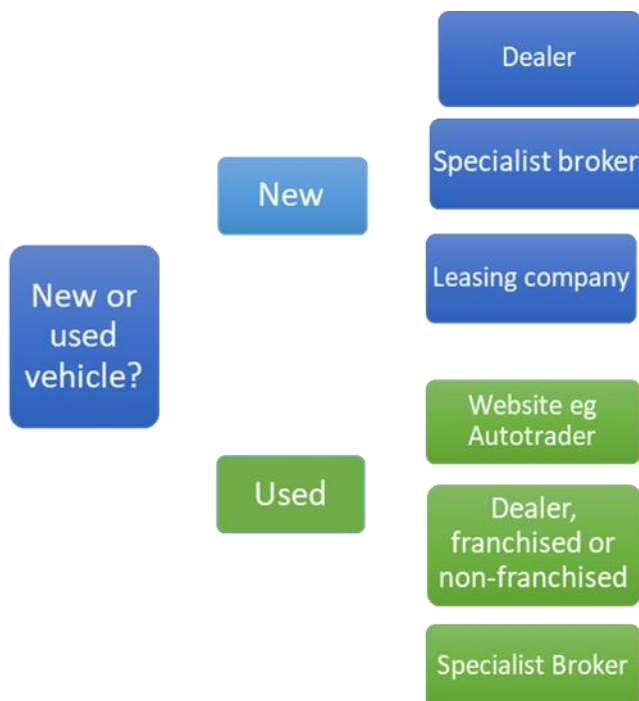


## Worksheet 4: How could electric vehicles (EVs) work in your business?

### Buying or leasing an EV

There are a wide range of options available to business looking to acquire a replacement vehicle and the following chart outlines some of the choices.

### New or used?



The differences when choosing an electric vehicle are mainly concerned with driving range and charging. Older electric vehicles are most likely to have shorter driving ranges and slower charging speeds and we have seen significant jumps in driving range as models have been updated in recent years. It is important to understand the relationship between battery size and range and also understand the capabilities of the vehicle you are considering to ensure it is fit for purpose.

The London Borough of Haringey Neighbourhoods of the Future programme also offers an EV Try Before You Buy scheme, allowing you to trial an EV car or van for between two and four weeks. Full details are available on [Haringey's website](#).

Battery capacity and its impact on range is an important element to consider. If you are considering a used vehicle you should ensure that the vehicle for sale has the range capabilities that you require and is likely to be reflected in the cost of the vehicle.

## **Vehicle finance**

Most vehicles are acquired using some type of finance product. The choice of scheme is usually determined by whether you wish to own the vehicle at the end of the agreement or simply hand it back at the end of the term.

For individuals, the range of options available in addition to outright purchase using own funds include:

- Loans
- Personal Contract Hire (PCH)
- Personal Contract Plans (PCP)
- Hire Purchase (HP)

We recommend discussing the options with your local EV dealer or financial advisor but for further information on the various options, visit the [Money Advice Service](#) website.

For businesses (including sole traders and SMEs) the options are generally outright purchase, hire purchase through monthly payments or lease. We advise discussing the financial options that are available with the vehicle supplier directly.

## **Battery leasing**

Battery leasing is no longer available on new cars and vans in the UK, however many older Renault models and some Nissans may be subject to a battery lease. A vehicle with a battery lease should be considerably cheaper to buy than an equivalent model where the battery is included in the price and this may explain the variation in price of some outwardly identical used vehicles.

Where a vehicle has a leased battery, a separate agreement is undertaken by the owner for the use of the battery over the period of ownership. The monthly cost of the battery lease depends on the mileage agreed in the contract and how long it is taken out for. Should the vehicle exceed the contracted mileage an excess mileage fee is applied.

Benefits of battery leasing include membership of a roadside recovery service during the lifetime of the lease and repair or replacement of the battery should it fall below a certain storage capacity.

The lease must be transferred from one owner to the next or from the selling dealer to the customer. There were concerns in the trade around processing battery lease transfers, however this is now considered to be a straightforward process by those who have experience of selling the vehicles.

### **Where to buy in Haringey**

The best option to ensure you get the finest advice possible when purchasing is to ensure the dealership you purchase your EV from is [Electric Vehicle Approved \(EVA\)](#). EVA is a set of standards for all areas of automotive retail that recognise businesses' excellence in the electric vehicle sector, enabling you as a consumer to identify dealerships that are at the forefront of EV retail.

The EVA website enables consumers to search by location for dealerships and businesses that have achieved this status.

### **Charging in Haringey (include EVCP request)**

The London Borough of Haringey keeps an up to date [list of chargepoints in the borough](#) and residents can use this page to request a charge point in their neighbourhood.

Another excellent source of information on chargepoints is [ZapMap](#). The website is independent of any local authority or chargepoint operator and offers a real time map of available locations across the UK, which is particularly useful when travelling further afield. The map shows whether chargepoints are in use and identifies those that are out of service. There is also a very helpful community of users that log their experiences of using particular locations on the website.

Users can access details of locations directly from operator's websites and the onboard navigation systems of most EVs will also direct you to the nearest available chargepoint if required – these maps may need updating periodically by a local dealership to ensure accuracy though.

### **Considerations for business users**

#### **Battery basics:**

- Battery is essentially the “fuel” tank of the vehicle
- Bigger battery capacity equals more range
- Battery capacity is measured in kWh
- For small to medium sized cars and vans, driving range is 3-4 miles\* per kWh, so a car with a 30kWh battery would have between 90 and 120 miles of driving range
- Heating and cooling the cabin and higher driving speeds are the two main factors which will limit driving range.

\*For guidance only, vans may consume more power when fully laden and a reserve of perhaps 30 miles should be considered.

The second element is charging speed. If your pattern of daily use allows for several hours of charging each day, then charging time is not going to be a concern. However, faster rates of charge can help replenish the battery during the working day, even allowing for a quick boost of range in a few minutes.

### Charging basics:

- Vehicles charge at x kW which varies by vehicle or even trim level
- The **vehicle** will always determine the maximum rate of charge (capacity of onboard charger) and will not be damaged if connected to a higher power chargepoint. It will simply charge at its maximum rate or, in some instances, not at all.
- For example, current model Nissan Leaf connected to a 7 or 22kW AC chargepoint will charge at a maximum of 6.6kW determined by its on-board charger
- Many plug-in hybrids and older EVs will only charge at 3 kW
- Most new EVs charge at around 7kW with 11kW capability increasingly being offered as an option
- Rapid charging of 50kW and more is standard on most new electric cars and vans and an option on some older models. 50kW rapid charging will allow a boost of range from 25 to 40 miles in around 15 minutes.

### Driving range

Before buying or leasing an EV, ensure that the models you are considering can perform the role in mind. Many people still think of electric cars and vans as having driving ranges in the order of 100 miles before a recharge is required however this is no longer the case. For cars, real world driving range is more commonly in the 170 to 250 miles range and for vans 120 miles or more. There are some shorter-range vehicles on sale however, so it is important to check the specification of the vehicles you are considering.

The driving range for new vehicles should now be stated under the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) test which has replaced the previous New European Drive Cycle (NEDC) test. The WLTP test is more representative of real-world driving range, however, you may wish to make an adjustment for carrying a heavy load or winter driving and some manufacturer websites provide a range calculator based on different driving conditions. You will also want to ensure that you have a reserve in hand so, for example, taking 30 miles off the WLTP range figure will make an allowance for unusual driving conditions or unexpected detours.

There may be occasions when a longer-range vehicle is required, so consider hiring a vehicle for these occasions or use another petrol or diesel vehicle if you have a number of vehicles in your business.

### **Costs**

The main saving when running an EV is the reduced “fuelling” cost - this means that making the best use of any EV in your business will help you recoup any additional cost when you buy or lease it more quickly. Other savings to consider are reduced or zero Vehicle Excise Duty (Road tax), reduced servicing costs and, as long as you register your vehicle, 100% discount on the London Congestion Charge. Other savings may result from reduced parking costs and possibly free charging at some supermarkets etc.

To estimate the electricity costs to drive an EV you need to check the WLTP energy consumption figure which should be stated on the manufacturer website or online brochure. It will usually be quoted in miles/kWh or sometimes as Wh/km. **Convert Wh/km to miles/kWh using the following formula: Miles/kWh = 1000/ (Wh/km x 1.609).**

To calculate the cost per mile, take your electricity price per kWh or unit and divide by the miles/kWh figure. For example, if the WLTP figure for a car is 3 miles/kWh and your electricity cost is 15p per kWh, then the cost per mile will be 5p. Similarly, you can calculate the running cost savings by switching to an electricity tariff offering lower overnight electricity rates and the cost of occasionally using public chargepoints such as rapid chargers. You can check the cost of charging at public chargepoints using the Zap Map website or app.

### **Electricity supply**

Most premises (both domestic and commercial) will support at least one 7kW chargepoint. If more are needed at a business location, then smart charging may be required to spread out the charging overnight so that the electrical supply capacity to the property isn't exceeded. You can roughly calculate the supply needed to charge your vehicle(s) by taking the most mileage you believe your vehicles will cover in a day and dividing it by the energy consumption figure as above. Then take this number and divide by the number of hours the vehicles will be parked and you can estimate the charging rate required.

For example, if two vehicles drive no more than 240 miles a day between them and drive 3 miles/kWh they will require c. 80 kWh charging a day. If they are parked for 10 hours, then the supply required will need to be 8kW. Providing a chargepoint supplier with this information will help them advise on the most cost effective solution for you, perhaps reducing the total draw of each chargepoint and thus remove the need or minimise the cost of an electricity supply upgrade.

### **Vehicle payload**

There are some payload constraints with electric vans but mainly in the larger vans with a gross vehicle weight (GVW) of 3.5 tonnes where payloads may be compromised due to the weight of the batteries reducing the carrying capacity. In recognition of this the law has been changed so that the weight limit for Category B driving licence holders driving alternatively-fuelled vans (including electric) has been increased from 3.5 tonnes to 4.25 tonnes (effectively restoring the payload capability of a diesel equivalent).

There are some additional training requirements to be considered before drivers can take to the road and this is covered in "[Changes to licence requirements for Alternatively Fuelled Vehicles \(AFVs\)](#)". There is a limited choice of 4.25 tonne electric vans available at the moment, but it is expected that manufacturers will take advantage of the revised regulation on future models.

### **Driver training**

It is essential that drivers of the vehicles understand how to drive and charge them before heading out on the road. This will include understanding the use of regenerative braking and other functions such as pre-heating or pre-cooling the vehicle while on charge. It may be useful where a number of users are involved to make up a laminated instruction card for each vehicle so that they are reminded how the vehicle works if they are not regular users.

Demonstrating how to charge the vehicle including safely storing the cable when disconnected so that it doesn't present a trip hazard or get run over and damaged is also important. It may be worth installing a sleeper or similar barrier on the ground so that the vehicle can't run into the chargepoint and any length of cable can be stored behind it, so that it can't be run or tripped over.

Energy Saving Trust offers in-depth, fleet reviews help organisations make financial and environmental savings. For more information, see [www.energysavingtrust.org.uk/transport/fleet/fleet-support](http://www.energysavingtrust.org.uk/transport/fleet/fleet-support)