



Office for  
Zero Emission  
Vehicles



Department  
for Transport

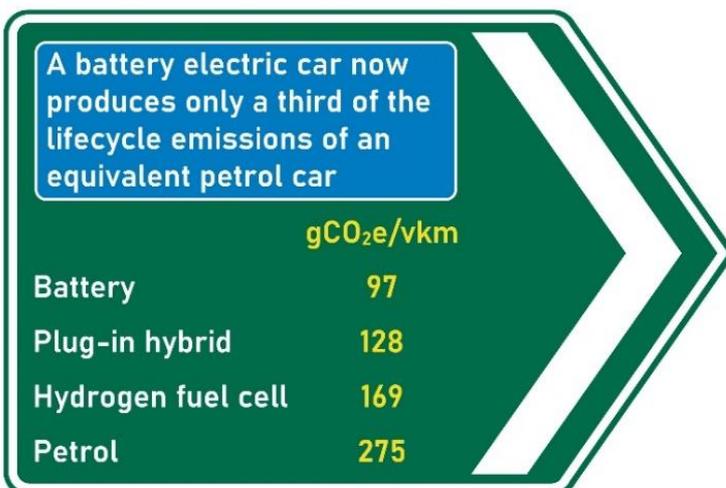
# Common Misconceptions About Electric Vehicles

July 2022

## 1. Electric vehicles (EVs) are too expensive

### Reality:

EVs do cost more to buy outright, but in many cases, have a lower cost over 4 years. According to recent industry estimates, an EV can save [£176](#) in running costs for every 1,000 miles driven. This means it can cost as little as [2p a mile](#) to run an EV when charging on off-peak electricity. This is compared to over 20p per mile for petrol and diesel. As EVs have far fewer moving parts, there's also less maintenance to be done. There are also tax incentives in place for owners of EVs, including zero road tax and favourable company car tax rates. These can save some drivers over [£2,000 per year](#). All this means that the market for more affordable zero emission vehicles is growing rapidly. As of May 2022, 24 models are priced under £32,000 compared to 15 at the same time in 2021. **With production costs reducing, some forecasts show that some EVs could be the same price to purchase as a petrol or diesel car well within the 2020s.**



## Only one percent of EV drivers want to switch back to petrol or diesel

- Source: Zap-Map

## 2. EVs do not have the battery range to travel as far as people need

### Reality:

99% of car journeys in England are [under 100 miles](#). This means most drivers' needs are easily met by an EV. For those travelling further, there are [over 20 models available with a quoted 200-plus mile range](#). There are also some new electric cars coming soon with a range of over 300 miles, enough to get from Exeter to Leeds. **With [battery prices](#) having fallen by 89% compared to 2010**, continued price decreases in 2021 and further drops forecasted in the long term, we expect to see more EVs available with greater range.

## 3. Building an EV generates more greenhouse gas emissions than it saves

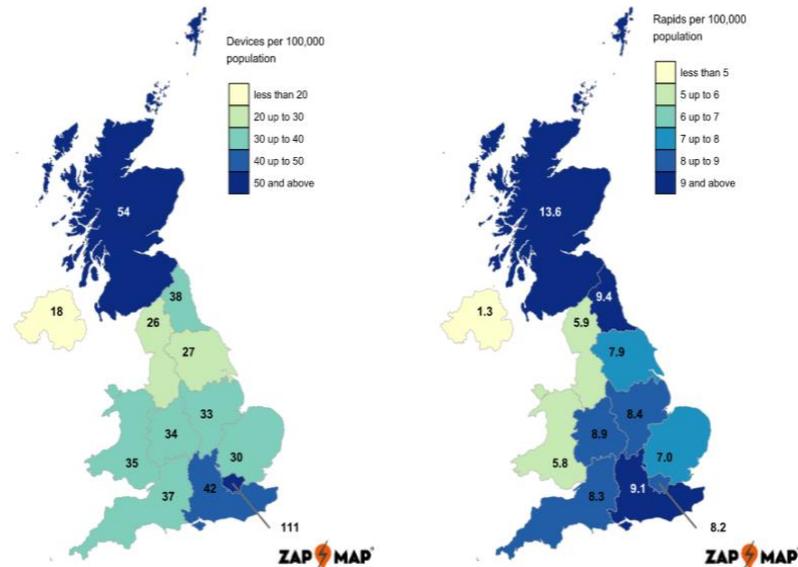
### Reality:

This has been debunked in numerous well-respected studies. **A new battery-electric car has just a [third](#) of the lifetime greenhouse gas emissions of an equivalent new petrol car**, even when taking into account battery production and disposal. EVs are getting progressively cleaner as electricity generation decarbonises.

## 4. The battery will need replacing after five years

### Reality:

There are well over 10 million EVs on the world's roads already. **There is no evidence to suggest their lifespans are any different from a petrol or diesel vehicle.** Most EV batteries have **warranties of around 8 years (or 100,000 miles) but are expected to last much longer**, and their lifespan continues to improve. EVs are in daily use across the UK's roads as taxis and in other high mileage roles. The government has committed £330 million to the [Faraday Battery Challenge](#) to support the research, development and scale-up of world-leading battery technology right here in the UK, including pioneering work on improving battery lifespan.



Total and rapid public charging devices per 100,000 of population by UK region 1 April 2022

## 5. Batteries cannot be recycled and will all end up in landfill

### Reality:

[Existing regulations](#) ban the disposal of EV batteries to landfill and incineration. Car manufacturers are obligated to take back EV batteries free of charge and ensure they are treated at permitted facilities that meet the required recycling efficiency standards. With the increasing number of EV batteries, we are reviewing these regulations to strengthen them. The government's £330m Faraday Battery Challenge has an aim of increasing recyclability of an EV battery to 95% by 2035, increasing the amount of minerals, like lithium and cobalt, that can be extracted and reused. **We want to create a circular economy for EV batteries to maximise the economic and**

**environmental opportunities of the transition to zero emission vehicles.**

## 6. Materials used in batteries come from questionable sources

### Reality:

It is true that there are current challenges in ensuring the transparency and sustainability of materials used in batteries and electric motors. However, this applies across many manufactured goods including smartphones and laptops. The **UK is part of international efforts to secure a transparent, sustainable and ethical supply of raw materials, protecting the lives and livelihoods of miners.** EV manufacturers are already committed to the responsible sourcing and reduction of 'rare earth' raw materials in their supply chains. They are also focusing on both transparency

and security in their supply chain (for good business reasons) and on minimising the use of elements like cobalt and ‘rare earths’ in their designs.

**Government is funding schemes to trial the recycling of key raw materials in batteries, and to localise more of the battery supply chain.**

## 7. There is not enough lithium to manufacture the batteries needed

### Reality:

There are **more than enough global resources for EV batteries to meet the UK and global demands until [at least 2050](#)**.

Production will need to scale up in line with the increasing demand for EVs. Recycling facilities and techniques are also improving to ensure a circular economy.

**Achievements in battery technology and chemistries are further decreasing pressure on resources.**

## 8: EVs cannot be driven or charged in the rain

### Reality:

Not true. **EVs have to comply with tough technical rules prior to entering the market, including crash and electrical safety. This means they are safe to drive and charge in a wide range of weather conditions.** Drivers should take the usual precautions by following the manufacturer’s instructions, only using the correct charging cable and ensuring the EV and cable are not damaged. As with any vehicle, drivers should also consult the owner manual for

guidance on the maximum depth of water a car is safe to drive through.

## 9: EVs cannot tow or be towed

### Reality:

**Like all other cars, electric vehicles need to be ‘type approved’ to tow a caravan or trailer.** An increasing number of EVs are coming to market with this capability. A caravan or trailer towed by an EV can also display a green number plate.

When an EV is being towed by another vehicle at higher speeds and longer distances, many manufacturers require that they must be towed with the wheels off the ground. This is also the case for any automatic petrol and diesel vehicles, so this is **not a new challenge for vehicle recovery companies.** If an EV breaks down and is in immediate danger (for example, when in a live traffic lane), it can be towed slowly a short distance to a safe location, to await further assistance, just like any other vehicle.



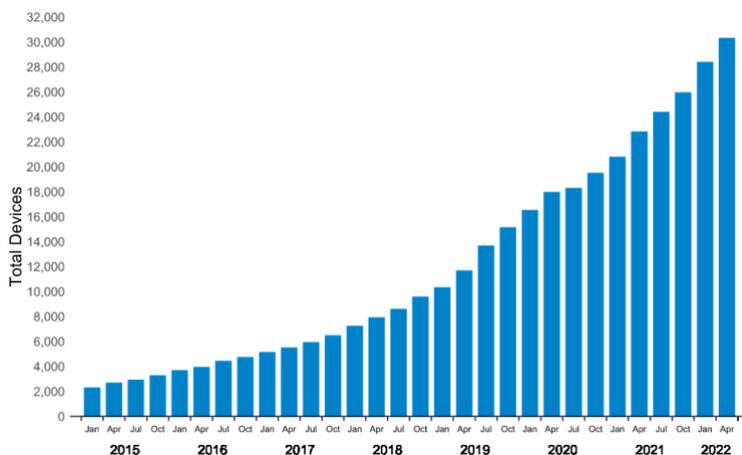
*Chargepoint design concept*

## 10. There are not enough chargepoints to meet demand

### Reality

Research has found that the UK has [one of the most extensive](#) rapid charging networks in Europe. Industry [statistics](#) show that there are **over 31,000 public chargepoints available across the UK**, a significant increase from 7,211 in 2017. There are also **more than 5,800 rapid chargers**. We expect continued, accelerated deployment of public chargepoints. On average, **over 600 new chargers are being added to the UK's road network each month**, of which over 100 are rapid. Today, a driver is never more than [25 miles](#) away from a chargepoint anywhere along England's motorways and A roads.

Most drivers charge at home and we expect to see this trend to continue. There are [nearly 900,000](#) plug-in vehicles on UK roads and evidence suggests that those with off-street parking can meet the vast majority of their charging needs at home while their vehicles are parked.



Growth in UK public charging devices since 2015.  
Source: DfT statistics

## 11. It takes too long to charge an EV

Most charging will be done at or near home overnight. However, some new cars are capable of charging up 200 miles in [as little as 20 minutes](#) – the time it takes to enjoy a cup of coffee. **Potential charging speeds have increased by a factor of 5 in the past few years** as businesses have started to focus seriously on EVs as the future of road transport.

## 12. Only people with off-street parking will be able to easily charge their EV

We want to ensure that lack of access to off-street parking is not a barrier to realising the benefits of owning a plug-in electric vehicle. The [On-Street Residential Chargepoint Scheme \(ORCS\)](#) is available to all UK local authorities (LAs) to provide public chargepoints for their residents without access to private parking. This year, £20 million is available under the scheme to ensure more LAs and residents can benefit. The scheme has **supported over 150 different LAs to fund more than 11,000 chargepoints for residents who do not have off-street parking**.

In March 2022 we **announced our £450m [Local EV Infrastructure \(LEVI\) Fund](#)**. This will deliver a step-change in the rollout of EV infrastructure and focus on providing for households without off-street parking. We have launched a first tranche of £10m as a springboard for the development of the full fund, which closed to applicants on 17 June 2022.

Government's £950m [Rapid Charging Fund](#) (RCF) aims to future-proof electrical grid

capacity at service areas on motorways and major A-roads to prepare the network for uptake of zero emission cars and vans ahead of need. **Rapid charging hubs and electric forecourts (equivalent to current petrol or diesel refuelling) are emerging as further options for EV drivers to recharge.**

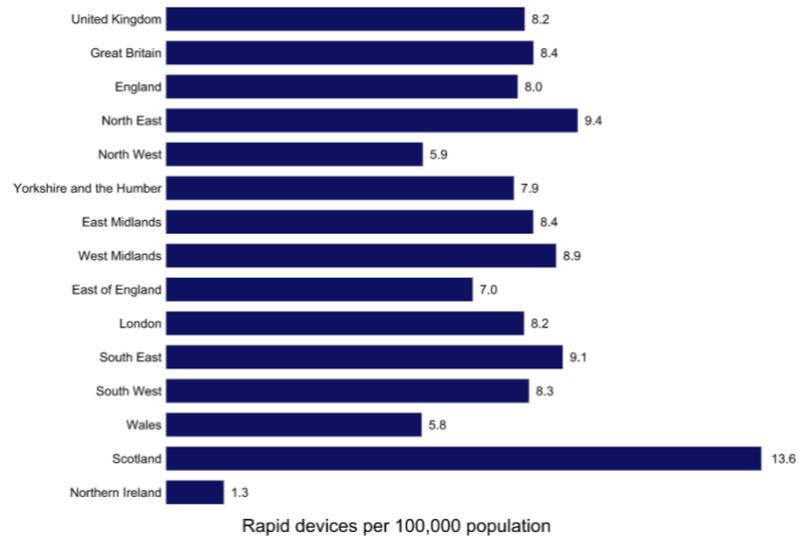
Charging at workplaces is also growing; Government has supported the installation of **over 26,000 workplace charging sockets** as of April 2022.

### 13. There are loads of chargers in London but hardly any in other cities or in rural areas

All regions in the UK have seen [increases](#) in publicly available chargepoints in the year to April 2022.

In addition to the ORCS scheme, government has also supported the installation of chargepoints in residential buildings and workplaces across the UK, including rural areas, through the [EV Homecharge Scheme \(EVHS\)](#) and the [Workplace Charging Scheme \(WCS\)](#). London has received the [second lowest](#) number of grants per household in England under the EVHS and the lowest number of chargepoint sockets per person in the whole of the UK under the WCS.

Government will also be providing **additional funding to install chargepoints for small accommodation businesses**, which are disproportionately found in rural areas. This will help boost destination charging across the UK in such locations.



Public rapid charging devices per 100,000 of population by UK country and region: 1 April 2022. Source: DfT statistics/Zap-Map.

### 14. Public chargepoints are all broken

EV users should expect a reliable public network wherever they drive in the UK. Having chargepoints out of action is inconvenient, frustrating and can be unsafe. However, according to [Zap-Map](#), **9 out of 10 chargepoints are working at any point in time.**

We are working to ensure that all consumers have a positive experience using the public charging network and any poor performing chargepoint operators are held to account. We are **mandating a 99% reliability standard for rapid chargepoints in the UK and a free 24/7 helpline for consumers struggling to charge.** We will lay legislation later this year.

## 15. There are too many different apps and different types of connectors

We will lay legislation later in 2022 to **mandate payment roaming**. This means chargepoint operators will have to work with each other to ensure that consumers can pay without having to download an app each time you use a different charging network. This will also **support the business sector to electrify their vehicle fleets**.

We legislated in 2017 to ensure all new and replacement public chargepoints must offer standardised connectors (plugs). This means that **the vast majority of EVs can charge on the entire UK public charging network**. The notable exceptions are the Nissan Leaf and Mitsubishi Outlander, which can charge at [over 95%](#) of public chargepoints. As manufacturers are increasingly standardising their connectors, government has no plans to intervene in the vehicle market.

## 16. The grid will not be able to cope if everyone switches to EVs

The Committee on Climate Change [suggests](#) that electrifying the vehicle fleet could result in road transport making up 15% to 20% of total electricity demand in 2050.

We are confident the grid will be able to cope, through the **robust processes in place for bringing forward new generation and grid updates**. Government has given Ofgem, the energy regulator, legal responsibilities and powers to **deliver an energy system fit for both current and future consumers**. We are also ensuring that Ofgem considers our energy policy

priorities for delivering net zero in its regulatory decisions.

Smart charging is an important part of this process. Smart charging technologies allow EV charging to take place when demand for electricity is lower. For example, at night, or when there is lots of renewable energy on the grid. This **reduces electricity system costs, lowering prices for everyone**. The motorist pays less for charging their EV and the electricity powering the EVs is greener.



Public charging devices by location type, March 2022

ZAP MAP

## 17. EVs are not 'greener' because of emissions from electricity generation

Since 1990, we have reduced greenhouse gas emissions in our electricity system by [over 70%](#). Taken together, **renewables and other low carbon generation, such as nuclear, currently provide over 50% of our electricity**.

Government continues to support the deployment of low carbon and renewable technologies to deliver a cleaner greener system at least cost to consumers and that maintains a secure supply of electricity. **Our plans could see 95% of our electricity**

come from low carbon sources by 2030.

By 2035, all our electricity will come from low carbon sources, subject to security of supply.

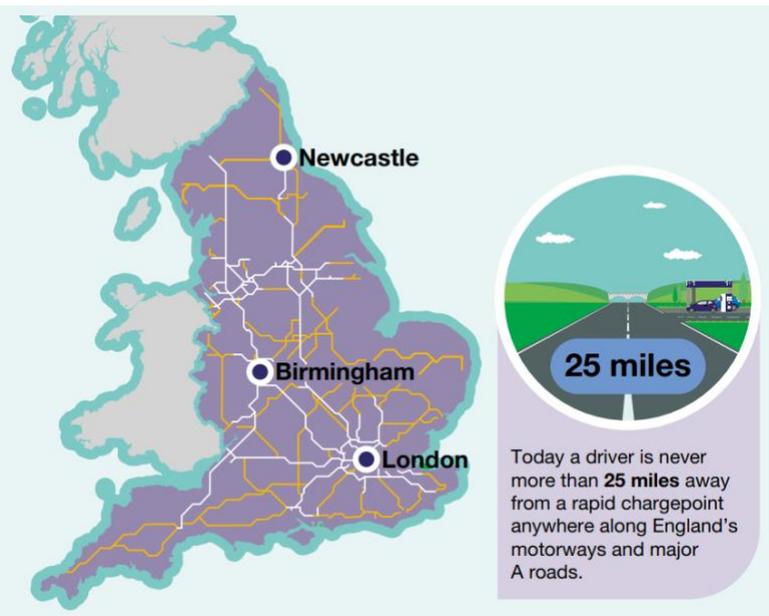
## 18. You will have to dig up all of the country to lay more cables

Ofgem, ensures that electricity network companies are funded to meet the additional demand from EVs. This incentivises them to plan and deliver the work as efficiently as possible. This includes **minimising unnecessary disruption and expense, for example by laying larger cables to avoid reopening roads twice.**

and some CO2 exhaust emissions. This means that for now this is not zero emissions. By comparison, the only exhaust emissions from hydrogen fuel cell vehicles is water.

As set out in the government's [hydrogen strategy](#), we **expect hydrogen to play a significant role in decarbonising transport.** We expect it will probably be most effectively used in heavier transport applications 'that batteries might not reach' like large trucks, maritime and aviation.

**For cars and vans, battery electric technology is the chosen route for a clear majority of manufacturers and motorists.**



Source: DfT statistics/Zap-Map

## 19. You could easily just switch all petrol and diesel cars to burn hydrogen without going to all this trouble

Government remains **technology-neutral.** However, currently, combustion hydrogen in a conventional engine still produces NOx