cases it may require an application to be made. To notify us download an [ENA form](#) and email to [connections@ssen.com](mailto:connections@ssen.com). If the electric vehicle charging point installer advises that your 'cut out' is not able to accommodate a charge point, then you can choose to upgrade your supply. To upgrade your supply to support a new EV charge point, your EV charge point installer will need to:



1. Contact us at 0800 048 3516 or [connections@ssen.com](mailto:connections@ssen.com) with a completed form, including the MPAN number, maximum demand of the property including the EV charge point (which can be taken from a load survey), the property's supply capacity, details of the new charge point installation (kVA/Amps) and earthing arrangements for the charge point.
2. If our assessments identify that the load at your property can support the charge point we will notify your installer and ask them to notify once installation is complete. If work is needed to facilitate the extra load needed to support the EV charge point, then we will initiate an application for a load increase and produce a connection offer for the work.

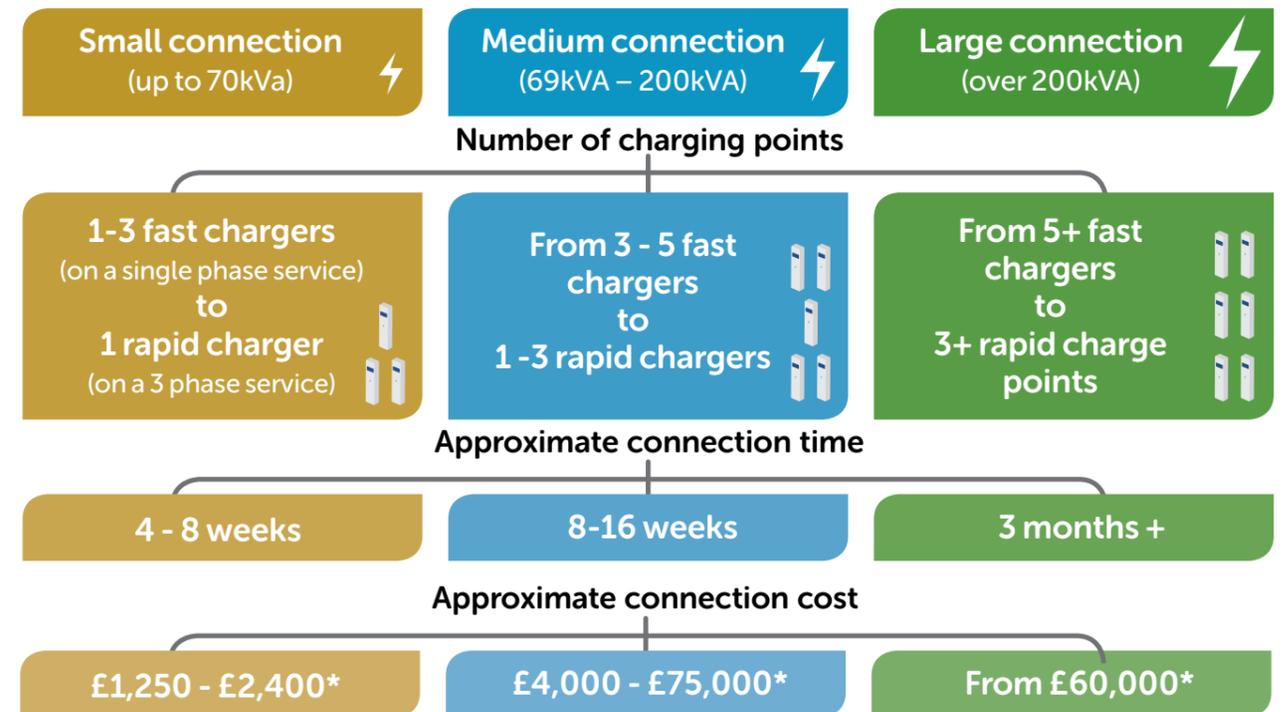
3. Your installer will receive our Connection Offer and you can choose to accept and progress. Your installer will need to pay for any works solely provided to enable the charge point and the standard costs for reinforcement (if required).



## Commercial and public charging

1. Decide number, size and type of charge points, decide where you want to connect them on your site. If you don't already have a supply where you are looking to connect your charge points, you will need to apply for a new demand connection. If you already have a supply where you want to connect your charge points, you may need to apply for an increase in load\*. Please note our advice regarding pre-existing agreements under 'Charging at Work'.
2. Register and apply using the [ENA form](#) and send to [connections@ssen.com](mailto:connections@ssen.com)
3. Once we complete our network studies and provide a Connection Offer, you can accept the offer and pay for the connection. You can choose who you wish to undertake the works. Find out more on our website: [www.ssen.co.uk/ConnectionsYouHaveaChoice/](http://www.ssen.co.uk/ConnectionsYouHaveaChoice/)
4. Appoint an approved electrical contractor to install the charge point(s).
5. Appoint an electricity supplier who will bill for the energy used by the charge point. Your supplier will appoint a meter operator to install a meter for the charge point.
6. We will deliver your connection and energise the charge point. If your request was for an increase in load, we will also provide a new connection agreement based on your new load.

\*Please note that we may need to change your application depending on your individual circumstances and charging requirements.



\*We have provided approximate costs and timescales to assist you with connections applications. These give a general illustration of connections cost and time to connect based on our Guaranteed Standards and Connections Charging Methodology Statement. The actual price for your connection may be significantly different based on the available capacity on the electricity network, your specific request and the premises in which you are looking to connect.

## Charging in public places

The most common way EV charging is installed 'onstreet' is by local authorities using existing unmetered street lighting columns or by local authorities or others installing 'pop up' columns (often owned by third party charging companies).

If you are a local authority looking to install charging points behind your existing unmetered street lighting columns, this section outlines some key information for you to consider.



### Unmetered Street lamps

- In both our licence areas street lighting columns are positioned on either side of the footpath (next to the road or next to the grass or concrete verge). To avoid the possibility of trailing charging cables across public footpaths you will need to check the street lighting columns you wish to use for charging are positioned next to the road.
- If the street lighting columns you wish to use are not positioned next to the roadside, you could consider installing a satellite column. These are dedicated columns installed next to the roadside but connected to the main street lighting column (under the footpath).

### Location (parking)

- You will need to make sure that the area you have identified for a charging point is safe for public access and appropriate for parking.

### Unmetered inventory list

- These EV charges will be connected onto your unmetered inventory, requiring to be owned, operated and maintained by you as your other street assets are.
- Each street lighting column housing an EV charging point in it will need to be set up on a new unmetered inventory list (this will be separate to any existing unmetered inventories local authorities may have with us).
- As such, there will be associated costs for appointing a meter administrator that you will need to consider.

### Measured Central Management System (mCMS)

- Unmetered supplies are classified as being below 500W and having a predictable load. Therefore, to make use of an unmetered supply you will need to ensure that the charging point has a mCMS to guarantee a predictable load.

You will need to ensure that whoever you appoint to install a charging point in your existing street lighting columns is CMS approved, which you can check through the [Elexon website](#). This ensures that the charging is managed remotely and on a half hourly basis.

### Charging speed

- Street lighting columns typically have a maximum of 500W supply, therefore on-street charging using existing street lighting columns will be limited to 'slow' charging; the existing supply will not be sufficient for rapid or fast charging. If you require faster charging you may need to consider a metered connection, rather than unmetered connection.

### Pop up columns

If you are a local authority or other looking to install new metered charging points as 'pop-up' columns. You will require to apply for a new connection. Get in touch with us for a pre-application meeting (at [connectionsfeedback@sse.co.uk](mailto:connectionsfeedback@sse.co.uk)) and we can help you identify the most efficient place to install your charging points.

## Costs

Costs will vary depending on whether you require a dedicated connection for your EV charging point, or if you will be making use of an existing unmetered supply. All other costs will be due to third party equipment and installation.

### How much could it cost?

The cost of connecting your EV charging point depends on:

1. How many EV charging points do you want to connect?
2. Where do you want to connect them?
3. Do you want a dedicated connection or make use of an existing unmetered supply?
4. How many vehicles you want to charge at the same time?
5. How quickly do you want to charge?

Other factors that could affect the overall cost could be additional costs of street works to provide your connection (i.e. road closure and excavation), legal costs for easement or wayleaves if relevant. Finally, if you're looking to install charging points that will require a lot of electrical power (i.e. several rapid chargers) your connection may need a new substation which may need planning permission.

### Metered connections

Any EV charging points that are not using an existing unmetered supply will be metered.

### Charging management system

Consider using your own equipment charging management system (some providers operate these – i.e. ubertricity)

## Government funding

Electric vehicle users can receive funding from [OLEV \(Office for Low Emissions Vehicles\)](#) to install a home charger for their plug-in vehicle through the [Electric Vehicle Homecharge Scheme](#). This provides a grant of up to 75 per cent of the eligible costs of charge point installation (capped at £500, including VAT) for the registered keeper, lessee or nominated primary user of a new or second-hand eligible electric vehicle. Find out more about [eligibility criteria](#) and a [list of approved installers](#). Funding is also available via the [Workplace charging scheme](#).





## Useful links used throughout this guide:

### ENA application form

[www.energynetworks.org/electricity/futures/electric-vehicle-infrastructure.html](http://www.energynetworks.org/electricity/futures/electric-vehicle-infrastructure.html)

### SSEN Connection Choices

[www.ssen.co.uk/ConnectionsYouHaveaChoice/](http://www.ssen.co.uk/ConnectionsYouHaveaChoice/)

### Elexon Central Management Systems

[www.elexon.co.uk/operations-settlement/unmetered-supplies/central-management-systems/](http://www.elexon.co.uk/operations-settlement/unmetered-supplies/central-management-systems/)

### Office for Low Emissions Vehicles (OLEV)

[www.gov.uk/government/collections/government-grants-for-low-emission-vehicles](http://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles)

### Electric Vehicle Homecharge Scheme

[www.gov.uk/government/publications/electric-vehicle-homecharge-scheme-guidance-for-customers-version-22](http://www.gov.uk/government/publications/electric-vehicle-homecharge-scheme-guidance-for-customers-version-22)

### Homecharge Scheme eligibility criteria

[assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/514339/electric-vehicle-homecharge-scheme-guidance-for-customers-2016.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/514339/electric-vehicle-homecharge-scheme-guidance-for-customers-2016.pdf)

### Homecharge Scheme authorised installers

[www.gov.uk/government/publications/electric-vehicle-homecharge-scheme-authorised-installers](http://www.gov.uk/government/publications/electric-vehicle-homecharge-scheme-authorised-installers)

### Workplace Charging Scheme guidance

[www.gov.uk/government/publications/workplace-charging-scheme-guidance-for-applicants-installers-and-manufacturers](http://www.gov.uk/government/publications/workplace-charging-scheme-guidance-for-applicants-installers-and-manufacturers)

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community