

Institution of Mechanical Engineers (IMechE)

Automobile Division

Written Evidence to the House of Commons Transport Committee

Inquiry: Supercharging the EV Transition

Submitted by: Institution of Mechanical Engineers (IMechE), Automobile Division

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About the Institution of Mechanical Engineers

The Institution of Mechanical Engineers (IMechE) represents over 110,000 engineering professionals and students in the UK and internationally. This response has been prepared by the IMechE's Automobile Division and submitted by the Institution's Engineering Policy Unit. The Automobile Division brings together expertise from across vehicle design, manufacturing, powertrain systems, infrastructure, safety, and lifecycle engineering. This submission draws on published IMechE policy positions, member expertise, and engagement with industry, government, and research organisations.

Executive Summary

The Institution of Mechanical Engineers (IMechE) supports the United Kingdom's ambition to decarbonise road transport and recognises the progress made in the adoption of electric vehicles (EVs) to date. The engineering community broadly endorses the direction of travel embodied in the Zero Emission Vehicle (ZEV) mandate and associated policies. However, evidence from market data, consumer research, and infrastructure delivery indicates that supply-side regulation alone will not deliver a self-sustaining mass market transition at the pace required.

While EVs accounted for over 23% of new car registrations in 2025, they represent just over 5% of the total UK vehicle parc. This reflects the structural challenge of vehicle stock turnover and highlights the need to strengthen private consumer demand, the second-hand EV market, and charging infrastructure delivery alongside regulatory mandates.

Our key messages to the Committee are:

- Consumer-side barriers remain the principal constraint on adoption, particularly affordability, access to lower-cost charging, and uncertainty over battery condition and residual values.
- Equity considerations are central: approximately four in ten households lack access to off-street parking and therefore face systematically higher running costs and reduced charging convenience.

- Infrastructure deployment is progressing, but delivery mechanisms must be accelerated and better coordinated, particularly at local authority and grid connection levels.
- Fiscal and regulatory signals must be stable and coherent, as frequent or poorly integrated changes risk undermining consumer confidence and slowing uptake.
- The second-hand EV market is a critical enabler of mass adoption and should be actively supported through battery health standards, targeted incentives, and finance mechanisms.
- Industrial capability and skills must be addressed in parallel, including battery supply chains, critical minerals, and workforce training in charging installation and EV servicing.

We recommend a holistic systems approach that integrates consumer policy, infrastructure delivery, industrial strategy, and fiscal design, supported by robust, transparent metrics and long-term policy stability.

(a) How effective have Government policies been in driving EV adoption to date, and what further action is required to accelerate take-up?

Government policy has been effective in shaping vehicle supply and signalling long-term regulatory intent, particularly through the ZEV mandate and the 2030 phase-out of new petrol and diesel cars.^{1,2} These measures have supported a rapid expansion in model availability and manufacturer investment.

However, IMechE has consistently advised that supply-side regulation cannot, on its own, deliver the transition unless paired with a suite of consumer-focused policies that make battery electric vehicles (BEVs) economically and practically attractive to private buyers. Evidence indicates that growth in EV uptake remains disproportionately concentrated in the fleet and company car market, where fiscal incentives and structured procurement frameworks reduce risk and cost.³

¹ Institution of Mechanical Engineers. (2023). *Written evidence to the House of Lords Environment and Climate Change Committee inquiry on Electric Vehicles*. https://www.imeche.org/docs/default-source/1-oscar/reports-policy-statements-and-documents/130923_hol-ecc_electric-vehicle-inquiry---imeche-response.pdf?sfvrsn=2

² Institution of Mechanical Engineers. (2025). *Response to the Department for Transport consultation on phasing out the sale of new petrol and diesel vehicles and support for the zero emission vehicle transition*. <https://www.imeche.org/docs/default-source/1-oscar/reports-policy-statements-and-documents/dft-consultation-on-zero-emissions-vehicles---web-version.pdf?sfvrsn=2>

³ Society of Motor Manufacturers and Traders. (2026). *UK New Car Registration Data and ZEV Mandate Analysis*.

A central constraint is charging access and affordability. Sources estimate that between 35% to 44% of UK households do not have access to off-street parking, limiting their ability to benefit from lower-cost domestic charging and placing them at a structural disadvantage relative to those with private driveways.^{4,5} Home charging costs around 65% less than public charging according to The Electric Car Scheme, with So Energy reporting the below differences in cost per mile but these estimates can vary.^{6,7}

Vehicle type	Average cost per mile
Electric (home charging)	8p
Electric (public rapid charging)	15–20p
Petrol	15–17p
Diesel	13–16p

There is also a growing skills and delivery risk, particularly in chargepoint installation, grid integration, and BEV servicing and repair. Without coordinated national training and accreditation pathways, workforce capacity risks becoming a binding constraint on both infrastructure rollout and long-term vehicle reliability.^{8,9}

Further action should therefore focus on:

- Stabilising long-term fiscal and regulatory signals to reduce consumer uncertainty.
- Reducing the cost disparity between domestic and public charging, including addressing VAT treatment and pricing transparency.
- Targeted support for private buyers and households without home charging access.
- Nationally coordinated skills and training programmes for charging infrastructure and EV servicing.

(b) How robust is the current rate of EV take-up relative to the Government's targets?

⁴ RAC Foundation. (2021). *Standing Still*. <https://www.racfoundation.org/wp-content/uploads/standing-still-Nagler-June-2021.pdf>

⁵ Lloyds Bank. (2022). *Nearly half of UK homes unsuitable for electric cars*. <https://www.lloydsbankinggroup.com/assets/pdfs/media/press-releases/2022-press-releases/lloyds-bank/221230-lloyds-bank-many-uk-homes-not-suitable-for-electric-vehicles.pdf>

⁶ The Electric Car Scheme. (2026). *Electric Cars vs Petrol Cars 2026: Which Is Actually Cheaper to Run?* <https://www.electricensecheme.com/blog/electric-cars-vs-petrol-cars-the-ultimate-debate>

⁷ So Energy. (2025). *How much does it cost to charge an electric car*. <https://www.so.energy/article/how-much-does-it-cost-to-charge-an-electric-car>

⁸ IMechE (n 1).

⁹ UK Government. (2025). *Local Electric Vehicle Infrastructure (LEVI) Fund Process Evaluation*. <https://assets.publishing.service.gov.uk/media/69244eedf2b88d41c7ba7ea4/levi-fund-evaluation.pdf>

Market data indicates strong growth in new EV registrations, with BEVs accounting for approximately 23–24% of new car sales in 2025.^{10,11} However, stock data shows that EVs represent only around 5.3% of the total UK vehicle parc (approximately 1.8 million vehicles). This highlights the scale of the remaining challenge, as overall emissions outcomes are driven by fleet turnover rather than annual sales alone. The current focus on discounts from both government and manufacturers to drive sales is clearly not sufficient nor sustainable at the level required to incentivise consumers and businesses, as suggested by SMMT.¹²

Without stronger consumer-side measures, the gap between mandated trajectories and sustainable private demand may widen as fleet markets mature and manufacturer discounting becomes less economically viable.^{13,14}

(c) How effective are existing incentives in influencing EV take-up, and to what extent might further or different forms of support be required?

IMechE's analysis indicates that incentives remain effective where they reduce risk and upfront cost, but current support is unevenly distributed across market segments.¹⁵ The majority of fiscal advantage now accrues to company car and fleet buyers, while most direct incentives for private consumers have been withdrawn.

The Institution has previously advised that this structure risks reinforcing a two-tier market, in which adoption is driven primarily by corporate schemes rather than household purchasing.^{16,17}

A key concern is the cost of public charging. IMechE has recommended that VAT on electricity delivered through public chargepoints should be aligned with domestic electricity, as a direct mechanism to reduce operating cost disparities for households without access to private charging.

Further or different forms of support could include:

¹⁰ SMMT. (2023). *New car market up but ZEV trajectory unviable*. <https://www.smmt.co.uk/new-car-market-up-but-zev-trajectory-unviable/>

¹¹ Zemo Partnership (2026). *Personal Mobility Working Group Proceedings and EV Market Monitoring*. <https://www.zemo.org.uk/assets/workingdocuments/PMWG-P-26-01.pdf>

¹² BBC. (2025). *Electric car discounts are unsustainable, says industry group*. <https://www.bbc.co.uk/news/articles/c0417v3v21ko>

¹³ IMechE (n 1).

¹⁴ IMechE (n 2).

¹⁵ IMechE (n 2).

¹⁶ IMechE (n 1).

¹⁷ IMechE (n 2).

- Targeted mechanisms for used EV purchases, including finance support or limited fiscal incentives.
- Social or community leasing schemes to expand access to lower-cost EVs.¹⁸
- Long-term predictability in taxation and incentive frameworks to reduce “wait-and-see” behaviour among consumers.¹⁹

(d) What are the likely implications of the introduction of Electric Vehicle Excise Duty (eVED), and what factors should guide its implementation?

Zemo Partnership analysis indicates that a mileage-based eVED system may improve fiscal fairness and protect long-term revenues as fuel duty declines.²⁰ The proposed design, administered through the DVLA and MOT framework with annual mileage reconciliation, avoids continuous vehicle tracking and preserves user privacy.

However, evidence also suggests that eVED is likely to increase EV running costs, place additional pressure on the second-hand EV market, and make delivery of the ZEV mandate more challenging if introduced without offsetting consumer support measures.^{21,22} The Office for Budget Responsibility has estimated a reduction of 440,000 in EV sales over the next five years if the policy is implemented as planned.²³

We advise that implementation should be guided by:

- Integration with wider ownership costs, including public charging VAT and energy pricing.
- Distributional impact assessment, particularly on households without home charging access.
- Transitional measures to protect the development of the second-hand EV market.
- Clear, long-term communication to avoid destabilising consumer confidence.

(e) How should the Government support further development of the second-hand EV market?

¹⁸ Zemo Partnership (n 13).

¹⁹ IMechE (n 2).

²⁰ Zemo Partnership (n 13).

²¹ Zemo Partnership (n 13).

²² IMechE (n 2).

²³ Office for Budget Responsibility. (2025). *Economic and fiscal outlook – November 2025*. <https://obr.uk/efo/economic-and-fiscal-outlook-november-2025/>

We consider the second-hand EV market to be a critical enabler of mass adoption, as it determines affordability and equity outcomes for the majority of households.^{24,25}

Zemo Partnership data indicates that in 2025:

- Used EV sales increased by approximately 52% year-on-year.
- 3–5-year-old used EVs sold, on average, five days faster than equivalent petrol vehicles.²⁶

These trends suggest that demand strengthens when price points and confidence conditions are favourable.

A persistent barrier remains over uncertain battery condition and longevity in the second-hand market. IMechE and Zemo have both identified the introduction of standardised battery health metrics and certification, aligned with international standards such as UN GTR 22, as a key mechanism to reduce information asymmetry and improve consumer trust.^{27,28}

Additional measures could include:

- Support for battery repair, remanufacture, and specialist aftersales services.
- Finance mechanisms or targeted incentives for used EV purchases.
- Development of battery passport and traceability systems to support circular economy objectives.

(f) What are the most significant factors affecting consumer confidence in EVs, and what steps could address them?

Consumer research presented to the Zemo Personal Mobility Working Group indicates that:

- 95% of EV drivers would recommend an EV to family and friends.
- 66% of non-EV drivers are considering electric for their next purchase.

²⁴ IMechE (n 1).

²⁵ IMechE (n 2).

²⁶ Zemo Partnership (n 13).

²⁷ IMechE (n 2).

²⁸ Zemo Partnership (n 13).

- Nearly 50% of petrol and hybrid owners cite upfront cost as the primary barrier to adoption.^{29,30}

Despite positive sentiment among existing users, structural barriers remain. Over 90% of current EV drivers have access to a driveway, while those without private charging report significantly higher operating costs and reduced confidence in public infrastructure accessibility and reliability.

We identify the principal confidence factors as:

- Upfront vehicle cost and finance affordability.
- Public charging availability, reliability, accessibility, and pricing transparency.
- Battery longevity, residual values, and second-hand market trust.
- Policy and fiscal uncertainty.
- Safety perceptions, including the need for clear, evidence-based communication on fire risk and vehicle standards.

Recommended steps include improved total cost of ownership information, deployment of battery health certification, fairer public charging cost structures, and consistent national communication strategies.^{31,32}

(g) What further action is required to ensure that the rollout of EV charging infrastructure facilitates transition at the necessary rate?

Zemo Partnership data indicates that by the end of 2025, the UK had approximately:

- 87,800 public chargepoints across 45,000 locations.
- Around 9,800 ultra-rapid chargers.
- Year-on-year growth of approximately 19%.³³

Under the Local Electric Vehicle Infrastructure (LEVI) Fund, government reporting indicates that existing capital allocations, including more than £185 million of approved payments to local chargepoint projects, are enabling significant rollout of local EV charging infrastructure. Official announcements estimate that LEVI-supported funding will contribute to the delivery of over 100,000 new public chargepoints across England,

²⁹ Zemo Partnership (n 13).

³⁰ EVA England. *Consumer Attitudes to EV Adoption (via Zemo Partnership)*.
<https://www.zemo.org.uk/assets/workingdocuments/PMWG-P-26-01.pdf>

³¹ IMechE (n 2).

³² Zemo Partnership (n 13).

³³ Zemo Partnership (n 13).

though many projects remain in development or procurement stages alongside uneven progress across regions.^{34 35}

Our assessment is that further action is required to:

- Accelerate grid connection processes and reinforce coordination with distribution network operators.
- Strengthen delivery capability and procurement support for local authorities.
- Mandate EV-ready provision in new developments where appropriate.
- Address cost and competition in public charging markets to prevent structural disadvantage for non-home-charging users.

(h) How effectively is the Department for Transport addressing affordability, geographic equity, accessibility, administration of funding, and grid connections?

We recognise the scale and ambition of DfT programmes, including LEVI, ORCS, and workplace charging schemes. Collectively, these have supported the installation of tens of thousands of chargepoints across residential, workplace, and public settings.

However, the Institution has previously advised that measuring progress by charger counts alone is insufficient. Equity and effectiveness should also be assessed against:

- Charger reliability and maintenance: Faulty chargers have been suggested as a key issue for people in the UK, some areas reporting almost a third of chargepoints as broken.³⁶ This poor perception has a negative impact on willingness to adopt an EV, with differences in perceived reliability equating to a 32% price change in a US study.³⁷
- Power rating and suitability for larger vehicles and vans.
- Physical accessibility and compliance with accessibility standards.
- Pricing transparency and payment interoperability.

³⁴ Department for Transport. (2025). *Government confirms delivery of over 100,000 local EV chargepoints through LEVI funding*. <https://www.gov.uk/government/news/charging-into-the-future-government-set-to-deliver-over-100000-more-ev-chargepoints>

³⁵ Energy Saving Trust. (2025). *LEVI chargepoint funding awarded to local authorities (£185 million)*. <https://energysavingtrust.org.uk/local-electric-vehicle-chargepoint-funding-awarded/>

³⁶ The Eco Experts. (2024). *Why are so many electric vehicle chargers broken?* <https://www.theecoexperts.co.uk/news/broken-ev-chargers>

³⁷ Singh, R., Quinn, C., & MacKenzie, D. (2025). *Poor reliability of public charging stations can impede the growth of the electric vehicle market*. <https://www.sciencedirect.com.imeche.idm.oclc.org/science/article/abs/pii/S0967070X25002513>

The Local Electric Vehicle Infrastructure Fund Process Evaluation has identified persistent barriers at the local authority level, including procurement complexity, regulatory processes, limited internal capacity, and skills shortages. Addressing these constraints is essential to ensure funding translates into timely, high-quality infrastructure delivery.³⁸

Significant geographical disparities also remain with chargepoint roll out. Greater London has over 27,000 chargepoints installed, more than double the amount of any other region, with the Southeast the next closest at 11,136. Initiatives to more evenly distribute charger rollout could be beneficial to EV uptake.

(i) What lessons should be learned from other countries' successes or setbacks?

Our analysis of the international landscape has highlighted four principal lessons:

1. Policy stability is critical. Abrupt changes in incentives or taxation can rapidly undermine consumer confidence and delay purchasing decisions.^{39,40}
2. Infrastructure obligations can be clearly specified and enforced. The European Union's Alternative Fuels Infrastructure Regulation establishes minimum coverage and interoperability requirements, offering a contrasting approach to more market-led deployment models.⁴¹
3. Industrial strategy and trade policy matter. Major economies, including the EU and the United States, have adopted domestic content and battery sourcing requirements, most notably through the US Inflation Reduction Act. IMechE has cautioned that without aligned industrial and trade frameworks, the UK risks becoming less attractive for automotive and battery investment.
4. Strong, sustained fiscal incentives can shift markets rapidly. Governments may later need to rebalance as adoption matures: Norway's approach has combined purchase tax and VAT advantages with other user benefits, with recent moves to adjust incentives as the market becomes near-saturated (Norwegian EV Association; EAFO; international policy reporting).⁴²

³⁸ Zapmap. (2026). *EV charging Statistics 2026*. <https://www.zapmap.com/ev-stats/how-many-charging-points>

³⁹ IMechE (n 1).

⁴⁰ IMechE (n 2).

⁴¹ European Commission. *Alternative Fuels Infrastructure Regulation (AFIR)*. <https://eur-lex.europa.eu/eli/reg/2023/1804/oj>

⁴² Norwegian EV Association. (n.d.). *Norwegian EV policy*. <https://elbil.no/english/norwegian-ev-policy/>

These experiences underline the importance of integrating EV transition policy with broader strategies for manufacturing capability, skills development, and critical minerals supply.