ELECTRIFYING | Together with Motability

BEGINNERS' GUIDE TO GOING ELECTRIC

EVERYTHING YOU NEED TO KNOW FROM THE ELECTRIC EXPERTS™

How to rapid charge

What is driving range?

Jargon-free advice

Welcome to the guide

At Electrifying.com we're proud to be the electric car experts. We've seen them transform from being automotive curiosities to mainstream options for a generation of motorists looking to reduce the envirnomental impact (and cost) of driving.

But we know that any significant change of technology comes with its challenges. Accessibility for all road users is essential if we're to make the most of this fundamental change. While early adoptors of electric cars were prepared to put up with unweildly rapid charge units and poorly designed charging sites in less-than-desirable locations (they had little option), we're now seeing a welcome shift towards more inclusive facilities. Owning and driving an electric car should be simpler and more pleasant than a diesel or petrol car and here at Electrifying.com, we're constantly pushing for charge point operators and car makers to improve the experience.

We're delighted to have teamed up with Motability Operations to share the knowledge in our **Beginners' Guide to Going Electric**. We hope to show that while there is new terminology to get to grips with along with a whole new approach to 'refuelling' the switch to electric will be a change for good for all motorists.

Ginny Buckley
Founder and CEO – Electrifying.com

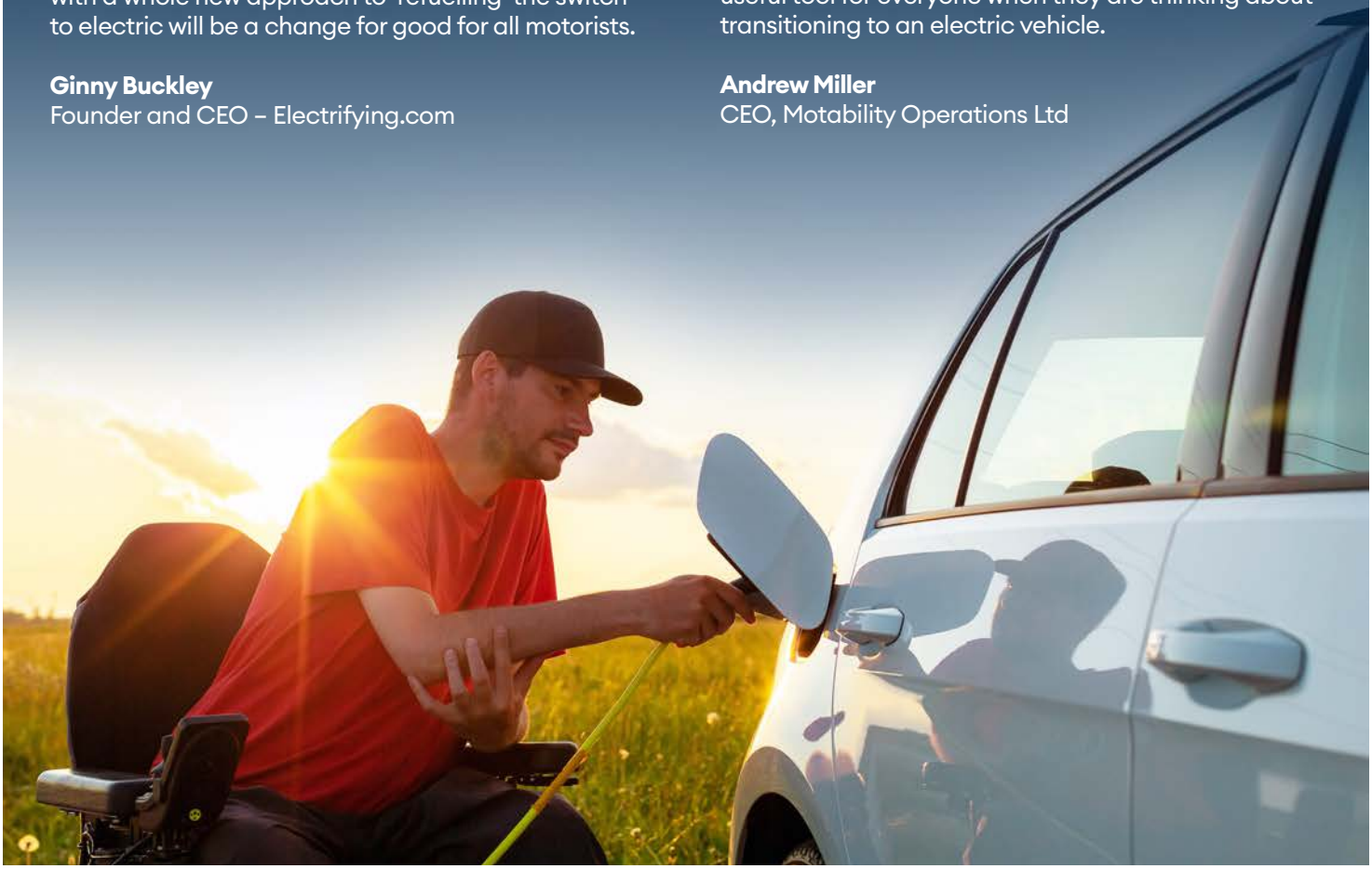
Freedom and independence are right at the heart of what we do here at Motability Operations. As the UK transitions to electric vehicles, we need to help remove the barriers to electric motoring for our customers.

With the sale of new petrol and diesel cars due to end by 2030, we are seeing a big increase in uptake of electric vehicles on the Motability Scheme, but we know these aren't accessible for everyone right now. That's why we're investing £300m and launched a series of initiatives in this area, to help ensure no one gets left behind.

We want everyone on the Motability Scheme to feel supported and confident, when they decide that an EV is right for them. With the technology rapidly changing and developing, we know our customers will have questions and concerns. We want to equip them as much information as we can, so they can make the right choice.

We're proud to be collaborating with Electrifying.com to share this guide to making electric cars and the charging network accessible to all, and we hope it's a useful tool for everyone when they are thinking about transitioning to an electric vehicle.

Andrew Miller
CEO, Motability Operations Ltd



MAKING ELECTRIC ACCESSIBLE FOR ALL

The Motability Scheme is embracing the switch to electric. Our guide covers everything you need to know about moving to an electric car

Electric cars have the potential to make our environment cleaner, quieter and safer. They're also simpler to drive and maintain than a traditional petrol or diesel car. But as with all new technologies, the switch to electric is not without its teething problems. Even the most enthusiastic of electric car devotees will admit that in many important areas, the critical public charging infrastructure and the cars are far from perfect when it comes to accessibility and practicality.

Making the new electrified world accessible and usable by all motorists is essential if the Government is to realise its pledge to stop selling new petrol and diesel cars by 2030. The Motability Scheme, which offers a wide range of cars and Wheelchair Accessible Vehicles, is embracing the electric revolution and is committed to delivering a seamless switch for customers.

Since it began in 1978, the Scheme has helped millions of disabled people and their families gain independence and freedom, with customers on average rating their satisfaction with the Scheme as 9.6 out of 10.

Right now, more than 650,000 disabled people and their families across the UK are benefiting from the freedom and independence provided through the Scheme.

Like all Motability Scheme cars, electric cars come with a worry-free package

Who can join the Motability Scheme and how does it work?
The Scheme is available to anyone who receives a qualifying mobility allowance. Carers and parents can drive on behalf of the disabled person, so parents of children (from the age of three) and non-drivers can apply to join. The vehicle must be used by, or for the benefit of, the disabled person and the allowance must have at least 12 months left.

Eligible applicants can then choose and order a vehicle from one of the 4,500+ Motability Scheme dealers in the UK. All these dealers have a specialist who can assist with the order. Although some vehicles on the Motability Scheme are available at less or no more than the cost of the weekly allowance, some more expensive vehicles require an additional payment (known as an Advance Payment) to cover the cost of the lease.

Your worry-free package
Running a car can be complicated process, so all Motability Scheme customers get a worry-free package. All Motability Scheme

'Fuel' stations look a bit different to what most drivers will be used to, but recharging an electric car when you're on the go is simple

leases include insurance for three named drivers, servicing, breakdown assistance and tyre repair and replacement. Leases also include a 60,000 mileage allowance for a three-year lease, window and windscreen repair and a choice of adaptations, with many at no extra cost.

People choosing their first electric car who have the ability to charge at home can also get the standard cost of a home chargepoint and its installation covered as part of their package. Home chargers can fully charge an electric car in around six to nine hours at a cost of under £5 when charging at night on a special electric car tariff such as Octopus Go.

For drivers without access to off-street parking or who can't have a home chargepoint fitted, the Motability Scheme will provide access to the bp pulse public charging network of more than 9,000 chargepoints.

What are the issues that face disabled drivers wanting to switch to electric? On the face of it, the switch to electric appears to be easy. Out go the dirty old petrol and diesel pumps and in come cleaner electric car chargers. What could be simpler?

The first issue that many drivers encounter is range. Put simply, electric cars can't go as far as their petrol and diesel equivalents before they need refuelling. Where a modern diesel car might be able to cover more than 500 miles on a full tank, a mid-sized electric car will often struggle to do half that. Which means more frequent stops to recharge.

For many drivers, recharging can be done easily at home. Others – particularly those covering longer distances or without access to a home charger – will need to use a public charger. And that's where the challenges can start. Public rapid chargers are extremely expensive pieces of kit that can deliver huge power outputs, so chargepoint operators are keen to protect them from damage. That often results in the installation of kerbs and bollards that can make access to the units difficult, especially for wheelchair users who might find that getting close to the charger and the screen impossible.

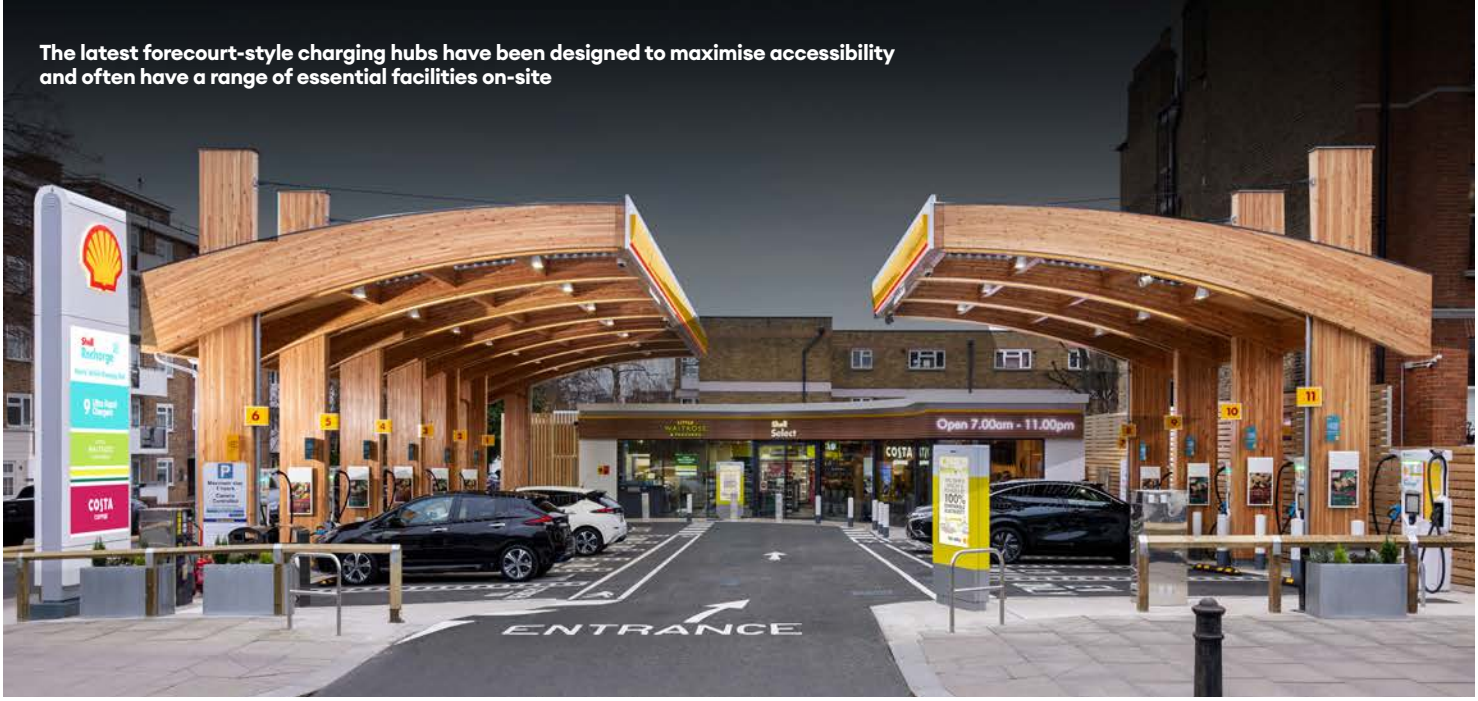
With no traditional gearbox or clutch to use, driving an electric car is simple

Fortunately, for drivers who are in less of a hurry or who can wait longer to charge, there are a host of different options. Destination chargers have lower outputs (typically between 3kW and 22kW) and don't come with large, heavy connectors. These are easier to use and can be found in places where people generally stop for longer periods, such as supermarkets. Lamp post charging – where posts are fitted with a charging connector – is also becoming more common. These offer drivers the opportunity to recharge their cars overnight.

Although most electric cars can be adapted so disabled drivers can use them, there are some technologies that can interfere with adaptations.

Another, more fundamental issue, affects Wheelchair Accessible Vehicles (WAVs). To create a WAV, converters usually adapt the floor of the vehicle to allow a ramp to be installed. Floor lowering also means that wheelchair users can still have a decent amount of headroom once they are in the vehicle. Electric cars have large battery packs that often run the full length of the floor area. This means that adapting the vehicle to install ramps is either impossible or a far more complex engineering task. Although electric WAVs do exist, these tend to be much larger vehicles where converters have more space to make ramp adaptions.

The latest forecourt-style charging hubs have been designed to maximise accessibility and often have a range of essential facilities on-site



All parties involved in the design and construction of new public charging sites are recommended to follow a new set of BSI guidelines (PAS 1899) that set out the minimum requirements for accessibility for the first time

What's being done to improve the situation?
While the current situation is frustrating for many disabled drivers, the car and charging industry is working towards making electric motoring accessible to all.

Motability, the Charity, has carried out extensive research to understand the barriers disabled people face in using electric vehicles. With the sale of new petrol and diesel cars due to end in 2030, they want to ensure disabled people are not left behind in this transition.

The charity has partnered with the UK Government's Office for Zero Emission Vehicles (OZEV) to sponsor the world's first national accessible charging standard, developed via the British Standards Institution (BSI).

To inform the standard, BSI has consulted with disabled people, chargepoint designers, installers, private landowners, local authorities and consumer groups to make sure that chargepoints are inclusively designed for use by all consumers.

The end result of this consultation was the publication of a new set of BSI guidelines (known as PAS 1899) that all parties are recommended to follow when designing and building new charging sites. For the first time, the new standards define the minimum requirements that all designers and installers need to factor in to the design of new sites. These include everything from drop kerb postioning and bollard spacing (to allow wheelchair access), to the height of display screens on the chargers. The standards also specify for the first time a maximum force required to lift a rapid charger cable and connector. In this particular instance, the guidelines state that the connector must be removable from its holder with a force of no more than 60 Newtons (around 6kg). The document also sets out new guidelines relating to lighting at charging points and the usability of touchscreen displays.

One chargepoint provider that has already demonstrated interest in more accessible experiences is Osprey Charging. Osprey have just opened a new hub on the A43 in Buckinghamshire with the designers of the site informed by a draft set of guidelines from the BSI. The new site features a range of simple but effective measures that are intended to address many of the access and use problems that disabled drivers face. These include a kerb-free environment and extra space around the charger unit to allow wheelchair users to reach the charger posts.

The new site also features a new generation of load sharing charger posts that take up considerably less room that traditional charging units. Designed and built by Kempower, these satellite posts require less protection in the form of bollards as they are mechanically simpler and a fraction of the size.

The Kempower charger posts also feature extended 'booms' that bear the weight of the charging cable and connectors. Osprey hopes this will significantly reduce the amount of strength needed to lift the charging cable and plug when connecting and disconnecting. The site, which will be a template for future Osprey hubs, features the same charger design and layout throughout, with units available to all drivers regardless of their accessbility needs. This means that disabled drivers have the option of using all eight chargers at the location rather than just one or two that have been specially adapted.

Other brands and carmakers are also developing similar systems aimed at making charging on the go more accessible. Audi, for example, has created a charging hub design that features counterweighted charging cables and height adjustable screens that can be lowered for wheelchair users. The brand has also worked to simplify the process of setting up and paying for a charge, making it easier and more straightforward for drivers with neurodiverse conditions.

What electric cars are available on the Motability Scheme?
The Motability Scheme currently offers a broad range of cars to drivers wanting to make the switch to electric. Choice has grown considerably over recent years, with new models being launched all the time. You can search for an electric car on their website.

Where can I find out more?
For more information about the Motability Scheme, how it works and who is eligible, visit motability.co.uk or click [HERE].

The introduction and implementation of new BSI guidelines will mean that all motorists will be able to access and use electric car chargers easily and safely

THE FIVE THINGS YOU NEED TO KNOW BEFORE GETTING AN ELECTRIC CAR

It's no secret that we're big fans of electric cars, and there's no doubt that they can bring advantages for you, your pocket and the air we all breathe. But there are a few things you need to check and research to make sure it is the right choice for you, as it will involve some changes to your normal driving routine.

Here are the top five things we'd advise you to check before you sign on the dotted line.

1. Do your sums

Firstly, work out how many miles you do in a week. Just simply make a note of the journeys you do and add them up at the end of the month. The average motorist covers around 20 miles in a day, so it's going to be easy to switch to an electric car. How often do you do a big trip of 150 miles or more? You might not need a car with a big battery if you can charge on the way when you break for a coffee and a comfort break.

2. Work out your charging

One of the many advantages of owning an electric car is that you can 'refuel' from the comfort of your own home. Even if you arrive with just a few miles left in your battery, by the time you wake up the next morning, you can be topped up and ready to go again. No more having to leave 10 minutes early the next morning to factor in a petrol station trip.

If you can't charge at home or the office, all is not lost, but you will have to rely on the public charging network. This isn't as tricky as it sounds. If you are doing 20 miles a day you could have a car with a couple of hundred miles of driving range. you can easily top up the battery every week on a public charger, either overnight or at a rapid charger while you shop, eat a meal or go to the gym.

The Motability Scheme is committed to supporting drivers make the transition to electric cars. For all customers who lease their first fully electric car, the Motability Scheme will arrange and cover the standard cost of a home chargepoint and its installation, or give you access to the bp pulse network of over 9,000 public chargepoints.

CLICK TO DISCOVER MORE

3. Work out your costs

Fuel
We are all used to hosing petrol or diesel into our cars, paying £80 or so and thinking no more about it. But with an electric car you'll never need to visit a petrol station again, unless you want to buy a pasty or some Jelly Babies. Charge at home overnight and a complete charge will cost under £5 and take you 200 miles or more. Even if you pay the UK average price for electricity you'll pay about a quarter of the amount you are used to spending at the petrol station.

Congestion Charge Zones, ULEZ and Tolls
Many towns and cities already have incentives for electric cars, including free or cheaper parking and exemption from tolls. Many more will follow London soon by starting to restrict entry to central areas for polluting cars in order to protect air quality.

4. Choose the right car

This is the fun bit. Choosing the right electric car for your needs is pretty simple, but doing a little more homework than you would with a petrol or diesel car purchase will be time well spent. With a petrol or diesel car, driving range isn't much of a factor. Almost all of them will comfortably cover more than 300 miles on a full tank, so most consumers don't give it a second thought. With electric cars, range is far more important because, a) you can't go as far in one go, and b) charging (refuelling) takes longer.

So, for example, if you know that you commute more than 150 miles a day and don't have the facility to charge at work or don't want to stop, then a smaller electric car with a range of 120 miles won't suit your needs. Bear in mind that official WLTP range figures (like old mpg figures) are almost unachievable in the real world. A car with a WLTP range of 150 miles will probably return around 110-120 miles in real world conditions.

On the flipside, if you're only doing small distances on a daily basis and only travel further afield on rare occasions, you might not need to choose a car with a bigger and more expensive battery. Work out how many miles you do on average and use that figure to help you search. And don't forget that you can discover a full database of reviews at electrifying.com. You can also find out what's available on the Motability Scheme by clicking [HERE] or the link below.

CLICK TO DISCOVER MORE

5. Long journeys

Some electric car drivers will never take them on a long journey and are happy to just charge at home. But once you realise how cheap an electric car is to run, it's likely you'll want to use it for far flung adventures.

But your first experience of driving a long distance in an electric car and needing to top up your battery could be stressful, unless you've done your homework. The good news is that the charging situation is getting much better every week. But there are still some things you'll need to know.

Firstly, you'll be needing apps to help you out. At Electrifying.com, we're devotees of Zap-Map.com, PlugShare and WattsUpp, and recommend them all. What makes these apps indispensable is that they show live information from the vast majority of the UK's charging network.

Choosing a location to charge requires more than with a petrol or diesel car. For example, some of the UK's biggest and best charging hubs are located in retail parks rather than garage forecourts. You'll also find a new generation of electric-only service areas, pioneered by Gridserve Electric Highway that feature up to 20 rapid chargers. You should also bear in mind that smaller sites with two or three chargers operate from coffee drive-thrus and fast food outlets. How we 'refuel' our cars in the electric age is already changing, and while it may feel a bit odd to head to your local McDonald's for a top up, you'll soon get the hang of it.

If you can find a location that has two or more units (increasingly common now), head there first. Even if one unit is offline or being used, your odds of success are far greater. Double or quad unit sites are also generally much newer and generally more reliable. If you are planning to charge at your destination, such as a hotel or shopping centre, check the website just to make sure the points are still working and haven't been dug up.

"The average motorist covers around 20 miles in a day, so it's going to be easy to switch to an electric car."

CHARGING YOUR CAR

We explain watts what when you need to plug in

If you're making the switch to an electric car, there's one aspect of driving that might seem a little baffling at first. Yes, we're talking about charging. You need to get to grips with cables, kilowatts and connectors. No wonder it seems confusing!

But the good news is that charging is actually very simple once you understand how it works. And we promise, you don't have to be a scientist to get to grips with it all.

Understand the acronyms

When it comes to electric cars, there's loads of new jargon and acronyms to familiarise yourself with and the first one to get your head around is kWh. It stands for kilowatt hour and is a unit for measuring how much electricity (or energy) you're using. The size of an electric car's battery is measured in kilowatt hours. In very simple terms, think of the battery as the fuel tank of an electric car. The higher the kWh figure, the bigger the battery and the more fuel (electricity) you can get into it.

For example, the least expensive battery on the Volkswagen ID.3 is 48 kWh, which means it can store a maximum of 48 kilowatt hours of electricity. Put simply, it would run a 1kW appliance like a kettle for 48 hours.

Know your kWh from your kW

The next acronym (see, we told you there are lots) is kW. And yes, you've guessed it, it stands for kilowatt. A kW is a measurement of the power created by a motor or engine but it's also used to describe how quickly a charging point can fill up your car's battery.

Power outputs of chargers range from 3.6kW right up to 350kW. The higher the number the faster the flow of electricity into your battery, with the most common being 7kW. But bear in mind that not all electric cars can charge at higher rates and you'll be limited to the speed at which your car takes power.

Figure out the charging times

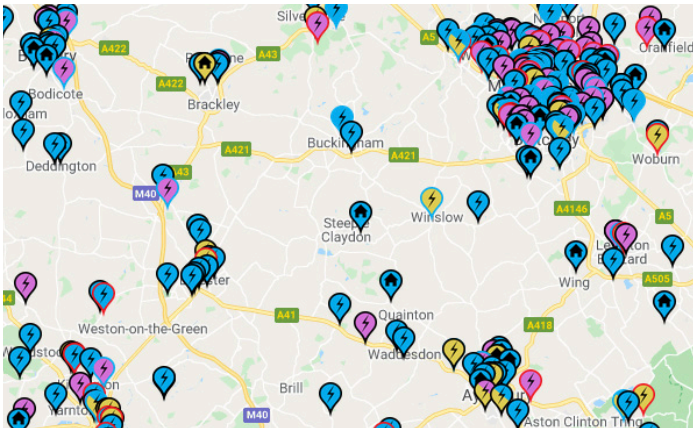
There are currently more than 30,000 public charging points around the UK and when it comes to delivering power, the king of the jungle is the ultra-fast charger. With the right electric car, a 350kW ultra-fast charger can add up to 200 miles of range to your car's battery in around 15 minutes, so if you need to stop mid-journey for a quick top-up then this is the charger for you.

The most common rapid chargers in the UK are 50kW units, with thousands dotted around the network. A Volkswagen ID.3 48kWh will take around 45 minutes to charge from 10 to 80 percent with one of these. Finally, we have what are called destination posts. They're often found in public car parks, supermarkets and workplaces. You'd usually use one of these points if you're planning to be away from your car for a few hours. So if you're at work or doing a spot of retail therapy, these are perfect. These use an AC connector, so make sure you have your cables with you.

East-to-use rapid chargers like these new 175kW units at the Shell Recharge hub in London can recharge your electric car within minutes

Know where to charge

Wondering where to charge an electric car? Basically, anywhere there's electricity! But if you can park off-street at home, most of the time you'll use your home charger, which is great as it means your car is filling up whilst you're sleeping. But if you are planning a longer trip, or don't have access to off-street parking at home, you'll need to do a little research.



Smartphone apps such as Zap-Map.com will show you the location of your nearest charger and can also tell you whether it's available. You can also filter results for charger speed and network

There are a number of apps such as Zap-Map that will show you the location, status and cost of chargers in the UK. Most have live information, so you can see if someone is using the charger and how long they've been charging for.

We suggest you download one of the apps and familiarise yourself with the location of charging points close to places you visit regularly, like work, friends or the gym. If you don't have access to off-street parking at home then charging once a week for half an hour or less at a rapid charger could give you enough charge for your weekly driving. Most networks also have their own apps that will show you the status and price of their units.

Get connected

It's easy to get confused with cables and connectors as they come in a few different flavours. There are three main ones: CHAdeMO, CCS and Type 2, along with an extra one known as a 'granny charger' with a three-pin plug which should only be used in emergencies to add range. It only charges at around 2kW so it's very slow and shouldn't be used regularly as it draws maximum power from your sockets. You'll also have to check that your electrics and fuse box are in tip-top condition. Otherwise, you might start melting things. Which isn't good.

Your choice of car, and how quickly you're going to charge, will determine which kind of cable you use when you are out and about. See our image at the bottom of the page for details.

CHAdeMO is mainly used on Japanese designed cars such as the Nissan Leaf and Mitsubishi Outlander PHEV while the CCS connector is used on pretty much everything else. All you need to do when you arrive at a charging point is pay via the app, website or using contactless payment or access card, connect the correct cable to the car and let the machines do their magic. If you're charging overnight at home all you need to do is plug your car in to the wallbox and you'll experience the joy of waking up every morning to a battery full of off-peak electricity ready to start your day.

At an AC charge point you'll be using your own cable, which has a connector called a Type 2 at one end and the correct fitment for your car at the other. You simply connect it to your car, use the app, website or your access card to activate the charging post and then plug in. Once you've finished charging you just stop the electricity flow using the same app, web page or card and the cable will be released.

However you charge it will soon become second nature, just like charging your phone. Waking up with a full 'tank' is bliss and topping up while you get on with working or shopping makes complete sense. Better than that, it's cheaper too and you'll never have to fill up with fuel again!

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

CLICK TO DISCOVER MORE

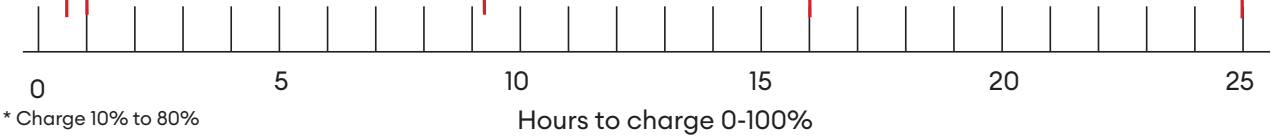
Ultra Rapid Charger
Output: 350kW
Time: 33m*

Rapid Charger
Output: 50kW
Time: 50m*

Home wallbox or charging post
Output: 7kW
Time: 9hrs 15m

Home wallbox
Output: 3.6kW
Time: 18hrs

'Granny' Mode 2 Charger
Output: 2.3kW
Time: 29hrs



* Charge 10% to 80%

Hours to charge 0-100%

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

Understand why car makers quote charge rates 'up to 80 percent'

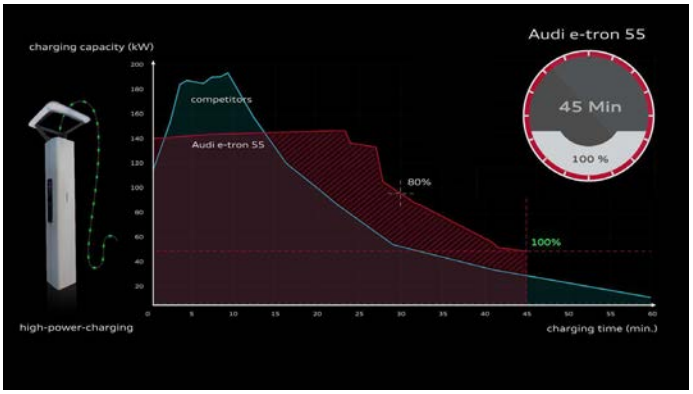
This is something that continues to confuse electric car drivers - and it's easy to see why. You wouldn't tell someone that a train journey takes two hours to do 80 per cent of it, so why does the car industry only quote recharging times to 'not quite full'?

Sadly, it all gets a bit technical at this point, but we'll try and keep things simple. Batteries are brilliant, but they also need looking after. If you overfill the tank of a petrol or diesel car, you get nothing more than wet feet. Do the same with an electric car battery, and you'll wreck it. Fortunately, we, as drivers, aren't able to overcharge batteries because electric cars come with all manner of management systems and fail-safes to stop it happening.

When batteries reach the point where they are nearly full, heat builds up in the cells. To keep temperatures down, the car reduces the amount of incoming charge significantly with the last few kWh being added at very low speeds. It's a bit like pouring yourself a very full glass of wine. You start slowly, speed up to fill the bulk of the glass and then dribble in the last few drops to prevent any overflowing.

Key to the whole process is what's called a charge map, which is a bit of code that your car uses when it detects that a rapid charger is plugged in. As you can see from the Audi e-tron charge map (bottom left) , the speed at which charge can be accepted drops quickly after the battery pack reaches 80% capacity. As most cars charge at the same fast rate up to 80%, this is used as an unofficial 'industry standard' to measure the time taken to rapid charge.

When rapid charging at a unit like the one above, your car will take full power until the battery reaches around 80% capacity. The Audi e-tron charge curve below shows that your electric car will limit the amount of power it can accept as the battery reaches a full charge



Why you don't need to (and shouldn't) charge your car to full after every drive

It might sound odd, but electric car batteries don't like being full to capacity. Thankfully, the management systems tucked away behind the dashboard ensure that this can't happen. However, if you want to really treat your battery to the automotive equivalent of a spa retreat, try to resist the urge to charge up after EVERY drive.

Car batteries are at their happiest at around 60% charged. If your commute uses, say, 25% of your charge, try and run the battery down and then charge every third day. This will be much kinder to your battery than repeating the charge cycle every 24hrs. If you have a smart home charger you can set the amount of charge that is sent to your car, which means your charger can perfectly tailor your battery levels.

Resist the temptation to plug in after every journey. Your battery will stay healthier if you allow it to discharge every so often

Why you should never leave your battery with very little charge in it

Okay, we've established that electric car batteries don't like being too full or too empty. One key reason why leaving them empty is a really bad idea is because hot or cold weather can potentially damage the chemistry within the cells of your battery. Ever been in a really cold climate and found that your smartphone stops working? Well, it's all to do with the fact that the chemical reactions in a lithium-ion battery become much slower as the temperature drops.

To prevent damage to your battery pack, most electric cars are equipped with battery management systems that can heat or cool a pack if the system thinks that damage may occur. To do this, it needs to have charge in the battery. So if you've got home with zero miles of range left, 2% showing on the battery and you haven't plugged in, the management system won't have the juice to keep your battery at a healthy temperature.

Electric car batteries hate the cold. Make sure you have enough charge in your battery so the car can keep the pack warm when the temps drop

HOW TO USE A RAPID CHARGER

CLICK TO DISCOVER MORE

If you're planning to use your electric car on longer journeys, sooner or later you'll need to use a rapid charger. These are the petrol pumps of the electric car world and are the fastest way to recharge your battery. How much quicker? Well, the latest-generation 350kW rapid chargers like those found at the newest charging hubs can top up your battery 50 times quicker than a normal home wallbox could. Speedy, right?

Using a rapid charger is a simple process – and a familiar one if you've used a self-service pump at a regular petrol station. Unlike a petrol pump, once you've connected your car and set up payment, you don't have to stand around in the cold holding the connector. You can get back in your car, wander around the shop, catch up on emails or get a bite to eat. It's all very civilised.

Here we show you how to use one of the latest rapid chargers. You'll find that rapid chargers come in all shapes and sizes, but don't let that put you off. The fundamental process of using one will be the same, but the screens may present information in a different way. Remember that your electric car will limit the speed at which it can charge, so bear that in mind. A car capable of charging at 50kW will only charge at 50kW even when it's connected to a 350kW charger.

1) Locate a charge point using a charge locator app such as ZapMap, PlugShare or WattsUp. Most apps will allow you to filter for speed, so if you're on the lookout for a rapid charge, filter for chargers that deliver more than 50kW.

2. Select your payment method. The easiest way is to tap your contactless payment card on the terminal. You can also pay by Apple Pay, and Google Pay if you want to use your smartphone or smart watch. You can sometimes start a charge via an app or with a multi-charger card such as Octopus Juice. The vast majority of the UK's rapid chargers are now set up to accept contactless payment, but some older units and Tesla Superchargers require you to use a smartphone app.

3. Plug the correct cable into your car. Most rapid chargers come with CCS and CHAdeMO connectors. Most new cars feature CCS connectors, but Nissan LEAF, Nissan eNV200 and Lexus UX300e models have CHAdeMO plugs.

4) Once your car and the charger have communicated, the charge will start. You'll usually hear a few clicks as the power delivery starts. The screen will show you how much energy is being delivered and at what speed.

5. To end your charging session, simply press the button to the right of the screen. Unplug the cable and you're done. If you've charged via the app, you'll be able to see stats and a receipt for your charge session.

RANGE ANXIETY AND OTHER STRANGE TERMS YOU NEED TO KNOW

When it comes to electric cars there's a host of new jargon to get your head around and we're here to help you do exactly that.

1. 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 whilst understandable there's no need to panic. In most electric cars (EV) 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 EV ownership.

2. AFV

No we not talking about an Armoured Fighting Vehicle, which we promise is a real thing! This AFV stands for Alternatively Fuelled Vehicle. An AFV is a vehicle that runs on substances other than the conventional petrol and diesel. That includes fuels like electricity, solar, biodiesel, ethanol, propane, compressed air, hydrogen, liquid natural gas... even algae could be a potential alternative fuel source of the future. The benefits of using AFVs include spending less on fuel and reducing carbon emissions.

3. BEV

Otherwise known as a Battery Electric Vehicle, a BEV is a car that gets its power solely from a battery, which is charged by plugging it in. When the battery runs out it won't go any more and it doesn't emit any CO_2. The UK Government has said it will impose a ban on selling new petrol or diesel cars by 2030 (hybrids by 2035), which means the only new cars for sale will be those powered by electricity.

4. Hybrid

One way of making a petrol or diesel engine more efficient is to add a battery and electric motor to help it out. This can capture the energy which is usually wasted when you slow down or push the brake pedal by putting the motor in reverse, so it becomes a generator. That can then be used to power the car, usually when you first start off from a stop or when you want a bit more acceleration. To help the engine even more (and improve fuel consumption), you can choose a plug-in hybrid. This means you can use mains electricity to charge a larger battery, allowing the electric motor to be used more. You can even choose to turn off the petrol engine completely and use electric only for shorter distances.

5. Degradation

All batteries get old and lose some of their capacity to hold power as they get older. This is degradation and it's accelerated by extreme heat or cold. We're all used to it happening with our phones and laptops, but it's more of a worry in a car where the battery will cost thousands of pounds to replace. It's worth learning how to protect your battery in everyday use.

The good news is that the power packs in a modern electric car are designed to be hardier than the batteries in a phone, and should be able to provide a useful range for the lifetime of the car. You can check the condition of your battery by looking at the State Of Health (SOH) either in the car's menu, via a special app (such as LeafSpy) or by asking the dealer at a service. Once the car is getting old, the packs can be reused for home or industrial power storage and still have a value.

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An electric car that runs solely on batteries is often referred to as a BEV, or Battery Electric Vehicle

6. ICEd

When talking about an ICE in the context of electric cars, it has nothing to do with what goes in a drink. It's an acronym for Internal Combustion Engine and us EV drivers get rather upset when an ICE vehicle parks in an electric car charging spot rendering it incapable of charging an electric car. This is known as being ICEd.

Occasionally, electric car and hybrid owners may even park in a charging bay without actually plugging in to the charger or will overstay in the spot after they're fully charged. This is known as 'selfish', rather than ICEd.

7. Rapid Charging

There are various ways you can get power into your electric car's battery, ranging from Trickle Charging using a common-or-garden three-pin socket, up to Rapid Charging, which requires some very expensive kit and is usually found at service stations or some other public charging points. These are usually comparatively expensive to use (but still cheaper than petrol) so are commonly reserved for topping up the range when on a long journey.

Rapid charging works by supplying the power in a way the battery likes (Direct Current) rather than the car's on-board inverter having to convert it from Alternating Current, which comes out of a mains electric supply from the power station. As a result of bypassing the inverter, a top up to 80% capacity usually takes 20-40 minutes.

8. Regenerative braking

In a petrol car, you're burning fuel to move forward. When you want to stop moving you press the brakes and pads squeeze against discs to slow the car down. It creates heat and wears away the brake parts. In an electric car, as soon as you lift off the accelerator pedal the motor automatically reverses itself to become a generator and starts harnessing the energy to top up the battery. This is called regenerative braking.

In many modern electric cars you can tailor the amount of regen braking to suit your driving style and preference. In a Nissan LEAF with an E-Pedal for example, you can drive without having to touch the brakes at all, except for an emergency stop.

9. 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.

10. kW and kWh

A kilowatt is a unit of electricity which is used in all sorts of measurements for electric car owners; from battery size and energy efficiency to charging speeds and energy costs. A kilowatt (or 1,000 watts) is roughly the amount of power needed to run a small electric heater. So, if you switched on that heater for an hour, you'd use 1kWh of energy.

An average electric car, such as the Renault Zoe, has a 52kWh battery, so would be capable (in theory) of powering the heater for 52 hours. Instead it is used to power a motor which will take the Zoe for 242 miles. That means it uses 0.21kWh per mile – which is its measure of efficiency, in a similar way to miles per gallon in a petrol car. The kW can also indicate how fast a car will charge and how much it will cost. In its simplest terms, compare a 2kW 'granny charger' to a 150kW rapid charger and you can guess how long it will take to fill a 100kWh battery. If you are paying 14p per kWh for your electricity at home, a full charge of 50kWh on your Zoe will cost you £0.14 x 50 = £7.

A Hyundai Kona Electric is a popular choice for first-time electric car drivers. It comes with a great battery range and is very simple to drive

MYTH BUSTING

The world of electric cars can be confusing. We'll help you sort the fact from the fiction.

The myth	The fact
"The National Grid won't be able to cope if we all switch to electric cars."	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. Preparations have been underway for a while and electric cars even have the potential to smooth out the peaks, by storing electricity when demand is low and feeding it back when we all make a cuppa in the ad break of our favourite programme.
"You can't charge an electric car in the rain."	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.
"You can't put an electric car through the car wash."	You can drive through car washes because electric cars are fully waterproof. Unless you leave the windows open, obviously. Which is never a good idea.
"An electric car can't take you as far as a petrol or diesel car."	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.
"I don't have off-street parking. An electric car is completely unsuitable for me."	The ability to charge at home with domestic rate electricity is great, but that doesn't mean than an electric car isn't suitable for those who don't have access to this. Many urban electric car drivers 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.
"The batteries are full of nasty stuff and they won't last."	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. They are too valuable to simply be thrown away like a worn out engine.

This is Tom. He's one of our Electrifying.com experts and spends his time sorting the fact from the fiction when it comes to the world of electric cars

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