

EVEN
MORE MYTHS!

FairCharge[®]



The Little Book of EV Myths

EV batteries don't last? EVs pollute more than ICE cars?
Hydrogen will displace EVs? EVs cost more to maintain?
And much more nonsense...

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The Little Book of EV Myths

There are more myths surrounding electric cars than Elvis Presley. That's the way it feels anyway. Everything from EVs pollute more than ICE, batteries fail, the grid won't cope, they catch fire more than combustion cars and that hydrogen, not batteries, is the future. EVs may not be for everybody, but we know that the technology works and has proved reliable for a million UK owners who drive EVs every day.

Many see EVs as a threat to their freedoms and there are plenty of well-funded vested interests who want us to carry on burning fossil fuels. But EVs have also become politicised – a four-wheeled symbol of your personal politics. Both in the UK and the USA there's a cultural war over electric cars with political parties using them as a wedge issue to divide voters. Electric cars will be the biggest energy disruptor of this century, so we shouldn't be surprised why so many dislike the idea of such a profound transition.

We've gathered together some of the most frequently repeated EV myths and used available data to set the record straight. EVs have been on our roads for over a decade with billions of battery-only miles travelled so there's plenty of real-world experience available. So, if you find yourself scratching your head at the myths, misinformation, and general moonshine that's being written, posted and broadcast about electric cars, this book is for you.



EVs are complicated to drive

They're simpler than ICE

Non-EV drivers seem intimidated by EV technology, especially seeing the large central screens and lack of conventional buttons and switches. In reality an EV is as easy to drive as a traditional automatic. You need to get used to using the touchscreen instead of pressing switches and learn to understand how to get into different menus. But if you can use a smartphone or an iPad, navigating through the car's operating system is similarly intuitive.

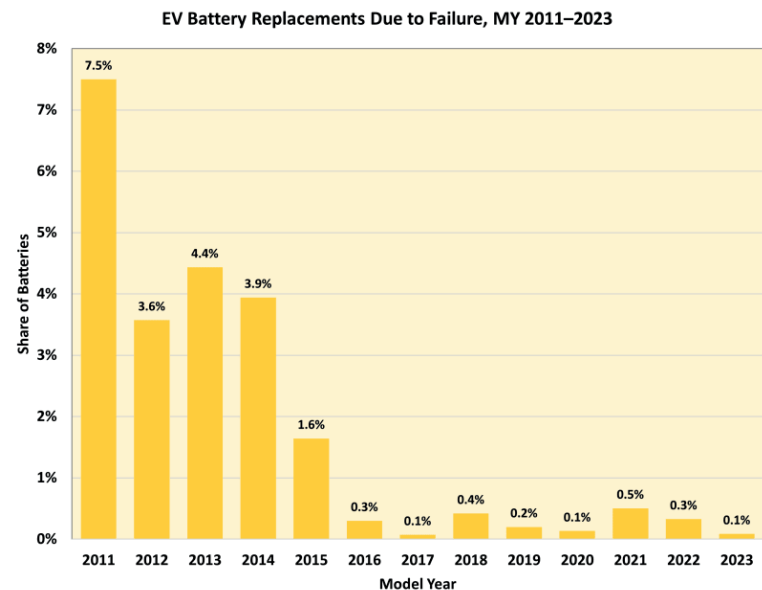
Getting used to how to charge and how to pre-condition the battery before high-speed charging is important and takes time, but the internet is full of tutorials, plus your EV's manufacturer will have an online guide. Most new EV owners tell us that they master the new tech within a few days of ownership.



New EV prices are falling

Yes, they are but the price difference is narrowing. The Dacia Spring is one of the cheapest UK EVs at £15,000. In May, Vauxhall announced that their monthly PCP prices for EVs will be the same as their petrol cars and some car makers have cut prices offering an average 20% discount. Analysis by comparison site, Green Match, shows that in 2024 the difference between the average price of an EV, compared to a combustion car, is £7,000, but by 2025 will fall to £4,000. Auto Trader, in November 2023, reported that the once £20,000 price premium between a new Tesla Model 3 and petrol BMW 3 Series has narrowed to just £950 between the base models.

The difference between a new electric VW iD3 and a petrol Mercedes A Class is now £4,115. Second-hand values of EVs and ICE are near to parity and in May 2024, the SMMT reported that sales of used battery electric vehicles reached record levels, up 71% and the highest ever market share of 2.5%. Used EVs were the fastest growing powertrain among used cars. In February 2024, Market research firm, Gartner, said that by 2027, EVs will be on average cheaper to make than combustion cars due to lower production costs. Pedro Pacheco, Vice President of Research at Gartner, said: "New technology means BEVs will reach ICE cost parity much faster than initially expected."



EV batteries don't last

There are EVs with 300,000 miles on original batteries

Car makers now offer eight-year, 100,000-mile battery warranties on EVs – a better warranty than on a combustion engine. In 2023, a study of 15,000 EVs by Seattle battery analysis company, Recurrent Motors – How Long Do Electric Car Batteries Last – found that only 1.5% of batteries had been replaced under warranty. In 2022, Tesla in its Impact Report stated that the battery degradation (loss of capacity) on its older S and X models after 200,000 miles is 12%.

In April 2024 the Fully Charged Show tested an Australian 2018 Tesla Model S that had covered 414,247 miles on its original battery pack. There's no data currently available to show persistent, premature, or unexpected failures of EV batteries. Industry experts now widely accept that EV batteries will generally outlast the chassis of the car.



EVs regularly catch fire

ICE cars are 20 times more likely to catch fire

The fire service estimate there are around 100,000 vehicle fires every year in the UK and records for 2022 to 2023 show only 239 EV fires – or 0.24%. The Swedish Contingencies Agency reported that ‘Petrol and diesel cars are 20 times more likely to catch fire than EVs’. In 2022 611,000 vehicle fires were recorded in Sweden of which 23 were EV fires – or 0.004%.

In America, data from the National Transportation Safety Board reported that battery-powered vehicles suffer 25 fires for every 100,000 sold, compared to 1,530 fires for petrol vehicles. In 2023 US insurer, AutoinsuranceEZ, released a report ‘Gas vs Electric Car Fires (2023 Findings)’ noting that “based on this data electric cars don’t catch fire nearly as much as the news claims.” But it is important to understand that putting out an EV battery fire does take much longer than an ICE vehicle fire.



EVs pollute more than ICE cars

Lifetime CO2 emissions from an EV are 68% less than an ICE car

The EVs aren’t ‘green’ myth has grown up around pollution from battery mining and manufacture, often in China, where coal-fired electricity grids power EV and battery factories. There are multiple studies showing the carbon debt of an electric car is paid off much earlier than previously thought. Research by the International Council on Clean Transportation (ICCT) has shown that when driven in Europe, an EV pays off its carbon debt after around 11,000 miles, after which the full life cycle CO2 emissions are around three times lower than an average petrol car.

A different analysis from Carbon Brief in 2023, showed that a Tesla Model Y, driven in the UK, would pay off its carbon debt after around 13,000 miles. After 14 years of driving the average petrol car has a carbon footprint of 45 tonnes of CO2. A Tesla Model Y driven over the same period in the UK would emit 14 tonnes of CO2 – a saving of 68%. Transport & the Environment worked out that in its lifetime the average ICE car burns 17,000 litres of petrol. Those barrels, stacked end-to-end, would make a tower 70 – 90m high – around the same height as a 25-storey building.



EVs shift emissions from roads to power stations

80% of EVs are charged at home using renewables

As we write this in May 2024, 55% of power to the UK grid came from zero carbon sources. Driving an EV in the UK, charged on a low-carbon grid and on a low-cost evening tariff where only renewable electricity is used, means that the emissions produced for the electricity charging the EV's battery are low. Even in coal intensive grids, Carbon Brief analysed that an EV in China would pay off its carbon debt at 22,000 miles and in Poland at 18,000 miles.

In its latest report, The Intergovernmental Panel on Climate Change (IPCC) said: "even with current grids, EVs reduce emissions in almost all cases." EVs reduce emissions even when being charged with electricity from fossil fuel heavy grids because they are roughly four times more energy efficient than ICE cars. Zapmap reports that 80% of EVs are charged at home, at night on low-cost electricity tariffs from providers that supply certified renewable electricity.



Hydrogen will displace EVs

Lifetime hydrogen emissions are 60% to 70% more than ICE

There are only 11 hydrogen filling stations in Britain and just 200 across Europe. The UK Government's Lifecycle Analysis of UK Road Vehicles, says that EVs are 'much more efficient' than hydrogen cars, using only a third of the energy. The lifecycle emission from a hydrogen passenger car would be 60% to 70% higher than an EV, even if the hydrogen was 'green' and made from low carbon sources. Barriers to widespread hydrogen adoption include a high pressure, low temperature infrastructure, more energy intensive to produce than electricity, logistical and storage challenges, and a forecourt cost that would be significantly more than petrol or diesel if 'green' hydrogen were made at scale.

In the USA the hydrogen price has risen to \$36/kg with a fill up now costing around \$201. Shell have closed all their hydrogen filling stations in the UK and in California. There are just two hydrogen cars currently available to private buyers in the UK - the Hyundai Nexo and Toyota Mirai. According to the DVLA there are only 98 Toyota Mirai and 29 Nexo registered on UK roads. Hydrogen may have a place in heavy goods vehicles, trains, or marine transport, but most experts agree its application to passenger cars is unlikely.



EVs cost more to maintain

EV servicing costs 30% less than petrol to 60% less than diesel

With around 20 moving parts in an EV drivetrain compared to more than 200 in a combustion car there are less parts to wear out. No spark plugs, oil, timing belts/chains, exhausts or clutches means that the total cost of ownership of an EV is significantly less than an ICE car.

Tusker Direct, a UK leasing company with 16,000 EVs, estimates that their EV maintenance costs are 30% less than petrol and 60% less than diesel. Data from a survey by BookMyGarage.com in Feb 2023 showed that 'overall average maintenance bills (including MoT tests, servicing and repairs) cost 43% less for EVs compared to other fuel types.' Data now shows that EVs are cheaper to maintain than ICE.



EVs have short ranges

Average UK EV battery range is now 236 miles

The Society of Motor Manufacturers and Traders (SMMT) say that average range of an EV in the UK is 236 miles. The highest range EV in the UK is the Mercedes EQS. A large 107.8 kWh battery pack and low drag coefficient means that the EQS can cover a claimed 458 miles on one charge. It's important to say that WLTP official battery range figures - like combustion cars mpg figures - will vary in real-world driving and colder temperatures.

Research from data provider, Cap hpi, shows EVs are now covering similar annual mileages as combustion cars. An average of 8,292 miles are driven annually by EV owners compared to 9,035 by petrol and diesel owners - a 743-mile difference. Longer range batteries and better charging infrastructure are responsible for the increase in yearly average EV mileages.



There won't be enough critical minerals

Viable reserves of critical minerals are increasing

A 2023 paper in Sustainability by Numbers reported that there are known reserves of 88 million tonnes of lithium: 'enough for our electric vehicles, decades into the future'. We still can't accurately say exactly how much available lithium or cobalt there is in the world as its exploration has been relatively recent.

The Energy Transitions Commission 2023 report stated that battery designs and improved electro chemistry have reduced future cobalt needs by 50% in five years. 50% of Teslas use no cobalt and nickel-free LFP batteries are now being used in 40% of EVs, up from 7% in 2019. The ETC also estimate that by 2040 over 50% of lithium used in batteries could come from recycling. As battery chemistries improve – particularly solid-state – with new materials like silicone and sodium, the need for critical or rare earth minerals will reduce.



EVs lose much more range than petrol cars in winter

EVs lose an average of 20% of range in winter compared to a 15% mpg loss for petrol cars

Yes, EV batteries do lose driving range in freezing temperatures but so do combustion cars. In 2020 the Norwegian Automobile Association tested 20 EVs in winter conditions and found that on average EVs lose up to 20% of range at temperatures between 0 and 2 degrees. The Nissan Ariya performed best with a 16% loss of range.

The latest EVs now have heat pumps to reduce low temperature range loss. But, according to tests done by the US Department of Energy, in low temperatures the average gasoline car also loses 15% fuel efficiency and on shorter trips before the engine has warmed up, the average increase in fuel consumption was 20%. But with an ICE car and a 350-mile fuel tank range you wouldn't notice the loss of efficiency as much as you would in an EV. Range loss in sub-zero temperatures will also depend on driving style.



Mining materials for EV batteries is environmentally bad

89% of global emissions are from fossil fuels

All mining and drilling for energy is environmentally bad, but global emissions and pollution need context. According to the Energy Transition Commission's latest report of July 2023 – Material and Resource Requirements for the Energy Transition – the cumulative global emissions of CO₂ and other greenhouse gases from battery mining and production of solar panels and wind turbines over the next 30 years will add up to between 15 to 35 gigatonnes of CO₂. Compare this figure to the 40 gigatonnes of CO₂ from global fossil fuel energy extraction that's emitted every single year.

In 2018 the Intergovernmental Panel on Climate Change (IPCC) reported that 89% of global emissions come from fossil fuels. Attempting to argue that emissions from mining for battery minerals could possibly exceed the global emissions from exploration, drilling, extracting, shipping, refining, transporting, distribution and burning of fossil fuels is a bit of a stretch – even for hard-core EV doubters.



Charging an EV when electricity is made by burning gas makes no sense

80% of EVs are charged at home using renewable electricity

According to the National Grid, in the first quarter of 2023, British wind farms created more electricity than was created by burning gas. As we write, National Grid ESO shows that 55% of the GB generation mix into the grid was zero carbon. It's also worth remembering that according to Zap Map 80% of EV drivers charge at night on low energy tariffs and the electricity used at night is certified by electricity suppliers to be renewable.

The majority of electric cars in the UK are charged not by coal or gas, but by electricity generated by wind, solar, biomass, hydro and nuclear.



Don't force me to drive an EV

You can drive an ICE vehicle forever

Nobody is threatening to take away the right to drive a petrol or diesel car. There will be combustion cars on our roads for the next 50 years – possibly longer. You will still be able to drive used combustion cars as long as there's fuel to power them. What you won't be able to do is to buy brand new ICE cars and vans after 2035 (or 2030 if a Labour government reverses the cut-off date).

A surprising number of people think that the end of the sales of new combustion cars and vans also applies to used ones and that they wouldn't be able to drive used combustion cars on public roads after 2030. In October 2023 Auto Trader ran a survey that showed that 7 out of 10 thought the 2030 sales ban wasn't only new cars but included used ones too. The Government got its messaging badly wrong on the 2030 new sales cut-off which confused many and helped create a culture war over EVs.



EV batteries run out of power and stop

Only 2% of AA break down calls are for EVs out of charge

In May 2023, the AA reported that the percentage of EVs 'out of charge' to which they were called out was 2% – or a total of 135 EVs. AA President, Edmund King OBE, said "our data on 'out of charge' clearly shows that charging anxiety doesn't match the reality." In 2023 the AA responded to 39,109 EV breakdowns of all types which is a total of 2.86% of all breakdown call outs – including petrol and diesel vehicles. They also report that 45% of breakdown calls from EV owners are for punctures and 12v batteries.

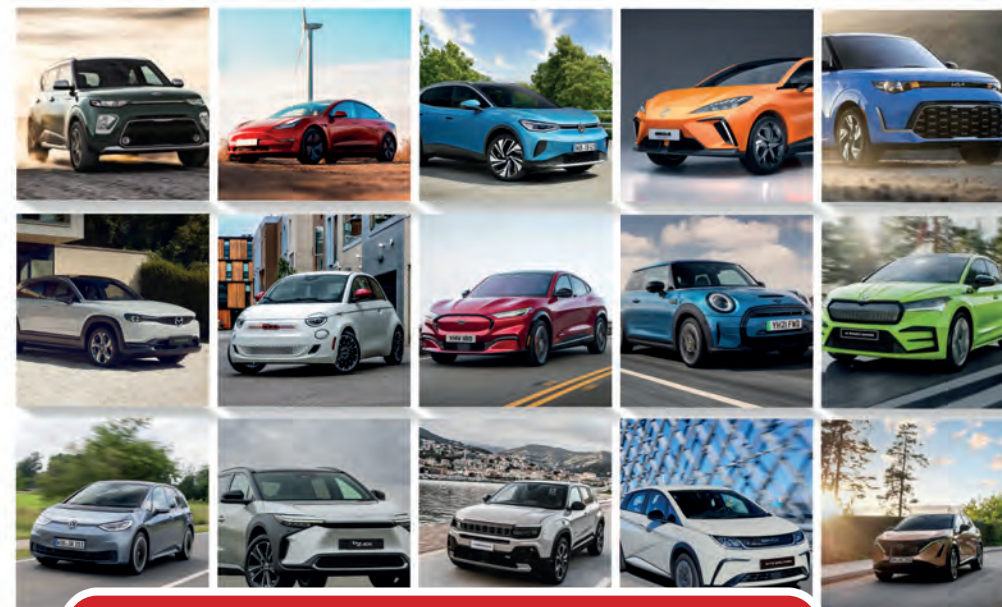


The Luton car park fire was started by an EV

It was caused by a 2014 Range Rover Sport diesel

Andrew Hopkinson, chief fire officer at Bedfordshire Fire and Rescue Service, publicly confirmed that the vehicle that started the Luton airport car park fire was a diesel – and not a hybrid or EV. “It was not an EV. This was a diesel-powered vehicle”. A ‘phone picture (above) shows a red 2014 Range Rover Sport in the Luton car park, surrounded by fire extinguishers, and not in a parking space, but abandoned, burning in one of the car park lanes.

Despite all this confirming evidence that it wasn’t an EV, there have even been many comments on social media that the Range Rover was definitely a hybrid and that the Bedfordshire Fire and Rescue – and even the Government – are involved in a cover-up.



The choice of new EV models is very poor

Octopus EV has 79 different EVs on their website

The Society of Motor Manufacturers and Traders (SMMT) estimate that by 2024 there will be over 100 plug-in battery cars on sale in the UK. The choice and cost of new mid-range models has improved with the Dacia Spring at £15,000, BYD Dolphin at £25,490, Vauxhall Corsa Electric at £26,895 and MG 4 at £26,995.

Experts reckon that prices on new EVs will become cheaper as battery raw material costs fall, car makers offer more discounts in a depressed global market and competition from Chinese automakers puts pressure on European EV prices. The ZEV mandate will mean car makers must sell more EVs and Chinese companies are already building dealer and parts networks ready to sell and support their new EV imports into the UK. Choice will improve and prices will fall.

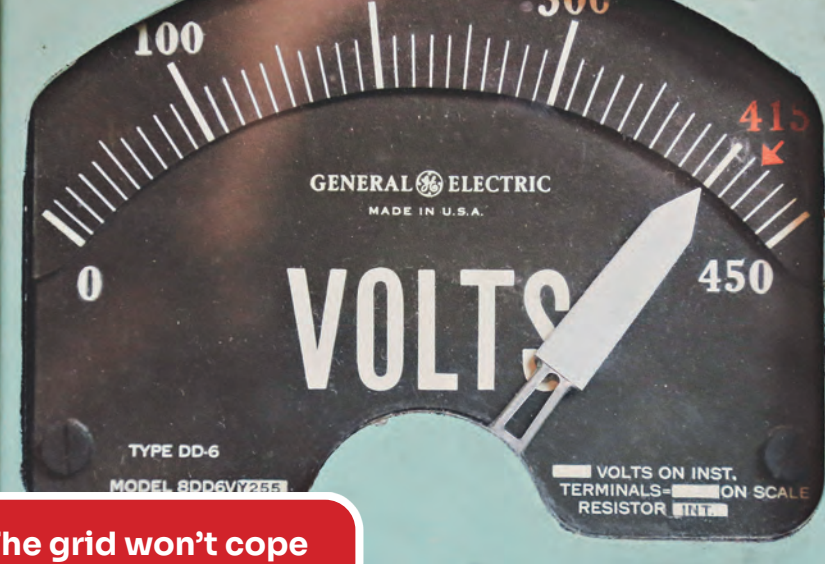


EV tyres cause high levels of particulate pollution

Tyre wear is similar to petrol and diesel cars

All tyres wear and leave nanoparticles in the atmosphere and particulates on the ground. In 2021 the RAC commissioned a report by Dr Euan McTurk that concluded that tyre wear is determined more by driving style than weight and that fleets found that their EVs wore their tyres down at a 'broadly similar rate to ICE cars'. Anecdotal data from EV owners and high mileage EV taxi firms also report normal rates of tyre wear compared to combustion cars.

A recent post by Michael Hamilton on LinkedIn said with some irony: "As someone working in a part of the tyre industry, I can only say that we are waiting to see the massive demand growth this drastic tyre wear will presumably generate...." The CEO of the Prohire Group in the UK said simply: "The tyre wear is the same as the equivalent diesel." We definitely do have a tyre particulate problem from all vehicles and scientific research is needed to properly establish EV tyre particulate pollution.



The grid won't cope

80% EV adoption would only increase grid demand by 10%

National Grid ESO says that EVs could "support the grid by storing excess generation from renewable sources and giving it back to the grid in times of high demand" and the UK could "comfortably handle" even an overnight switch to EVs, because of a fall of around 16% in electricity demand through technological efficiencies over the past two decades. National Grid also says that if the UK switched to EVs overnight "we estimate demand would only increase by around 10%."

The IPCC has also reported that widespread use of smart charging (as recommended by government and fitted as standard to many EVs) where EVs are charged at night during low-demand cycles could cut the impact of peak electricity. Peak demand from 80% EV penetration is still 11 years away (six years if Labour reverts to 2030), so National Grid, the District Network Operators, OFGEM and the Government have time to build and improve electricity infrastructure.



Heavy EVs will collapse multi-storey car parks and bridges

No bridge or car park has collapsed because of EVs

EVs are heavier than combustion cars but newspapers are largely responsible for spreading this myth with headlines like: “Heavy batteries in electric vehicles leave multi-storey car parks at risk of collapse”. We can find no evidence that any bridge or multi-storey car park has collapsed (or even been damaged) because of heavy EVs. A major car park association told us that this myth originated when a journalist approached one of their engineers and asked the hypothetical question about EV weights in relation to older car park construction and his responses were in a hypothetical context with multiple caveats.

He categorically did not say that there had been any collapses. The assumption is that when EV adoption grows, the collective weight of EVs travelling across bridges could bring them tumbling down. But one 44-tonne articulated lorry is still the equivalent of around 20 EVs – that’s a lot of cars traveling across one bridge at a time.



Old EV batteries will be a toxic hazard

Global battery recycling will be worth \$6.8 billion by 2028

Used EV batteries are far too valuable to be chucked away. They can be recycled again and again to make new packs for EVs and for static energy storage batteries. Cobalt, nickel, manganese, and lithium are all highly prized minerals and 95% of the minerals can be recycled ready for use as cathode-active materials by car makers. The global EV battery recycling industry is estimated to be worth \$6.8 billion by 2028, according to data provider, Statista.

There are plenty of EV battery recycling companies both here and in the USA who can’t get enough spent EV batteries to satisfy demand. You won’t be seeing EV batteries in landfill anytime soon.



EV insurance is much more expensive than ICE cars

Insurance for EVs is 25.5% more expensive

Yes, insurance for EVs is more expensive than combustion cars, but not as much as claimed. An Auto Express study in 2023 found that premiums for EVs were on average between 10.4% to 25% higher than combustion equivalents, but some Teslas cost significantly more to insure than a similar Audi or BMW ICE, due to higher parts costs. According to Confused.com, the average insurance premium for all car types has increased by 58% in the last 12 months.

Vehicle theft is up, so is claim inflation and delays in part supplies (still a hangover from Covid) is increasing the costs of replacement car hire. We've spoken to insurance brokers and EV specialist repairers, and they tell us that the reasons for higher EV premiums is a combination of claims inflation, lack of understanding by insurers of battery technology, limited battery repairability options, and a shortage of trained EV repairers. FairCharge agrees that EV insurance premiums definitely need to reduce.



Synthetic fuels make more sense than EVs

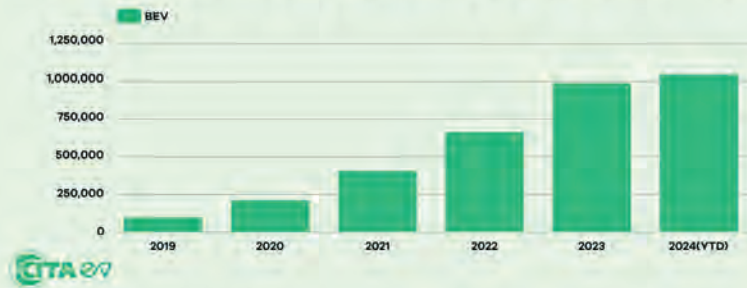
E-fuel production uses five times more electricity than EV charging

Synthetic, or E-fuels, made by combining CO2 with hydrogen can be used in conventional combustion engines. If they're produced with 'green hydrogen', they can reduce carbon emissions. But, according to the IPCC they are "up to three times more expensive than conventional fossil fuels" and would need five times as much electricity to produce compared to the amount of electricity used for EVs.

Transport & Environment calculated that the lifecycle emissions from an EV in 2030 would be 53% lower than for a combustion-engine car powered by synthetic fuels. The IPCC said: "Given these high costs and limited scales, the adoption of synthetic fuels will likely focus on aviation, shipping and long-distance road transport segments, where decarbonisation by electrification is more challenging."

The ICCT suggests that E-fuels could cost around 40% more than petrol and diesel with a potential pump price of £2.50 a litre. Transport & Environment calculated that filling a 75-litre fuel tank with synthetic fuels could cost up to £200. E-fuels could contribute to decarbonising the existing ICE car fleet without consumers having to switch to a more expensive EV, but until prices come down, this appears an expensive, and only a partly low-carbon, option.

Cumulative number of battery-electric cars in the UK (2019 to date)



EV sales have slumped

Global EVs sales up by 25% compared to 2023

The International Energy Agency's 2024 Global EV Outlook reports that in Q1 of 2024 global sales of new EVs grew by 25% and will hit 17 million by the end of the year. In the UK, the SMMT reported 48,388 EVs registered in March – the highest figure ever recorded – with over a million EVs now on UK roads. New Auto Motive reports that in April 2024 the number of UK EVs registered was up 10% and now represents nearly 17% of total car sales.

Private sales of UK EVs are down with retail sales of all fuel types falling. The decline in private car sales shouldn't surprise us though. Consumers are struggling against multiple economic and geopolitical headwinds – a global recession, 16 interest rate hikes since 2021, declining disposable income and confidence. The used market shows a different story with second-hand EV sales showing record growth in May 2024.



There aren't enough chargers

The UK has more than 61,000 charging devices

While the UK definitely needs to build a much bigger charging infrastructure, data from Zapmap shows that in May 2024, there were 61,000 charging devices in the UK – a year-on-year increase of 50% – with new installations running at around 1,900 per month. There are 8,353 petrol stations in the UK compared to 32,300 EV charging sites. There are also 11,600 rapid or ultra-rapid chargers, with 319 high-power charging hub sites. Charge point operator industry body, ChargeUK, has committed to investing £6 billion on UK charging infrastructure by 2030.

But Government must make building charging infrastructure a major industrial priority and part of their critical infrastructure policies. Private enterprise must be supported to help expand networks across all areas of the country. FairCharge and the RAC have written a Public Charging Charter, highlighted in the 2024 House of Lords, Environment and Climate Change Committee report.



Charging is too expensive

Public charging prices need to come down

Yes, public charging is far too expensive. But Zapmap's annual survey of EV drivers shows that around 80% charge at home using off-peak tariffs as low as 7.5p per kWh. Energy provider Octopus has worked out that low-tariff domestic charging can cost less than 3p per mile in an EV compared to around 19p to 20p for a combustion car. For those without driveways, the average price of on-street chargers in March was 50p per kWh – or around 14p per mile.

Prices at faster and more powerful rapid and ultra-rapid chargers vary between 58p and 85p, which Zapmap works out as 17p and 24p cost per mile respectively. Using the most expensive ultra-rapid chargers – such as those on motorways – can make charging an EV as expensive as filling up with diesel and petrol. Zapmap's data shows that very few EV drivers rely on ultra-rapids and the average usage is only a few times a month. FairCharge has campaigned to reduce charging costs generally and repeatedly asked the Treasury to cut the 20% VAT on public charging to 5%, in line with domestic tariffs.



Too many chargers are broken or busy

On average less than 4% of chargers are out of use

The incidence of broken chargers has fallen in Q1 of 2024. Zapmap data shows that rapid and ultra-rapid chargers – needed for longer journeys – are in service 96.7% of the time and Government has mandated charge point operators (CPOs) must achieve an average of 99% reliability. Tesla Superchargers have 99% reliability.

On average, charge points are in use for only three to four hours per day, but there are pinch points at busy holiday times. Apps like Zapmap display live availability status on a 24/7 giving drivers data on working chargers in real-time. In July 2023 Electric Charging and Infrastructure (EVC&I) reported “anecdotal figures which vary from 5% to 10% being out of use in a single day.” Charge point operators (CPOs) have improved levels to an average of less than 4% unreliability in March 2024.



Charging takes too long

Ultra-rapid chargers add 100 miles in 15 mins

Charging does take longer than filling up with fuel. Key factors in EV charging times are charger power, battery size, and vehicle charging capability. The majority of EV owners charge at home while they sleep on a low-power, 3 to 7 kW domestic supply or on-street lamppost chargers. This takes between six to 12 hours.

The most common high-powered ultra-rapid chargers (150kW) add around 100 miles in 15 minutes (or provide an 80% charge on a 250-mile range EV in 30 minutes). Ultra-rapids can be up to 350 kW, reducing charging times further.

Battery technology is improving all the time. In April 2024, Polestar engineers charged an EV prototype and added 200 miles in 10 minutes (charging from 10% to 80% capacity).



Charging is too complicated

Payments and connections have become much simpler

Nobody wants to faff around with apps or trying to get a mobile signal at a remote charging location. Standardisation of connectors – Type 2 and CCS – are becoming the norm (although Nissan is an exception), making compatible charge points easier to find. Tesla have opened some of their UK supercharger network to all makes of EVs.

The most popular payment option is contactless credit and debit cards, and Government has mandated that contactless payment must be available on all new rapid charger installations, and this will also apply to any existing rapid chargers without contactless capability in the next two years. FairCharge would like to see Starlink satellite internet at all remote charging sites, so signals are 100% dependable.



An old car is greener than a new EV

Over 14 years an EV produces 68% less carbon than ICE

Keeping an old car eliminates the carbon spike from the manufacture of a new EV and its batteries. And if you only do a small annual mileage – like many classic cars – you won't cause much environmental damage. Carbon Brief worked out that the carbon spike from a new EV is paid off between 20,000 and 32,000 miles (several other studies show between 11,000 and 17,000 miles), or around four years. They compared a pre-2015 Ford Focus and a pre-2000 petrol Mercedes against a new Nissan Leaf and a Tesla Model Y. Pollution from the older cars never reduces and can even increase as they become less carbon efficient when engines and emission equipment ages and wears.

We know that in older vehicles diesel particulate filters and catalytic converters trap less particulates and NOx and, over time, DPFs can become completely blocked with soot and carbon. Carbon Brief worked out that after 14 years of driving, the average petrol car will have emitted 45 tonnes of CO₂ (tCO₂), while over the same period a Tesla Model Y would emit 14 tCO₂ – a saving of 30 tCO₂ or 68%.



EVs will run out of charge in long traffic jams

A stationary EV uses very little battery power

A typical 1.0 litre car uses around 6/10ths of a litre of fuel every hour the engine is idling. An idling 3.5 litre engine will burn up to two litres of fuel every hour. When stationary an EV uses very little power from its battery. In Jan 2022, U.S auto magazine, Car and Driver, tested a 2019 Tesla Model 3 Long Range with a 75-kWh battery at 98% charge in minus 15-degree Michigan temperatures by running stationary with the heater set to 65 degrees for 37 hours.

At the end of the test the Tesla had 50 miles of range left and the battery pack had depleted at an average rate of 2.2% per hour giving a theoretical maximum battery life when stationary with heating set to a constant 65 degrees as 45.1 hours – or just under two days. Enough power for even the very longest traffic jam.



EVs suddenly run out of charge

There are lots of warnings before an EV battery goes flat

EVs have battery monitoring systems and will do several things before running completely out of charge. If you're using the in-built sat nav, the system will tell you if you have enough battery range to reach the destination. If you ignore this and run the battery down, the car will give range warnings, then a power reduction protocol kicks in to extend the remaining charge, and finally it goes into 'limp mode' to conserve the remaining power.

The sat nav will also direct the car to the nearest charge point. In 2023 the AA reported that only 2% of their EV breakdowns were due to lack of charge in drive batteries. The percentage of charge and remaining mileage range of the drive battery is always clearly displayed on the EV's central screen. It is, or course, possible to flatten an EV battery if the driver ignores all these warnings.



You can't drive an EV through water

EVs cope with floods much better than ICE

On a combustion passenger car, a high level of water can be sucked into the exhaust pipe, cause damage to the engine, and stall the car. Because EVs have no exhaust tailpipes and batteries sealed in a water-resistant pack they can usually drive through floods without stalling. In the global floods we see in the news, there's often footage of an EV driving through high levels of flood water when combustion cars sit stranded.

In 2020, Elon Musk Tweeted: "A Tesla works as a boat for short periods of time, as an electric car has no air intake or exhaust to block & battery/motor/electronics are water sealed. Submarines are just underwater EVs." But driving any car through flooded roads where there could be submerged obstructions can be very dangerous and definitely shouldn't be attempted.

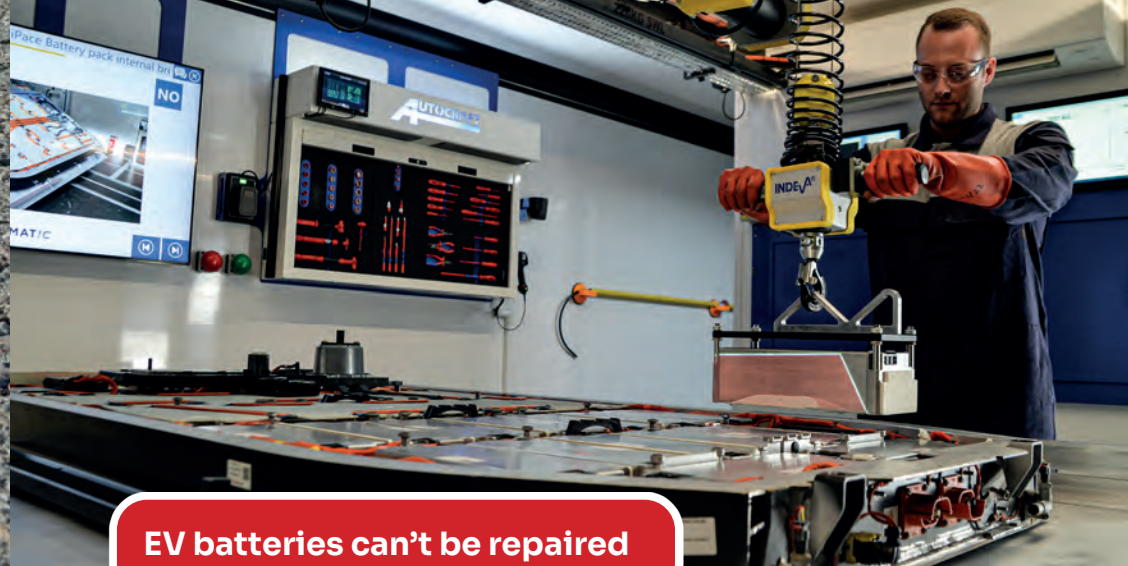


Heavy EVs are causing potholes

HGVs are the heaviest vehicles on UK roads

In March 2024 the Daily Mail ran the headline “Heavier electric cars are blamed for the £16 billion cost of Britain’s pothole plague as crumbling roads reach ‘breaking point.’” The writer cited a 2024 report by the Asphalt Industry Alliance (AIA) that blamed heavier vehicles for road damage. But the AIA report didn’t mention EVs at all. The Daily Mail wrote that the report blamed EVs specifically when this wasn’t the case.

The Environment and Climate Intelligence Unit (ECIU), and others, complained to the Independent Press Standards Organisation (IPSO) about the article’s inaccuracy, the complaint was upheld, and the Daily Mail published a correction. Lorries, buses, tankers, and trucks are all heavier than passenger cars and cause the greatest wear on our road surfaces. In 2022 the AA said that: “the extra weight and torque of an EV is negligible compared to a 44-tonne lorry.”



EV batteries can’t be repaired

EV batteries have cells that can be replaced

While an EV battery can never be restored to new condition due to the chemical reactions occurring over time (calendar ageing), it is possible to diagnose and replace faulty or degraded individual cell modules to restore overall pack performance. Battery experts, Autocraft EV Solutions, headquartered in Grantham, say: “Our dynamic testing capability now provides us with a granular picture of State of Health (SoH) identifying where faults are located on a cellular level. We can target the affected area, replacing faulty cells with healthy ones, leaving the majority of the battery fully intact.”

Autocraft has successfully repaired over 2,000 battery packs for car makers since 2020. Repairing or remanufacturing battery packs creates much less waste than shredding the whole pack to extract black mass. While the battery repair industry is in its infancy, its likely to grow significantly as the global EV fleet ages. Car makers also need to build in greater repairability into packs at the design stage.



HYBRID

Hybrids are better than EVs

Hybrid emissions are 3.5 times higher than official figures

While hybrids (vehicles with a combustion engine and a drive battery) reassure EV range anxiety, their range on battery power alone is typically between 30 to 70 miles, after which the combustion engine takes over. With a plug-in hybrid, regularly charged and travelling a small mileage, it's possible to drive on electricity alone almost indefinitely. But hybrids aren't as good for the environment as we've been led to believe.

Data from the European Union Environment Agency (EUEA) in April 2024 showed that in real-world driving the average CO2 emission figures for hybrids were 100g/km or 3.5 times higher than their quoted Worldwide Harmonised Light Vehicle Test Procedures (WLTP) figures. Toyota's plug-in hybrid emissions were four times the claimed WLTP figure and close to the average emission figures of their petrol models. Hybrids emit both more emissions and use more fuel than previously stated. The EU's real-world driving data shows that when it comes to emissions and fuel efficiency, many hybrids aren't significantly different from regular petrol cars.



EVs can't tow

There's a wide range of EVs suitable for towing

The best towing cars are those that produce the most torque at low engine speeds and the torque in an EV is instantaneuous. As long as you choose an EV that has been approved by the manufacturer for towing, you'll find that they can work as well as combustion cars and, depending on the battery, can tow between 1500 kg and 2500 kg. The BMW iX is rated for a 2500kg towing weight, the Genesis EV70 is 1800kg and the Tesla Model Y 1600 kg.

Because EVs don't have gears the smoothness of power delivery and reduced noise can make towing a caravan easier and quieter. As with ICE cars, towing will reduce your mileage range, which on an EV depending on load, speed and driving style can be as much as 30% less. Charging with a large caravan or trailer in tow can be more difficult in smaller charging sites and bays.



EVs need specialist servicing

There are around 20 moving drivetrain parts in an EV compared to 200 in an ICE car

Because EVs have so few moving parts, servicing is often limited to rotating the tyres to even out wear, replacing the cabin pollen filter, visually checking brakes, suspension, steering and checking the battery efficiency. This can now be done by many large garages and fast-fit centres. Tesla's brake health checks are every four years with cabin filter replacement every two years. EVs have no filters or oils, very few friction-based parts to wear, exhausts to replace or timing belts to change.

Drive battery or charging system problems will need an EV specialist, but the data now available shows that battery failures are rare. Bookmygarage.com says that the average cost of an EV service is £103 compared to £163 for a diesel or petrol vehicle. In Feb 2024, EV lease specialist Tusker, said that the servicing costs for an EV are '65% less than a diesel vehicle and 37% less than a petrol car'.



EVs are soulless to drive

Some EVs can accelerate to 60 mph in under three seconds

Ask anybody who owns an EV, and they'll tell you that the acceleration is one of the greatest attractions. The new Tesla Model 3 Performance can hit sixty in 2.9 seconds and the Model S Plaid in under two seconds. Even the £36,500 MG4 XPower can accelerate to 60 mph in 3.8 seconds which is faster than a Porsche 911 Carrera 4.

In May 2023 Autocar magazine said that "Some electric cars are now among the fastest cars in the world". One of the very fastest is the 1064 bhp Lucid Air, good for 235 mph and sixty in 2.5 seconds. Talk to an EV driver, ask about performance - and you'll see them smile quietly.



No driveway, no EV

There are many places to charge without a home charger

In May 2024 there were 22,000 lamp post, bollard, and on-street chargers and a growing network of public charging hubs around the country. There are also destination chargers – now 46% of the UK's charger total – at supermarkets, hotels, gyms, leisure centres, retail parks, workplaces, and some council car parks. The total EV charging points across the UK is now 61,000 – a 50% increase since 2023 – and this number will only increase.

In 2023 the RAC Foundation worked out that the average UK driver travels 28 miles per day, meaning that an EV with an average range of 230 miles would only need charging once a week. Public charging will cost more than domestic charging and carries a 20% VAT levy, compared to 5% at home. The spread of public charging across the UK isn't wide enough yet and you should check how many chargers are near to you before you go fully electric.



EVs will displace jobs

Two clean energy jobs will be created for every fossil fuel job lost

New jobs created in solar, wind, batteries, electrification, automotive and renewable energy are estimated to be greater than displaced jobs in the fossil fuel industries. In March 2022 the World Economic Forum (WEF) reported that “The transition to clean energy is expected to generate 10.3 million new jobs globally by 2030. That will offset the 2.7 million jobs expected to be lost by the fossil fuel sectors.”

In November 2023 the International Energy Agency (IEA) said that “Around two clean energy jobs will be created for every fossil fuel-related job lost.” The agency added that “clean energy employment now represents over half of total energy sector jobs, having overtaken fossil fuels in 2021.”



EVs are just town runabouts

New UK EVs drive an average of 9,435 miles per year

Using MOT data, the RAC Foundation has analysed that new EVs in the UK drive an average of 9,435 miles per year in the first three years of their life, which is 26% further than the average petrol car. Figures from Bloomberg NEF show that EVs in Norway now drive further than both petrol and diesel cars. The increase in EV mileage is due to longer battery ranges, increased charging infrastructure and that people like to use things more if they're cheaper.

FairCharge has done several 700-mile trips to France in EVs with only three charging stops. With the number of 100,000 mile plus EVs now appearing on the used market, there's clear evidence that EVs are now travelling the same, or more, mileage than combustion cars.



EV drivers are returning to petrol and diesel cars

EV satisfaction rates are over 90%

Data from Autotrader shows that EVs have around a 90% satisfaction rating among drivers. Lease specialist Tusker, who surveys their drivers every year and has 16,000 EVs in their fleet, said in 2023 that "91% of EV drivers were either 'satisfied' or 'very satisfied' with their current EV." Tusker's MD, Kit Wisdom, said "In terms of people who finish an agreement with us and enter into another one for a new car, 92% of EV drivers who came to the end of their agreement in 2023 went back into another EV and 6% went into a hybrid. So, there's only a tiny percentage of people who are choosing to go back to a petrol or diesel vehicle".



Conclusion

EV myths and misinformation are out of control. In its 2024 report on EV strategy, The House of Lords Environment and Climate Change Committee noted that there had been ‘a concerted campaign of misinformation about EVs in recent months.’ The use of the words

“...a concerted campaign of misinformation about EVs in recent months.”

‘concerted campaign’ agrees with what most of us in the EV world have been saying for a long time, that this isn’t something that’s just happened naturally. It’s an unprecedented and deliberate campaign of misinformation.

The Little Book of EV Myths

We may never know the origins of all this misinfo – if it’s being paid for or just newspaper editors wanting clickbait stories – but it’s certainly destabilised the EV market, confused consumers, and frustrated car makers. So, our advice is that if you really want to know the truth about electric cars, and if they could suit your lifestyle (they might not), then talk to one of the million people who are driving around in EVs. They’ll tell you the positives and negatives.

“...talk to one of the million people who are driving around in EVs. They’ll tell you the positives and negatives”

And ask yourself one final counter-intuitive question:

Should you really take seriously stuff about why you shouldn’t buy an electric car that’s been posted, written or broadcast by those who have never owned, driven, or even charged an EV? Think about that one...

The Little Book of **EV** Myths

Second Edition

Useful websites

fullycharged.com, faircharge.co.uk, everythingelectric.show, octopusev.com, electrifying.com, justgoev.co.uk, ev-database.org, drive-green.co.uk, drive-electric.co.uk, insideevs.com, which.co.uk, zap-map.com, autoexpress.co.uk, autocar.co.uk, rac.co.uk/drive/electric-cars

Sources

We'd like to acknowledge the following organisations and companies for their data sources: Auto Trader, The Society of Motor Manufacturers and Traders, Zap Map, Tesla, Transport & Environment, Carbon Brief, International Council on Clean Transportation, Statista, Intergovernmental Panel on Climate Change, AA, Association of British Insurers, Auto Express, National Grid, House of Lords Environment and Climate Change Committee, RAC, Dr Euan McTurk, Energy Transition Commission, Bedfordshire Fire and Rescue Service, Norwegian Automobile Association, Consumer Reports, Recurrent Motors, Forbes Magazine, AutoinsuranceEZ, Sustainability by Numbers, Gartner Research, Tusker Direct, Bookmygarage.com, Edmund King OBE, Prohire, Gridserve, CAP hpi, Thatcham Research, National Transportation and Safety Board.



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