

CLARITY GUIDES

*In a world full of disinformation, get **Clarity**.*

COSTS · CHARGING · RANGE · TAX

Electric Cars

Hype, hate and the real numbers: running costs, charging, range, pay-per-mile tax and the 2030 rules, checked

◆ **FREE guide · Both sides checked against the evidence**



WELCOME

About this guide

Few subjects split opinion like electric cars. To some people they are the obvious future: cheap to run, quiet and clean. To others they are an expensive con: batteries that die, chargers that never work, cars that catch fire and a government that wants to tax you by the mile.

This free guide takes the biggest claims from both sides and checks them against official figures and published research: what it really costs to run an electric car, how charging works at home and on the road, what happens to range in a Scottish winter, how the new pay-per-mile tax (eVED) is planned to work from April 2028, and what the 2030 rules actually ban.

We sell no cars, chargers or tariffs. For many drivers an electric car saves money; for some it doesn't. Here are the real numbers so you can work out which you are.

How to use this guide

- 1 Start with chapter 1.** The arguments in a nutshell and the key numbers on one page.
- 2 Check the rules.** Chapter 2: what changes in 2030 and 2035, and what doesn't. Chapter 5: the pay-per-mile tax.
- 3 Do your own sums.** Chapters 3 and 4: running costs, tax, insurance and depreciation, with a worksheet.
- 4 Understand charging and range.** Chapters 6 to 9: home and public charging, Scotland's network, winter range and batteries.
- 5 Myths, both ways.** Chapter 10 checks the popular claims from fans and critics alike. Chapter 11 helps you decide.

IN A WORLD FULL OF DISINFORMATION, GET CLARITY

Every fact and figure in this guide was checked in October 2026 against reputable sources, listed at the back: mostly official and peer-reviewed ones. Where we rely on industry data or weaker evidence, we say so. Chapter 10 mentions using everyday AI tools like Grok; always check what they tell you against the original source.

PLEASE NOTE

This guide is general information, not financial, legal or tax advice. It does not recommend any car, charger, energy supplier or charging network. Prices, taxes and grants change often; check the official source before you make a decision. Some rules described here (such as eVED and changes to the 2030 rules) were still proposals in October 2026.

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CHAPTER ONE · START HERE

The argument in a nutshell

Electric cars attract strong feelings. Before we get into the detail, here is what each side usually says, and the handful of numbers that matter most.

As you'll see, **each list below contains things that are true, things that are partly true and things that are wrong.** Whether an electric car makes sense for you depends mainly on three things: whether you can charge at home, how far you drive, and whether you buy new or used.

WHAT FANS SAY

- They're much cheaper to run.
- No exhaust fumes in our streets.
- Lower lifetime carbon emissions.

- Quiet, smooth and quick.
- Fewer moving parts, so less servicing.
- Charge at home while you sleep.

WHAT CRITICS SAY

- Too expensive to buy.
- Not enough chargers, and many are broken.
- Range falls off a cliff in winter.
- Batteries wear out and cost a fortune.
- They catch fire.
- The grid can't cope, and now they'll tax us by the mile.

The key numbers (checked October 2026)

WHAT	FIGURE	WHERE FROM
Petrol / diesel pump price (UK average, week of 12 Oct 2026)	175.3p / 200.0p a litre	DESNZ weekly fuel prices
Home electricity (price cap average, Oct-Dec 2026)	26.32p per kWh	Ofgem
Public charging, slower / rapid (Sept 2026 average, pay as you go)	54p / 79p per kWh	Zapmap (industry data)
Pay-per-mile tax (eVED) from April 2028	3p a mile (electric), 1.5p (plug-in hybrid)	HM Treasury (planned)
Public chargers in the UK (1 July 2026)	121,171	DfT statistics
Licensed zero emission vehicles (end of 2025)	2,012,000 (4.8% of all vehicles)	DfT statistics
Electric Car Grant (new cars up to £37,000)	Up to £3,750 off	GOV.UK
New pure petrol and diesel cars	Sales end in 2030; hybrids allowed to 2035	DfT

Sources are given in the chapters that follow.^{3,1}

What the evidence says

- **Electric cars are now a big minority of new sales, not a niche.** 473,000 new zero emission cars were registered in the UK in 2025, 23% of all new cars, and there were just over 2 million licensed zero emission vehicles at the end of 2025.³
- **But sales are behind the government's targets.** The Department for Transport says zero emission cars were 23.3% of manufacturers' sales in 2025 (provisional) and up to 29.1% in June 2026, below the levels the rules anticipated. That is why the rules are being reviewed (chapter 2).²

- **Drivers who switch mostly stay switched.** The Department for Transport's tracker of electric car drivers found close to 80% would most likely buy or lease another, and close to 90% would recommend one. (This is a survey of people who already chose an electric car, so it tells you about satisfaction, not about whether one suits everyone.)²

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CHAPTER TWO · THE RULES

2030, 2035 and the ZEV mandate: what is actually banned

You will often hear that petrol cars are “banned from 2030”. The real rules are narrower than that, and they were under review in autumn 2026.

What changes, and when

DATE	WHAT HAPPENS
Now	You can buy, sell and drive any legal petrol, diesel, hybrid or electric car. Manufacturers must meet yearly zero emission sales targets (the ZEV mandate).
From 2030	New cars that run only on petrol or diesel can no longer be sold. This includes mild hybrids . New cars with an engine must be at least a full hybrid or a plug-in hybrid .
From 2035	All new cars and vans sold must be zero emission at the tailpipe (in practice, battery electric or hydrogen).

DATE	WHAT HAPPENS
After 2030 and 2035	Used petrol and diesel cars can still be bought, sold and driven. Nothing in these rules takes existing cars off the road.

The UK government confirmed in April 2025 that the 2030 phase-out would be defined by technology: from 2030 a new car that burns fuel must be at least a full hybrid, and mild hybrids (which cannot drive on electric power alone) will not qualify.⁴ Its August 2026 review states that the commitment to phase out new purely petrol and diesel cars by 2030, and all new non-zero emission cars and vans by 2035, is “unwavering”.²

MILD, FULL AND PLUG-IN HYBRIDS: WHAT'S THE DIFFERENCE?

Mild hybrid: a petrol or diesel car with a small electric motor that helps the engine. It can't drive on electricity alone. Treated as petrol or diesel from 2030.

Full hybrid: can drive short distances on electric power, charged by the engine and braking. No plug. Allowed to 2035.

Plug-in hybrid (PHEV): a bigger battery you charge from a socket, typically good for a few dozen miles on electricity before the engine takes over. Allowed to 2035.

Battery electric (BEV): no engine at all. This guide mostly means these when it says “electric car”.

The ZEV mandate in plain English

The zero emission vehicle (ZEV) mandate doesn't force anyone to buy an electric car. It requires each manufacturer to make a rising share of its new car sales zero emission each year, starting at 22% in 2024 and reaching 80% in 2030 (70% for vans). Manufacturers can meet the targets through sales, trading credits with other makers and other flexibilities, or pay a charge.²

YEAR	HEADLINE TARGET FOR NEW CARS (CURRENT LAW)
2024	22%
2025	28%
2026	33%

YEAR	HEADLINE TARGET FOR NEW CARS (CURRENT LAW)
2027	38%
2028	52%
2029	66%
2030	80%
2035	100%

In August 2026 the UK, Scottish and Welsh governments and Northern Ireland's Department for Infrastructure opened a joint review of the mandate, which closes on 23 October 2026. It notes that real sales are below the targets, and sets out options for a 2030 target of 70%, 60% or 50%, or keeping 80% with more flexibility, all still reaching 100% by 2035. **No decision had been made when we checked.**²

Scotland's position

The Scottish Government has its own commitment to "phase out the need" for new petrol and diesel cars and vans by 2030, brought forward from 2032 in December 2020.⁵

This is a policy aim backed by spending on charging and other support. The legal ban on selling new cars is set at UK level.²

What the evidence says

- **“Petrol cars will be banned in 2030.”**
Mostly false. Only the sale of *new* pure petrol and diesel cars (including mild hybrids) ends in 2030. New full and plug-in hybrids can be sold until 2035, and used cars of every kind can be sold and driven after that.⁴
- **“The 2030 date has been scrapped.”**
False, as of October 2026. The government’s August 2026 consultation restates the 2030 and 2035 commitments. What is being reviewed is how fast the yearly targets for manufacturers rise.²
- **Some websites still say the ban is in 2035.** That was the policy between 2023 and 2024. The current UK government restored the 2030 date for new pure petrol and diesel cars.⁴

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CHAPTER THREE · THE REAL NUMBERS

Running costs: electric vs petrol and diesel

The biggest money argument for electric cars is fuel. Whether it holds up for you depends almost entirely on where you charge. Here are the sums, with every assumption shown so you can swap in your own figures.

The cost per mile formula

THE SUMS

Electric: price per kWh $\div$ miles per kWh = cost per mile.

Petrol or diesel: price per litre $\times$ 4.546 $\div$ miles per gallon = cost per mile.

Find your car's real efficiency on its dashboard or trip computer. In this chapter we assume an electric car does **3.5 miles per kWh**, a petrol car **45 mpg** and a diesel **55 mpg**. These are example assumptions, not measured figures for any particular model.

What a mile costs (prices checked October 2026)

HOW YOU FUEL	PRICE USED	COST PER MILE	8,000 MILES A YEAR
Electric, home, cheap overnight EV tariff	about 7p per kWh (varies by supplier)	about 2p	about £160
Electric, home, standard price cap rate	26.32p per kWh	7.5p	£600
Electric, public slower chargers (pay as you go)	54p per kWh	15.4p	£1,230
Electric, public rapid chargers (pay as you go)	79p per kWh	22.6p	£1,810

HOW YOU FUEL	PRICE USED	COST PER MILE	8,000 MILES A YEAR
Petrol car (45 mpg)	175.3p per litre	17.7p	£1,420
Diesel car (55 mpg)	200.0p per litre	16.5p	£1,320

Pump prices are the UK averages for the week of 12 October 2026.⁶ The home rate is Ofgem's average price cap rate for 1 October to 31 December 2026, paying by Direct Debit; it excludes the standing charge, which you pay anyway.⁷ Public prices are Zapmap's weighted pay-as-you-go averages for September 2026; many networks offer cheaper app or subscription prices.⁸ The Energy Saving Trust says cheap EV tariffs can bring home charging down to about 2p a mile.¹⁰

ADD THE PAY-PER-MILE TAX

From April 2028 electric cars are due to pay eVED at 3p a mile on top of these figures (chapter 5). Even so, home charging at the price cap rate ($7.5p + 3p = 10.5p$) would still be cheaper per mile than petrol at today's prices. Rapid-only charging would not.

What the evidence says

- **“Electric cars are much cheaper to run.”**

True if you charge at home. The government says drivers who do all their charging at home can save around £1,400 a year compared with a petrol car, paying as little as 2p a mile off-peak.² The Energy Saving Trust puts a full charge (about 220 miles) at around £17 at home, against up to £45 for the same distance in petrol or diesel.¹⁰

- **“Electric cars are cheaper to run.” Not always true if you rely on rapid chargers.** At September 2026’s average rapid price of 79p per kWh, an average electric car costs about 24p a mile (Zapmap).⁸ That is more than the 17.7p a mile for a 45 mpg petrol car in our worked example, though most drivers charge mainly at home and use rapid chargers only some of the time. The Energy Saving Trust gives a similar picture: about £53 for 220 miles on public rapid chargers.⁹
- **Home electricity is temporarily VAT-free.** The government removed VAT from household electricity bills from 1 October 2026 to 31 March 2027, and the 26.32p cap rate excludes VAT for that period.⁷ From April 2027 the usual 5% VAT is due to return unless the government extends the cut, adding about 1.3p per kWh at this rate. Charging at public chargepoints is always charged at the standard 20% VAT rate.¹¹

Plug-in hybrids: only cheap if you plug them in

A plug-in hybrid is cheap to run on short trips if you charge it regularly, because most of those miles are electric. The Energy Saving Trust warns that if you don't charge it, it can be more expensive to run than an ordinary petrol or diesel car, because you are carrying a heavy battery around for nothing.¹⁰

Worksheet: your own cost per mile

	YOUR FIGURE	NOTES
Miles you drive a year		
Share charged at home (%)		
Your home rate (p per kWh)		
Public rate you would pay (p per kWh)		
Car's miles per kWh		
Electric cost per mile (p)		
Your current fuel cost per mile (p)		
Difference $\times$ miles a year (£)		

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CHAPTER FOUR · BEYOND FUEL

Tax, insurance, servicing, depreciation and grants

Fuel is only part of the cost of owning a car. Here is how electric cars compare on the other big costs, and where the evidence is thin.

Vehicle tax (VED)

Electric cars used to be free to tax. Since April 2025 they pay vehicle tax like other cars. For cars registered since April 2017:¹²

	ELECTRIC CAR	PETROL OR DIESEL CAR
First year (included in the price of a new car)	£10	£115 to £5,690, depending on CO ₂ emissions
Each year after that (single 12-month payment)	£200	£200

	ELECTRIC CAR	PETROL OR DIESEL CAR
Expensive car supplement (years 2 to 6)	Extra £440 a year if the list price was over £50,000	Extra £440 a year if the list price was over £40,000

The government raised the expensive car supplement threshold for new electric cars from £40,000 to £50,000 at Budget 2025.¹⁴

Disabled people getting the enhanced rate mobility component of PIP or Adult Disability Payment, or the higher rate mobility component of DLA or Child Disability Payment, can apply for a vehicle tax exemption. The standard rate mobility component of PIP or Adult Disability Payment gives a 50% reduction.¹⁵

Servicing and maintenance

Electric cars have no oil, spark plugs, clutch or exhaust, and regenerative braking means the brakes are used less. The Energy Saving Trust says servicing and maintenance can cost up to 40% less than for petrol or diesel cars.¹⁰ Tyres,

suspension, wipers and the 12-volt battery still need looking after, and the car still needs an MOT from three years old.

Insurance

There are **no official figures comparing insurance premiums by fuel type**. Price comparison websites publish their own averages, and they don't agree on whether electric cars cost more or less to insure than petrol ones. Their figures also reflect who drives each type of car, not just the car itself. Repairs to batteries and sensors can be expensive, so get quotes for the exact model before you buy.

Depreciation and used prices

Early electric cars lost value fast, partly because new models improved so quickly. The picture has changed. The Department for Transport, quoting Autotrader data, says 1 in 4 used electric cars on that site now sells for under £15,000, the average 3 to 5 year old electric car costs around £18,000, and these are the

fastest-selling used cars on the platform.² (This is data from a commercial car sales website quoted by government, not official statistics.)

BUYING USED?

A cheap used electric car can be a bargain, but check the battery health report, the charging cable, which charging speeds it supports, and how much of the battery warranty is left (chapter 9).

Grants and help with the price

- **Electric Car Grant.** Takes up to £3,750 (band 1) or £1,500 (band 2) off eligible new electric cars with a recommended price of £37,000 or less. You don't apply: the dealer applies the discount. Eligible cars need a range of at least 100 miles and an 8-year or 100,000-mile battery warranty. The scheme runs until 31 March 2030.^{1,13}
- **Home chargepoint grants.** Up to £500 for renters, flat owners and households with on-street parking using a cross-pavement solution, until 31 March 2027 (chapter 6).

- **Wheelchair Accessible Vehicle grant.**

£2,500 towards eligible electric wheelchair accessible vehicles priced at £50,000 or less, confirmed until March 2027.²

WATCH OUT

The list of cars that qualify for the Electric Car Grant changes. Check the current list on GOV.UK, and make sure the discount shows on your order before you sign.

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CHAPTER FIVE · PAY-PER-MILE

eVED: the new mileage tax for electric cars

From April 2028, electric and plug-in hybrid cars are due to pay a tax for every mile they drive. Here is how it is planned to work, what it will cost, and what is still undecided.

Why it is coming

Petrol and diesel drivers pay fuel duty at the pump: 52.95p on every litre in October 2026.⁶ Electric car drivers pay nothing equivalent. As more people switch, fuel duty income falls; the government says the Office for Budget Responsibility expects it to fall to around half of current levels in the 2030s and towards zero by 2050.² eVED is meant to replace some of that money, so that, like fuel duty, people who drive more pay more.¹⁶

The key facts

QUESTION	ANSWER (AS PLANNED IN OCTOBER 2026)
When does it start?	1 April 2028. You pay it when you first renew your vehicle tax after that date.
How much?	3p a mile for battery electric and hydrogen cars; 1.5p a mile for plug-in hybrids and range extenders. Rising with inflation (CPI) from 2029–30.
Is it instead of vehicle tax?	No. It is on top of normal vehicle tax (VED).
Which vehicles?	Cars only. Vans, buses, coaches and lorries are not included at the start. Ordinary and mild hybrids without a plug are not included.
How is mileage measured?	You give your odometer reading and estimate the miles you'll drive in the coming year. It is checked against readings taken at the MOT.
Will my car be tracked?	No. The government has ruled out charging by where you drive, to protect privacy. Miles driven abroad count too.
How do I pay?	Through DVLA, alongside vehicle tax: all at once, every six months or monthly by Direct Debit.

QUESTION	ANSWER (AS PLANNED IN OCTOBER 2026)
What if I over- or under-estimate?	You can top up during the year. If you drove less, the unused miles are carried forward as a credit; refunds are possible in some cases (for example if the car is stolen).

Sources: the eVED policy paper and the government's July 2026 consultation response.^{16,14}

What it will cost you

MILES A YEAR	EVED (ELECTRIC, 3P)	EVED (PLUG-IN HYBRID, 1.5P)	FUEL DUTY FOR A PETROL CAR (ABOUT 6P A MILE)
5,000	£150	£75	about £300
8,000	£240	£120	about £480
12,000	£360	£180	about £720
20,000	£600	£300	about £1,200

The government says an average electric car driving 8,000 miles a year will pay £240, or £20 a month, while an average petrol or diesel car driving the same distance pays around £480 in fuel duty. That is why it describes eVED as half

the fuel duty rate.² The fuel duty column is our rough estimate using that ratio. Monthly Direct Debit payments may carry a 5% surcharge, as vehicle tax does.¹⁴

What changed after the consultation

- The consultation received over 5,000 responses.¹⁴
- The government dropped a plan for extra mileage checks on cars under three years old (which don't yet need an MOT). Owners will estimate, and the first MOT reading will settle the difference.¹⁴
- It plans new offences for tampering with odometers ("clocking") and a legal requirement for a working odometer.¹⁴
- Around 80% of eVED money from the first three years is promised for supporting electric cars and the car industry, including the Electric Car Grant and chargers.²

What the evidence says

- **“eVED is already law.” Not yet.** In October 2026 the government had published its response and draft legislation for technical comment. It still has to be passed by Parliament before April 2028, so the details could change.^{14,16}
- **“Pay-per-mile means black boxes and tracking.” False, as planned.** The government says it will not charge by location, and that mileage will come from odometer readings and MOT records.¹⁴
- **“eVED will kill electric car sales.” The official forecast says the effect is small but real.** The Office for Budget Responsibility estimated that eVED and related Budget measures would reduce electric car sales by around 120,000 over five years, about 2% of expected sales. The government also admits the environmental effect is uncertain, as some people may keep petrol cars longer.¹⁶

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CHAPTER SIX · CHARGING AT HOME

Charging at home: the cheapest way

If you have a driveway or garage, home charging is what makes the running cost sums work. If you don't, there are still options.

Your options

Home chargepoint

A wall box fitted by a registered installer, usually 7kW. Adds roughly 7 miles of range for every 20 minutes plugged in, so a typical overnight charge covers most people's weekly driving.

3-pin plug

Most cars come with a cable for a normal socket. It's very slow (12 to 15 hours for a full charge of a typical car) and should only be used on a socket in good condition, as advised by the manufacturer.

Shared and on-street

No driveway? Some councils allow cross-pavement channels; some people share home chargers through apps. Many drivers use nearby on-street or supermarket chargers.

Charging speeds and the “kW equals miles per 20 minutes” rule of thumb come from the Energy Saving Trust.⁹

What a home charger costs, and grants

The government says its £500 grant covers almost half the cost of a typical installation, which suggests a typical cost of roughly £1,000 or more.¹⁸ From 1 April 2026 to 31 March 2027, grants of up to £500 are available to:¹⁷

- people who own and live in a flat, or rent any home, and have private off-street parking;
- households with only on-street parking who install a cross-pavement solution such as a channel or gully;
- landlords (per socket) and workplaces (per socket, up to 40 sockets).

In Scotland, Transport Scotland launched a cross-pavement charging pilot in August 2025 for residents without off-street parking in participating council areas, and the Energy Saving Trust offers funding for chargepoints in shared (factored) residential car parks. Ask your council whether it is taking part.⁵

Getting the best price

- 1 Check your tariff.** EV and time-of-use tariffs offer much cheaper electricity overnight. They usually need a smart meter. Compare the whole tariff, not just the cheap rate.
- 2 Charge off-peak.** Set the car or charger to charge in the cheap hours. Smart chargers sold in Great Britain must have smart functions built in, so they can do this automatically.
- 3 Don't fill to 100% every night.** Many manufacturers suggest a lower everyday limit, often around 80%, unless you need the full range. Check your handbook.
- 4 Remember the standing charge.** You pay it anyway, so charging at home adds only the unit cost.

Advice on tariffs from the Energy Saving Trust; smart charging requirements from National Grid's summary of the Electric Vehicle Smart Charge Points Regulations.^{9,19}

SAFETY

Have chargepoints fitted by a registered electrician or approved installer. Don't run a charging cable across a pavement without permission from your council: it can be a trip hazard and may be against the rules where you live. Don't use a household extension lead unless the car maker says it's safe.

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CHAPTER SEVEN · ON THE ROAD

Public charging and Scotland's network

Public chargers are what you need for long trips, or every day if you can't charge at home. The network has grown fast, but prices and reliability are real issues.

How many chargers are there?

1 JULY 2026	ALL PUBLIC CHARGERS PER 100,000 PEOPLE	RAPID OR FASTER (50KW+) PER 100,000
United Kingdom (121,171 chargers in total)	174.9	41.7
Scotland	231.6	59.1
London	345.1	27.9
Wales	185.5	42.8
Northern Ireland	60.0	19.3

Scotland has more public chargers per person than any UK nation or English region except London, and the most rapid chargers per person of anywhere in the UK. Across the UK there was one public charger for every 17 battery electric cars in April 2026.²⁰

Charger speeds

TYPE	POWER	TYPICAL USE	TIME TO CHARGE
Standard	3.7kW to under 8kW	Overnight, at home or on-street	5½ to 11 hours for a full charge
Fast	8kW to 49kW	Car parks, supermarkets, hotels	1 to 5 hours
Rapid	50kW to 149kW	Main roads, service areas	15 minutes to an hour to 80%
Ultra-rapid	150kW and above	Motorways and hubs	10 minutes to an hour to 80% (if the car can take it)

Source: Energy Saving Trust. Charging usually slows down above 80% to protect the battery, so on a long trip it is often quicker to stop twice to 80% than once to 100%.⁹

Your rights at public chargers

The Public Charge Point Regulations 2023 set rules for public chargers in Great Britain, including:²¹

- ☐ Contactless card payment on new chargers of 8kW and above, and on rapid chargers
- ☐ Prices shown in pence per kWh, so you can compare
- ☐ A free 24-hour helpline at every public charger
- ☐ Reliability standards for rapid charging networks
- ☐ Payment “roaming” so you can use different networks without lots of apps
- ☐ Open data on location, price and availability for apps and maps

What it costs, and why

Public charging costs more than home charging. Zapmap's September 2026 averages were 54p per kWh on slower chargers and 79p on rapid ones, with the top 10 rapid networks ranging from 59p to 92p.⁸ The government's review of public charging costs notes industry estimates that prices rose 38% between 2021 and 2025, and is due to report in autumn 2026.²²

CLARITY TIP

Use a charging map app to compare prices before you set off. Many networks charge less through their own app or a subscription, and some are cheaper overnight. Look out for overstay fees if you leave the car plugged in after it has finished.

Scotland: ChargePlace Scotland is ending

Many Scottish drivers know the publicly funded ChargePlace Scotland network. The Scottish Government has decided not to renew the contract to run it. Charger owners (often

councils) are moving their chargers to other networks, with a deadline of the end of December 2026.^{23,5} In practice this means the charger in your town may change its app, price or payment method.

- The Scottish Government has invested over £65 million in public charging since 2011, and Scotland met its target of 6,000 public chargepoints in October 2024, two years early.²⁴
- Its ambition is around 24,000 additional public chargepoints by 2030, mostly paid for by private companies.²⁵ The £30 million EV Infrastructure Fund is meant to help councils bring in private investment, especially in rural and island areas where chargers are less profitable, and is expected to deliver about 6,000 of them.²⁴
- Over 12,000 public chargers were counted in Scotland in March 2026. Part of the recent jump is because the way chargers are counted changed in February 2026.⁵

What the evidence says

- **“There aren’t enough chargers.”**

Depends where you live. Scotland is better served than most of the UK, but provision varies a lot between council areas, and Northern Ireland has far fewer.²⁰

- **“Public charging is a rip-off.” Partly true.** Rapid charging can cost more per mile than petrol (chapter 3), and the government itself has called high charging costs a possible barrier for people without home charging.²

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CHAPTER EIGHT · RANGE

Real-world range, including a Scottish winter

“Range anxiety” is one of the biggest worries for would-be drivers. Here is what the evidence says about how far electric cars really go, and how much winter takes off.

How far do they go?

The Energy Saving Trust says most battery electric cars have a real-world range of around 220 miles on a full charge, and some do over 300 miles.¹⁰ Official (WLTP) figures in adverts are measured in a laboratory and are usually higher than you’ll get in everyday driving, especially at motorway speeds.

For comparison, the government’s own example of an average electric car assumes 8,000 miles a year, which is about 22 miles a day.² For most

people, daily driving uses a small fraction of a typical range; the real question is long trips and how easy it is to charge on the way.

Winter: how much range do you lose?

TEST (LABORATORY, US DEPARTMENT OF ENERGY)	RANGE COMPARED WITH MILD WEATHER
At -7°C with the heater on	about 41% less
At -7°C without using the cabin heater	about 12% less
At -18°C (0°F) with heating	around 50% less on average
Petrol car in the cold (for comparison)	about 10% to 20% less fuel economy (more on short trips)

About two-thirds of the extra energy goes on heating the cabin, rather than the battery itself.^{26,27} These are harsh test conditions. Most winter days in Scotland are milder than -7°C , so most drivers will see a smaller loss, but a noticeable one: **plan on noticeably less range from November to March**, especially on short trips in the cold and on fast roads.

Getting more range in winter

- ☐ Pre-heat the car while it is still plugged in (most cars and apps let you schedule this)
- ☐ Use heated seats and steering wheel instead of heating all the air in the cabin
- ☐ Keep tyres at the right pressure (cold lowers it)
- ☐ Park in a garage if you have one
- ☐ Slow down a little on motorways
- ☐ A car with a heat pump uses less energy for heating than one with only a resistance heater

Tips from [fueleconomy.gov](https://www.fueleconomy.gov) and the US Department of Energy.^{26,27}

What the evidence says

- **“Electric cars lose half their range in winter.” Exaggerated for the UK.** Losses of around 40 to 50% have been measured in laboratory tests at -7°C to -18°C with heating on. In milder cold and without heavy heater use, losses are much smaller (about 12% at -7°C with the heater off).^{26,27}
- **“Winter doesn’t affect them.” False.** All cars use more energy in the cold, but electric cars lose proportionally more range, mainly because of cabin heating.²⁷

09

CHAPTER NINE · BATTERIES

Batteries: how long they last and what happens when they wear

The battery is the most expensive part of an electric car, and the subject of lots of scare stories. Here is what is known.

How long do they last?

The Energy Saving Trust says electric car batteries are expected to last 10 to 20 years, depending on how they are used and kept.¹⁰

Batteries don't usually fail suddenly. They slowly hold less charge over time ("degradation"), so the range gradually shrinks.

A 2024 peer-reviewed study in *Nature Energy* found that batteries cycled the way real drivers use them (stop-start, with rests) lasted up to 38% longer than in the constant-drain tests usually used in laboratories. That suggests

some older estimates of battery wear may have been too pessimistic, though it was a laboratory study, not a survey of cars on the road.²⁸

Warranties

To qualify for the Electric Car Grant, a car's battery must have a warranty of at least 8 years or 100,000 miles, and the battery must be replaced if it falls below 70% of its capacity in the first 8 years.¹³ Many other cars carry similar warranties, but terms vary; check the exact wording, and whether it transfers to a second owner.

Looking after the battery

- ☐ Avoid charging to 100% every day unless you need the range
- ☐ Avoid leaving it at very low or very high charge for long periods
- ☐ Use rapid charging when you need it, not for every charge, if home charging is available
- ☐ Avoid parking for long spells in extreme heat

Advice from the Energy Saving Trust.¹⁰

Buying used: battery checks

- 1 Ask for a battery health report.** Often called “state of health” (SoH), shown as a percentage of the original capacity. Many dealers can provide one; independent tests are also available.
- 2 Check the warranty.** How many years and miles remain? Does it cover capacity loss, and to what level?
- 3 Check charging speed.** Some older cars charge slowly on rapid chargers, which matters for long trips.
- 4 Test the range yourself.** Charge it fully on a test drive if you can, and look at the predicted range.

What the evidence says

- **“You’ll need a new battery after a few years.” Not supported by the evidence.**

Batteries are expected to last 10 to 20 years, and warranties typically cover 8 years or 100,000 miles.^{10,13}

- **“Batteries last forever.” Also false.** All lithium-ion batteries lose capacity over time; how fast depends on heat, charging habits and use.²⁸

- **Weak evidence warning.** There is little published, independent UK data on how real electric car batteries age over 10 years or more, simply because few cars are that old. Much of what circulates online comes from companies selling battery tests or telematics, so treat precise figures with caution.

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CHAPTER TEN · MYTHS VS FACTS

Myths and facts: both sides checked

Here are the most common claims about electric cars, from fans and critics alike, with what the evidence actually shows and how strong that evidence is.

THE CLAIM (CRITICS SAY)

“Electric cars are worse for the climate once you count making the battery.”

Mostly false. Making the battery does create extra emissions, so an electric car starts with a bigger carbon footprint. But it usually pays this back over its life. A peer-reviewed study of 59 world regions found electric cars already had lower life-cycle emissions than new petrol cars in 53 regions covering 95% of the world's road transport, with bigger savings where electricity is cleaner.²⁹ For the EU, the ICCT's 2025 update estimated that an average new battery electric car produces about 73% less greenhouse gas over its life than a comparable petrol car, paying back the extra emissions from making its battery after about 17,000 km (roughly 10,500 miles).³⁰

THE CLAIM (FANS SAY)

“Electric cars are zero emission.”

Partly true. They have no exhaust, so no tailpipe carbon dioxide or nitrogen dioxide in the street.¹⁰ But making the car and the electricity both create emissions (see above), and tyres, brakes and road wear still create particle pollution. Government air quality experts found these “non-exhaust” emissions are now a major source of particle pollution from traffic, and heavier vehicles can produce more of them.³²

THE CLAIM (CRITICS SAY)

“Electric cars catch fire all the time.”

Not supported by the available data, but the data are thin. Sweden's civil contingencies agency recorded 40 fire-service call-outs to fires involving electric or plug-in hybrid cars in 2024 (excluding arson), out of about 881,000 such cars (23 in 2022, 38 in 2023). Just over 3,100 cars of all fuel types burned that year, but that total includes arson, so the two figures can't be compared directly.³¹ We found no official UK fire figures by fuel type. When a battery does catch fire it burns differently: it can be hard to put out and can reignite, which fire services train for.

THE CLAIM (CRITICS SAY)

“The grid can't cope.”

Mostly false, if charging is managed.

National Grid estimates switching transport to electricity would add around 120 terawatt hours a year to the roughly 260 used now, over many years, as cars are replaced gradually.¹⁹ The system operator says around 75% of owners charge at home, and smart charging moves this to times when demand is low.³³ Local networks will still need upgrades in places.

THE CLAIM (FANS SAY)**“Electric cars are always cheaper.”**

Not always. They are usually far cheaper to run with home charging. Relying on rapid public chargers can cost more per mile than petrol (chapter 3), and the purchase price, insurance and, from 2028, eVED all count.⁸

THE CLAIM (CRITICS SAY)**“They’re useless in the cold.”**

Exaggerated. Range falls in cold weather, by up to around 40% in harsh test conditions with the heater on, but much less in milder cold.²⁶

THE CLAIM (CRITICS SAY)

“Batteries end up in landfill.”

Weak evidence either way. Old electric car batteries are valuable and can be reused (for example for energy storage) or recycled, and UK waste battery rules require producers of industrial batteries (which include electric car batteries) to take used ones back. We couldn't find reliable official UK figures for what happens to every end-of-life electric car battery.

THE CLAIM (CRITICS SAY)

“Everyone will be forced into an electric car in 2030.”

False. See chapter 2. Only new pure petrol and diesel car sales end in 2030; hybrids continue to 2035, and used cars are unaffected.⁴

WHERE DOES THE TESLA NAME COME FROM?

The electric car maker Tesla is named after Nikola Tesla (1856–1943), the inventor whose work on alternating current (AC) electricity and the AC induction motor helped shape the power grid we use today. He had no link with the company, which was founded in 2003, long after his death. Online, his name is often attached to claims about “free energy” that the evidence doesn’t support.

Want the story behind the name? See our Free Energy guide (goclarity.uk/guides/free-energy.html).

HOW TO CHECK A CLAIM YOURSELF

Ask: who is saying it, and do they sell something? Is it a one-off news story, or a pattern in official data? Is the comparison fair (new car vs new car, same size, same year)? Everyday AI tools like Grok can help you summarise a long report, but always check numbers against the original source.

II

CHAPTER ELEVEN · YOUR DECISION

Is an electric car right for you?

There is no single right answer. This chapter pulls the evidence together into a checklist so you can weigh it up for your own situation.

It's likely to work well if...

- ☐ You can charge at home or at work
- ☐ Most of your trips are under 100 miles
- ☐ You do lots of short, stop-start journeys (where electric is most efficient)
- ☐ You can get a cheap overnight electricity tariff
- ☐ You drive into a Low Emission Zone often (electric cars meet the standards)
- ☐ You are buying used and can check the battery

Think carefully if...

- ☐ You can't charge at home and would rely on rapid chargers
- ☐ You often drive long distances in remote areas with few chargers
- ☐ You tow heavy loads often (towing cuts range significantly)
- ☐ Your budget is tight and the purchase price is the main issue
- ☐ You keep cars for a very long time and want to avoid battery uncertainty

Scotland has Low Emission Zones in the city centres of Aberdeen, Dundee, Edinburgh and Glasgow. They run 24 hours a day and are enforced by cameras. Electric cars meet the standard; older petrol and diesel cars may not. Check any car on the official LEZ checker.³⁴

Alternatives worth considering

- **A full hybrid:** no plug needed, better fuel economy than petrol, still on sale after 2030.

- **A plug-in hybrid:** electric for short trips if you can charge, engine for long ones. Only cheap if you plug it in.
- **Keeping your current car longer:** often the cheapest option, and the 2030 rules don't stop you.
- **A used electric car:** much cheaper than new, as long as the battery checks out.

Worksheet: my decision

QUESTION	MY ANSWER
Can I charge at home or work?	
Miles I drive a year	
Longest regular trip (miles)	
Fuel cost per mile now (chapter 3)	
Electric cost per mile for me (chapter 3)	
Yearly saving or extra cost (incl. eVED from 2028)	
Insurance quotes compared	
Battery health and warranty (if used)	
Grants that apply (chapter 4)	
My decision and why	

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Energy Saving Trust	energysavingtrust.org.uk (independent advice on electric cars, charging and Scottish funding)
Grants and eVED	gov.uk : search “Electric Car Grant” (eligible cars), “electric vehicle chargepoint grants” or “Electric Vehicle Excise Duty”
Vehicle tax rates	gov.uk/vehicle-tax-rate-tables
Check MOT history and mileage	gov.uk/check-mot-history
Low Emission Zones (Scotland)	mygov.scot/low-emission-zones (vehicle checker and zone maps)
ChargePlace Scotland changes	chargeplacescotland.org (which chargers have moved)
Energy price cap	ofgem.gov.uk
Free advice in Scotland	Advice Direct Scotland: advisedirect.scot · Citizens Advice Scotland: cas.org.uk
Further reading from Clarity Guides	Free Energy: Is It Real or Just Maths? · goclarity.uk/guides/free-energy.html (the real story of Nikola Tesla and how Tesla cars work)

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Glossary

BEV

Battery electric vehicle: a car with no engine, powered only by a battery.

Degradation

The gradual loss of a battery's capacity over time.

eVED

Electric Vehicle Excise Duty: the planned pay-per-mile tax on electric and plug-in hybrid cars from April 2028.

Full hybrid

A car with an engine and a small battery that can drive short distances on electricity; no plug.

kW

Kilowatt: a measure of power. A charger's kW rating shows how fast it can charge.

kWh

Kilowatt hour: a unit of energy. Battery size and electricity are measured in kWh.

LEZ

Low Emission Zone: an area where vehicles that don't meet emission standards can be fined.

Mild hybrid

A petrol or diesel car with a small motor that assists the engine; cannot run on electricity alone.

PHEV

Plug-in hybrid electric vehicle: a car with an engine and a battery you charge from a socket.

Rapid charger

A public charger rated 50kW or more.

State of health (SoH)

A battery's current capacity as a percentage of when it was new.

VED

Vehicle Excise Duty: vehicle tax.

WLTP

The official laboratory test used for range and fuel economy figures.

ZEV mandate

Rules requiring carmakers to make a rising share of new sales zero emission.

Where the evidence is weak

We have flagged these in the text. In short:

- **Public charging prices** come from Zapmap, a commercial charging app, because there are no official statistics on charging prices. They are averages; what you pay depends on network and payment method.
- **Insurance:** no official comparison by fuel type; commercial comparison-site averages disagree, so we don't quote them.
- **Used car prices** come from Autotrader data quoted by the Department for Transport, not official statistics.
- **Fires:** the UK publishes no official figures by fuel type; the Swedish figures are limited and not like-for-like.
- **Winter range** figures come from US laboratory tests at temperatures colder than a typical Scottish winter.

- **Long-term battery life** in real UK cars over 10+ years is not yet well measured; the Nature Energy study was laboratory-based.
- **Lifetime emissions:** the EU figure (73%) is from a research organisation, not a peer-reviewed journal, and isn't UK-specific; the peer-reviewed global study uses 2015 data.
- **Battery recycling:** we could not find reliable official UK figures for what happens to end-of-life electric car batteries.
- **Rules that may change:** eVED was not yet law, and the ZEV mandate review had not concluded, in October 2026.

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Electric Cars

Making the confusing clear.

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