

ELECTRIFYING^{CO.}

THE COMPLETE

GUIDE TO GOING ELECTRIC

EVERYTHING YOU NEED TO KNOW
FROM THE ELECTRIC EXPERTS™



- ⊕ IS ELECTRIC RIGHT FOR ME?
- ⊕ HOW TO CHARGE YOUR CAR
- ⊕ ELECTRIC OR HYBRID?
- ⊕ BATTERY FACTS
- ⊕ TOP OWNING TIPS
- ⊕ SALARY SACRIFICE



Welcome

At Electrifying.com we're proud to be the electric car experts. But that wasn't always the case and despite the fact that I've driven hundreds of different cars over the years, making the switch from an internal combustion engine car to electric still took quite a bit of getting used to.

But I'm now hooked on electric cars (even though I made a few mistakes along the way!) and it's great to share the knowledge the whole Electrifying.com team has picked up about them in our handy **Guide to Going Electric**.

Why do we need one? Well, although electric cars are incredibly simple to drive and own, they do require a change of mind-set – especially for those of us who are switching after decades of driving petrol and diesel cars. There's new terminology to get to grips with along with a new approach to 'refuelling'. Thankfully, it's all easy to master, and as the number of electric cars on our roads continues to rise, making the switch to electric is easier than ever.

I hope the following pages help clear the air, but if you have any questions about electric cars then feel free to send them over to us on social media (the links are on the back page of this guide) or through the website and we'll do our best to answer them.

Ginny Buckley

Founder and CEO – [Electrifying.com](https://www.electrifying.com)

CONTENTS

Is an electric car right for me?	03
What are BEVs, PHEVs and HEVs?	04
Five things you need to know about buying and electric car	06
Don't worry about the battery	08
How to recharge an electric car	10
Electric car jargon-buster	12
What is salary sacrifice?	14
What is an electric car like to drive?	16
Electric car myth-busting	18



Want to keep up to date with the latest electric car news and advice? Click here to sign up to our free weekly newsletter



Is an electric car right for me?

Making the switch to electric is easy, but you'll need to ask yourself a few questions to ensure that now is the right time to do it

Much as we love electric cars at Electrifying.com, we know that making the switch is easier for some drivers than others. That's why we advise anyone considering going electric to have a quick look at the sums to see if they can easily make the switch.

Firstly, you'll need to do some maths. Have a look at how you actually use your car, the kinds of miles you do regularly, and your lifestyle – they'll all impact on which car you should buy.

Tot up what you'd usually spend on fuel, road tax, servicing and the usual stuff like insurance, then compare it to the running costs of an electric equivalent.

Included in that should be any tax incentives (such as Benefit in Kind if you have a company car) and the cheapest domestic energy supplies.

If you're only doing a big trip of 150 miles or more once or twice a year, for example, you might not

really need a car with a big battery. That means you can save some money on the purchase price and improve efficiency. You might need to top up for half an hour on the odd big trip, but it really isn't that much hassle and will be worth the savings.

The thought of charging concerns a lot of people, but it really isn't that difficult. If you can have a home wallbox, that's the easiest – and cheapest – way to charge. You wake up to a full 'tank' every day if you want and never have to visit a petrol station again.

But all is not lost if you can't have a home charger: most people in the UK only do 20 miles-ish a day, and so a car like a Citroën ë-C4 with a 200+ mile range will only need charging at a public charger once a week.

And even if you have to make longer journeys, you soon get used to using public stations and rapid chargers at motorway service stations and other places like supermarkets and restaurants. Smartphone apps like Octopus Electroverse, WattsUp and ZapMap give you live information on where the nearest chargers are, and they'll even tell you if they're being used.

We know it sounds a little bit complicated. But once you properly try an electric car, very few people want to switch back! They're quick, quiet, efficient and good for your wallet as well as the environment. Doing a bit of research before you make the switch will make all the difference to your electric car journey – but we are here to help every step of the way.

“ Even if you have to make longer journeys, you soon get used to using public stations and rapid chargers.”

Nicola loves her electric car so much, she often carries her charging cable around to introduce it to strangers



What are BEVs, PHEVs and HEVs?

The car industry loves an acronym, and with the arrival of electric cars, the geeks have gone into overdrive. But fear not, because we're here to cut through the code and explain in simple terms what they all mean

Choosing a car can be a bit of a minefield. You have to navigate cost, practicality, insurance... and that's even before you start wondering what colour you want, or what style of wheels or trim. You're constantly trying to balance what you want, versus what you actually need.

Just as you start to get your head around all of terms, along come electrified vehicles, with new acronyms and terms which sound like words that wouldn't be allowed in Scrabble. But we're here to clear the air and help you make the right choice for you and the way you drive. So we'll start with how to choose between a pure electric BEV, a plug-in hybrid PHEV or a hybrid HEV.

These are three different ways of powering a car, with varying levels of, er... electricness. All three offer some form of electric assistance that can help reduce your running costs and emissions. If you're looking to make the switch and want to know which one is right for you, you've come to the right place...

Battery Electric Vehicle (BEV)

BEV isn't just that nice lady in accounts who brings in cakes every Friday. It stands for Battery Electric Vehicle, which means there is no traditional engine at all. Instead it has a big battery pack and electric motor. You never have to fill up with fuel again because you plug it into a charging point at home or use a public charger.

A BEV produces no localised emissions, is almost silent and can be considerably cheaper to run than a petrol or diesel car. If you're able to charge at night and take advantage of cheap rate electricity, a family-sized car like a Volkswagen ID.3 will cover around 48 miles on a pound's worth of electricity. That's about a quarter of the cost of running a petrol or diesel car.



Ginny's tip

"Discover the key differences between the various kinds of electric cars first before narrowing down your search. Full electric cars work for most owners, but you might find that a PHEV is better suited."



Fully electric cars come in all shapes and sizes, from city-friendly superminis to family-sized MPVs like the retro-styled Volkswagen ID.Buzz

Plug-in Hybrid (PHEV)

A PHEV – or plug-in hybrid electric vehicle – has a smaller battery than you'll find in a BEV and it can be plugged into the grid to charge. That substitutes some of the miles you'd usually be using petrol with electric running, which makes it cheaper to run as electricity costs less than fuel.

PHEVs can't match BEVs for electric range and you'll usually get between 30-80 miles on electric, depending on the model. If you're doing a longer trip then the car automatically switches to its petrol engine.

Hybrid Electric Vehicle (HEV)

Finally, we have a HEV – otherwise known as a hybrid electric vehicle. That means it has a traditional petrol engine, an electric motor and a small battery pack, which work together. When you press the brakes to slow down, the energy is recovered by turning the motor into a generator to top up the battery. Then the power is used by an electric motor to boost the petrol engine when you are moving away from a stop or wanting a bit of extra acceleration.

Generally, a good hybrid will use 20% less fuel than an internal combustion engine. But this is not an electric car in the traditional sense as it never uses power from a plug – it's a petrol or diesel car which has been made more efficient.

Which option is best?

There are pros and cons for each. The one which is best for you will depend on the type of journeys you do most often and if you have access to charge easily. You will also need to check if you can get incentives to go electric, such as company car tax benefits.

A hybrid is effectively still a petrol or diesel car, just more efficient. So if you're keen to switch to an electric car then this isn't the right option for you. A PHEV is more expensive than a straight hybrid, but it can run for much greater distances on electric-only power. If you're a business

user, a PHEV can attract some serious Benefit-in-kind advantages, without ever having the practical issues of a pure electric car. It's also as convenient as a hybrid, because if you can't charge or are doing longer journeys, it just uses the engine.

A pure electric car is quiet, calm, and quick. If you are on a long journey the charging takes longer than visiting a petrol station, but if you have home charging, you wake up every morning to a full "tank". Bear this in mind if you think a pure electric car won't work for you because you do a long trip a few times a year – the inconvenience of needing to stop for 30 minutes to rapid charge the battery is actually outweighed by the convenience of never having to visit a fuel station for the rest of the year.

And pure electric gets all of the tax incentives. You don't pay congestion charges, there's no road tax (until 2025), and company car drivers will currently pay 2% benefit in kind tax (2023-2024), which could save thousands every year.

What about the cost?

One of the biggest issues with pure electric vehicles is that they are generally more costly than their more traditional equivalents, but prices are starting to come down and there are now more affordable models on sale that compete on price with an equivalent petrol car, and don't forget you'll also save money with lower running costs.

A PHEV is a good compromise, combining the convenience of a traditional car with some of the capability of a pure electric. If you plug one in regularly and have access to home charging, you can seriously improve your efficiency without compromising convenience.

But as charging gets both faster and more convenient – and charging stations are popping up everywhere now – a pure EV is better to drive and for the environment as a whole.

“Most of us drive fewer than 20 miles a day, so that means you could do the bulk of your journeys in EV mode. And if you're doing a longer trip then the car automatically switches to its petrol engine.”



Plug-in hybrid (PHEV) cars like the Skoda Superb iV combine battery electric power and a traditional combustion engine and are a good option for those who aren't ready to go fully electric

5 things you need to know before buying an electric car



If you're considering going electric with your next car or a van you've probably got a few questions. Are we right? Thought so. Here at Electrifying.com, we're answering questions all the time: from the complicated ones about how much money you could save, to the more surprising ones about whether you can drive an electric car in the rain. Yes, we really do get asked that.

Much as we like answering questions, we also like to stay one step ahead. The Electrifying.com team has been driving electric cars for years now, and during that time we've learned a lot. So if you're planning to go electric any time soon, do not click away because these are the FIVE things you need to know BEFORE you buy an electric car

Ginny's tip

"Of all the confusing things out there, I think charging speeds are the biggest issue. Just remember that your car limits the speed at which it can charge, so don't get frustrated when you don't achieve the speeds on the charger."



1 Do your maths

Before you get into the nice parts of ordering a car like choosing the colour and what options you might go for you really need to do your sums first. Yes, we know it sounds boring and about as much fun as sorting your home insurance, but it's really, really important to get on top of your numbers.

First up, work out how many miles you do in a week. You don't need to be ultra precise – we won't be checking. Use the [range calculator](#) on the Electrifying.com site if you're struggling. This figure is important, because it will tell you whether a pure electric car is right for you. The average mileage in the UK is around 20 miles a day or just over 140 miles a week. If that sounds like you, then bingo – an electric car is going to be perfect for you. In fact, even if you did six times the UK average, you'd still be perfectly suited to an electric car.

If you've done those sums and you're regularly doing more than a thousand miles a week, then you might be better off choosing a plug-in hybrid which can be better suited to high mileage drivers.

2 Calculate the TOTAL cost, or TCO

Don't put that calculator away just yet. But we're nearly done – we promise. You may have heard a term that often comes up when people discuss electric cars: Total Cost of Ownership or TCO as those people who like to talk in code like to call it.

As you will almost certainly have noticed, electric cars usually cost more to buy than the equivalent petrol or diesel cars. The gap is coming down all the time as batteries become cheaper to produce, but right now, you'll still pay more to go electric.

Or will you? That's where total cost of ownership comes in. Because owning a car is more than just the price you pay either outright or every month. The monthly cost of running ANY car includes fuel, road tax and other things like maintenance. If you're driving a company car, you'll also need to add Benefit in Kind tax to your totals too.

By choosing electric, those 'other' costs are usually a lot less. If you're able to charge at home on cheap-rate electricity, you'll be able to fill a car like a Volkswagen ID.3 for around six pounds. You'll also pay no road tax as all electric vehicles are zero rated until 2025.

Maintenance? Well, you won't be shelling out for a new exhaust or clutch after a few years because electric cars don't have them. Electric cars have far fewer moving parts than an internal combustion engine car, so there's less to look after.

And there's even better news if you have an electric car as a company car. Currently, you'll pay just 2% benefit in kind tax on a fully electric car - which could save you thousands of pounds over the course of a year.



Even Nicola is excited at the prospect of working out her potential savings. Do your sums to see if you'll be able to reduce your running costs

3 You REALLY don't need to worry about your battery lasting

One of the questions we get asked on a regular basis here at [Electrifying.com](https://www.electrifying.com) is 'Do I need to worry about how long the battery will last?' Well, the simple answer is no, you really don't need to worry.

That's because electric car batteries are designed to last the lifetime of the car and actually lead a very stress-free life. Most electric cars have a heater to keep it warm in cold weather and a cooling system to keep it cool when it gets hot. All electric cars have what's called a battery management system (BMS) that prevents the likes of you and me doing anything to risk its health. And if you're still concerned, battery packs on all electric cars have much longer warranties than the rest of the car.

The vast majority of electric cars come with eight year, 100,000 mile warranty. If the capacity dips below 70% of its original capacity in that time, it will get repaired.

4 Work out your charging

We'd all admit that the subject of charging can be a little confusing at first. There are different speeds, different connectors and a whole new bunch of acronyms to get your head around. But trust us, it's all simpler than it sounds and you'll be up and running in no time.

Let's cover off the basics. If you're able to charge at home, we recommend that you have a proper charger fitted (check out our [reviews](#) to find the best on the market). Yes, you can technically charge an electric car from a three-pin plug, but it will take a very long time and you'll need to make sure that the socket you plug in to is up to the task.

A charger has to be fitted by a qualified electrician and is wired directly to your incoming supply for safety. It will take a bit of time to get one ordered and fitted, so make sure you get the ball rolling as soon as you've made the decision to buy the car.

You should also look into switching to a specific [electric car energy tariff](#). These are only open to electric car owners, but they give you cheap-rate electricity for a few hours every night.

5 Don't be scared by the idea of public charging

If you don't have off-street parking or can't get a home charger fitted, don't worry because there are plenty of other options. Public charging has advanced in leaps and bounds over the last few years and while there's still room for improvement, the situation across the country is pretty good. There are two kinds of public chargers, destination chargers where you'll need to be plugged in for a few hours to fill up, or rapid chargers where you can top up in minutes.

Destination chargers tend to be in places where you'll leave your car for a longer period of time such as gyms, offices and stations. Rapid chargers are usually on major routes and are a bit like the petrol stations of the electric world.

Unlike a petrol or a diesel car where you fill up at the same speed, things are a little different when it comes to electric. All electric cars have a maximum charging speed and all rapid chargers have a maximum output. Both are measured in kilowatts (kW).

The trick to minimising the time you spend charging is to find a charger that can make the most of your car's charging speed. Let's put some figures on this. A Vauxhall Corsa electric can charge at a maximum rate of 100kW, so if you plug it into a 50kW charger, you'll charge at a slower rate than you would be if you were connected to a 100kW unit. Don't worry if the charger has a higher output than 100kW, it will only draw as much power as the battery allows.

How do you know which chargers charge at what speeds in advance? The good news is that you can do it from the comfort of your sofa. There are a number of apps that will show you where the chargers are, what speed they are and also if they're being used. Some of the best ones used by the team are Octopus Electroverse, Zap-Map, WattsUp and PlugShare. They are free to download and use and could save you a lot of time. You can also check out pricing and information about the UK's biggest network providers on our [Charging Away from Home](#) pages on [Electrifying.com](https://www.electrifying.com).



Don't worry about the battery. (Unless you like worrying...)

The nay-sayers will have you believe that we'll all be replacing electric car batteries every couple of years. Fortunately, the reality is quite different...

One of the most commonly asked questions we receive at Electrifying.com is 'when will I need to replace the battery in my electric car?'. On the face of it, this sounds a very sensible query. After all, battery packs are enormously expensive parts of electric cars and most of us can barely keep a mobile phone alive for more than three years. Factor in a regular feed of headline-grabbing horror stories from the click-hungry mainstream media and you can understand why so many buyers assume that they'll be faced with a battery replacement bill during their period of ownership.

If you really can't be bothered to read to the end of this article, here's the short answer: you will (almost certainly) never have to replace the battery in your electric car. Battery packs are the most over-engineered, pampered and protected parts of any electric car. They are fitted with so many fail-safes and management systems that they have the potential to comfortably outlast the rest of the car.

Electric car batteries and mobile phone batteries are NOT the same

Mobile phones have lithium-ion batteries. So do electric cars. And that's pretty much where the similarities end. Comparing the two is understandable, but it doesn't tell you the full picture. Mobile phone batteries

(which are a single cell) are made to deliver maximum power for minimal cost. They have no heat protection and get charged every night. Mobile phone batteries are designed and engineered to endure around 500 charge cycles before the performance starts to deteriorate. Mobile phone makers assume that after 500 cycles, you've either dropped it down the toilet, smashed the screen or been tempted into buying a better one.

An electric car battery is made up of multiple cells. A Ford Capri, for example, has a pack that contains 288 cells - all of which are built to automotive grade rather than consumer grade as you'll find in a phone. Each one of those cells sits within a pouch that has a water cooled jacket that keeps it in the 'goldilocks' zone. No matter how you drive, the battery's management system ensures that each and every cell operates at the perfect temperature.

In an electric car battery, not all the cells are pressed into action. You may have noticed that car makers quote two capacities when it comes to batteries, net and gross or usable and total. The reason for this is battery health. Lithium ion batteries hate two things more than anything else: being empty and being completely full. Both can damage the chemistry of the pack. To prevent this, car makers allocate a buffer amount - a percentage of the battery that is only there to protect it. When your battery display shows empty or full, it's actually neither.

Ginny's tip

"If battery life really concerns you, double-check the small print in the warranty. Here you'll find key details relating to the mileage and cover period that should put your mind at rest. They do vary, so check first."



DISCOVER MORE...



Is Nicola worried about her electric car battery? Of course not. She's just trying to remember where she left her keys

Batteries are lasting much longer than even the experts thought

When the first mass market electric cars first arrived just over 10 years ago, car makers were a little nervous about how long they could last. Although manufacturers went to great lengths to test packs to destruction with multiple charge and discharge cycles (far more than cars are ever likely to have), nobody quite knew what to expect over the course of time.

Today, any concerns about longevity have long since been dispelled. Tesla was one of the first brands to sell electric cars in large numbers in the UK. As a result, it has some of the oldest electric cars on the road in the UK. According to figures provided by Driver and Vehicle Standards Agency (DVSA), there are more than 720 Tesla models with at least 100,000 miles on the clock. More than 40 have in excess of 200,000 on the clock. The same figures show that at least three Model Ss have covered more than 300,000 miles, with the highest mileage example having been driven 375,000 miles. According to Tesla, its packs should last between 300,000 and 500,000 miles before they need replacing.

Today's battery packs are significantly more advanced than those fitted to early cars. Not only are the materials used of higher quality, the management systems have improved immeasurably. An early Nissan Leaf battery, for example, had no cooling or heating system

“Almost all of the EV batteries we’ve ever made are still in cars, and we’ve been selling electric cars for 12 years.”

Nick Thomas, Nissan

whatsoever and relied on fresh air to keep it cool. Today, most electric cars come with an integrated liquid cooling system as standard to maintain the pack's health at all times.

Manufacturers don't want the hassle. Or the cost.

Car makers know that buyers are wary of battery technology, which is why you'll always find that the battery packs have much longer warranties on them than the rest of the car. VW electric cars, for example, come with a warranty that guarantees 70% battery capacity for 100,000 miles or eight years. That warranty is fully transferrable and stays with the car. So even if you buy a three-year old car, the battery still has five years of warranty on it.

You might wonder how manufacturers can be so confident. The simple answer is because they know how robust modern battery packs are. Last year, we visited Audi's battery research and development hub in Germany - effectively a torture chamber for electric car batteries. As part of the testing

phase technicians blast the packs with high levels of charge to replicate the worst possible scenarios. The tests run day and night until the packs have completed the equivalent of 300,000kms or 15 years of high mileage driving. Only when the packs have survived this process do they go onto the next stage of development. It's this kind of destruction testing that allows car makers to offer extended warranties with confidence.

And if the worst should happen...

Battery failures are incredibly rare, but as with all manufactured things, they can go wrong. If your electric car battery does go sick, it's unlikely that the manufacturer will need to replace the whole pack. Although individual cells can't be replaced, a battery pack is made up of modules or pouches that contain a set of cells. These can be swapped out like Lego bricks to fix any issues. The same approach is taken if your car's battery suffers damage in an accident.



Audi invited us to see its battery testing facility in Germany where technicians can simulate a complete lifetime of use and abuse. Only when packs survive the equivalent of 15 years of charging and driving are the designs approved for production

How to recharge your electric car

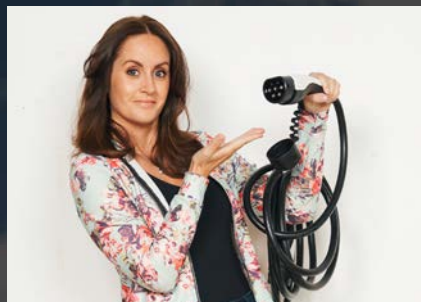
Chargers are the petrol pumps of the electric age. They might look confusing at first, but getting to grips with charging is simple

Sooner or later, any discussion about electric cars comes around to charging. How do you do it, where can you do it, what cables do I need? The good news is that the whole business of charging actually sounds more complicated than it is. Yes, there's some new terminology to get your head around and a few new skills to master, but it's really no more hassle than plugging your phone in every night.

Charging at home

In simple terms, electric cars can be charged at two speeds - slow and rapid. You'll do the former at home, workplace or anywhere where you see an AC charge point. If you have a charging point at home, or even a three-pin plug socket, then you can slow charge your car. If you do this overnight you can take advantage of cheaper electricity rates and, of course, wake up to a fully charged car the next morning.

An average-sized electric car with a 60kWh battery will take around seven and a half hours to charge from completely empty to full if you have a home charger unit, but less if you are just topping up or charging to 80% (which is best for long-term battery health).



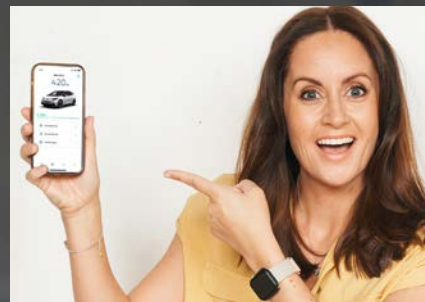
1. Locate your charging cable. If you're using a tethered charger (with a built-in cable), find the end that goes into the car



2. Plug the cable into the car - it will be obvious where it goes!



3. Once the charge has started, you can lock up and leave your car for as long as you want



4. You don't need to go out to the car to check that it's charged. Just use the connected app to check its status

 **DISCOVER
MORE...**



Charging away from home - a step by step guide

Home charging is simple and cheap, but what happens if you aren't able to install a charger at home, or need to fill up mid-journey?

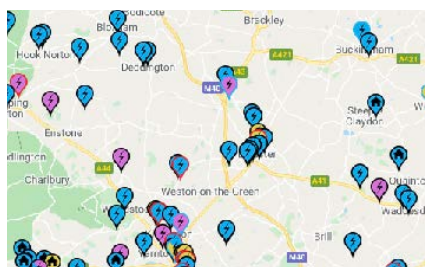
That's when you'll need to use a public rapid charger. These come in all shapes and sizes but they all do the same thing - put a lot of electricity into your battery in a short space of time.

Finding a charger is pretty simple. There are loads of free smartphone apps that not only show where charging points are, they also show you if someone is using it. We'd recommend Octopus Electroverse, ZapMap, PlugShare and WattsApp as great places to start.

But there's a catch here. Not a big one, but one every buyer should be aware of. All electric cars have a maximum charging speed. Some cars, like a BMW i3, have a maximum of 50kW while some newer models can charge at speeds of up to 230kW.

The rate a car will charge will also depend on other factors, such as the outside temperature and how many other cars are plugged in at the same time. The speed at which your car will charge fluctuates throughout the charging session. The car controls the rate at which the battery is charged and only allows high levels of charge when the pack is at the perfect temperature. It's usual to see quite low speeds when you first plug in (the battery will be cold) and when you reach capacity (when it will be hot).

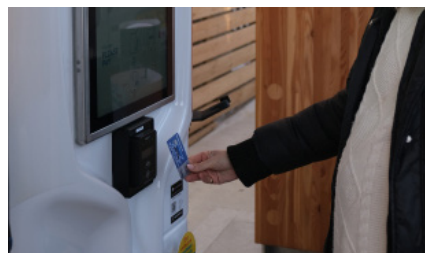
Although rapid chargers come in all shapes and sizes, they all work in the same way. You plug in, choose to pay by contactless or through an app and that's basically it. When you want to stop, you either end the session on the charger or by tapping your contactless card on the pad.



1. Find a public rapid charger by using your car's navigation system or by using an app such as Octopus Electroverse, ZapMap or PlugShare



2. Once you are parked at a charger follow the instructions on the screens. Most chargers work in the same way



3. You can pay for a charge either with a contactless card or via an app or an RFID card. Contactless is the easiest method



4. You'll notice that the connector is bigger and heavier than the one you use for home charging. Plug it into your car to start charging

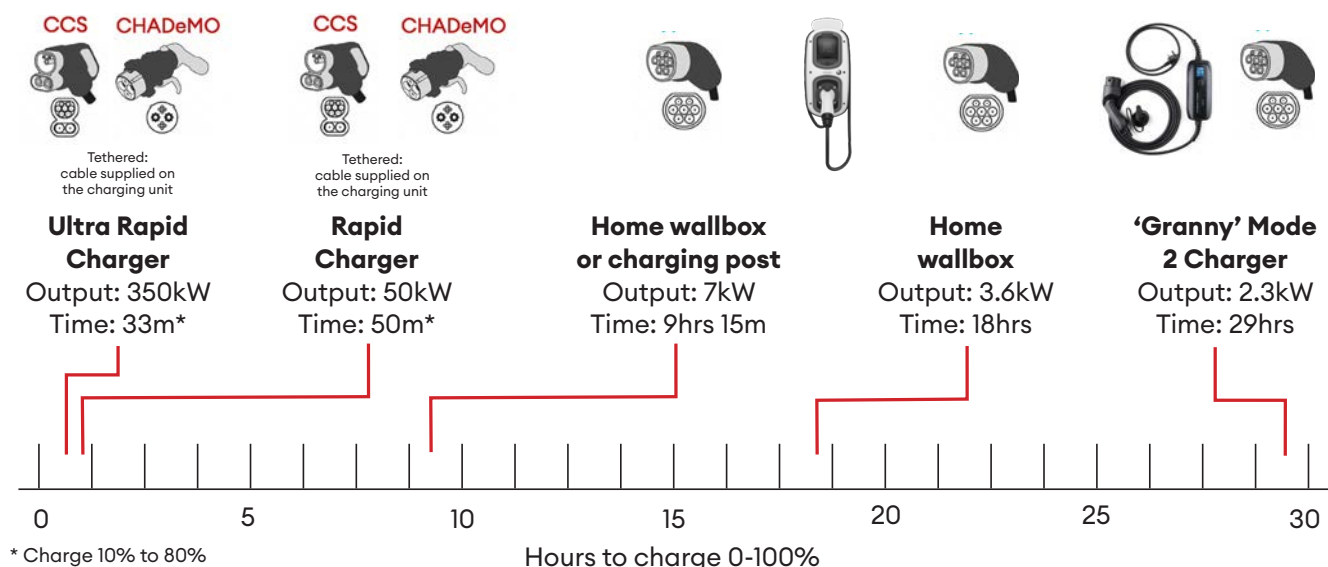


5. The charger will show your progress, but if you want to check remotely, your car's connected app will tell you when you're fully charged



6. When you're done, press stop on the charger (if required), unplug your car and return the connector for the next driver to use. Simple!

What plugs in where? Understanding what cable and connector you'll need (and how long you'll need to plug in for...)



All times shown are for an electric car with a 58kWh battery pack and maximum charging speed of 125kW

Electric car Jargon-Buster



The car industry is famous for its love of acronyms and baffling jargon. We're here to cut through the nonsense

Range Anxiety

This is the fear that you will run out of battery power before reaching your destination or a charger. It's an often unfounded state of mind and while understandable there's no need to panic. In most electric cars, the range is pretty accurate and achievable and most electric cars have built-in sat nav or an app, which will direct you to the nearest charge point before you get in trouble. You'll soon get to know your electric car's capabilities, stop staring at the range meter and start to relax into ownership.



Tethered or untethered

When you choose a home charger, the unit you opt for is likely to come in two forms: tethered and untethered. This refers to the cable and how it connects to the charger unit. A tethered connection means that the cable is hard-wired to the charger. An untethered connection means that your charger is fitted with a socket into which you can connect your own cable. There's no right or wrong solution – a tethered connection will be pricier and means that you have a cable to store by the charger. An untethered connection will be neater but you'll need to get your cable out of the car and pack it away every time you charge your car.



Preconditioning

One of the joys of electric car ownership is getting into a warm car in winter and a chilled car in summer. Preconditioning allows you to set a departure time for your car. The car will then prepare itself for your chosen time by heating or cooling the cabin to your chosen temperature. Some cars will also heat the steering wheel and seats in readiness for your arrival. Preconditioning on some cars also gently warms the battery pack to ensure that it's at the optimum temperature to deliver its energy to the motors. Settings can be entered via the car or by a connected app.



Gross vs net battery sizes

This one is infuriating. Car manufacturers often quote two figures for battery sizes. This is because a certain amount of a battery's capacity isn't used to power the car. The only figure you should be interested in is the usable, or net, figure. For example, a Skoda Enyaq has an 82kWh battery, of which 77kWh is usable. When you charge it to 100%, it will be holding 77kWh of energy. The rest is held in reserve to preserve the health of the battery pack. When choosing an electric car, make sure you know what you're getting in terms of actual capacity.

Ginny's tip

"Of all the confusing things out there, I think charging speeds are the biggest issue. Just remember that your car limits the speed at which it can charge, so don't get frustrated when you don't achieve the speeds on the charger."



This is Mike and he hates jargon. Almost as much as he hates broccoli. That's a lot of hate

CCS and CHAdeMO

The terms CCS and CHAdeMO refer to the two different charging connectors you'll find on a rapid charger. CCS stands for Combined Charging System and has been the default industry connector for the last decade. Prior to CCS being adopted as the industry standard, some cars (primarily the Nissan LEAF) were designed with CHAdeMO connectors. Today, more than 99% of all new electric cars are fitted with CCS connectors, so it's not a factor in choosing a new car. However, if you're looking to buy a used car and have the LEAF on your shortlist, bear in mind that not all rapid charging stations cater for the CHAdeMO connector. With no new cars being built with CHAdeMO, that situation is not likely to improve.



Intelligent and overnight electric car tariffs

The popularity of electric cars has led to the advent of the intelligent electric car tariff. Although cheap-rate overnight electricity is nothing new, new tech has helped to create a range of tariffs that allow electric car owners with access to home charging the facility to charge their cars for much lower rates. There are two kinds of overnight tariffs, simple and intelligent. A simple overnight tariff gives your house a lower kWh price over a set period, usually 12:30 to 05:30. An intelligent tariff is a little more complicated and uses software that allows the energy provider to 'talk' to your car and charger. With an intelligent tariff, the energy provider smart charges your car with the greenest and cheapest power available on the grid. This may be outside the normal 'cheap rate' hours, but you'll only be charged the lower rate. The downside is that not all cars and home chargers are compatible with intelligent tariffs, so check with your supplier first.



Miles per kWh

Efficiency and consumption in petrol and diesel cars are measured in miles per gallon or mpg. Which is a little strange given that we've been buying petrol and diesel in litres for around 20 years. The electric equivalent of mpg is miles per kWh and is actually quite easy to understand (for once). Most electric cars will show the current miles per kWh figure on the dashboard. In simple terms, it means that your car will use 1 kWh travel this distance. A standard family hatchback will return between 3.0 and 5.0 miles per kWh. So, if your car has a full 50kWh battery at the start of your journey and you are seeing 4.0 miles per kWh on the display, you can expect to have a driving range of 200 miles.

kW and kWh

This is something that causes a lot of confusion – even among existing electric car owners. In simple terms, a kilowatt (kW) is a measurement of power. The rate at which a device uses electricity is always measured in kW, whether it's a toaster, a heater, an electric car motor or a charger.

An electric oven, for example, uses 6kW of electricity. If you were to run that oven for 1 hour, it will consume 6kWh of energy. If you have it on for 30 minutes, consumption will be 3kWh.

A kilowatt hour (kWh) is a measurement of the amount the energy an electrical device uses. You pay your home energy bills in kWh because it's a measurement of how much you have used - a quantity. An electric car battery is measured in kWh because it can store a fixed quantity of energy. Confusingly, both terms come into play when we talk about charging an electric car. A charger will always be rated in terms of kW (for example, a home charger will output 7kW) while a battery is measured in kWh. If you have a 7kW charger connected for seven hours, your battery will receive 49kWh of energy (7kW x 7 hours).

WLTP Range

This is the official figure which should give you an indication of how far an electric car will travel between charges. In theory it should be an accurate indicator of the sort of mileage you'll be able to get, but in reality there are so many different factors which influence the range that you won't really know until you try it yourself. City driving is better for electric cars, whereas motorways, hills, cold weather and driving enthusiastically all eat up power.

The WLTP part stands for 'Worldwide harmonized Light vehicles Test Procedure' and was introduced after a few car makers were found to be 'creatively' finding ways of getting better fuel consumption and emissions figures in official tests. The law makers decided to introduce a tougher assessment which is closer to real world conditions. As a rule of thumb, we'd knock about 20% off these figures to give you a good idea of the distance you can comfortably cover.



When she's not cutting through electric car jargon, Nicki likes to practice her driving in the Electrifying office

Okay, so what is Salary Sacrifice?

It might sound a bit like something done on a hillside at full moon, but salary sacrifice is a neat way of arranging your finances in order to get a company car for less. Here's everything you need to know...

We all love the convenience, efficiency and simplicity that comes with electric cars. However, all these qualities can come at a price - especially if you're comparing like-for-like with an equivalent petrol or diesel car. In simple terms, electric cars can seem pretty expensive.

However, looking at the list price doesn't give you a particularly accurate picture of the cost of ownership. Over the course of having an electric car, drivers usually make big savings on fuel, vehicle excise duty (road tax) and servicing. In most cases, these savings will quickly off-set the premium you'll pay to go electric.

There's also another way to reduce your outgoings. If you're employed and earn more than National Living Wage, you may be able to take advantage of a salary sacrifice scheme. The good news is that setting one up is pretty straightforward and there are lots of specialist companies offering the scheme to make the whole process simple and easy to navigate.

How can I go about setting up a scheme at my company?

It is a business relationship therefore the employer has to sign a master contract hire agreement to cover off the funding. The employer can choose from different types and values of car and different contract lengths to be made available for their employees. Employers can also choose to take out early termination and redundancy protection which protects them, and employees should they leave the employment and end the agreement early.

What's the process of ordering a car through salary sacrifice?

The scheme provides access to all current makes, models, and specifications available in the UK market. Employees then make their selection and the employer conducts eligibility checks and approves the car order.

The employer leases the car for a period of 24 to 48 months. When the car arrives, the employer reduces the employee's gross salary in exchange for the benefit of the car. They then use the gross salary sacrificed to cover the lease company's monthly invoice.

Ginny's tip

"It might appear to be a real faff, but there are significant benefits to getting a new electric car via a salary sacrifice scheme. A shorter contract period will allow you to trade into an improved model earlier, too."



Salary Sacrifice schemes allow you to lease cars over a period that you can define. It means that you can end up driving one of the latest models, such as the new Kia EV3

How much work will my HR department have to do to set up salary sacrifice?

Very little. The lease company you sign up with should implement and carry out the majority of the work. Implementation generally takes between 4 to 6 weeks at zero cost to the employer.

Are there restrictions on which employees can have a car under salary sacrifice?

There are no restrictions on which employees can benefit from salary sacrifice, in fact HMRC is keen for all employees to have access. There are however age restrictions on certain cars based on insurance cover. The lease company will work with employers to ensure employees only have access to the cars they can afford and are legally entitled to drive. There may also be financial restrictions as the amount an individual can sacrifice for a car cannot take them below National Living Wage.

Will salary sacrifice affect my pension or other benefits?

Most companies use the notional salary to calculate pensions, which is based on the employee's salary before any salary sacrifice contributions such as a car or childcare. A final salary pension could be impacted and if you were in your final three years of employment before retiring, there could

be more of an impact so it would be worth reviewing the decision in detail. There would be no impact on an employee's own private pension such as a SIPP. As with all areas of pension we would recommend employees receive professional advice through their company or an Independent Financial Adviser before signing up to the scheme.

Will salary sacrifice affect a mortgage application?

Yes, as part of a mortgage company's affordability index individuals have to volunteer their gross and net earnings and outgoings such as a bank loan, credit card or car HP or PCP finance. Therefore, all salary sacrifice benefits would also have to be declared.

Does a company need to be a certain size to have a salary sacrifice scheme?

There is no legislative restriction based on a company's size and the benefit is designed for all employees, not just directors or company car drivers.

Can sole traders and the self-employed set up a scheme?

No, as under HMRC legislation you need to be an employee to benefit from Salary Sacrifice as you are agreeing with your employer to vary your terms and conditions of employment to receive a benefit in lieu

of salary. Small organisations can however operate salary sacrifice schemes and there are salary sacrifice providers in the market that specialise in working with smaller companies.

Am I only allowed one car through a salary sacrifice scheme?

HMRC does not stipulate a restriction of how many cars an employee can have on the scheme, it is down to the employer's overall benefits framework and employee affordability

My company currently pays mileage when I travel on business. How will this be affected?

This works the same way as a company car with the employee being compensated for any business mileage based on HMRC's advisory mileage rates. <https://www.gov.uk/guidance/advisory-fuel-rates>. Employers can choose to pay more than these rates, but employees must remember they will be taxed on the additional company mileage contribution.

Get the car of your dreams and pay less per month for it. But you might have to fight Nicola for the Alpine A290, though...



What is an electric car like to drive?

Forget clutches and gearboxes, electric cars redefine driving simplicity and deliver plenty of fun along the way

We know that electric cars are quiet and efficient. We also know that they produce zero tailpipe emissions and can potentially save you money. But did you know that they are also great fun to drive? Although many 'driving enthusiasts' are often quick to dismiss electric cars as soulless devices, those who have made the switch are often surprised by how much driving pleasure they deliver.

Let's start with the stuff you won't see. There's no gearbox doing a million and one things under the bonnet. There's no gear stick to stir around and no clutch to give your left leg a good workout in traffic.

All you have is a drive selector where you to choose between going forwards.... or backwards.... And for the times that you're not doing either of those things, you can select park and it locks the wheels. Drive selectors come in all shapes and sizes and can appear in a few different locations. On a Peugeot

e-208, for example, you'll find it on the centre console, while a Volkswagen ID.7 has it on a steering column stalk.

Like an automatic, there are two pedals, accelerator and brake. The one that delivers the most entertainment is, of course, the one on the right. Unlike a petrol or diesel, electric cars deliver full power the second you press the accelerator. That means they feel really perky as soon as you pull away, which is great if you are facing up a hill or pulling out of a junction.

You'll also find that an electric car feels a lot more secure to drive, and that's because the battery pack is right below the seats which keeps the centre of gravity very low. This makes them feel way faster and more fun than their power outputs suggest. If your first experience of an electric car is driving away from a dealer forecourt - just take it easy when you leave, okay?

Ginny's tip

"Always, always, always take a test drive before you choose your car. Although electric cars are fundamentally the same, they all drive differently. It's a very personal thing, so find one that you'll be comfortable with all the time."



 **DISCOVER MORE...**

"Unlike a petrol or diesel, electric cars deliver full power the second you press the accelerator. That means they feel really perky as soon as you pull away."



The hills are alive with the sound of... not much if we all switched to electric cars. Despite what some people will tell you, electric cars are seriously good fun to drive

Regen, B button and e-Pedal. What do they actually do?

If you want the simple life (and who doesn't?), that's pretty much all you need to know. However, if you want to fine-tune your driving experience to make it more fun or efficient, we're here to help.

First, let's look at what happens when you press this 'B' button. B stands for 'brake' although that's a little misleading. Select B mode and you'll notice that when you lift off the accelerator, the car slows down on its own. It's a bit like changing down a gear in a petrol or diesel. This is called regenerative braking and it means that you'll probably use the brake pedal far less than you would before.

But the big benefit is that it's actually saving energy too, meaning you don't need to plug in as often and will spend less on electricity.

It sounds complicated, but trust us, it's not. When you're slowing down and take your foot off the accelerator, the electric motor performs a bit of a party trick and it sends energy from the wheels back to the battery to give you more range.

It might feel a little odd at first, but once you get used to it and realise that every time it happens you're putting power back into your battery, it does get a bit addictive!

It's worth noting that not all cars come with a B mode and that some manufacturers give the same system a different name. Some call it regen, others call it E-pedal. Some cars also come with adaptive regenerative braking that alters the amount of regen delivered according to road conditions.



Driving modes

Like B mode, the names of the various modes vary by manufacturer, but generally speaking, they all do the same thing. When you start the car, it will be in Normal. This gives a good balance between performance and efficiency and will be the mode you'll be using most of the time for your everyday driving.

You might want to change that occasionally though, choosing an Eco setting. This maximises the energy efficiency by reducing the electric motor's power output and in some cases reducing the functions of the heating system. Eco mode is useful if you are doing a longer journey and don't want to stop to charge. And the car still feels plenty fast enough, so it's not a real hardship.

At the opposite end of the scale is Sport. This is for when you want a bit of fun and it allows maximum electric engine power output as well as tightening up the responses from the accelerator pedal and steering. Sport mode does affect the efficiency though, so it's best to use it when you're not trying to stretch your range to the max.

“Regenerative braking means that you’ll probably use the brake pedal far less than you would before.”



Myth Busting

It won't have escaped your attention that there's a mountain of urban myths and disinformation swilling around the media. But panic not because we're here to help you sort the fact from the fiction



The myth

"The National Grid won't be able to cope if we all switch to electric cars."

"You can't charge an electric car in the rain."

"The batteries are full of nasty stuff and they won't last."

"Electric cars are just too expensive to buy."

The fact

The truth is that there will be enough energy to meet future demand and the grid will be fine. Growth in renewable energy will help and smart metering will make our use of power more efficient.

According to the National Grid, we're using 16% LESS energy than we were 20 years ago. The National Grid estimates that an overnight switch to electric cars would result in a 10% increase in consumption.

We know that electricity and water don't mix. But no current flows between the car and the charging station until they have talked to each other and decided that everything is tickety-boo, while the car and cables are shrouded in layers of protection that prevent them getting wet or dirty.

Electric car batteries contain a complex mix of elements and chemicals. However, almost all the materials found in an electric car battery are recyclable and the batteries are expected to have a life of 20 years or more in various guises. Manufacturers are also working to reduce the environmental impact of production. LFP (lithium iron phosphate) batteries, for example, don't use cobalt.

There's no denying that electric cars cost more than their petrol and diesel equivalents. But the gap is coming down all the time. For example, the new Dacia Spring is one of the cheapest new cars in the UK –and that includes petrol and diesel cars!



Electric cars are perfectly happy being driven and charged in the rain. You, on the other hand, might need an umbrella...



The myth

“An electric car can’t take you as far as a petrol or diesel car.”

“I don’t have off-street parking. An electric car is completely unsuitable for me.”

“All the electricity used to charge electric cars is created by burning fossil fuels.”

“There aren’t enough public chargers for electric car owners.”

“Electric cars catch fire more often than petrol cars.”

The fact

There’s no hiding from the fact that, right now, a petrol or a diesel car will usually go further without needing a top up. However, if you take regular breaks (drivers are advised to take short stops every two hours) and use that time to plug in, the distance you can travel is as long as you want it to be. The rapid charging network is growing all the time while battery ranges are improving with every new model that arrives.

The ability to charge at home with domestic rate electricity is great, but that doesn’t mean that an electric car isn’t suitable for those who don’t have access to this. Many urban electric car owners have small commutes and only need to charge once a week. This can be done at a supermarket or at the gym - wherever there’s a charger.

Overall, the electricity generated in the UK in 2023 had the lowest-ever carbon intensity. Fossil fuels made up just 33% of UK electricity supplies in 2023 – their lowest ever share – of which gas was 31%, coal just over 1% and oil just below 1%. Low-carbon sources made up 56% of the total, of which renewables were 43% and nuclear 13%.

There are now just under 23,000 rapid charger connectors in the UK and nearly 5,500 locations. That’s a 45% increase over 2023. Thousands of new sites and chargers are either in the planning stage or being built, which means that any electric car driver will have access to countless charging points.

A recent study by the Swedish Civil Contingencies Agency concluded that EVs are 20 times LESS likely to catch fire than petrol and diesel cars. With data corroborated from a US insurer, the study found that EVs suffer 25 fires per 100,000 sold. Petrol or diesel vehicles were found to experience 1,530 fires per 100,000, with hybrid vehicles at a notably higher risk of 3,475 fires per 100,000.

New multi-charger hubs are joining the network every week. This new Instavolt hub in Banbury now has 32 rapid chargers



ELECTRIFYING^{COM}

For all the latest electric car news, reviews and videos, click the icons to follow us. Click the logo above to go to our site.



@electrifyingcom



@electrifyingcom



youtube.com/electrifyingcom



Search 'Electrifying.com'



All figures contained in the guide correct at time of production. Please check manufacturer resources for latest figures.