

Electric Vehicle FAQ's

What is an Electric Vehicle (EV)?

EV's are a ultra-low emission vehicles that produce less than 70 grams of Carbon Dioxide (CO2) per kilometre driven. EV's are electricity powered vehicles that come in one of three main types:

1. 100% Battery Electric Vehicles (BEV)

Large battery packs power BEVs, which produces zero harmful emissions or CO2. BEV's offer between 100 and 250 miles of range which is practical for most people's day-to-day journeys. Owners can charge at home or using any public available charging points.

2. Plug-in Hybrid Electric Vehicles (PHEVS)

PHEVS pair a smaller battery and electric motor with a petrol or diesel engine. This provides up to 40 miles of electric, zero-emission driving for short trips. For longer journeys, the petrol or diesel engine provides hundreds of extra miles.

3. Hydrogen Fuel Cell Electric Vehicles (HFCEV)

To power an HFCEV, hydrogen and oxygen are fused together in a specialised "fuel cell". This chemical reaction generates the electric charge which drives the motors. You don't need to plug in an HFCEVs to re-charge it, unlike BEVs and PHEVs. You will need to refill them with supercooled liquid hydrogen at special fuelling stations.

You can find more information at <https://www.goultralow.com/choosing-an-electric-vehicle/types-of-electric-vehicles/>

What are the Benefits of EVs?

1. Lower running costs

Cheaper Fuel costs

Charging an electric vehicle is much cheaper than a petrol and diesel vehicle. Costs are as little as 1.6 p per mile compared to an average of around 10p per mile for petrol or diesel. For more information, go to <https://www.goultralow.com/energy-tariffs/> (link to external website).

Tax benefits

Ultra-low Emission Vehicles up to a certain value are exempt from Vehicle Excise Duty (VED or road tax). This could result in a saving of around £500 over a three-years.

For more information, go to <https://www.gov.uk/government/publications/vehicle-excise-duty> (link to external website).

2. Cheaper to Maintain

Electric vehicles have less moving parts to maintain, so are less labour intensive, as shown by the lower costs of servicing. Fully electric vehicles need digital diagnostics and updates rather than parts replacement. Hybrids are more comparable to petrol and diesels.

3. More environmentally friendly

Reduced Carbon Emissions

EV's charged using "average UK mains electricity" produce 40% less CO₂ than a small petrol car and 25% less than a diesel. This figure increases further for EV's charged using a green tariff. As the UK grid is decarbonised, savings for EV's will increase further. This will help to mitigate the impacts of climate change.

Air quality improvements

Each year, Roadside pollution contributes to around 40,000 early deaths on UK roads. Fully electric vehicles produce zero exhaust pipe emissions which will improve local air quality and in turn benefit public health.

4. Quieter Driving

BEVs and PHEVs when driving on electric mode, have no internal engine noise whilst driving. When driving on battery there is less noise. This creates a much more pleasant experience for drivers, passengers as well as less noisy environment for pedestrians.

5. Fast and Easy home charging

If you have access to your own driveway, you can charge an electric vehicle at home. This would use your own electricity tariff. You would also avoid queueing at busy service stations. The cost of domestic electricity means that people can charge the car for cheaper than filling up at the petrol station.

What are the drawbacks of EVs?

1. Upfront costs

Most electric vehicles on the market have a larger price tag than a petrol or diesel counterpart. This is due to the cost of the battery. Over recent years, battery production costs have fallen. It's anticipated by 2023 the cost of electric vehicles will be comparable to the cost of petrol or diesels.

2. Range capabilities

Electric vehicles have a much shorter driving range than petrol and diesel vehicles. This means they need more frequent refuelling. But as technology has improved, the range of EV's has also improved. You could expect a range of between 100 and 300 miles depending on the vehicle. Most new models offer 200 miles or more on a single charge.

3. Existing infrastructure

The electric vehicle market is still in its infancy, so public charging infrastructure is currently limited. The infrastructure needed for electric vehicles is growing. The motorway network is

well equipped, with charging stations for long distance journeys. We have recently installed 6 rapid charging hubs in the City centre. There are a further 6 planned for summer 2020. For available charging points in your area, see Zap Map at <https://www.zap-map.com/live/> (link to external website). Please note that the vast majority of charge points shown on the map are not operated or owned by Sandwell Council or any other public body. As such, users use these charge points at their own risk and charging rates may vary.

4. Second-Hand Market

As the second-hand market isn't well established there aren't many vehicles available. Demand remains high, which means that even second-hand vehicles can be too expensive. The expectation is that this will change as the first-hand EV market picks up.

What are the different charging stations and charging speeds?

You refuel electric vehicles by plugging into an electricity supply. This could include your domestic electricity supply.

1. Slow

3kW trickle charging which is equal to plugging into your mains socket at Home. If your vehicle has 60 kWh battery, it will take approximately 20 hours to charge your vehicle

2. Fast up to 7 kW

You can have a charging point installed at home without changing electricity supplier. This would charge a 60kWh battery within 9 hours. Perfect for overnight charging at home.

3. Fast up to 22-kW

Despite offering faster speeds, you can still install one of these at home. You would need an upgrade to your electricity supply. This can be quite costly. These chargers are more typical of long stay car parking for work and commercial places. A 22-kW charger would charge a 60kWh battery in around 3 hours.

4. Rapid chargers – up to 50 kW

Offer much quicker charging times, these chargers are usually placed in strategic locations. This includes motorway service stations and short stays car parks in town centres. This helps to accommodate electric taxis, commercial vehicles and quick trips. You could charge a 60kWh battery from 0 to 80% in under 40 minutes, full charges would take approximately 1.5 hours.

5. Ultra-rapid Chargers –100kW – 300 kW

These offer the quickest charge times but few vehicles can accept this much power. Eventually, all vehicles will be compatible with this method of charging. They are usually placed at service stations to provide recharging for longer journeys. You are able to charge to 80% within 15 minutes.

How much does it cost to charge an EV?

The charge is in pence per kilowatt-hour (p/kWh) of electricity. We will often talk of electric Vehicle batteries in terms of kWh too.

How much it costs to charge your electric vehicle can depend on several different things.

1. The size of the Battery

Modern domestic EV battery power ranges from 20 kWh to 100 kWh. The higher the battery power the more energy required to be fully charged.

2. The type of charging point you use

There are several types of charging point providing different charging speeds. These range from 3 kWh to 150 kWh. See the question "What are the different charging stations and charging speeds?" for more information.

Commercial providers will always charge more per kWh than you pay at home. This is to recover the costs of installing and maintaining infrastructure and paying staff. Some rapid charging points charge a flat connection fee (e.g. £1.00) on top of a higher energy tariff. The table below outline approximate charging costs for different types.

Power rating of charge point	Domestic/workplace cost (p/kWh)	Public (Commercial) cost (p/kWh)
3 kW	12-15p/kWh	N/A
7 kW	12-15p/kWh	18 – 22 p/kWh
22 kW	12-15p/kWh	20 – 25 p/kWh *
40 – 150 kW	N/A	25 – 30 p/kWh *

* Often with flat rate connection fees of £0.50 - £1.00

3. How long you charge for

This will depend on how much your battery is charged and what charge you need for ongoing trips.

Charging for 3 hours at 22 kWh will provide 66 kWh of energy to the battery. Compare this to 1 hour at 22kWh providing 22 kWh of power.

To work out the cost of charging, multiply the cost of electricity by the power rating of your battery.

For example, imagine the following:

- your car's battery is flat
- the battery has a size of 60 kWh
- you charge at home on your domestic energy supply costing around 14p/kWh
- A 60kWh electric vehicle has a real-world range of around 200 miles.

So:

1. $14p \times 60kWh = 840p/kWh$ or **£8.40** to charge
2. $£8.40 / 200 \text{ miles} = 0.04$ or **4 pence per mile**

A petrol or diesel vehicle driving at 45 miles per gallon, at a cost of £1.20 per litre, would cost in the region of 12p per mile.

Is an EV right for me?

Whether an electric vehicle is right for you depends on your circumstances. For example:

- how many miles do you drive each day?

- how much you spend on your existing vehicle?
- what are your financial circumstances?

If you wish to see if an electric vehicle would be right for you, you can use:

1. journey cost calculator at
 - a. <https://www.goultralow.com/journey-cost-savings-calculator/> (link to external website)
 - b. <https://www.nextgreencar.com/tools/fuel-cost-calculator/> (link to external website)
2. Car comparison tool at:
 - a. <https://www.nextgreencar.com/tools/comparison/> (link to external website)
 - b. <https://www.goultralow.com/car-selector/> (link to external website)
3. You can also see the locations of all charge points available to the public at <https://www.zap-map.com/> (link to external website). Please note that the vast majority of charge points shown on the map are not operated or owned by Sandwell Council or any other public body. As such, users use these charge points at their own risk and charging rates may vary.

Are there any grants available?

The government has several grants and incentives available for domestic and commercial cases. This is to encourage the early adoption of electric vehicles. The links below will take you to gov.uk website for more information on what is available.

Plug in vehicle grant scheme <https://www.gov.uk/plug-in-car-van-grants> (link to external website)

Can I get a charge point at my home?

Yes, you can get a charge point installed at your home by a verified installer. If you are buying a new electric vehicle, the manufacturer or dealership may install a ChargePoint for you.

If this isn't the case you can take advantage of the governments home charging grant scheme

<https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles#electric-vehicle-homecharge-scheme> (link to external website)

How can I Charge at home if I don't have a driveway?

We recognise that a proportion of households do not have their own driveway. This could prevent them from charging their vehicle at home, deterring them for choosing an electric vehicle.

There are several solutions to this problem, but each solution may change from area to area.

The council has a commitment to helping all residents charge electric vehicles. If you already own, or are considering owning, an electric vehicle (EV), you can let us know if you need a charge point so we can map local demand. This will allow us to target infrastructure to locations that need it.

Completing this form will not guarantee we will install a charge point at your suggested location. We will map your suggestion against the existing charge point network and usage to identify priority areas.

Suggest a charge point location (Link to survey current charge point location survey again)