# Facts: EV Charging Points

As electric vehicles become more and more popular up and down the UK, the number of charging points is increasing by the day. There are different types of charging points available to use, so understandably there is some confusion. To help explain, we have created a short guide on everything you need to know about charging points.

## What is a charging point and how do they work?

An electric vehicle charging point supplies the electric energy needed to recharge the vehicles battery. It works by converting AC electricity from a power source into DC power for the battery. For your electric car to charge, you will need to plug it into a charging point. Exactly the same as charging your phone, you simply plug the vehicles charging cable into the socket and leave the car to do the rest – it really is that simple. Currently in the UK they are typically located in 4 main areas either at home, work, retail shopping centres, restaurants, car parks and motorway service stations.

## Charging connectors

There is a variety of different connectors that are used when charging an electric vehicle. Each connector varies by vehicle and the power output of the charge point. Most EVs have either a Type 1 or Type 2 connector for slow/fast charging and CHAdeMO or CCS for DC rapid charging. However, if you own a Tesla Model X and Model S vehicles, they are an exception as they use Type 2 connectors for DC rapids. There is also no need to worry about using the incorrect charger as the cable simply won't fit.

### Charging types

The timeframe in which it takes to recharge your vehicle is dependent on these features including:

- The type of charging station
- How much power the charging station can provide
- How much power the car can accept – higher the wattage, the faster the charge

## Types of EV Chargers

There are 3 main types of EV charging – rapid, fast, and slow. They represent the power output and therefore charging speeds, available to charge an EV

**Rapid chargers (43 kW to 50 kW)** – Currently there is 2 types of rapid charger available in the UK - AC (Alternating Current) and DC (Direct Current). Rapid AC chargers operate at 43 kW while most DC units offer 50 kW of power. Both chargers will provide an 80% charge in as little as 30minutes to 1 hour depending on battery capacity. Tesla has created its own range of Superchargers which are Rapid DC and charge at 120 kW, these chargers however use a bespoke Type 2 connection, although adaptors are available. It is worth noting that even though rapid chargers offer a quicker charging time, not all electric vehicles are compatible.

**Fast chargers (7 kW to 22 kW)** - The most common type of charger in the UK, fast chargers provide a power output of 7 kW to 22 kW, with a charge time of 3 to 4 hours. Common fast connectors are a tethered Type 1 or a Type 2 socket (via a connector cable supplied with the vehicle).

**Slow chargers (3 kW)** - Slow chargers offer power up to 3 kW and typically takes between 6 and 12 hours to recharge. Because of this, slow chargers are more commonly used for overnight charging. On the plus side, you are able to use a cable that connects the vehicle to a 3-pin plug to slow charge, or a Type 2 socket. The majority of EV drivers purchase a portable charging cable that can match their vehicle's connector type so that they can charge on public networks.

## Charging an electric car at home

Charging at home is often the more convenient and cost-effective way to recharge your electric vehicle, as you are able to charge the car overnight and wake up to a full battery every morning. To charge your electric car at home, you will need to install a home charging point. A £350 Government grant is available for purchasing and installing a home charger, with prices starting from as little as £279 with an OLEV grant. Home chargers are either rated at 3 kW or 7 kW giving you 15 to 30 miles of range per hour of charge.

In terms of cost, using an average domestic electricity rate of 14p per kWh, you would be able to fully charge a Nissan Leaf 40kWh for around £5.60 (3.3p per mile). The cost of fuel for a typical petrol or diesel car costs around 12p per mile, so the cost for driving the same distance would be around £20.20, giving you a saving of £14.60. However, it is worth considering that in most cases, home charging will require off-street parking to avoid cables trailing across footpaths and public areas. This means that if you live a flat or don't have access to an allocated parking space or driveway, home charging may prove difficult to install.

## Charging an electric car at a public charging point

Most public charging points are run by a number of different companies including BP Chargemaster, Ecotricity, Pod Point and Charge Your Car. Although many charge points are free to use, many do require payment with the cost on average around £1.50 per hour. Fast and rapid chargers are usually more expensive to use and payment and access methods vary across each network. There are some charging points that require the use of a RFID card to activate the charge point while others use a smartphone app.

Find your nearest electric charging station using **Zap-Map**, to locate the charging stations available in your area and identify the type of charging on offer.

**Note: this factsheet is not a substitute for professional advice and guidance. Vehicle owners should also check any finance, hire, maintenance agreements and any supplier or manufacturer warranties.**



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