

Electric Vehicles and Public Charge Points

A Briefing note for Blackdown Hills Parish Councils

Why bother?

Because after 2035 no new vehicles will be sold in the UK which are neither electric nor hybrid. There are already 1.6m EV's and hybrids on the roads now in 2024 but by 2040 there could be 30m.

Because we all live in an area of outstanding natural beauty, part of Britain's 'national landscapes' so we should encourage everyone to do what they can to preserve this for future generations. EV's alone will not alleviate climate change but it's a start and can lead others to take bigger steps.

Because parish councils can and should provide a lead to preserve the climate for future generations and the public good.

Charging

Charging at home is the cheapest and most convenient way to charge and if all or part of the charge comes from wind or solar then it's even cheaper. If you charge at home you are paying 5% VAT. A public charge point will be at 20% VAT. Most new electric vehicles will manage 150 -350 miles on a single charge.(depending on weather and type of driving). For journeys which are not local, owners will have to use public charge points. A few Blackdown hills parishes already have these attached to village halls.

Home charging can be done from a 13 amp plug but this is slow, inconvenient and potentially a trip hazard. A special 7.2 kW home charger mounted on an outside wall is the best way and will take around 8-9 hrs to fully charge from 5% or less. Of course, practically, when you put the car on charge it will not be 'empty' so it won't take all night. It will cost the same as your domestic kilowatt hour rate, but if you have an off-peak agreement and charge at night, or you have PV panels perhaps augmented by battery storage it will cost much less.

Some manufacturers or dealers might subsidise installation but expect to pay up to £1500.

Charging away from to home

There are not enough public points in the UK at the moment to meet demand.

Some are 'rapid' or 'ultra- rapid' and these are DC. They are expensive to use, and not all EV batteries can cope with them. You can find out where all charge points are and if they are in use from an App. (eg : Zap-Map). Charging at motorway service stations (like petrol/diesel prices) is expensive. You could pay up to 0.95p per kWh (Nov'23 prices), whereas a home overnight charge on a cheap tariff could be as low as 0.9p per kWh. Solar generated charge

augmented by storage batteries even allowing for installation costs over the life of the units will be much less.

Community charging , where you rent someone else's home charger, is catching on. You can also carry a spare stand-by battery in the car but it will be expensive and heavy, and it will not provide many miles.

Hotels, public car parks, local authorities and motorway services all have an increasing number of charge points but not all are the same. However the Public Charge Point Regulations (2023) are imposing more standardisation and reliability targets.

The batteries in EV's need DC so they have an onboard system which converts AC to DC. AC is what your home socket provides and its what chargers provide up to 22kW. Above that (Rapid DC/ Ultra fast) charge is DC but not all EV's can cope with this fast charge.

Parish Councils

County and District councils are encouraging the take-up of electric vehicles as part of their climate crisis initiatives and it makes sense for PC's to take up this challenge too.

The government provides grants to install public charge points. It is called the 'on-street residential charge point scheme' and can provide 50% of the cost of installation. The total cost can be £3500 to £8000 depending on the distance from a power source. This will give a 7kw 'fast' charger. Usually this is a double point for two cars to charge simultaneously. To provide a faster charger requires three-phase supply and is a lot more costly. Other grants may be available. Although the grant is called 'on street', confusingly the charger does not have to be actually on the street. It can now be in public car parks or village halls if certain criteria are met.

First you need to find a provider such as Podpoint or Shell EV, then apply for a quotation (usually involving a site survey) and apply for the grant. These are 'brokered' by the Energy Saving Trust to whom you apply in the first instance.

Councils can set the cost of charging per kWhr at any level they choose and may be able to recover some of the operating costs in this way. You will need an agreement with a power supply company or an agreement with someone like a Parish Hall or a CLT if you take a power feed from them. However use of the charge point will vary considerably depending on price to the consumer.

Your charge point provider will collect revenue from users and remit the revenue to the 'operator' (Parish Council) minus a service/handling charge. The operator of the EV charger pays the energy supplier or third party directly for energy used. Usually there is a period of grace for users between 'hook up' of their EV and logging on to the App to input details of vehicle and billing. Set this period for as short a time as you can. Fraudulent use (when users plug and unplug within the grace period without paying for electricity used) is increasing but can be combatted by a short time period and even a cheap security camera.

The PC does not need to own the land to get the grant but you will need a formal agreement from the landowner if you don't. It's simpler to own it. You will need 24 hr access and dedicated parking bays, the creation of which can be claimed as part of the grant.

After the initial contract guarantee period you will need £100-£150 per ann per outlet to maintain and run the point. Local electricians or DIY experts are not an option because the software is propriety technology and will be invalidated by third party interference.

You will need to make sure it's covered on your insurance (normally it is) and if you have an App-based or smart card activation process then users will need a good 4G mobile signal or access to adjacent guest wifi.

To charge an EV at a public point you usually need to belong (be registered) to a 'supplier' and at the moment there is no standardisation. However this is changing. Whether you choose an electronic device (an RFID fob) a club card (works like a charge card) or download an App is a matter of choice but it's inconvenient. More charge points in locations with secure internet will now take a credit card for charging. Local businesses may also provide charging points and some may be free if you are visiting for another reason. Some will offer a complimentary period of charge subject to purchase. New public charge points over 8kW must now offer contactless payment.

In busy holiday times, charge points on main routes will be busy. There is a random social protocol about queuing which has led to aggressive customer behaviour. Often if you drive a few miles off the motorway you will find an available charger in a quiet place with less hassle. However you may need good wifi or mobile signal to be able to hook up, which means you need your phone too.

Is it worth it?

It is true that the rapidly escalating cost of electricity has reduced the financial advantage of running an EV compared to a petrol or diesel engine vehicle. However, even the most expensive public ultra -rapid charging cost is cheaper than an equivalent diesel- fuelled vehicle. (at Jan '25).

However home -charging is always cheaper than fuelling an equivalent petrol or diesel vehicle by 7-10p per mile. Add to that running costs which are cheaper (fewer components to maintain / no congestion charging / some free parking, and until 2025 no vehicle excise duty) and the cost advantage is quite substantial .Most EV's are proving reliable and have high second hand values. Many argue that insurance costs are unreasonably high but insurance providers are apprehensive about the risk to batteries and replacement cost. On average you should be able to run an EV for 10-15p per mile less than any other comparable vehicle. This means you can save £1500-£1800 per ann on running costs for an average user.

However if you charge predominantly on a cheap night time rate or only from solar generated power then your saving will be a lot more.

Bear in mind too that initial purchase price is often higher than an equivalent conventional vehicle (the cheapest new four -seat EV at Jan 2024 is approx. £25k, but you can find a new two seater for under £10k) and delivery times are sometimes long because of component scarcity. However prices are falling because manufacturers are required to produce an agreed proportion of their output as EV's or hybrids. Chinese and South Korean manufacturers are bringing good value EV's to markets in Europe. For example the MG brand. Even if you allow for the 'opportunity cost' of the additional capital outlay (the loss of other purchase opportunities by additional outlay on an EV) , over the life of ownership an EV will be cheaper.

EV batteries, which are very expensive to replace should last for 100000 mls but their efficiency will degrade over time. Owners may be able to insure against this and some manufacturers provide free upgrades when the battery has reduced efficiency lower than an agreed percentage with long warranty periods. Since the battery is the most expensive component and can be 80% of the vehicle price it is worth checking length of warranty.

For many the motivation is to alleviate climate change. But is an EV really 'green'? The manufacture of an EV produces more 'greenhouse gasses' than the manufacture of an equivalent petrol or diesel vehicle but over the life of the vehicle, EV's produce far less. Of course if the amount of energy required for an EV over its life comes from a renewable source that gives an additional advantage. So EV's are 'greener' over the expected life of the vehicle . The battery should last seven to nine years before losing significant power or failing completely and this will be a major replacement cost.

This briefing note does not address electric vehicle company car schemes or 'salary sacrifice vehicle leasing' schemes. They can be very advantageous but are beyond the scope of this note.

Things to look out for

EV's can lose as much as a third of their theoretical range in cold weather but this varies depending on vehicle. Secondly the claimed output of public charging stations is rarely achieved and you won't get the car's maximum charging capacity. Additionally at any one time it is estimated that 20% of the UK's public charging stations are out of service.(at 2024 the UK has 75000 public charge points) , so if you are on a long journey in unfamiliar country it might take you a long time to find a charger. Planning a long journey requires a bit more effort.

So a Parish Council needs to make sure that the point is quickly fixed if it goes wrong. Recent legislation requires the operator to maintain reliability.

EV manufacturers often produce two versions of the same model. The difference is the battery capacity (and therefore the range) and of course ,the price. It will be hard to compare whether it's worth the extra money because the trim level on 'big battery models'

is usually a higher specification and its hard to disaggregate the additional cost of the battery alone. Reports of EV reliability are mixed and the data only covers a short period. A few manufacturers drag the average down but careful choice will achieve reliability which equates to non-EV's from the same manufacturer.

EV's have very fast acceleration and are virtually silent.(if not looking, pedestrians are unlikely to hear you approaching!). If you are teaching a family member to drive the acceleration will be potentially scary.In addition when you release the accelerator , the electric motors act as a break on the road wheels. Sometimes the deceleration can be disconcerting. Similarly if you are elderly then reaction times and vision will be less acute so take care with the power. EVs can leap forward at an alarmingly silent pace without experienced driving.

Finally watch out for vehicle excise duty from 2025. If you own an EV costing more than £40k you will pay a road tax (VED) of £520 a year for years two to six. However rates for less expensive vehicles are much lower.

The Future

The manufacturing deadline of 2035 for new UK vehicles powered by petrol or diesel is very close. The supply of components is not yet as robust as it needs to be to match demand. It is also unclear how quickly hydrogen-powered vehicles and supporting infrastructure will be developed commercially if at all. At 2025 there are only two hydrogen-powered cars on the market and 8 hydrogen refilling points in England. Hydrogen cannot be stored at home and its more expensive. However the emission from a hydrogen car is only water vapour.

Vehicle-to-grid (V2G) charging technology may catch on. This technology allows vehicle owners to sell battery energy back to the grid at peak times.

We all live in a rural area renowned for its natural beauty and we should encourage all to do what they can to preserve this for future generations. EV's alone will not alleviate climate change but it's a start and importantly it encourages others to make bigger steps.

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