KINTO

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Electric Vehicle Guide

Contents

Statistics

1832

Robert Anderson developed the first crude electric vehicle

The electric car market is growing quickly. There were more than 1,000,000 plug-in cars with approximately 590,000 BEVs and 430,000 PHEVs registered at the end of October 2022

3 x less

CO_2

Electric cars generate 3x less CO_2 on average than their ICE counterparts[1]

Cheaper to maintain than ICEs due to less moving/wearing parts

ICE		EVs
150	Moving Parts	24
24	Wearing Parts	11

The average cost of charging an electric car at home is about £15 for a full charge

Drivers of electric vehicles are exempt from Congestion Zone and Clean Air Zone charges

From 25th October

2021

only pure electric vehicles are eligible for the Cleaner Vehicle Discount in London's Congestion Charge Zone

Chargers

Slow Chargers
(up to 3Kw)
6 - 12 hours

Best for over night charging as these can take typically between six to 12 hours

Fast Chargers
(7Kw - 22Kw)
3 - 4 hours

Fast chargers (7Kw to 22Kw) usually take between three to four hours to charge

Rapid Chargers
(43Kw - 50Kw)
30 mins

Rapid chargers (43Kw to 50Kw) these can charge an EV to 80% in around 30 mins

8 year warranty

Most manufacturers offer an eight year or 100,000 mile warranty for their EV batteries

10 years

The current prediction is that an electric car battery will last 10-20 years before they need to be replaced

20 years

London

has the most EV charging points, followed by the South-East

According to DfT, the number of rapid charging points in the UK has increased to 6,395 units

>34,000
public charge points in the UK

There are currently more than 34,637 public electric vehicle charging devices available in the UK, often located in supermarkets, shopping centres, public car parks, hotels and sometimes service stations

More than
30,000
electric vans in the UK as of October 2022

70%

of van drivers drive less than 62 miles a day, making electric vans perfect business vehicles

25 miles

Drivers are currently never more than 25 miles away from a rapid (50 kilowatt) charge point anywhere along England's motorways and major A roads

Types of Electric Vehicles

BEVs	HEVs	PHEVs	E-REVs	FCEVs
Battery Electric Vehicles (electricity only)	Hybrid Electric Vehicles (electricity, petrol/diesel)	Plug-in Hybrid Electric Vehicles (electricity, petrol/diesel)	Extended Range Electric Vehicles (electricity, petrol/diesel)	Fuel Cell Electric Vehicle (electricity, hydrogen)

[1]European Federation for Transport and Environment

Overview

What is an electric vehicle?

What is an electric vehicle?

EV stands for Electric Vehicle. An electric vehicle is driven by electricity and doesn't rely on any combustible fuels such as petrol or diesel.

Full EVs will need to be plugged in and charged in order to re-charge the battery.

ULEV, which stands for Ultra Low Emission Vehicle, have a CO2 of 50g or less.

How do electric vehicles move?

The heart of an electric vehicle is the combination of:

- The electric motor
- The motor's controller
- The batteries

Battery electric vehicles

The key components of battery electric vehicles are:

- Electric motor
- Inverter
- Battery
- Battery charger
- Controller
- Charging cable

Electric vehicles, or "EVs" can be broken down into:

- BEVs: Battery Electric Vehicles (electricity only)
- PHEVs: Plug-in Hybrid Electric Vehicles (electricity, petrol/diesel)
- E-REVs: Extended Range Electric Vehicles (electricity, petrol/diesel)

Better for the environment

Pure electric vehicles have no tailpipe emissions; in fact, they don't even have an exhaust. Plug-in hybrids have significantly lower average emissions than traditional petrol or diesel vehicles too. This can help improve air quality, particularly in urban areas and at the roadside where air quality can be worse.
Even when taking into account the impact of generating the electricity used (the 'well-to-wheel*' emissions), pure electric vehicles can still produce substantially lower greenhouse gases than petrol or diesel vehicles. These emissions will be reduced further as the UK switches to more renewable and nuclear electricity generation.

*the well-to-wheel emissions capture the total environmental impact of the electricity used throughout the whole life cycle of an EV; all the way from the emissions produced from the vehicle manufacturer production line to the electric charge used when driving the vehicle.

Key benefits

Better for the environment

Many of us want to do our bit to help our environment, and electric vehicles can help us do just that. Fully electric vehicles have zero tailpipe emissions, which means they are greener, cleaner and better for our environment. Plug-in hybrids also emit zero tailpipe emissions, but only when being driven in electric mode, which will differ depending on their EV range.

Cheaper to maintain

Whilst the actual price of an EV may currently be slightly higher than the petrol or diesel version, the cost to run one is significantly cheaper in the long run.

When you think of a petrol or diesel vehicle, you appreciate that the engine is rather complex, requiring many additional components to operate correctly – exhaust systems, starter motors, fuel injection systems, oil, radiators, gears.

But pure electric vehicles, on the other hand, have just three main components – the on-board charger, inverter and motor – and fewer moving parts than vehicles with an internal combustion engine. This means there are less things requiring maintenance and servicing is simpler. All of which could significantly save money.

Plug-in Hybrid Electric Vehicles (PHEVs) can also be cheaper to maintain than 'traditional' petrol or diesel-powered alternatives. Whilst these have a petrol engine that needs regular servicing, the electrical motor requires little maintenance due to far fewer moving parts, which leads to less wear and tear of the petrol engine component.

Cheaper to run

Compared to petrol or diesel, electricity is cheaper. On a cost per mile basis this means a pure electric vehicle could cost a third (or less) of what a traditional petrol or diesel vehicle might cost. Plug-in hybrids efficiently combine an electric motor with a petrol or diesel engine, meaning they too can be considerably cheaper to run. The cost savings will be greatest when owners charge at home and have access to an off-peak overnight electricity tariff.

Convenient charging

One of biggest benefits EV drivers state is convenient charging.

The benefit of electric vehicles is that they can charge wherever there is an appropriate electrical socket- so while you are sleeping at home, in your work place car park whilst you do your 9-5, or even while you are doing your weekly shopping at the supermarket using the free public charge points.

For many, with easy convenient charging you may never have to visit a petrol station for 90% of your driving.

And even for those longer journeys, the number of charging points across the UK is growing rapidly, so while you visit the services for a comfort break and a coffee, you can be confident that your battery can be topped up before you head on to your final destination.

Government funding & relief

The government aims to increase the number of people choosing an EV, and there are currently a number of great incentives.

Grants are available towards the cost of installing a home charge point. The government's Workplace Charging Scheme also provides eligible businesses with support towards workplace charging points.

For businesses and their drivers, the support from the government is even greater. In addition to the grants, there is also reduced Benefit-in-kind tax, Vehicle Excise Duty, National Insurance and capital allowances.

And with the increase of Clean Air Zones and Ultra Low Emission Zones being introduced around the country and in London with fees designed to discourage polluting vehicles from entering certain areas, a key benefit of an electric vehicle is being exempt from these charges. A regular user of the London zones could save over £2,000 a year if they switched to an EV.

Free parking for electric vehicles is also available in some towns and cities.

Improved driving experience

Not only will you notice how much quieter an electric vehicle is to drive, providing a more relaxing driving experience, on the whole electric vehicles are also better to handle too, as their heavy batteries are mounted in the chassis creating a low centre of gravity.

Electric vehicles also provide instant torque from zero revs, making them extremely fun to drive.

And finally the regenerative braking when easing off the accelerator, which feeds energy back into the battery adds to their efficiency.

Myth busting

Electric vehicles don't go that far

How far an electric vehicle can go on a single charge differs from make and model. Most EVs now have a significant range to comfortably suit most people's daily journeys, with some models having an official range of over 400 miles.

Home chargers take a long time to charge

How long it takes to charge your EV at home depends on the battery capacity (expressed in kilowatt hours, or kWh), plus the speed of your charger.

The time it takes to charge an electric vehicle can be as little as 30 minutes or more than 12 hours. This depends on the size of the battery and the speed of the charging point.

A typical electric vehicle (60kWh battery) takes just **under 8 hours to charge from empty-to-full** with a 7kW charging point whilst a **50kW** rapid charger can charge **up to 100 miles of range in approx. 35 minutes**.

There aren't enough public chargers

There are currently >34,000 EV charge points in the UK, often located in supermarkets, shopping centres, public car parks, hotels and sometimes service stations.

Availability can be checked using a charge point map such as Zap-Map or Charge Place Scotland.

EV batteries don't last long

Most manufacturers have a five to eight-year warranty on their battery. However, the current prediction is that an EV battery will last from 10-20 years before they need to be replaced.

EVs won' t be practical to own without a fully established infrastructure of public charging points

Whilst most electric vehicle charging is done at home or at work, there is a growing number of public charging points across the UK. Currently, a driver is never more than 25 miles away from a rapid (50 kilowatt) chargepoint anywhere along England's motorways and major A roads and in the March 2020 Budget, the UK government announced the Rapid Charging Fund, as part of a £500 million commitment for the EV charging infrastructure.

Lack of choice

The electric vehicle market is expanding rapidly. As of August 2020 there are more than 130 plug-in cars and vans available; including superminis, large family cars, hatchbacks, estates, sport utility vehicles (SUVs), executive models, and medium-sized vans.

EVs are slower than petrol and diesel vehicles

For normal EVs, top speeds aren't really any different to other vehicles, but they accelerate more quickly so can 'feel' faster. This is because you get the maximum torque (leading to acceleration) from the minute you start rolling, whereas you need to 'rev up' an internal combustion engine (ICE) vehicle to get maximum power and torque.

Breakdown service providers won't cover electric vehicles

The majority of breakdown suppliers now provide services for all EVs as well as conventional vehicles.

EVs cost more to run than petrol/diesel vehicles

Buying and owning an electric vehicle (EV) is more cost-effective than getting a new petrol or diesel vehicle. New research suggests EVs are now cheaper to own over their whole lifetime, costing an average of around £107 every year less than petrol or diesel vehicles.

EVs are costly to maintain and repair

Overall electric vehicles require much less maintenance and cost less to maintain as a result. Internal combustion engine (ICE) vehicles have some 150 moving parts and 24 wearing parts which need to be maintained and repaired whereas electric vehicles only have 24 moving parts and 11 wearing parts.

Also there is real-world evidence that the rate of battery decay is much less than feared - with some manufacturers expecting their batteries to outlast the rest of the vehicle.

EVs aren't safe

Although we all know not to mix electricity with water, when it comes to EVs there's absolutely no extra risk of driving in a lightning storm - they are just as safe as a petrol or diesel vehicle. EVs also undergo the same rigorous testing and meet the same safety standards required for petrol or diesel fuelled vehicles.

EV batteries will eventually wind up in landfills

Although most lithium-ion batteries are not designed to be reused or recycled at the end of their lifespan, companies are now developing a circular economy approach which offers the possibility to reduce both the environmental impacts of batteries and the reliance on raw mineral extraction by developing batteries that can be repaired, reused and upgraded.

The power grid won't be able to handle the hundreds of thousands of EVs expected in the future

Estimates show that if we all switched our petrol or diesel vehicles to electric overnight, we would experience only a 10% increase in demand, fitting comfortably within the grid's capacity.

But in order to provide sufficient infrastructure and energy for EVs as cheaply as possible for consumers, demand will need to be spread to avoid adding too much to the evening peak of electricity demand which is between 6 and 8pm.

With this in mind, the government's EV Energy Taskforce recently recommended that all future vehicle chargers should be 'smart by design'. This means that no matter what time you come home and plug your vehicle in at, it will charge when you need it but will pause during that evening peak when energy is most expensive and demand on the grid is highest.

EVs aren't really that much greener

Research* shows that in 95% of the world, driving an electric vehicle is better for the climate than a petrol vehicle.

The only exceptions are places like Poland, where electricity generation is still mostly based on coal.

Average "lifetime" emissions from electric cars are up to 70% lower than petrol cars in countries like Sweden and France (where most electricity comes from renewables and nuclear), and around 30% lower in the UK.

*Source: research paper published by Dr Florian Knobloch, University of Nijmegen in the journal Nature Sustainability,

FAQs

Electric vehicles

Q. What is the difference between a mild hybrid, plug-in hybrid and an electric vehicle?

A. Electric Vehicle – A vehicle powered solely by electricity. The vehicle is charged by an external power source, e.g. a home wall box or public charge point. These vehicles are also referred to as a BEV, Battery Electric Vehicle or E-REV, Extended Range Electric Vehicle.

Plug-in Hybrid – These vehicles have a specified range which they can travel on using their electric charge, and then once the electric charge is used up, the journey continues on the hybrid fuel mode petrol. You will need to use home wall box or public charging points to charge up your vehicle to obtain the optimum benefit of these vehicles.

Hybrid - Mild hybrids are generally internal combustion engines equipped with an electric battery allowing the engine to be turned off whenever the car is coasting, braking, or stopped, yet can restart quickly. Mild hybrids may employ regenerative braking and some level of power assist to the internal combustion engine, but mild hybrids do not have an exclusive electric-only mode of propulsion. These vehicles are also referred to as MHEVs or Mild Hybrid Electric Vehicles. These do not need to be plugged in.

Q. How do I know an EV is right for me?

A. EVs are increasingly becoming a more viable option for many drivers across the UK, but of course every individual has to factor in their own personal needs and situation. We have created a tool to help answer some the key questions to assess whether an EV might be the right choice for you. https://secure.kinto-uk.com/VehicleNavigator

Q. What is the range of an electric vehicle? How far can an electric vehicle go?

A. Just like an ICE vehicle, the range of an EV varies between make and model.

However, according to the latest WLTP figure, some EVs can go up to 453 miles on a single charge - and this performance is improving all the time. All pure electric vehicles can comfortably drive around 100 miles before they need recharging- that's from London to Portsmouth, or London to Leicester.

Range is also influenced by a variety of factors, in the same way as with an ICE vehicle. These factors include driving conditions, weather, load, tyres etc.

Q. What is the battery life of an EV?

A. Again this depends on the vehicle make & model, but most manufacturers offer an eight year or 100,000-mile warranty for EV batteries.

Q. Are EVs fun to drive?

A. Yes! There are a number of reasons which make EVs really fun to drive. Not only will you notice how much quieter they are when driving, but on the whole they are also better to handle too, due to the fact that their heavy batteries are mounted in the chassis creating a low centre of gravity! Electric vehicles also provide instant torque from zero revs, making them extremely fun to drive. And finally the regenerative braking when easing off the accelerator, which feeds energy back into the battery adds to their efficiency.

Q. Are all EVs automatic?

A. Put simply, yes. Unlike petrol and diesel vehicles, electric vehicles don't have multi-speed gearboxes.

Q. Can I drive in the rain?

A. Although we all know not to mix electricity with water, when it comes to EVs there's absolutely no extra risk of driving in the rain or a lightning storm - they are just as safe as a petrol or diesel car. EVs also undergo the same rigorous testing and meet the same safety standards required for petrol or diesel fuelled vehicles.

Q. How can I work out what my BiK tax (Benefit-in-kind tax) will be?

A. You can work out an estimated BIK figure using the Tax Fuel Calculator on the HRMC website. If you are a KINTO customer, it is also located on the top right of your driver extranet page. You will need to calculate BiK figures dependent on the specific vehicle as the figures will vary with CO2 and P11D differences.

Q. Can I drive an electric van above 3500kg with a normal licence?

A. The government has approved a change to driving licence legislation designed to make it easier for people to use electric vans. The new rule came into force on 24 July 2018 after a consultation a year earlier and is designed to make it easier for manufacturers to sell alternative fuel vans in the UK and take the hassle out of applying for more complex licences. Essentially, it means van operators can drive a heavier-than-normal van with a conventional driving licence – providing it's powered by something other than petrol or diesel.

Motorists with a Category B licence – the conventional type you get when you pass your car driving test – are already allowed to drive most normal vans that weigh no more than 3500kg; however, the new legislation allows Category B licence holders to drive alternative fuel vans that weigh up to 4250kg.

But there are some conditions. Category B licence holders are not automatically allowed to drive the vehicles in question. Before they can get behind the wheel of a heavier alternative fuel van, they must first complete a minimum of five hours' training at the helm of such a vehicle with a registered instructor.

Q. What types of vans does the new legislation refer to?

A. The Department for Transport (DfT), which is responsible for the legislation, stipulates that alternative fuel vans must be powered by "electricity, natural gas, biogas or hydrogen or [a combination of] hydrogen and electricity". Basically, the new legislation applies to vans that are not powered by petrol or diesel and weigh between 3500 and 4250kg. Batteries that power electric vehicles are heavy, so it's often difficult for manufacturers to fit them to LCVs and keep the weight beneath the traditional 3500kg level. They also need to factor in an acceptable amount of weight allowance for carrying cargo.

Electric vehicle charging

Q. How long does it take to charge an electric vehicle?

A. It all depends on what type of charger you are using, there are 3 types of charging:
1. A 7kW home charging wall box: best for overnight charging, usually take between 6 & 12 hours.
2. Fast chargers (7kw- 22kw), usually take around 3-4 hours to fully charge a vehicle
3. A 50kW rapid charger can charge an EV to about 80% in 30 minutes.

Q. How do I order a charge point?

A. We are partnered with Pod Point, and can assist you with making installation arrangements.

We use an online portal to submit your request, after which Pod Point will contact the driver. to complete a home survey assessment. They will ensure the property is suitable for a charge point to be installed and work with the driver to complete any necessary paperwork in order to claim the government grant. Don't worry about filling the documents out as the dedicated installation advisor will happily give your driver a call and talk you through every step.

You will be kept fully informed and updated and can ensure on the day of the installation you are given a full overview of your wall box and how it works.

Q. If I can't have a home charge point can I still order an EV or PHEV?

A. It is advisable that you have a wall box installed at your property for convenience, however it is not a mandatory requirement. Whilst there are public charging points and points at each of the main sites you would need to ensure you have suitable access to these.

Q. I live in a flat / rented property. Can I have an EV charging point?

A. You must have the permission of the landlord. If you live in a flat other than the ground floor, you must have a dedicated off road parking space & permission to install a charging point at it.

Q. Can we source our own charge points?

A. Yes. Here at KINTO we can help you arrange a charging point to be installed through our current partner Pod Point however you can always choose to make your own arrangements through your own provider if you so wish.

Q. This is not my first EV and I already have a wall box. Do I need to do anything?

A. It is great that you were an early adopter of an electric vehicle and already have a wall box installed at your home. You will not need to change your current wall box, however if you have a tethered wall box you may want to check that the pins in the plug are of the current standard. Those that adopted the wall boxes 5-10 years ago may find that they need an adaptor for the tethered cable or wish to change the wall box altogether.

Q. Can I just use an existing 3 pin plug in socket

A. Whilst most EVs are capable of charging via 3 pin sockets, it is not advisable to rely on this method for regular use due to the strain that it places on the household electrical infrastructure and the car's charging hardware. Some company policies require employees to have a suitable charging point at their home in order to drive an EV.

Q. How do I pay for the charging point?

A. If you are eligible for the grant, Pod Point will apply for this and deduct the grant amount from the total cost of your home charge installation.

The remainder of the home charge installation cost, can be invoiced directly to you or your employer by KINTO, depending on your employer's car policy and preferred setup arrangements; which will then enable them to subsequently adjust any personal use contributions for payroll deductions if appropriate.

The KINTO Quotes team will advise you of the value of any adjustments so you are kept fully informed of your contribution amounts. The cost of any remedial work required must, however be met in full by you upon completion.

Customers also have the option to organise the home charge installation themselves, directly with our Charge Point partner, Pod Point and be invoiced directly by them upon completion of the installation.

Q. What is the OZEV grant and how does it work?

A. This is a grant provided by the Office of Zero Emission Vehicles (OZEV) for electric car home chargers.

The OZEV EV chargepoint grant provides up to £350 off the cost of purchasing and installing a home charging point. The grant is applicable for fully electric and plug-in hybrid electric vehicles.

EV charging

When it comes to electric vehicles, for most of us the concept of charging rather than filling up with fuel in the way we have traditionally done is what concerns us the most. But actually, when you think about it, being able to charge our vehicle while we are sat at home eating dinner in the evening, or while we do our 9-5 in the office or in the service station car park while we pop in for a quick comfort break is actually rather convenient! The concept is different to what we have always been used to doing, and of course it's going to take a bit of time adjusting to a new way.

How long does it take to charge an EV?

How long it takes to charge an EV depends on the type of charger you are using. There are 3 types of charging (more on that below). If you are charging your vehicle overnight at home for example, this can take around 6 hours or so, but if you visit a rapid charge point at a service station your EV can be topped up in around 20-30 minutes.

How long it takes to charge an electric vehicle depends on the following:
- your vehicle's battery size
- how many miles you have done since the last charge
- your charging style- are you topping up after each use, or only charging once low?
- your charger type

There are 3 different types of EV charging these are:

Three pin plug: Think of any three-pin plug that you connect to a plug socket at home, whilst it is not the recommended way to charge an EV, and it will be considerably slower than the other methods, it can be done.

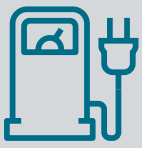
Socketed: A charge point which you can connect to either a Type 1 or Type 2 EV cable (more about EV cables below)

Tethered: A charge point with a cable permanently attached to it. The cable will have a Type 1 or Type 2 connector on it, some have both.

Different types of plugs

Three Pin Plug
A standard three-pin plug that you can connect to any 13 amp socket.

Socketed
A charge point where you can connect either a Type 1 or Type 2 cable.



Tethered
A charge point with a cable attached with either a Type 1 or Type 2 connector.

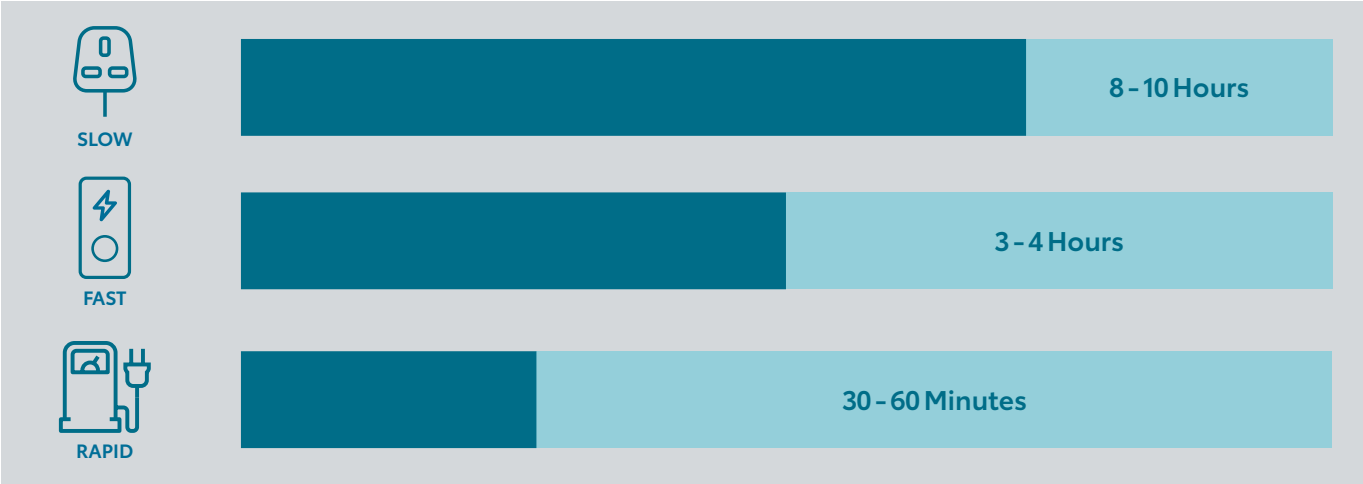
EV charging speeds

There are 3 different charging speeds, these are:

Slow - up to 3kW, you'll generally see these at home or at workplaces and will be used to charge vehicles overnight or whilst working standard shift. Charging time: 8-10 hours

Fast - These are generally 7Kw or 22kW, and you'll likely find these installed in car parks, supermarkets, leisure centres or at your home if you have off-street parking and have had a fast home charger installed. Charging time: 3-4 hours

Rapid - 43 kW upwards. You'll generally find these at service stations or shopping centres, and they are capable of charging cars to around 80% quickly and conveniently. Charging time: 30-60 minutes



EV charging cables

Charging cables have connectors you plug into the vehicle and/or the charge point. The type of charging connector depends on the vehicle and the power rating of the charge point

Type 1 | Type 2 | CSS | CHAdeMO

Essentially there are 4 types of plug that exist, two for AC (type 1 and 2) and two for DC (CHAdeMo and CCS).

The power that comes from the electricity grid is always AC. However, batteries in EVs can only store power as DC, so your EV has an onboard charger to convert it.

The difference between AC charging and DC charging is whether the AC power gets converted inside or outside the vehicle. Unlike AC chargers, a DC charger has the converter inside the charger itself meaning it can feed power directly to the car's battery and doesn't need the onboard charger to convert it. DC chargers are bigger, faster and what you will find at rapid charge points at service stations where people do not have much time to recharge.

Where can I charge my EV?

There are more than 30,000 charge points across the UK at over 11,000 locations, and using ZAP Maps handy interactive tool you can search for a charge point near you. You'll find them at shopping centres, service stations, supermarket car parks, and in some cities you can even find them at the side of the road. Take a look here.

Many people also opt for home charge points if they have off street parking.

And finally, more and more workplaces are also encouraging the uptake of EVs for their staff and provide free workplace charging in car parks too. Has your employer installed EV charging yet?

Charging incentives

As the government looks to increase the uptake of EVs, they have introduced grants towards the cost of installing a home charge point, and the government's Workplace Charging Scheme also provides eligible business with support towards workplace charging points.

Benefits of a home charging wall box

Charging at home is the cheapest way to charge your electric vehicle. One average the cost of charging an electric vehicle at home is 5 times cheaper that a public charging station.

Another benefit of charging at home, you don't depend on the charging networks and on their charging prices. It also gives you absolute control over when you charge your car.

Finally, charging your EV at home is just like charging your mobile phone which most people plug in overnight. So when you get home, you simply plug your EV in overnight and when you wake up your car is 100% charged and you are ready to go!

Pod Point – Our new charge point provider has a useful map showing various locations of Pod Point chargers around the UK. You can look at the map and identify your route, noting the Pod Point chargers along the way.

Pod Point

We are currently collaborating with Pod Point for the installation of wall boxes.

Pod Point are one of UK's leading providers of electric vehicle charging. Since forming in 2009, they have manufactured and sold over 69,000 charging points across the UK and Norway. They have also developed an extensive public network connecting EV drivers with 3,000+ charging bays at locations including Tesco, Lidl and Center Parcs.

They install smart home charging points for customers of major automotive brands including Audi, Nissan, Volkswagen and Hyundai.

Through their network of home, workplace and public charging points, they have already powered over 158 million miles of electric driving

Pod Point provides solutions for:
- Smart home charging
- Workplace and fleet charging
- Commercial charging
- Developers and property managers

We have a streamlined process agreed with Pod Point using an online portal to submit and manage all requests of our customers. Pod Point will complete a home assessment survey with the driver to ensure suitability of the drivers' property; all paperwork can be carried out online, Pod Point will complete as much of the paperwork as they can and are happy to call and discuss with the driver on how to complete the rest. The installation will be agreed at an appropriate time and date that suits the driver ensuring that it is installed to quality standards and a demonstration of the wall box is given in detail to the driver.

Pod Point also have a very useful App that can be used by drivers to monitor their charging activity and gain insight into their energy usage. The app can be used for:

- Overseeing your vehicle charging costs and track every kWh used.
- Export itemised reports that can form part of your vehicle/house budgeting.
- Learn when it is cheapest to charge on your energy tariff.

Alternative charge point suppliers

- Myenergi / Zappi
- Rolec EV
- EO Charging
- Ohme
- ChargedEV
- POD Point
- Chargemaster
- NewMotion
- Ensto
- Andersen
- JuiceBox
- EVBox
- Alfen
- Keba
- Schneider Electric
- Wallbox

Driving an electric vehicle

It can feel strange moving from a manual/ automatic petrol or diesel vehicle and you might be wondering if the driver experience of the electric vehicle will be the same. Rest assured driving an electric vehicle is just the same.

Some key differences you will notice:
- Electric vehicle are only automatic
- Electric vehicles are silent – although some manufacturers are starting to add artificial noise
- They are quick off the mark – accelerating quickly due to the engine torque and the fact that there is no gearbox makes the acceleration seamless and smooth

How to drive an electric vehicle

With the purchase of an electric vehicle you can expect superior economy and reduced operating costs. However, the vehicles do not drive themselves (yet). To reach peak efficiency numbers, drivers need to understand how the vehicle works and react accordingly.

The process includes getting used to strong acceleration, and a braking system that actually adds power back to an EV battery when operated correctly. Knowing how to charge and manage an EV is also useful.

Driving an electric car for maximum efficiency

Here are a few simple but helpful tips to help get as many miles as possible out of a battery pack to extend your range on a single charge.

Take it easy

To use fewer electrons, replace road rage with driving Zen. Learn to anticipate stops and slowly coast towards a red light with your foot off the accelerator pedal. When driving off from a stop, gently ease down on the accelerator until gradually reaching your desired speed. Aggressive driving is estimated to reduce efficiency by about 30%. On the motorway—where aerodynamics make a big difference—stay as close as possible to the speed limit. For every 10 mph of speed over the posted limit, it costs you approximately 10% of efficiency (and therefore range).

Keep the maintenance schedule

While electric vehicles need less maintenance than petrol-powered vehicles, poor upkeep can have the same detrimental effect on efficiency. Start with proper tyre inflation. Look up your vehicle's recommended tyre pressure and check regularly with a gauge to ensure the correct level. A vehicle's fuel economy goes down by about 1% for every 3 pounds of pressure missing from its tyres.

Make sure to follow the suggested service intervals for your vehicle, and perform regular checks on things like coolant levels. While electric vehicles don't have an engine that needs to be kept cool, many use liquid cooling to keep the battery pack, inverter and motor operating at peak efficiency. Insufficient levels of coolant can result in poor performance and overheating components can even damage the battery life.

Plan your route

The route you choose could have a dramatic effect on efficiency and range. You will notice this more in an electric vehicle than a petrol or diesel vehicle because the shorter driving range and need to charge every night, are frequent reminders of energy usage.

Motorways aren't always the best choice. As a vehicle's speed increases, so does the drag. The faster the vehicle moves, the more energy is required to fight through the air, draining your vehicle's battery more quickly. While driving non-motorway routes can result in better range, alternative routes need to be studied. If you encounter a lot of stops and starts, or challenging hills, it might mean less efficiency. So pick a route with gentle gradients, minimal intersections, and light traffic. If you have the opportunity, test the amount of range remaining after travelling alternative routes.

How the weather affects your electric vehicle

The weather affects how much your EV consumes. You have a large range in the summer and a smaller range in the winter.

Extreme weather – very hot or very cold – impacts battery range. The additional heating or cooling needed for passenger comfort requires more energy than more moderate temperatures would. Cold batteries also have greater resistance to charging and do not hold a charge as well.

How to prolong battery life?

- Do not overcharge your vehicle. Keeping your electric vehicle fully charged can actually damage it. Most electric vehicles will stop charging when they reach capacity.
- While electric vehicle batteries have a built in thermal management system to keep them cool, it is still worth seeking out a shady spot on a hot day.
- Some battery experts recommend keeping state of charge between 15% - 90 % whilst others say 20% - 80%. Whilst advice varies, fundamentally the rule is do not overcharge your vehicle battery or let it go flat.
- It is also advisable to avoid immediately charging your electric vehicle following a particularly spirited drive. Give the batteries a chance to cool down first.
- Limit your use of fast chargers. Obviously there are times when you need to top-up on the move, and they give you a quick boost up to 80% in a short space of time. However, do not rely solely on fast chargers to keep your vehicle topped up, as they are not good for it in the end. Slow charge whenever you can.

How to maximise electric range

- Use accessories wisely: accessories such as heating, air conditioning, and entertainment systems affect fuel economy on all vehicles, but can have a greater effect on EVs. However, using seat warmers instead of cabin heater can save energy and extend range.
- Use the economy mode: Many EVs come with an "economy mode" or similar feature that maximises the vehicles fuel economy. In some vehicles, this mode can be activated by simply pressing a button. The economy mode may limit other aspects of the vehicles performance, such as acceleration rate, to save fuel.
- Plan ahead before driving: pre-heating or pre-cooling the cabin of an all-electric vehicle or plug-in hybrid electric vehicle while it is still plugged in can extend its electric range. Especially in extreme weather.
- Avoid hard braking and anticipate braking: this allows the vehicles regenerative braking system to recover energy from the vehicles forward motion and store it as electricity. Hard breaking cause the vehicle to use its conventional friction brakes, which do not recover energy.
- Observe the speed limit: efficiency usually decreases rapidly at speeds of 50mph and above.

Driving an electric commercial vehicle on a standard driving licence

The government has approved a change to driving licence legislation designed to make it easier for people to use electric vans. The new rule came into force on 24 July 2018 after a consultation a year earlier and is designed to make it easier for manufacturers to sell alternative fuel vans in the UK and take the hassle out of applying for more complex licences. Essentially, it means van operators can drive a heavier-than-normal van with a conventional driving licence – providing it's powered by something other than petrol or diesel.

Motorists with a Category B licence – the conventional type you get when you pass your car driving test – are already allowed to drive most normal vans that weigh no more than 3500kg; however, the new legislation allows Category B licence holders to drive alternative fuel vans that weigh up to 4250kg.

But there are some conditions. Category B licence holders are not automatically allowed to drive the vehicles in question. Before they can get behind the wheel of a heavier alternative fuel van, they must first complete a minimum of five hours' training at the helm of such a vehicle with a registered instructor.

EV driver training

We are proud to be working in partnership with DriveTech. DriveTech, which is part of the AA, is the world leader in fleet risk and safety management, and driver training.

To help support you in giving confidence to your drivers we can work with Drivetech to provide various training and online courses for EV driving. A few of the on-road courses currently available are:

EV & PHEV familiarisation - introductory training session, designed for drivers who are new to, or are thinking of driving an Electric Vehicle (EV) and/or Plug-In Hybrid Vehicle (PHEV). The session is a blend of vehicle familiarisation, safe vehicle operation and efficiency.

EV & PHEV Real World Driver - understand the unique operation, maintenance & driving strategies required to maximise safety and efficiency of electric vehicles (EV) and Plug-In Hybrid Vehicles (PHEV). In addition to vehicle familiarisation, this on-road session includes coaching for maximising range, charging strategy & safe operation, ensuring your business & drivers get the most out of these innovative vehicles.

We can provide you with more information around the services available upon request.

KINTO support:

Here at KINTO we can support you by working in partnership with manufacturers to help organise and promote EV events at you company site. By arranging test drives for vehicles and expert speakers from the manufacturers, we will create a day that will help you promote electric vehicles in line with your company objectives.

Breakdown

If a KINTO customer should break down whilst driving an electric vehicle, they can rest assured that they will be in safe hands. Our award-winning breakdown partner is expertly equipped to deal efficiently with recovering electric vehicles and will ensure your drivers are safely back on the road as soon as possible.

Heavy 4x4 patrol vehicles provide the following benefits:

- ✓ Improved vehicle train weight capacity
- ✓ Super HDRDT trailer system to increase the tow capacity by 150kg axle weight and 350kg gross vehicle weight over current fleet. This will enable recovery of vehicles with an increased kerb weight of up to 2440KG
- ✓ Improved passenger capability (limited)
- ✓ EV boost charging capability
- ✓ Capacity to recover motorcycles
- ✓ All wheel drive capability for inclement weather

EV charging solution

Charging via Pod Point:

- ✓ Pay As You Go (PAYG)
- ✓ 1,700 public charging bays across the UK
- ✓ Points will be integrated in Patrol Sat Nav
- ✓ Retail outlets & supermarkets
- ✓ Customer app for availability and location

Benefits:

- ✓ EV solution with standard Patrol vehicle
- ✓ Swift up-scale process
- ✓ Lesser overall impact on environment

Increased patrol towing capacity with 'all wheels up' capability

4x4 models can be towed with this solution without the need for a second recovery resource.

Towing can be completed for faults such as:

- ✓ Handbrake faults
- ✓ Transmission or driveline faults
- ✓ RTAs
- ✓ Electric vehicles, lowered vehicles and vehicles with broken road springs

Benefits for customers:

- ✓ Reduced customer waiting times
- ✓ No need to wait for a second resource
- ✓ Improved roadside service
- ✓ Ability to lift a 2T vehicle

Servicing & MOT

Are you considering changing to an electric vehicle but have concerns about servicing and MOT? Will it cost me more money? Can I take my vehicle to my local garage? Does a service and MOT work the same as with a petrol or diesel vehicle? Will it take longer to complete?

Servicing and maintenance costs on electric vehicles (EVs) are lower than on standard petrol or diesel vehicles. There are fewer moving parts than an Internal Combustion Engine (ICE), for example, an electric vehicle does not have:

- Gearbox
- Clutch
- Exhausts including Catalytic converter and DPF's (Diesel particulate filter)
- Engine fluid top ups
- Fuel tanks and lines
- External alternators
- Starter motors
- Emission sensors including EGR (exhaust Gas Recirculation) valves
- Glow plugs
- Service items (spark plugs and filters)
- Timing belt replacements – Auxiliary belts (alternator belts)

The regenerative braking on many electric vehicles also means that there is much less wear and tear on brake pads and discs.

Even if you have chosen an EV, the vehicle will still require regular servicing and MOT's, in line with the manufacturer's schedules. Although the software and technology is built into the vehicles, there are some manufacturers such as Tesla, that state they can rectify many issues with software updates which they are able to complete remotely.
EVs still require regular MOT testing after 3 years, however some say that as these vehicles have no emissions there are less areas in which the vehicle could fail.

Some common concerns and misconceptions about EV servicing and MOTs:

Where can vehicles be taken – do I need to go to a specialist garage?

No. However at the moment not all garages have EV qualified technicians.

If your EV is still under warranty, we recommend taking the vehicle to the manufacturer as the repair could be a warranted item. If the vehicle is out of warranty, then an EV qualified non-franchised garage can be used as they will have the equipment and knowledge to work on EV vehicles.

Do the dealerships / garages require clean rooms?

All qualified EV repairers must have an area that can be coned off as a designated area to ensure all personnel know that the vehicle is an EV and to ensure no one without the relevant qualifications works on the vehicle.

Do I need an accredited engineer to work on my EV?

Yes, manufacturers and the Institute of the Motor Industry (IMI) are currently training EV technicians throughout the UK, and a technician should only work on an EV vehicle if they have the correct qualifications.

When we book your vehicle into a garage we will ensure it is booked into a garage that has the necessary clean room and accredited EV technician.

I have heard it is more difficult to replace my tyres?

When selecting replacement tyres for an EV, it is critical to check that the tyre has been developed with the right characteristics required to provide an EV with an efficient performance.

As it stands, there are not too many tyres on the market yet that have been designed specifically for use on EVs but it is unlikely that this will remain the status quo for long since automotive manufacturers are increasingly developing and making improvements to electric vehicles. Tyre manufacturers are already working hard to develop tyres which meet the specific demands of electric vehicles.

Tyres on an electric vehicle do, however wear quicker due to the softer rubber compound and the torque (twisting force) on the wheels.

Are parts more expensive?

On average, EV parts are 30% more expensive because they have to last longer. Brake pads and discs are the best example as these are not used like on an ICE vehicle as the regenerative braking function does not actually slow the vehicle by using the brake pad and discs but rather by using the gearbox. This in turn means the brakes are open to the elements and can corrode. And the solution that the manufacturers have needed to produce in order to resolve these issues, has resulted in the parts being more expensive.

Technology

Sat Nav technology

Electric vehicles come with technology on their Sat Navs which uploads the location of various charge points. Although you will always plan your journey prior to leaving your destination, the useful guide to charge point locations will give you reassurance and comfort that you will always be able to find somewhere to charge.

Vehicles still come with all the mod cons

You may think that electric vehicles have limited technology, as this will use up the battery power, however this is not the case and vehicles still come with all the technology you may need. Some of these options are: heated windscreens, air conditioning, electric windows, Sat Nav, Tyre Pressure Monitoring System (TPMS), electric operated door mirrors and cruise control. Dependant on the make and model you choose, more options may be available as standard.

Regenerative braking

Many electric vehicles these days have the capability to capture the energy from braking and either use it immediately or store it in the battery. However, the most efficient way to drive an electric vehicle is to accelerate to a constant speed and only touch the brake when required.

Journey planning

Along with using the in-vehicle Sat Nav giving you guidance on where charge points can be located there are also third party maps that can be used.

Driving technologies

Nissan ProPILOT – automatically keeps pace with the flow of traffic. Activate ProPILOT to let your car automatically follow the car ahead at a present distance and keep you centred in your lane. Push the ProPILOT Park button to let your car take control of steering, acceleration, braking, and shifting to automatically manoeuvre into a parking spot

Hyundai – provide autonomous emergency braking with pedestrian detection, lane keep assist, rear cross traffic alert reduce the risk of collision with approaching traffic when reversing out of narrow areas with low visibility. Lane follow assist and lane keep assist, blind spot detection.

Audi E-Tron – Parking system Plus with 360o display to help manoeuvre you in or out of tight spots. Audi Connect infotainment provides high-speed 4G internet access in your car via an embedded SIM card. Audi Pre-sense Front and Basic – monitors the traffic in front of the vehicle for potential collision hazards. Lane departure warning.

ZapMap – A UK wide map of charging points. The website has various functions; a map of all charge points with details of each of the points. A journey route planner showing you the most efficient route to take and the charge points along the way and many more functions. You can download an app straight onto your phone.

The Cost of EVs

The Cost of EVs

Often when considering whether to switch to an EV, there are some concerns that they are too expensive. But, whilst the initial cost of an EV may currently be slightly higher than the petrol or diesel version, the cost to run one is significantly cheaper in the long run.

There are a number of factors that make an EV cheaper than its equivalent if you take running costs and lifetime costs into account.

Purchasing an EV

Pure electric vehicles currently benefit from the government Plug in Car and Van Grants. These grants enable discounts of up to £3000 off the price of an electric car, and up to £8,000 off the price of an electric van.

EVs also currently hold their value better than their petrol and diesel counterparts- this is great news if you are purchasing an EV, but also if you are leasing an EV it helps with the costs as there is less depreciation.

Charging an EV

The cost of charging an electric car is one of the biggest attractions of switching from petrol or diesel. Compared to Petrol or Diesel, electricity is cheap. On a cost per mile basis this means a pure electric car could cost a third (or less) of what a traditional petrol or diesel car might cost.

In order to make charging your EV as cost effective as possible, you'll need to have an EV charging point installed at your home. At present there are grants of up to £350 available towards the cost of installing a home charge point. The government's Workplace Charging Scheme also provides eligible businesses with support towards the installation of workplace charging points.

There may be a time where you need to use a public EV charging point. Some places are now offering free charging - for example in shopping centres, supermarkets or hotels, allowing you to top up the charge of your vehicle while you are stopping for groceries.

If you visit a chargeable EV charge point, you can expect to pay between £1.50 and £4 per hour for fast charging, whilst rapid chargers cost around £12.50 an hour. Both are still considerably cheaper than topping up with petrol or diesel.

Maintaining an EV

When you think of a petrol or diesel vehicle, you appreciate that the engine is rather complex, requiring many additional components to operate correctly – exhaust systems, starter motors, fuel injection systems, oil, radiators, gears.

Pure electric vehicles, on the other hand, have just three main components – the on-board charger, inverter and motor – and fewer moving parts than vehicles with an internal combustion engine. This means there are less things requiring maintenance and servicing is simpler. All of which can significantly save money.

Plug-in Hybrid Electric Vehicles (PHEVs) can also be cheaper to maintain than 'traditional' petrol or diesel-powered alternatives. Whilst these have a petrol engine that needs regular servicing, the electrical motor requires little maintenance due to far fewer moving parts, which leads to less wear and tear of the petrol engine component.

Other cost savings

With the government setting out their Road to Zero strategy, a long-term plan to tackle rising CO2 levels in the UK by moving towards to zero-emission road transport, driving an EV will also include further savings as the government roles out initiatives to meet their objectives.

For example, Electric Vehicles currently pay as low as 1% BIK tax and are currently exempt from VED. Plug-in hybrids are likely to cost between £0 and £100 for the first year depending on CO2 emissions, and then increase to £140 each year after.

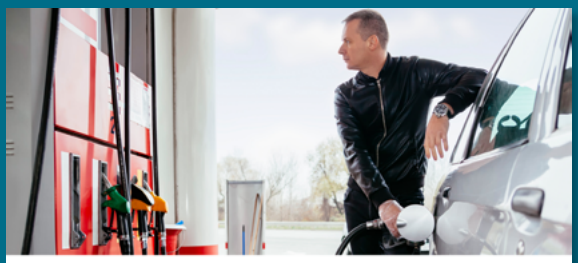
And with the increase of Clean Air Zones and Ultra Low Emission Zones being introduced around the country and in London, with fees designed to discourage polluting vehicles from entering certain areas, a key benefit of an electric vehicle is being exempt from these charges.

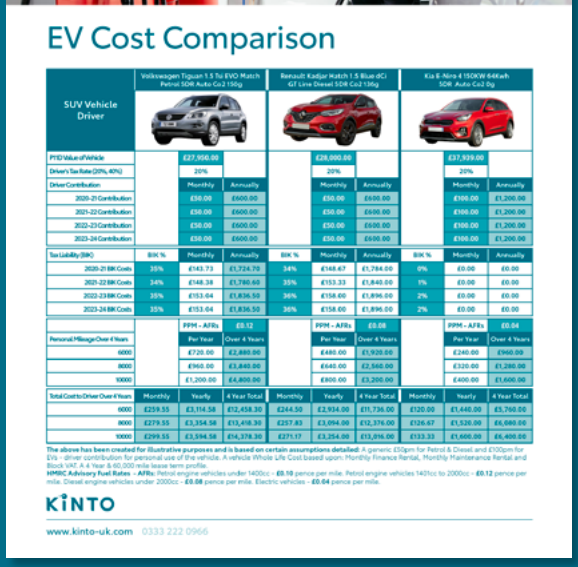
So before you say no to an electric vehicle based purely on the retail price, make sure you consider the other costs that a typical vehicle will have during its life.

EV Cost Comparison

Here are KINTO we have created some EV cost comparison examples, these examples show how an EV can compare to its petrol and diesel counterparts for both companies or individuals looking to go Green.

Take a look at our EV Cost Comparison **here**.




EV Cost Comparison

SUV Vehicle Driver	Volkswagen Tiguan 1.5 TSI EVO Match Petrol SDR Auto Co2 150g	Renault Kadjar Match 1.5 Blue dCi GT Line Diesel SDR Co2 136g	Kia E-Niro 4 150KW 64Kwh SDR Auto Co2 0g
P11D Value of Vehicle	£27,950.00	£28,000.00	£37,939.00
Driver's Tax Rate (20%, 40%)	20%	20%	20%
Driver Contribution	Monthly / Annually	Monthly / Annually	Monthly / Annually
2020-21 Contribution	£50.00 / £600.00	£50.00 / £600.00	£100.00 / £1,200.00
2021-22 Contribution	£50.00 / £600.00	£50.00 / £600.00	£100.00 / £1,200.00
2022-23 Contribution	£50.00 / £600.00	£50.00 / £600.00	£100.00 / £1,200.00
2023-24 Contribution	£50.00 / £600.00	£50.00 / £600.00	£100.00 / £1,200.00
Tax Liability (BIK)	BIK % / Monthly / Annually	BIK % / Monthly / Annually	BIK % / Monthly / Annually
2020-21 BIK Costs	35% / £143.73 / £1,724.70	34% / £148.67 / £1,784.00	0% / £0.00 / £0.00
2021-22 BIK Costs	34% / £148.38 / £1,780.60	35% / £153.33 / £1,840.00	1% / £0.00 / £0.00
2022-23 BIK Costs	35% / £153.04 / £1,836.50	36% / £158.00 / £1,896.00	2% / £0.00 / £0.00
2023-24 BIK Costs	35% / £153.04 / £1,836.50	36% / £158.00 / £1,896.00	2% / £0.00 / £0.00
	PPM - AFRs / £0.12	PPM - AFRs / £0.08	PPM - AFRs / £0.04
Personal Mileage Over 4 Years	Per Year / Over 4 Years	Per Year / Over 4 Years	Per Year / Over 4 Years
6000	£720.00 / £2,880.00	£480.00 / £1,920.00	£240.00 / £960.00
8000	£960.00 / £3,840.00	£640.00 / £2,560.00	£320.00 / £1,280.00
10000	£1,200.00 / £4,800.00	£800.00 / £3,200.00	£400.00 / £1,600.00
Total Cost to Driver Over 4 Years	Monthly / Yearly / 4 Year Total	Monthly / Yearly / 4 Year Total	Monthly / Yearly / 4 Year Total
6000	£259.55 / £3,114.58 / £12,458.30	£244.50 / £2,934.00 / £11,736.00	£120.00 / £1,440.00 / £5,760.00
8000	£279.55 / £3,354.58 / £13,418.30	£257.83 / £3,094.00 / £12,376.00	£126.67 / £1,520.00 / £6,080.00
10000	£299.55 / £3,594.58 / £14,378.30	£271.17 / £3,254.00 / £13,016.00	£133.33 / £1,600.00 / £6,400.00

The above has been created for illustrative purposes and is based on certain assumptions detailed: A generic £10pm for Petrol & Diesel and £100pm for EVs - driver contribution for personal use of the vehicle. A vehicle Whole Life Cost based upon: Monthly Finance Rental, Monthly Maintenance Rental and Block VAT. A 4 Year & 60,000 mile lease term profile.
HMRC Advisory Fuel Rates - AFRs: Petrol engine vehicles under 1400cc - £0.10 pence per mile. Petrol engine vehicles 1401cc to 2000cc - £0.12 pence per mile. Diesel engine vehicles under 2000cc - £0.08 pence per mile. Electric vehicles - £0.04 pence per mile.

KINTO

www.kinto-uk.com 0333 222 0966

Electric cars currently available

Range (miles)

140+


Nissan Leaf


Mini Cooper S


Citreon Space Tourer


MG ZS

170+


Audi E-tron


BMW i3


Hyundai Ioniq


Fiat 500e


Kia Niro


Peugeot 208


Lexus UX300e

200+


Vauxhall Corsa


Mercedes EQV


DS3

230+


VW ID3


Jaguar I Pace


Toyota bZ4X


Volvo Xc40


Renault Zoe


Tesla Model X


Mercedes EQS

Electric vans currently available

Range (miles)

65+

MAN eTGE
(68 - 71 miles)

Mercedes eSprinter
(71 - 93 miles)

VW e-Crafter
(68 - 71miles)

Mercedes eVito
(92 miles)

VW eTransporter
(82 miles)

Iveco Daily Electric
(Varries)

100+

Citroën ë-Relay
(99-140 miles)

Peugeot e-Boxer
(99 - 140 miles)

Peugeot Partner Electric
(106 miles)

Citroën Berlingo Electric
(106 miles)

Nissan e-NV200 40kWh
(124 miles)

Renault Master ZE
(124 miles)

140+

Renault Kangoo ZE 33
(143 miles)

Maxus e Deliver 3
(150 miles)

Vauxhall Vivaro-e electric
(143 - 205 miles)

Toyota Proace Electric
(143 - 205 miles)

Peugeot e-Expert
(143 - 205 miles)

Citroen Dispatch Electric
(143 - 205 miles)

Fiat Ducato Electric
(136 - 223 miles)

170+

Morris Commercial JE
(200 miles)

Maxus e Deliver 9
(up to 184 miles)

230+

Renault Zoe Van
(245 miles)

KINTO

Vehicle availability and range are subject to constant review and other vehicles may be available

Useful Links

https://www.kinto-uk.com/ev-hub/

www.gov.uk/plug-in-car-van-grants

www.gov.uk/government/collections/plug-in-vehicle-chargepoint-grants

www.zap-map.com/electric-vehicles/ev-buying-guide/

www.automotiveev.com

https://www.edfenergy.com/electric-cars

https://pod-point.com/

https://chargeplacescotland.org/live-map/

www.fleetworld.co.uk/vehicle-to-grid-tech-could-save-ev-drivers-300-a-year-finds-research-project/

www.greenbiz.com/article/vehicle-grid-technology-revving

https://www.shell.co.uk/make-the-future/cleaner-mobility/the-great-travel-hack/season-one/fuels-vehicles.html#vanity-aHR0

www.nationalgrid.com/document/125116/download

www2.deloitte.com/content/dam/Deloitte/uk/Documents/manufacturing/deloitte-uk-battery-electric-vehicles.pdf

www.pwc.co.uk/industries/power-utilities/insights/electric-vehicle-infrastructure-report.html

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