

### **Worksheet 3: Introducing the benefits of EVs and ULEVs**

This section will identify the main benefits of electric vehicles (EVs) and ultra-low emission vehicles (ULEVs) including operational costs; service, maintenance and repair costs, and grants and incentives to assist with purchase and charging.

We will also aim to address some of the key questions often raised around EV batteries and warranties, their manufacture and resources involved. Finally, we will also consider the issue of CO<sub>2</sub> emissions associated with EV manufacture.

#### **Welcome to reduced running costs**

There are some taxation incentives to take into account and we would advise getting specialist advice from an accountant to ensure all the benefits are taken into account.

The running costs of an EV are approximately a third of the average cost of an internal combustion engine (ICE) vehicle. There will be some differences in costs depending upon the type of charging you are able to use as an EV driver. As a rough estimation, the average EV can travel approximately three miles per kWh of charge.

For those able to charge at home using a dedicated home charge unit, the cost of charging is approximately 15p/kWh or around 5p per mile and using a public charging network will cost on average 30p/kWh or approximately 10p per mile (information taken from Zap Map's [public charging calculator](#)). As a comparison, the current [HMRC advisory fuel rates](#) identify a cost per mile of 9-13p per mile for diesel cars and 12-20p per mile for petrol cars.

For a real example please see the different fuel costs for a Vauxhall Corsa below:

	Corsa (petrol)	Corsa-e Home	Corsa-e public
Cost after 15,000 miles	£1,487.81	£567.00	£810.00
Savings compared to petrol		£920.81	£677.81

Based on: petrol price 120p per litre, 15,000 miles per year, Corsa mpg 55, Corsa-e kWh per mile 0.27

The table above shows the savings that could be made when making the switch. A saving of almost £1,000 per year is not to be ignored and for businesses who regularly exceed 15,000 miles a year, increased mileage will result in more savings.

It is worth bearing in mind that costs for public charging can vary considerably, some locations even offer completely free charging – [www.zap-map.com](http://www.zap-map.com) is a very useful tool for locating your nearest chargepoint and comparing prices.

### **Save money on ownership costs**

In the table below, we have compared the costs of owning an ICE vehicle and an EV over one year and over a six-year life cycle for an individual travelling 12,000 miles per year. The results show that there are significant savings to be made (purchase costs not included):

Based on 12,000 miles per year	ICE Vehicle	EV
	Kia Sportage 1.6 CRDi	Kia e-Niro
Official CO <sub>2</sub> emissions (g/km)	141 <sup>1</sup>	0
Annual CO <sub>2</sub> (tonnes) <sup>2</sup>	3.58	1.01 <sup>3</sup>
Annual fuel/electricity cost	£1,634 <sup>4</sup>	£560
Fuel/electricity over 6 years	£9,804	£3,358 <sup>5</sup>
1 <sup>st</sup> year vehicle excise duty (VED) <sup>6</sup>	£530	£0
VED over 6 years	£1,255	£0
1st year costs (fuel + VED)	£2,164	£560
6-year costs (fuel + VED)	£11,059	£3,358
<b>Total 1<sup>st</sup> year cost saving</b>	-	<b>£1,604</b>
<b>6-year cost saving</b>	-	<b>£7,701</b>
<b>Total annual CO<sub>2</sub> saving (tonnes)</b>	-	<b>2.57</b>

<sup>1</sup> CO<sub>2</sub> figure obtained from <https://vehicleenquiry.service.gov.uk>.

<sup>2</sup> Includes an uplift to reflect real-life driving style, based on BEIS methodology 2019.

<sup>3</sup> Electric vehicle CO<sub>2</sub> emissions are calculated using the BEIS / DEFRA figure for average emissions from UK electricity generation.

<sup>4</sup> Based on fuel price provided, or UK average obtained from <http://www.theaa.com/driving-advice/driving-costs/fuel-prices>.

<sup>5</sup> Electric vehicle fuel cost is based on a 14.05p/kWh tariff. Further savings can be made if off-peak charging is utilised.

<sup>6</sup> Vehicle Excise Duty (road tax). VED figures are based on the date the ICE vehicle was first registered and the most recent VED rates for EVs.

### **Servicing**

At present, although the upfront costs are usually higher for an EV compared to an equivalent ICE vehicle, it is important to understand in addition to reduced running costs the servicing requirements of an EV are significantly lower and therefore cheaper. Fully electric vehicles are designed to be as efficient as possible with only a small number of moving parts

compared to an ICE vehicle. As a result, servicing is far more straightforward with no need to replace any of the major consumables that you would normally do such as oil, oil and air filters and there are also no worries about major, expensive, mechanical replacements as the mileage increases.

As far back as 2018, [reports estimated](#) servicing costs to be as much as 23% lower for EVs compared to petrol vehicles. When comparing smaller cars such as Renault's Zoe with a petrol-powered Vauxhall Corsa the saving can be as much as 35%.

### **EV grants and Incentives**

A variety of government grant and tax incentives ensure a lower financial burden for anyone making the switch:

- [Plug-in car grant](#) is available until 2022/23 financial year with £3,000 off the purchase price of a fully electric vehicle (not PHEV), although cars costing £50,000 or more are excluded.
- [Plug-in van grant](#) provides up to a maximum of £8,000 off the price of a plug-in van, and there is up to £20,000 off the price of large vans and trucks.
- [Plug-in motorcycle grant](#) offers up to a maximum of £1,500 off the purchase price of a motorbike with no CO<sub>2</sub> emissions and can travel at least 50km between charges.
- Electric vehicles are also exempt from paying Vehicle Excise Duty ("Road Tax").
- All zero emission vehicles will be exempt from the VED 'expensive car supplement' from 1 April 2020 until 31 March 2025. Currently all cars with a list price above £40,000 pay a £325 supplement for five years from the second time a vehicle is taxed.
- [Electric Vehicle Homecharge Scheme](#) – the scheme provides grant funding of up to 75% of the cost, up to £350, for the installation of a chargepoint at a domestic property in the UK. Recipients of this grant need proof of ownership/lease of an EV.
- [Workplace Charging Scheme](#) – the grant funds up to 75% of cost, capped at £350, per socket for up to 40 sockets across all sites. Locations must be a place of work or a visitor's car park and there is no requirement for the organisation applying to have EVs on their fleet.

The UK Government also introduced changes to the company car benefit-in-kind (BIK) tax rules from 2 April 2020. Full details are available on the [Go Ultra Low](#) website.

Pure EVs will have:

- 0% BIK tax in 2020/21
- 1% BIK in 2021/22
- 2% BIK in 2022/23, 2023/24 and 2024/25

g/km CO <sub>2</sub>	Electric range	2020/21	2021/22	2022/23	2023/24	2024/25
0		0	1	2	2	2
1-50	>130	0	1	2	2	2
1-50	70-129	3	4	5	5	5
1-50	40-69	6	7	8	8	8
1-50	30-39	10	11	12	12	12
1-50	<30	12	13	14	14	14
51-54		13	14	15	15	15
125-129		28	29	30	30	30

If you are thinking of making the switch to a low emission vehicle, visit [www.energysavingtrust.org.uk/transport/electric-cars-and-vehicles](http://www.energysavingtrust.org.uk/transport/electric-cars-and-vehicles) to see what support is available.