



## Common Misconceptions About Electric Vehicles

### 1: Electric vehicles (EVs) don't have the battery range to travel as far as people need

**Reality:** By car, 99% of journeys in England are under 100 miles<sup>1</sup>, meaning most drivers' needs are easily met by an electric car. For those travelling further, there are over 20 models available with a quoted 200+ mile range and some new electric cars even come with a range of over 270 miles, enough to get from Southampton to York! With battery prices little more than a tenth of what they were in 2010<sup>2</sup>, and further drops forecast, we expect to see more EVs available and with greater range.



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

**Reality:** 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 to provide public chargepoints for their residents without access to private parking. This year, £20 million is available under the scheme to ensure more local authorities and residents can benefit. The scheme has supported over 120 different local authorities to fund over 4,000 chargepoints for residents who do not have off-street parking. We are also introducing a new £90 million fund for local EV charging infrastructure to deliver a step change in the roll out of larger, on-street charging schemes and rapid hubs in England. Emerging findings from our work with EV drivers show that those without access to off-street parking are using a mix of public charging options like on-street residential chargers and chargers at supermarkets. This suggests that drivers without access to off-street parking are already making the switch to EVs, despite being in a minority (around 10%, currently), and taking advantage of a range of charging options.



### 2: There aren't enough chargepoints and they're too slow

**Reality:** A recent NGO study<sup>3</sup> found that the UK now has more rapid chargers every 100 miles of key strategic road than any country in Europe. Industry statistics show that there are over 25,000 public chargepoints available across the UK and over 4,500 rapid chargers<sup>4</sup>. On average, over 500 new chargers are being added to the UK's road network each month, of which over 100 are rapid<sup>5</sup>. And today, a driver is never more than 25 miles away from a rapid chargepoint anywhere along England's motorways and A roads<sup>6</sup>. It is also important to recognise that this is in addition to home charging. There are 500,000 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.



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

Source: Zap-Map



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### 4: Electric vehicles are too expensive

**Reality:** EVs do cost more to buy outright today but they already benefit from a huge advantage in running costs: as low as 1p a mile for off-peak electricity, and far fewer moving parts so much lower maintenance costs. With production costs reducing, some forecasts<sup>7</sup> show by the mid to late 2020s EVs could also be the same price to purchase as a petrol or diesel car. But already, in a number of cases EVs have a lower total cost over four years in 2021. Further, owners of EVs don't pay Vehicle Excise Duty and new cars under £35,000 are eligible for a government grant of £2,500. Vehicle manufacturers including BMW and Nissan have recently reduced prices of electric models to under £35,000 to requalify for the grant.



### 5: The battery will need replacing every five years

**Reality:** There are well over 10 million EVs on the world's roads already and there is no evidence to suggest their lifespans are any different to a petrol or diesel vehicle. Most electric vehicle batteries have warranties of around eight years (or 100,000 miles), but are expected to last much longer, with their lifespan continuing to improve. Electric vehicles are in daily use across the UK's roads as taxis and in other high mileage roles. The Government has committed £318m into 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.



### 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 (although 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 also highly focussed 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: Batteries can't be recycled and end up in landfill

**Reality:** Existing regulations ban the disposal of EV batteries to landfill and incineration. Battery producers are obligated to take back EV batteries free-of-charge, and ensure they are treated at permitted facilities which meet the required recycling efficiency standards. With increasing numbers of EV batteries, we are reviewing these regulations. We want to create a circular economy for EV batteries to maximise the economic and environmental opportunities of the transition to zero emission vehicles. The Faraday Battery Challenge's target is for 95% of an EV battery pack to be recyclable by 2035.







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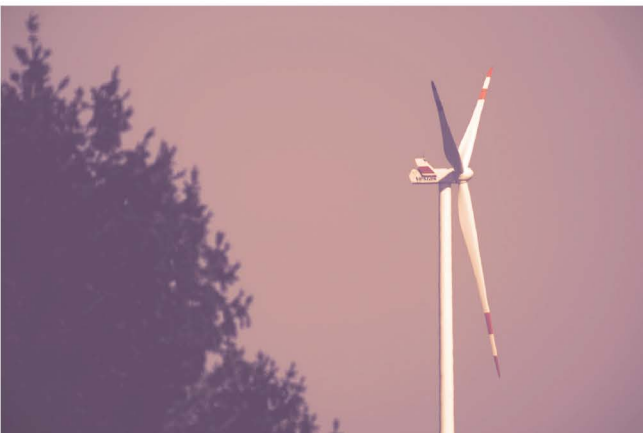
### 8: It takes too long to charge an electric vehicle

**Reality:** Most charging will be done at or near home, overnight. However, new cars are typically capable of charging up 120 miles or more in as little as 20 minutes - the time it takes to enjoy a cup of coffee! And potential charging speeds have increased by a factor of 5 in the past few years as engineers have started to focus seriously on EVs as the future of transport.



### 9: Building an electric car generates more carbon emissions than it saves from driving

**Reality:** This has been debunked in numerous well-respected studies. It is true that an EV may have higher emissions associated purely with manufacture than a petrol or diesel car. But a new battery electric car, operated in the UK, has just a third of the lifetime greenhouse gas emissions of an equivalent new petrol car, even including battery production<sup>8</sup>. And they are getting progressively cleaner as electricity generation decarbonises.



### 10: The electricity grid won't be able to cope if everyone switches to electric cars

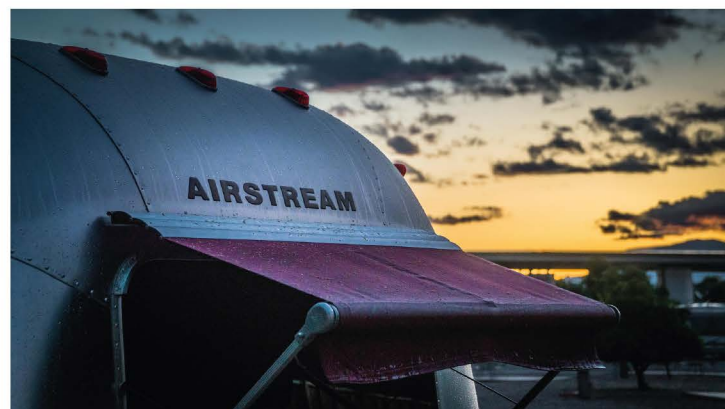
**Reality:** The Committee on Climate Change suggest that electrifying the vehicle fleet could result in road transport making up 15-20% of total electricity demand in 2050<sup>9</sup>. We are confident the grid will be able to cope, through the robust processes in place for bringing forward new generation and grid upgrades. Plus, smart charging reduces the need for new infrastructure and EVs could bring benefits to the grid in due course through technologies such as vehicle to grid. Government has given Ofgem, the energy regulator, legal responsibilities and powers to deliver an energy system fit for both current and future consumers, and is ensuring that Ofgem considers our energy policy priorities for delivering net zero in its regulatory decisions.

### 11: You will have to dig up all of the country to lay more cables

**Reality:** Ofgem, the energy regulator, ensures that the electricity network companies are funded to meet the additional demand from EVs incentivising 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.

### 12: Electric vehicles can't tow caravans or trailers

**Reality:** Like all other cars, electric vehicles need to be 'type approved' to tow a caravan or trailers. An increasing number of EVs are coming to market with this capability. A caravan or trailer towed by a zero emission vehicle can also display a green number plate.







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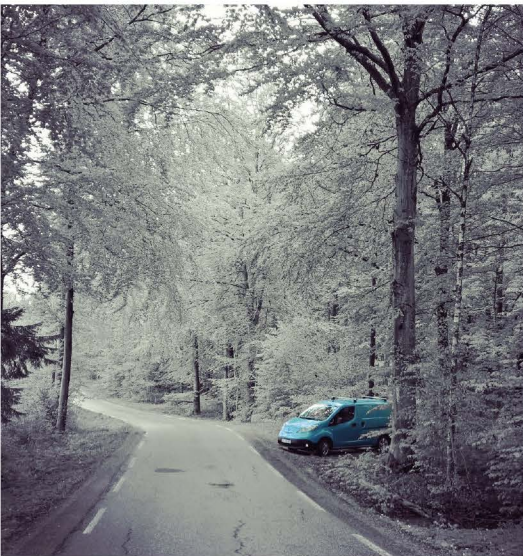
### 13: Electric vehicles can't be towed

**Reality:** When an EV breaks down it can be towed slowly out of immediate danger (e.g. a live traffic lane), to await further assistance, just like any other vehicle. For towing at higher speeds and longer distances many manufacturers require that EVs must be towed with the wheels off the ground. This is also the case for many automatic petrol and diesel vehicles, so not a new challenge for vehicle recovery companies. AA and RAC have developed 'wheel-up' innovations that allow standard patrol vans to tow an EV for long distances.



### 14: Electric vehicles can't 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, making them safe to drive and charge in a wide range of weather conditions. Drivers should take the usual precautions to use only the correct charging cable, that it is undamaged, and to follow the manufacturer's instructions. As with any vehicle, drivers should also consult the owner manual for guidance on the maximum wading depth.



### 15: You could easily just switch all internal combustion engine cars to hydrogen without going to all this trouble

**Reality:** The Government is technology neutral in how we reach net zero. Currently however, combusting hydrogen within an engine still produces both CO<sub>2</sub> and NO<sub>x</sub> emissions, meaning that this technology would not meet the criteria of zero emission at the tailpipe which is required by the 2030/2035 phase out dates. By comparison, the only emission from hydrogen fuel cell vehicles is water. As set out in the Government's Hydrogen Strategy, we expect hydrogen to play a key role in decarbonising transport. It is likely that hydrogen will prove most effective in heavier transport modes: areas 'that batteries might not reach' like road freight maritime and aviation. For cars and vans, battery electric technology is the chosen route for a clear majority of manufacturers and motorists.

### 16: Publicly available chargepoints are all broken

**Reality:** EV consumers should expect a reliable public network wherever they drive in the UK. Having chargepoints out of action is inconvenient, frustrating and can be unsafe – although according to Zap-Map, 9/10 chargepoints are working at any point in time<sup>10</sup>. 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 have consulted to mandate a 99% reliability standard for all UK chargepoints and intend to lay legislation later in the year.





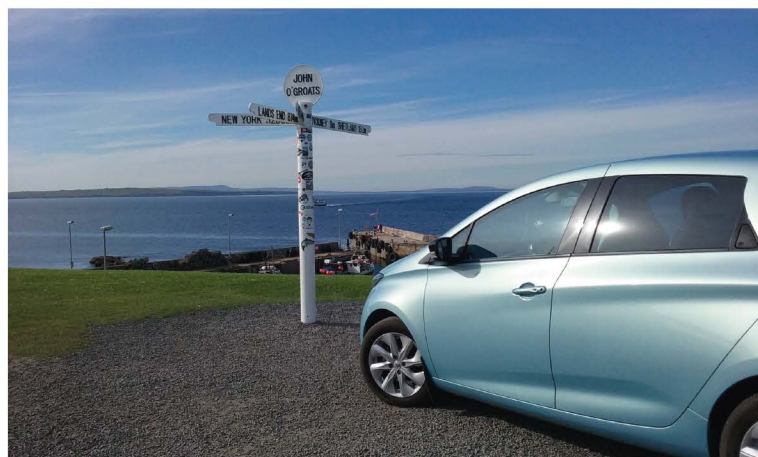
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### 17: There are lots of chargepoints in London/big cities but hardly any in some regions and in rural areas

**Reality:** All regions in the UK have seen increases in publicly available chargepoints in the year to July 2021<sup>11</sup>. In addition to the ORCS scheme, the 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 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<sup>12</sup>. The 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 the destination charging across the UK in such locations.

### 18: Battery swapping is the best way to transition to zero emission cars and vans

**Reality:** Battery swapping poses various technological challenges, including the need to standardise battery size and location between different vehicle makes and models; and to produce more batteries than vehicles. The commercial case for battery swapping is yet to be proven, especially as EV range and charging speeds improve. However, we continue to watch developments across all EV technologies with interest.



### 19: There are too many different sockets on EVs and consumers cannot charge at every chargepoint

**Reality:** The Government 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 99% of public chargepoints<sup>13</sup>). As manufacturers are increasingly standardising their connectors, Government has no plans to intervene in the vehicle market.

**It costs from only 1p per mile to charge up a new EV, compared to around 10p per mile to fuel a new diesel or petrol vehicle**

Source: Go Ultra Low

### SOURCES

Footnote 1: NTS 2019, Table 0308

Footnote 2: BloombergNEF 2020

Footnote 3: Transport and Environment, Recharge EU, 2020

Footnote 4: Zap-Map 2021

Footnote 5: Electric Vehicle Charging Device Statistics, July 2021

Footnote 6: Project Rapid Vision 2020

Footnote 7: Transport and Environment & BNEF, May 2021; CCC, December 2020

Footnote 8: Ricardo-AEA for the European Commission (Sept 2020)

Footnote 9: CCC internal analysis

Footnote 10: Zap-Map 2021

Footnote 11: Electric Vehicle Charging Device Statistics, July 2021

Footnote 12: EV Charging Device Grant Scheme Statistics, July 2021

Footnote 13: Zap-Map 2021

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