

Bradford E-Vehicle Webinar

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What is an
Electric Vehicle?

Plug-in vehicles: BEV vs PHEV

Battery electric vehicle

- Also known as 100% or pure electric
- Range from 120–300+ miles
- Eligible for the Plug-In Car Grant (<£35,000 RRP)



Plug in hybrid vehicle

- Internal combustion engine plus battery
- Electric range 20–50 miles
- Not eligible for the Plug-In Car Grant
- New sales banned from 2035



MG 5 EV
From £24,495*
Range: 214 miles

Range of vehicles



Nissan LEAF
From £26,845
Range: 168 miles

Renault
Kangoo Crew
Van Z.E.
From £26,784
Range: 143 miles



Vauxhall Vivaro-e
From £35,028
Range: 124 miles

Nissan
Dynamo
From £47,995
Range: 187 miles



Renault Master
Van Z.E.
From £57,880
Range: 75 miles



Citroen e-
Dispatch
From £25,053
Range: 143 miles

Mercedes Vito
Taxi
From £49,000
Range: 260 miles

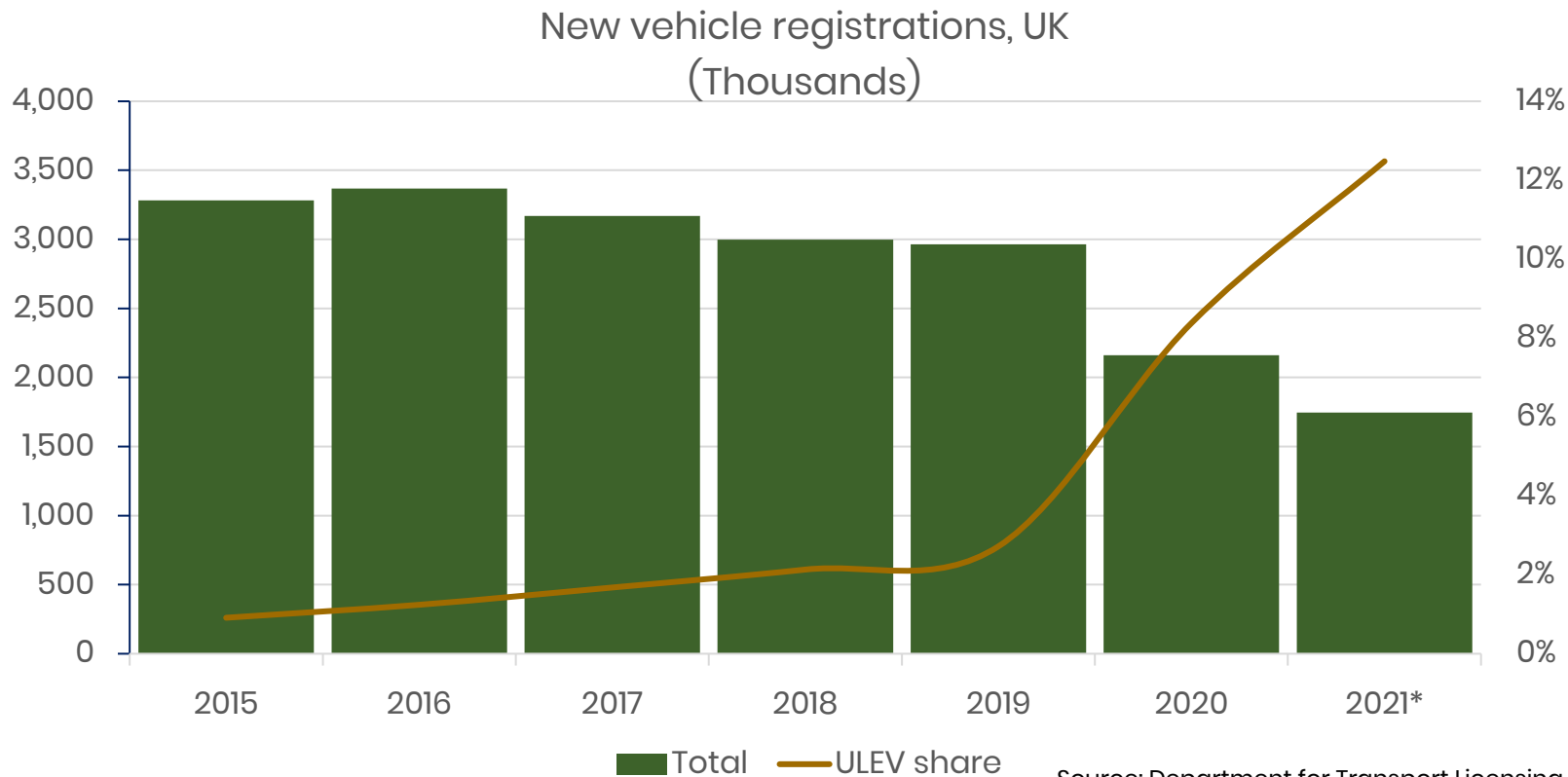


Nissan Env-200
£32,700
Range: 106 miles



There are now over 600,000 plug-in electric vehicles in the UK
In September 2021, more than one in five new cars sold had a plug

Thousands of vehicles registered for the first time – UK



Source: Department for Transport Licensing Statistics

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Why switch to
an EV?

Why choose an Electric Vehicle?

- Zero tailpipe emissions
- Quieter and smoother driving experience
- Higher upfront purchase cost but lower running costs
- Lower servicing and maintenance costs
- Zero road tax (VED) and reduced benefit-in-kind on company cars
- Increasing choice of models at lower price points



The Business Case for EVs

- EVs have far fewer moving parts and are therefore **cheaper and easier to service and maintain**
- **Zero road tax (VED)** and reduced benefit-in-kind on company cars
- **Penalty free access** to congestion zones, low emission zones and clean air zones
- **Lower cost per mile** than an average petrol or diesel vehicle:

At home (18.9p/kWh):

Recharge from 0-100%
would cost **£8.50**

4p per mile

On a public network (38p/kWh):

Recharge from 0-100%
would cost **£17.00**

9p per mile











(Based on the Citroen e-Berlingo van with 45kwh battery, with a WLTP range of 177 miles on a full charge. BEIS 2021 Average UK home electricity tariff costs. Parkers - p/mile for an ICE equivalent is 20p/mile for petrol and 16p/mile for diesel)

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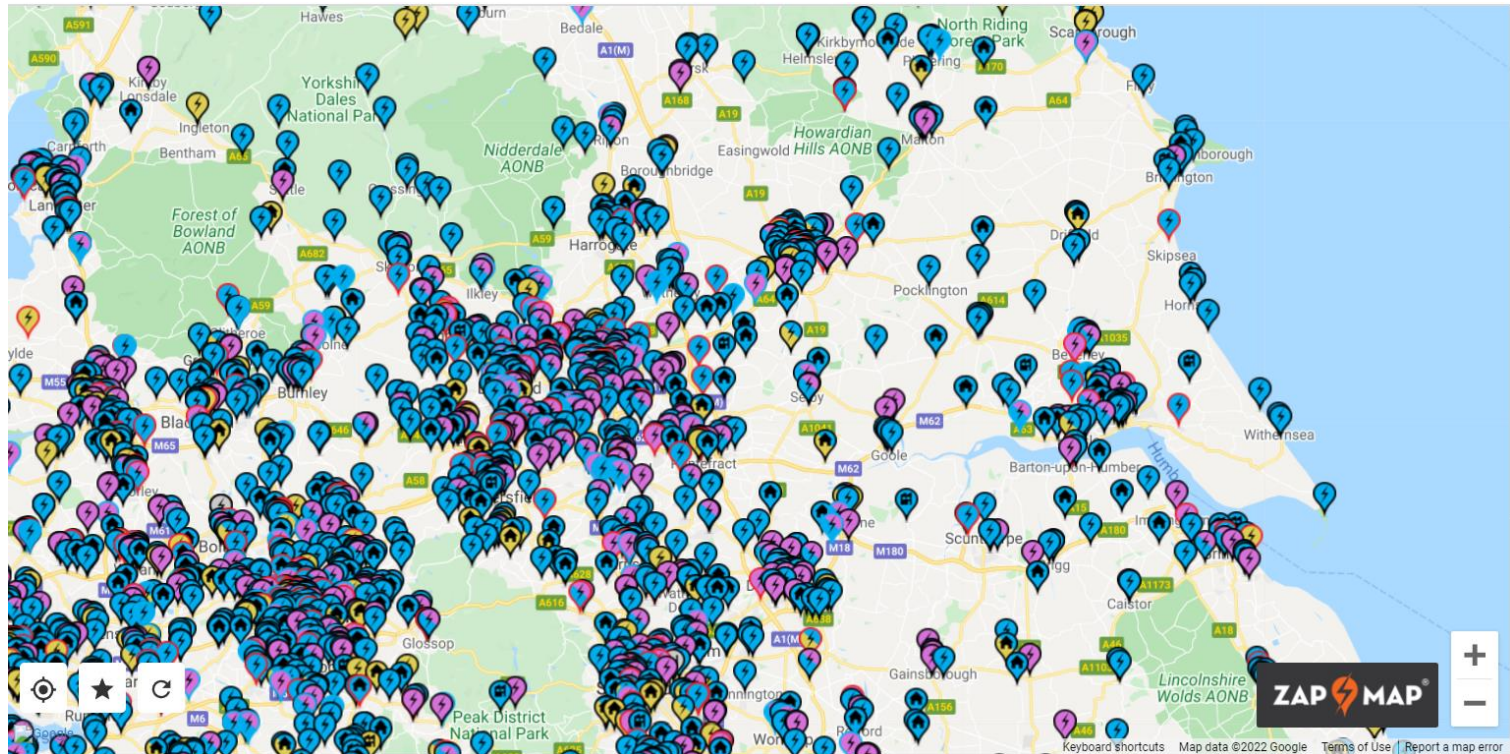
Electric Vehicle charging

Chargepoint types

	<p>Home charging 3.7/7 kW</p> 	<p>Destination 7/22 kW</p> 	<p>En route 50 kW</p> 	<p>Charging hub 150 kW</p> 
Speed of charge	Slow (10-12hr)	Fast (4-6hr)	Rapid (<1hr)	Ultra Rapid (15mins)
Power rating	2.3 – 3.7 kW	7 - 22 kW	Up to 50 kW	120-350 kW
	<p>Lamp-column 3/5 kW</p> 	<p>On-street residential 7/22kW</p> 	<p>Destination 50 kW</p> 	<p>'Electric forecourt' 350 kW</p> 

Finding a chargepoint?

Total devices: 29,626, Updated: 16 February 2022



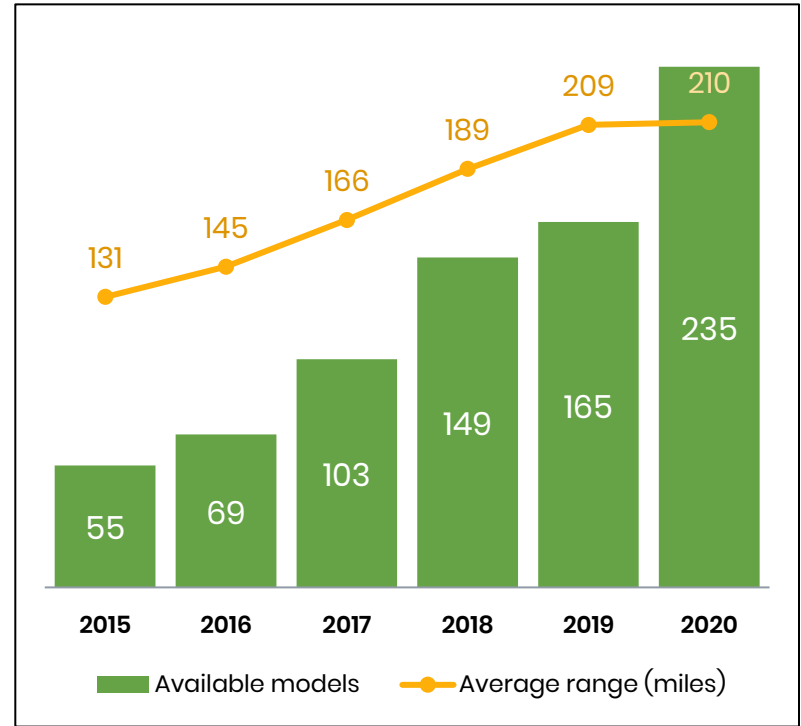
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Myth busting

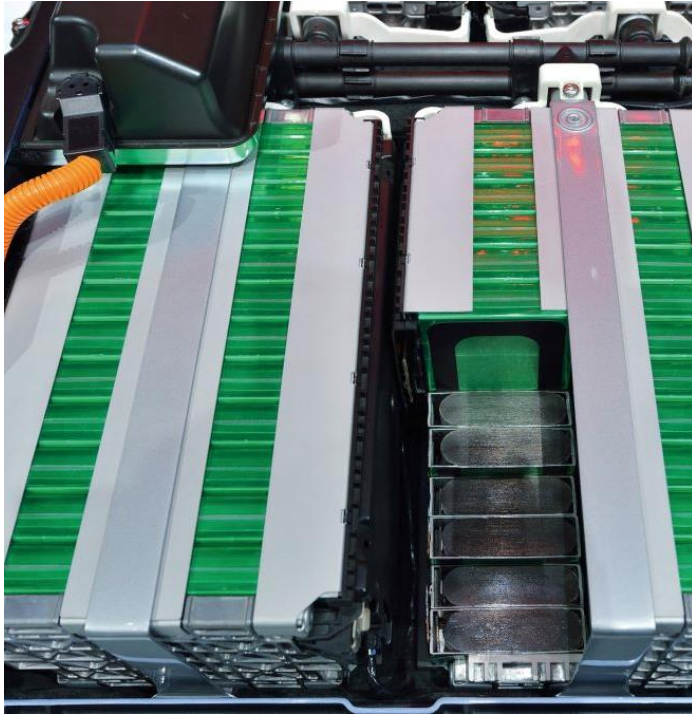
EV Range – Is it an issue?

- New EVs now typically have a range of **at least 200 miles**
- **Battery performance** can be impacted by a number of factors:
 - use/driving style
 - extremes of temperature
 - charging type, however, is less of an issue
- **Now more than 26,000 chargepoints** across the UK
- By 2023, the Government aims to have **at least 6 high powered chargepoints** at motorway service areas in England.



Number of battery electric car models available globally and their average range, 2015-2020. Data from IEA.

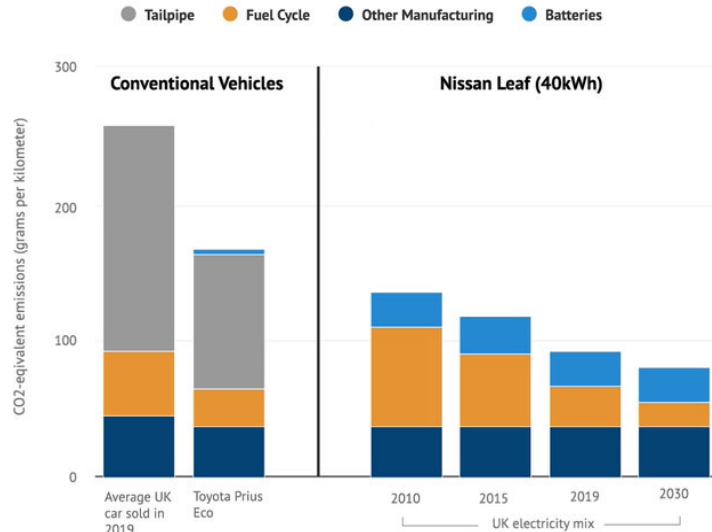
Batteries for Electric Vehicles



- Rarely need to replace a whole battery
- **Warranties** available to cover battery performance
- End of life EV batteries can be used for **energy storage**
- Growing industry focused on battery **repurposing** and **recycling**
- Manufacturers are increasingly cautious about their **supply chains**
- Reducing manufacturing emissions, mainly through **streamlining processes**

Carbon emissions from EVs

EV emissions will keep on falling as the electricity mix gets cleaner over time



CarbonBrief
CLEAR ON CLIMATE

- In UK, in 2019, lifetime emissions per km of a Nissan Leaf EV were **three times lower** than an average conventional car
- As **renewable electricity** generation increases further, emissions will fall
- Many chargepoint networks use renewable energy tariffs
- Emissions from battery production can vary across different countries

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A photograph showing two workers on a rooftop solar panel array. One worker, wearing a red high-visibility suit and a white hard hat, is kneeling and looking at a laptop. The other worker, wearing a blue jacket and a blue hard hat, is also kneeling and looking towards the laptop. The solar panels are dark blue and reflect the sky. The background is a clear blue sky with some light clouds.

Your route to
driving an EV

Buying a new EV

Get researching

Look for an EV Approved retailer

Grant funding:

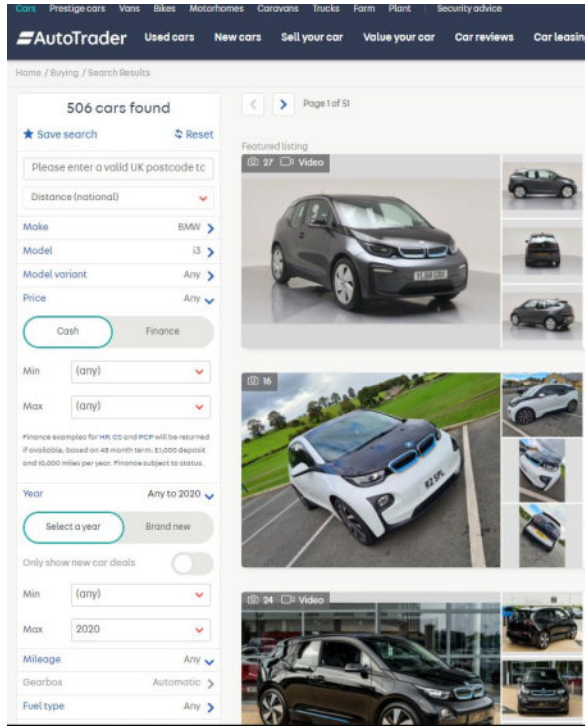
- £1,500 grant for cars (up to 35% of purchase price)
- £2,500 converting a vehicle to be wheelchair accessible
- £2,500 grant for small vans (up to 35% of purchase price)
- £5,000 grant for large vans (up to 35% of purchase price)
- £7,500 grant for taxis (up to 20% of purchase price)
- £16,000 Small trucks (up to 20% of purchase price)



love my **EV**



Alternative routes to driving an EV



Lease/subscription service

- All new EVs available on finance
- Lease companies are increasingly understanding the reduced risk due to lower maintenance costs

Buying a used EV

- 515,000+ plug-in vehicles on the road in the UK, 100,000 EV sales in 2021 = growing used market
- Check specification and consider the range you need/battery size – charging cables included?
- Check battery lease
- Increasing knowledge and number EV specialist dealerships

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Thank you for
listening



Glossary

Battery Electric Vehicle (BEV)	A car that runs purely on electric power, stored in an on-board battery that is charged from mains electricity (typically at a dedicated chargepoint).
Plug-in hybrid electric vehicle (PHEV)	A car with a combination of a traditional internal combustion engine and a rechargeable battery, allowing for either pure electric-powered driving or extended range from a combination of the petrol engine and electric motor.
Plug-in vehicle (PiV)	A blanket term for any vehicle with a plug socket, including BEVs and PHEVs.
Ultra Low Emission Vehicle (ULEV)	A car that has official tailpipe carbon dioxide emissions of less than 75g/km, and is therefore eligible for grants and benefits from the UK government.
Full Hybrid or "Self-Charging" Hybrid	A 100% fossil fuelled hybrid car. The most common is the Toyota Prius. A small battery is charged through regenerative braking that generates some electric power in combination with a combustion engine, but the car's energy originates from petrol. The electric motor can only power the car itself for short periods at low speeds.
Kilowatt	A measure of one thousand watts of electrical power.
Kilowatt hour (kWh)	A unit of energy equivalent to the energy transferred in one hour by one thousand watts of power. Electric car batteries are typically measured in kilowatt hours. 1 kilowatt hour is typically 3-4 miles of range in a BEV.
Smart charging	A catch-all term for a series of functions that a Wi-Fi connected chargepoint can perform. Typically this refers to things like load balancing, energy monitoring and "managed charging", i.e. shifting charging periods away from periods of high grid demand and/or low grid supply and to periods of low grid demand and/or high grid supply.
Range	Range refers to the distance an electric or hybrid vehicle can travel before the battery needs to be recharged.

Source: <https://pod-point.com/guides/driver/ev-dictionary>