

Electric vehicle infrastructure cost and availability



Westminster Hall debate briefing

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Background

- Global spending on electric vehicles (EVs) and charging infrastructure surged by [77% to \\$273 billion in 2021](#). As of the end of January 2023, there were [1,135,000 plug-in cars](#) registered in the UK.
- The UK has made strong progress on charging infrastructure in recent years and its availability is higher than perceived. Developing an affordable, nationwide charging network will be vital to ensure people can benefit from clean cars sooner, to futureproof the UK's automotive industry, and to tackle emissions from transport.
- Transport is responsible for nearly [a third of the UK's carbon emissions](#), with cars and taxis making up [52% of emissions](#) from domestic transport. To speed up progress, the government published its [electric vehicle infrastructure strategy](#), outlining plans to accelerate the rollout of chargepoints across the country, with [300,000 public chargers](#) to ensure the UK is 'EV fit' by 2030.
- The government's [ban on the sale of all new fossil fuel powered cars and vans by 2035](#), and its commitment to drive up the sale of EVs through the [Zero Emission Vehicle \(ZEV\) mandate](#), showcases ambition. However, [delays](#) to the ZEV mandate consultation process threaten the UK's ability to keep ahead in the global EV race.
- The recent [Net zero review](#) recommends government deliver on the proposed ZEV mandate introduction as one of its key policies to speed up the net zero transition.

Where and how often is charging needed?

- Most EV owners charge [at home](#). Around [two thirds of households](#) have access to off-street parking, for example a garage or driveway. Other options for charging include workplaces, retail, or leisure sites and public chargepoints. Availability of these alternatives is important to enable convenient charging, particularly for drivers who do not have off street parking.
- [Half of all drivers](#) use their cars so little they typically charge fully twice a month. On average, [fewer than one in 20 cars](#) needs to be fully charged more than twice a week, meaning most EV drivers' needs are easily met by infrequent home or street charging.
- Plug-in hybrid cars have significantly shorter ranges and require more frequent charging than fully electric cars. Unless regularly charged, they lead to only a marginal decrease in tailpipe emissions compared to conventional petrol and diesel cars, and they are significantly more expensive to run than battery electric vehicles (BEVs).

How much does it cost to charge an EV?

- Analysis from ECIU in October 2022 found EVs are typically [three and a half times cheaper](#) to fuel than petrol equivalents.

- Those using smart charging and rooftop solar panels to charge will [pay even less](#) and EVs require much less maintenance than petrol and diesel cars. Despite currently having higher upfront prices, EVs are cheaper to run than petrol and diesel on a total cost of ownership basis over a [seven year period](#).
- VAT on charging differs between home chargepoints, which are subject to 5% VAT, and public chargepoint users, who pay 20% VAT. Public chargepoints are significantly cheaper than filling an average car with petrol. However, higher rates for public charging creates unfairness among EV drivers, punishing those who don't live in homes with off street parking, and disincentivising drivers to make the switch.
- As recommended in the Environment APPG's [Ten Point Plan for Climate and Nature](#), equalising VAT rates is an important step to help a wider range of drivers to access affordable charging and support the transition to net zero transport.

Is the current EV charging network big enough?

- The Climate Change Committee estimates around [280,000 chargepoints](#) will be needed by 2030. The government aims to have a network of [at least 300,000 public chargepoints by 2030](#).
- Some argue the current public network has sufficient charge points for the number of EVs currently on the road. New research finds there are more workplace charge points than public charge points, which is significant because [22 million cars](#) are regularly used for commuting, and 35% of all car and van miles in 2019 were for commuting and business needs. When driving on UK motorways and roads, drivers are never more than [25 miles](#) away from a rapid chargepoint.

How are chargepoints distributed across the UK?

- While there is a significant number of chargepoints overall, the main issue is disparity between regions and contrary to public commentary, there is no North-South divide issue. Nearly a third of all UK chargepoints are located in Greater London, equivalent to [101 chargepoints per 100,000 people](#). Coventry, West Sussex and Surrey also showcase best practice when it comes to accessibility to charging infrastructure.
- In contrast, Greater Manchester offers [16.6 chargepoints per 100,000 people](#). [Wider areas](#) experiencing the lowest rates of access in the UK include Northern Ireland, the North East of England, Wales and Yorkshire and the Humber.
- Policy response is needed to target areas falling behind in the rate of installations and chargers per BEV catch up.

What is the role of local authorities?

- Local authorities are responsible for deciding where chargepoints should be located and securing investment for public charging facilities. However, there is no specification of how many they should have in their area.
- Many local authorities have no strategy for how they will deliver EV charging infrastructure in their area, with only [28% having published EV transition strategies to date](#).
- When planning strategy for expanding local EV charging networks, local authorities must consider placement and potential demand from residents, commuters, visitors, delivery services and taxis. They must also ensure charging is adequate for van users as well as cars. To support local authorities, [New Automotive has developed a toolkit](#) to ensure their charging infrastructure decision are demand and data driven.

How can government ensure strategy is fit for purpose?

- The government's strategy to deliver [300,000 public chargepoints by 2030](#) strikes a balance to ensure adequate charging supply without creating surplus infrastructure.
- Existing funds committed to the charging network have been supported by further funding in the [Electric Vehicle Infrastructure Strategy](#). This includes £450 million for local authorities and a £950 million Rapid Charging Fund to support the delivery of 6,000 rapid chargers across England's motorways by 2035. This strategy includes a requirement for all new homes and commercial buildings to install chargepoints. It refocuses [Homecharge](#) and [Workplace Charging](#) schemes to target support based on need and sets requirements for smart charging, reliability, accessibility and ease of use.
- However, the strategy has placed the burden of delivery on local authorities without adequate support. Funding for local authorities ends in 2025, the 300,000 chargepoint target has no interim targets, and there is no requirement on existing commercial buildings to install chargepoints.
- To provide a charging network that can support rising demand and encourage a faster switch to EVs, the government should build on its commitments in the infrastructure strategy by considering the following:
 1. **Support local delivery**- Local authorities are best placed to address the needs of their areas; however, they need detailed policy instructions and adequate resources to deliver the strategy.
 2. **Introduce interim targets**- The strategy would be strengthened by including interim targets for local authorities, so they can plan deployment and avoid delays.
 3. **Funding allocation**- The local electric vehicle infrastructure fund should be allocated based on local needs, including the number of cars registered and the number of chargepoints per BEV in each area.
 4. **Reduce VAT at public chargepoints**- from 20% to five per cent to match the rate paid at private charging devices, to ensure those without access to off street parking can benefit from cheap, clean electricity.
 5. **Allow flexibility on the target**- While current estimates suggest 300,000 public chargepoints by 2030 will be adequate, the government should be ready to respond quickly if it looks like demand will outpace supply.
 6. **Delivering an ambitious ZEV mandate on time**- This regulation will require manufacturers to meet increasingly stringent ZEV sales targets from 2024 to 2035, when all new vehicles sold must be ZEV. The consultation process is currently delayed, and delivering the mandate on schedule would enable the UK to more easily project the number of plug-in vehicles entering the market each year and, as a result, the number of chargers needed to support them.

What do voters think?

- [Polling](#) by consumer group Which? found nearly three out of four EV owners are currently unhappy with the UK's public charging system, with 40% reporting non-working chargers and 61% suffering difficulties making payments.
- A [YouGov survey](#) of prospective or current learner drivers in the UK found 42% would prefer their first car to be either fully electric or hybrid after they pass their test. It further finds just 21% would want a petrol-only car, with 6% saying they would opt for a diesel car.

- [Polling](#) by Aviva found 43% of current or potential EV drivers note running out of charge and being left stranded as their greatest concern, and 42% list the availability of charging points on long journeys as an issue.
- [Polling](#) commissioned by Arnold Clark found less than 1% of EV drivers would want to go back to petrol or diesel.