

READY TO MOVE:

*A framework for
decarbonising UK HGVs*

About



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ACKNOWLEDGEMENTS

The authors would like to particularly thank Andy Eastlake, Aldersgate Group and REA members, and all external experts consulted in support of this publication. Their time and insight have been invaluable in developing the analysis and recommendations.

The authors would also like to thank colleagues at the Aldersgate Group and REA for their work and support during this project.

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Published October 2026.

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Summary

Road freight decarbonisation is now a major concern for businesses across the UK. As well as affecting corporate carbon targets, recent global conflict has thrown into relief the risks associated with our dependency on imported diesel. Moving freight off diesel can cut emissions, strengthen energy security and reduce businesses' exposure to volatile fossil fuel prices.

The Aldersgate Group and Renewable Energy Association worked with our members, other businesses and wider stakeholders to look systematically at what would help to drive faster decarbonisation of heavy goods vehicles (HGVs) across the economy. There was broad agreement that electrification should be central to the transition, and that supportive policy should be built with that in mind. However, significant practical and economic barriers mean that electrification of all HGVs on the road will be a slow process.

This report explores the themes raised in cross-industry discussions and proposes solutions spanning strategy, financing and regulation. Its overarching finding is that HGV decarbonisation is an energy problem, not a transport problem. Delivery will largely come down to electricity being available in the right place, at the right price and at the right quantity for use by HGVs, especially in the context of competing demand from other end users.

Clarity is also needed on the role that low carbon fuels, especially biomethane, are expected to play. They may be the only option for meeting short-term UK carbon budgets and corporate commitments while electric infrastructure is put in place.

Any HGV decarbonisation strategy therefore needs to be a joint effort between energy and transport departments, alongside finance, planning policy, local authorities and devolved governments. Regulatory interventions such as a zero-emission sales mandate could play an important role, but only as part of a wider strategy and in a way that reflects market conditions. The UK's practical and economic reliance on freight is such that adverse impacts must be avoided carefully. If taken forward in this way, industry participants are excited to be part of a transition which offers the UK economic and leadership opportunities.



RENAULT TRUCKS

Six key messages

- **Battery electric is the main route to zero-emission freight.** Electric HGVs are already viable for some operations. Wider adoption depends on vehicles and charging infrastructure that meet the needs of different routes, loads and business models.
- **Power availability and price are central to progress.** Slow or expensive grid connections, limited network capacity and high electricity costs can hold back investment even where suitable vehicles are available.
- **Grants alone will not close the financing gap.** Uncertain resale values and battery condition can increase borrowing costs and lease payments, particularly for smaller operators. A functioning second-hand market is essential to wider adoption.
- **Low carbon fuels have a limited near-term role.** Biomethane and other low carbon fuels can cut emissions from existing fleets while zero-emission infrastructure is built out. Their role is likely to narrow as sustainable fuel supplies face competing demands, but operators lack clarity on timescales and future policy direction.
- **Businesses need a coherent plan for investment.** The long-term phase-out trajectory provides direction, but regulation must evolve alongside vehicle availability, charging infrastructure and commercial viability.
- **Delivery requires coordination across government and industry.** Planning barriers, leased-depot arrangements, skills gaps and vehicle weight limits can delay otherwise viable projects. Addressing these barriers requires coordinated action across transport, energy, planning, finance and skills policy.



Recommendations

01 **Provide a clear and consistent policy framework for the transition**

- Establish clear cross-government ownership of freight decarbonisation, coordinating transport, energy, planning, land use, skills and industrial policy and integrating freight decarbonisation into wider transport, energy and industrial strategies.
- Maintain the long-term trajectory towards ending the sale of new non-zero-emission HGVs, supported by an interim regulatory framework, and publish an action plan for the transition.
- Develop an interim HGV emissions framework that can tighten as the market matures, combining a progressive zero-emission trajectory with effective control of CO₂ emissions from remaining non-zero-emission vehicles.
- Define a clear, time-limited role for low carbon fuels in road transport.

02 **Unlock investment and make the transition affordable**

- Support vehicle and power purchasing using targeted finance through the National Wealth Fund, British Business Bank and other mechanisms, including residual value guarantees, SME loan guarantees and appropriate financing models.
- Develop a battery state-of-health framework to support confidence in the second-hand market and reduce investment risk.
- Reduce overall electricity costs for HGV users.
- Help small and medium-sized enterprises (SMEs) in particular access competitive electricity prices, and broaden support for charging infrastructure and innovative business models. We recommend shared depots, public HGV charging hubs, power parks, storage and charging-as-a-service.

03 Plan and deliver the infrastructure required

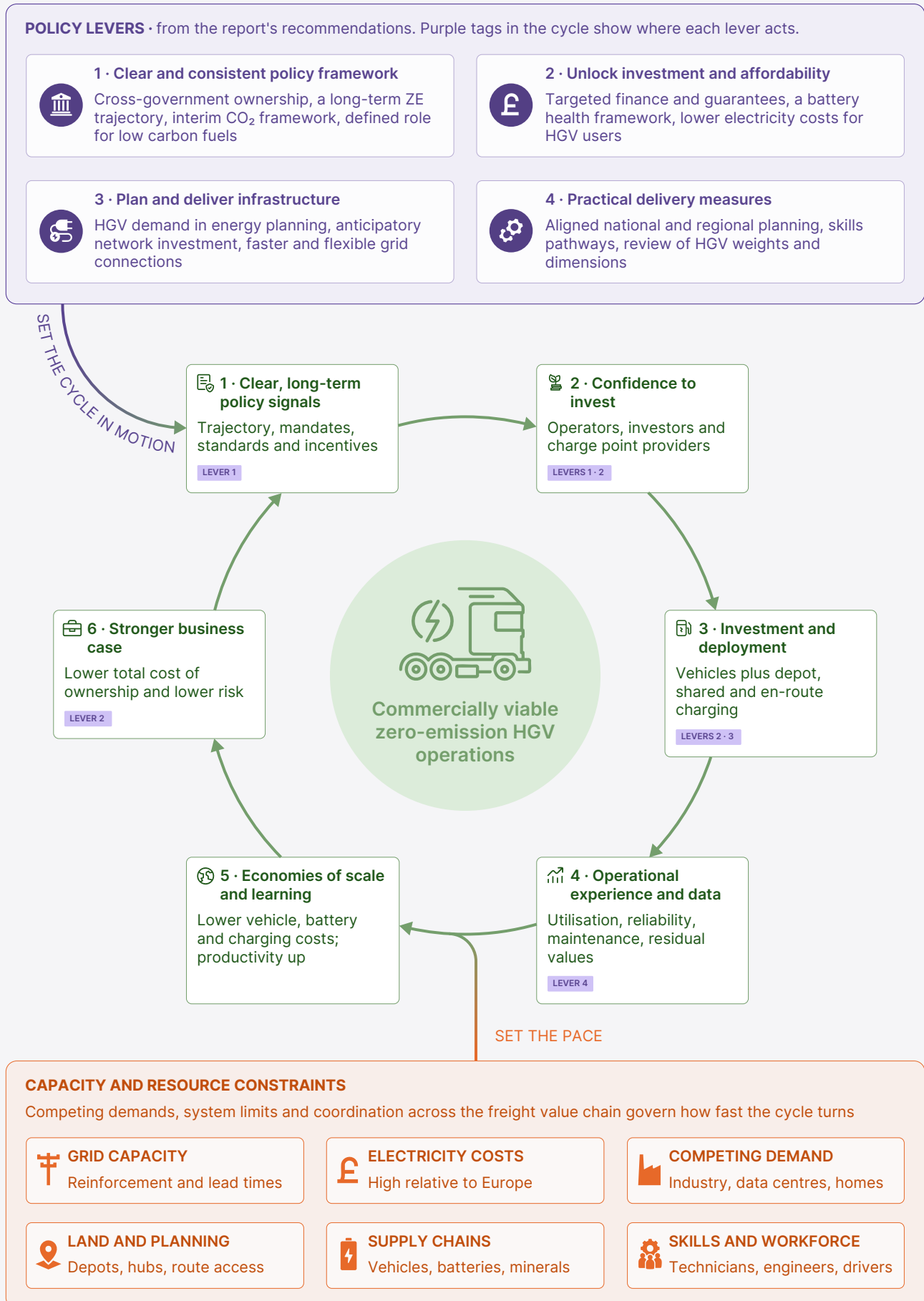
- Incorporate HGV electricity demand into strategic energy, network and spatial planning, supported by better data on the location, scale and timing of freight demand.
- Develop policy to enable anticipatory investment in electricity networks at freight hotspots, including logistics hubs, distribution centres and key freight corridors.
- Improve the transparency, accessibility and speed of grid connections, including through flexible connections, smart charging and greater use of independent network providers.
- Support battery energy storage where it can reduce connection costs, defer network reinforcement or provide flexibility, and facilitate on-site renewable generation and energy sharing.
- Clarify landlord and tenant responsibilities for depot charging, and address planning and property barriers to shared and future-ready infrastructure.

04 Implement practical measures to support delivery

- Align national and regional planning, land use, network capacity and investment signals, with clear delivery mechanisms and realistic expectations for local authorities and regional bodies.
- Develop long-term, industry-led training and career pathways for electric freight, including reskilling the existing workforce and building skills in vehicle maintenance, charging infrastructure, electrical engineering, software and depot energy management.
- Review HGV weights and dimensions to support zero-emission vehicles.

FIGURE 1

How policy builds momentum



CHAPTER 1



The system we need to move

Context

Road freight is essential to the UK economy, connecting manufacturers, warehouses, ports, retailers and customers. In 2025, GB-registered HGVs moved 1.53 billion tonnes of goods within the UK and travelled 19 billion kilometres.¹ Meanwhile, HGVs produced 18.4 MtCO₂e of greenhouse gas emissions in 2024: around 17% of domestic transport emissions.² In 2025, domestic transport accounted for 31% of total UK territorial greenhouse gas emissions, making it the UK's largest emitting sector.³

As the electricity system and passenger vehicles decarbonise, road freight will account for an increasing share of remaining transport emissions. Moving away from diesel combustion can also strengthen energy security, improve air quality by eliminating tailpipe pollutants, and support the competitiveness of the freight sector through the adoption of more efficient technologies and investment in low-carbon supply chains.

The scale of the transition is considerable. In June 2026, there were around 521,000 licensed HGVs in the UK, but only around 1,600 were zero-emission

vehicles, equivalent to 0.3%.⁴ The challenge is to create the conditions for a rapid and sustained increase in zero-emission HGV deployment, while ensuring that the freight sector can continue to provide a reliable and competitive service.

Commercial barriers

The commercial characteristics of the sector make this transition particularly complex. Road freight is highly fragmented, with many small and medium-sized businesses operating on tight margins and with limited capacity to absorb higher upfront costs or take on new risks. HGVs are working assets, often purchased outright and selected to meet specific routes, loads and customer contracts.

The commercial case for zero-emission vehicles therefore depends on factors such as mileage, payload, utilisation, charging costs and access, and the length and security of contracts. Technologies must be commercially viable as well as technically feasible if deployment is to grow rapidly and sustainably.

1. DfT, 2026. [Domestic road freight statistics, United Kingdom: 2025](#).

2. DfT, 2025. [Greenhouse gas emissions from transport in 2024](#).

3. DESNZ, 2026. [2025 UK greenhouse gas emissions: provisional figures - statistical release](#).

4. DfT, 2026. [Vehicle licensing statistics data tables](#).



GETTY IMAGES

Benefits of the transition

Delaying the transition would make the UK's climate targets harder to meet, prolong air pollution and exposure to volatile fossil-fuel prices, and risk higher future operating and compliance costs. It could also reduce opportunities in growing low-carbon markets and increase the likelihood of disruptive late policy intervention. Swift action would also accelerate gains for drivers, who report quieter, smoother operation, with automatic transmission as standard, improving both comfort and safety in the cab. Experience in the bus and coach sector points in a similar direction, with 78% of drivers reporting that they prefer electric vehicles to diesel.⁵ This could matter for a freight sector that needs to attract new entrants: 21% of HGV drivers are over 60 and only 4% are under 25.⁶

Technology and fuel choices

There has been substantial debate about which technologies will power the future HGV fleet. The evidence increasingly points towards battery electric (BEV) HGVs as the principal zero-emission technology for most road freight operations. The UK government has previously stated that, based on the trajectory of technology development and industry feedback, BEV HGVs are expected to be capable of meeting the needs of most use cases by the 2035 and 2040 phase-out dates.⁷ However, this does not mean that every HGV operation can be electrified immediately, or that other technologies are excluded.

5. Electric Drives, 2026. [UK survey finds bus and coach drivers strongly prefer electric over diesel.](#)

6. Logistics UK, 2026. [Employment and Skills Report 2026.](#)

7. DfT, 2023. [Infrastructure for zero emission heavy goods vehicles and coaches.](#)

Low carbon fuels can provide a useful transitional option while the zero-emission fleet and its infrastructure are being built, although their role is likely to become more constrained over time by availability and by competing demands for sustainable fuels. Hydrogen fuel-cell HGVs may also have a role in particular applications, although the scale of that role remains uncertain; based on current evidence, most operators seem unlikely to adopt hydrogen technologies in the UK.

It is vital that uncertainty about the precise technology mix does not prevent investment in infrastructure, market conditions and policy. Infrastructure such as grid connections and appropriately located charging facilities will take years to plan and deliver, while vehicles will continue to evolve. Planning therefore needs to accommodate technological development without waiting for every aspect of the future fleet to be settled.

There remain several technical challenges to overcome, particularly as BEVs need to carry large amounts of energy while maintaining payload, range and reliability. At the same time, zero-emission HGVs are already operating in the UK and internationally, and manufacturers are bringing increasing numbers of models to market. The priority is therefore to create the conditions in which available technologies can be deployed at scale, while continuing to learn where further innovation is required.

System challenges

The principal constraint on deployment of BEV HGVs is increasingly the ability of the wider system to support the vehicles (Figure 2). Infrastructure is developing more slowly than the vehicles themselves, particularly where operators require high-power connections at depots or reliable charging on longer journeys.

The electricity system presents a primary constraint. Securing a new grid connection can take many months and sometimes years. This is especially significant for HGV operators because charging requirements can be substantial. For example, depot-based charging for a large fleet of electric HGVs can require a grid connection of several megawatts or more, comparable to some large industrial sites. The availability and location of network capacity can therefore become a determining factor in an operator's decisions about whether and how to electrify, rather than simply an operational detail.

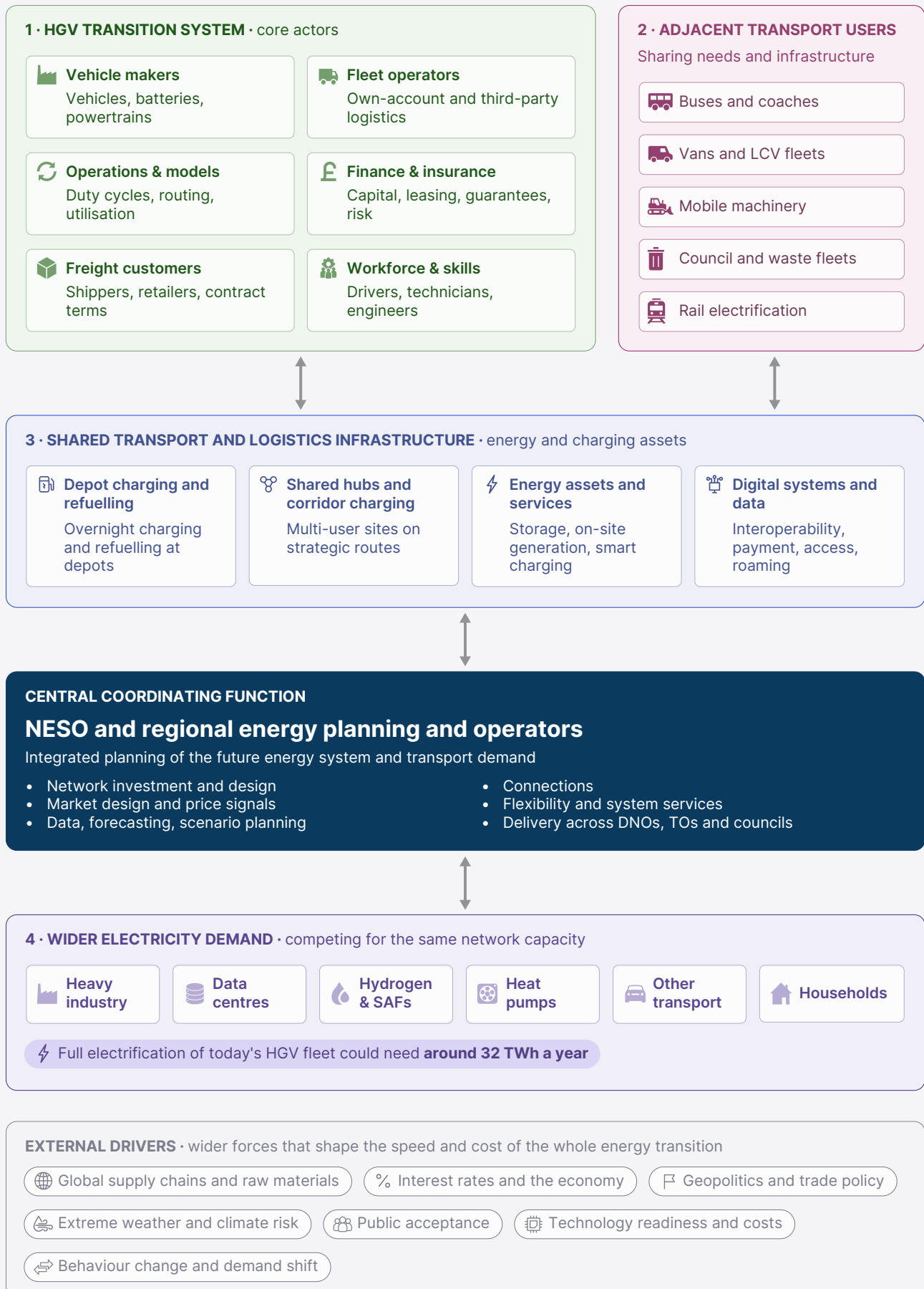
Electricity prices also affect the business case significantly. UK industrial and commercial electricity costs remain high relative to many European competitors, while operators may also face substantial upfront costs to secure or upgrade the grid connection needed for depot charging. This can make an electric HGV investment unattractive even where the vehicle itself has a competitive whole-life cost. For operators making investment decisions on tight margins, the economics of the vehicle, electricity and infrastructure therefore need to be considered together.

The scale of the energy requirement adds a further challenge for the overall system. Full electrification of the existing HGV fleet could ultimately require around 32 TWh of electricity each year – around 10% of current UK electricity consumption.⁸ HGV charging demand will compete for grid capacity with homes, industry, data centres and other forms of transport. Decisions about where and when new capacity is provided will affect the speed and cost of the freight transition, so the electricity system will need to anticipate where freight demand is likely to grow rather than simply responding to individual connection requests once they arrive. The National Energy System Operator (NESO), transmission and distribution network operators and emerging regional energy planning arrangements consequently have an important role to play in coordinating the transition.

8. Logistics UK (2025), [Exploring current and future energy demand from road freight](#).

FIGURE 2

The wider system



The policy landscape

Government has already put in place various measures to support the transition, although there is no overarching long-term regulatory framework for HGV electrification.

The Renewable Transport Fuel Obligation (RTFO) and fuel duty system influence the carbon intensity and relative cost of transport combustion fuels, but do not directly incentivise investment in zero-emission vehicles or infrastructure. Other measures target vehicle deployment, including the **additional weight allowance for zero-emission vehicles** to mitigate payload disadvantages.

The UK government is also providing **direct financial support**. In March 2026 it announced a package worth up to £1 billion for zero-emission trucks and vans and charging infrastructure. This includes a £170 million multi-year Depot Charging Scheme, under which the first 2026 application window provided funding covering up to 70% of eligible charging and civil costs, subject to a £1 million cap across sites.^{9,10} The Zero Emission HGV and Infrastructure Demonstrator programme is also providing important evidence about how zero-emission technologies operate in real-world freight applications.

Alongside these measures, the government is developing the next stage of the **regulatory framework**. In January 2026 it consulted on a new HGV CO₂ emissions regulatory framework, centred on options for a zero-emission HGV sales mandate and requirements to reduce average CO₂ emissions from new HGVs. A new framework will aim to provide a regulatory pathway towards the existing 2035 and 2040 phase-out commitments.¹¹

Other elements of the policy framework are also being developed, including the **Zero Emission HGV and Coach Infrastructure Strategy**; wider freight planning through a new **Freight Plan** intended to bring together the growth and

decarbonisation agendas for freight; and changes to the RTFO, including the future trajectory of renewable-fuel targets and support for advanced fuels.

While these measures signal the direction of travel, they have emerged on different timetables and do not yet form a coherent delivery plan. Operators need confidence in the availability and cost of charging before investing in vehicles, while infrastructure providers need confidence in future demand. Freight customers may be reluctant to absorb higher costs, and government must balance decarbonisation with the sector's tight margins.

Clearer long-term policy signals, competitive business models and mechanisms to share upfront costs and risks will be important to accelerate deployment, improve air quality and realise the productivity and competitiveness benefits of fleet modernisation.

Creating a positive demand cycle

Breaking this pattern requires aligned policy and mutually reinforcing investment decisions (Figure 1). Clear long-term policy signals can build confidence to invest, driving demand for vehicles and charging infrastructure and enabling manufacturers and providers to achieve economies of scale and reduce costs, strengthening the case for further investment. However, the pace of this cycle will depend on addressing practical constraints, including electricity costs and network capacity, competing demand for power, grid connection times, land availability, planning processes, supply-chain capacity, workforce skills and coordination across the freight value chain. Aligning decisions across these areas will help accelerate the transition and reduce its overall cost.

9. DfT, 2026. [£1 billion to cut costs for businesses, drive growth and clean up UK roads](#).

10. UK Gov, 2026. [Depot Charging Scheme](#).

11. DfT, 2026. [New HGV CO₂ emissions regulatory framework for the UK](#).

CHAPTER 2



A long-term vision and framework

For a freight operator, the decision to adopt a zero-emission powertrain is primarily commercial. A zero-emission HGV will be attractive when its total cost of ownership reliably competes with the incumbent technology and when it can provide an equivalent or better service. An operator also needs confidence that the vehicle will work across the required duty cycle: that it can carry the required payload, travel the required distance, be available for the required hours and be maintained without unacceptable disruption.

Finally, the necessary energy and infrastructure must be available. There is little value in an affordable electric HGV if an operator cannot obtain a sufficiently large grid connection, or if the charging infrastructure needed to operate it is not available.

Widespread investment therefore depends on five conditions being met:

- **Long term strategic policy:** clarity from government is needed about the expected end point and the trajectory for getting there.
- **Vehicle cost certainty:** the purchase price of the relevant vehicle class, for both new and used vehicles, needs to move sufficiently close to that of incumbent technologies to avoid a prohibitive upfront cost differential.
- **Infrastructure availability:** charging and refuelling infrastructure needs to be deployed ahead of demand rather than waiting for every operator to commit before investment begins.
- **Energy cost certainty:** the energy required to operate zero-emission vehicles must be available at a competitive and reasonably predictable cost.
- **Reliable access to energy:** operators need confidence that access to electricity or other fuels will not be constrained by grid capacity, wider infrastructure limitations or other factors outside their control.

The certainty gap

The strongest message from industry is that a clear long-term direction is a precondition for investment. The UK has already established a long-term direction through its proposed phase-out dates for new non-zero-emission HGVs: from 2035 for HGVs weighing up to and including 26 tonnes, and from 2040 for all new HGVs up to the current UK maximum of 44 tonnes, subject to the emerging regulatory framework and any defined exemptions. These specific dates sit in the context of the UK's overarching legal requirement to reduce emissions to net zero by 2050, for which total HGV

emissions will need to be close to zero. The priority now is to turn that direction into a comprehensive framework that businesses can plan against.

What can regulation achieve?

Regulation plays an important role because the market alone is unlikely to provide the level of coordination needed for a system-wide transition. Manufacturers will be reluctant to invest heavily in new products without confidence that there will be a market for them. Operators will be reluctant to buy vehicles if infrastructure is unavailable or if the resale value of the vehicle is uncertain. Infrastructure providers will be reluctant to invest ahead of demand if they cannot see sufficient future utilisation. A regulatory framework can help break this cycle by creating a predictable trajectory for emissions reductions and vehicle availability.

Lessons from VETS and the ZEV mandate

In considering a potential regulatory framework for decarbonising HGVs, it will be important to factor in the market differences compared with lighter vehicles. The government's existing Vehicle Emissions Trading Schemes (VETS) includes a zero-emission vehicle mandate for cars and vans, with annual manufacturer targets rising over time. The scheme also contains CO₂ reduction requirements for the non-zero-emission vehicles, together with trading and other flexibilities intended to give manufacturers different routes to compliance.

The experience of the car and van ZEV mandate illustrates both the potential and the limitations of this approach. The VETS regime combines annual zero-emission targets with a wider CO₂ emissions framework and provides manufacturers with flexibilities, including trading and borrowing mechanisms, to manage fluctuations in supply and demand. Meanwhile, the bus sector has no current mandates or regulations, but has shown that depot electrification works at scale, and that residual values, customer demand and contract duration shape who can participate.

The HGV market is sufficiently different that the government should not directly replicate the model used for lighter vehicles. However, the underlying principle is relevant: a future HGV framework should ensure that progress towards zero-emission sales is accompanied by effective control of the emissions performance of the vehicles that remain in the market.

HGVs are overwhelmingly commercial assets, purchased because they perform a specific economic function. Their suitability depends heavily on payload, range, utilisation, charging or refuelling requirements and the economics of the individual operation. There is also an important second-hand market. Larger operators often purchase new vehicles and subsequently sell them to smaller operators. This means that the economics and performance of a new HGV can affect several businesses over its lifetime. Smaller operators may also have less access to large depot charging facilities and may therefore depend more heavily on public charging infrastructure and second-hand vehicles with older technology.

Maintain the long-term phase-out trajectory, but avoid premature lock-in

The government should retain clear, credible phase-out dates for new non-zero-emission HGVs, providing a long-term signal to manufacturers, infrastructure providers and operators planning vehicle replacement cycles. To strengthen this signal, the government could consider introducing a conventional zero-emission sales mandate, requiring manufacturers to meet annual sales targets. However, introducing one too early risks outpacing market readiness. The zero-emission HGV market remains immature, with vehicle availability and capability not yet matching the full diversity of HGV duty cycles.

A rigid mandate could place pressure on manufacturers to meet targets without sufficient customer demand, with compliance costs potentially passed through the value chain. Equally, once vehicles become commercially competitive and demand grows, a mandate may add limited value. The car and van ZEV mandate illustrates how annual targets can be supported by

flexibilities such as trading and borrowing, although these arrangements have also been subject to adjustment.

Consideration will also need to be given to the wide range of HGV weight classes and vehicle types, the markets for which mature at different rates. The government should therefore retain the long-term phase-out dates while developing an interim regulatory framework that can tighten progressively in line with improvements in vehicle capability, infrastructure and commercial viability.

Build the future regulatory framework around emissions, not simply vehicle type

The future HGV regulatory framework should regulate the emissions outcome as well as the deployment of zero-emission vehicles. A zero-emission sales requirement can provide an important signal, but on its own it may leave manufacturers able to meet the requirement while continuing to sell relatively high-emitting non-zero-emission vehicles. The government should therefore consider how a CO₂-based element could operate alongside any future zero-emission sales mandate, providing a backstop on the emissions performance of the remaining non-zero-emission market and allowing appropriate compliance flexibilities.

This bridging framework should also consider whether lifecycle greenhouse gas emissions can be incorporated as the methodology and data become sufficiently robust. The use of vehicle-level CO₂ data and VECTO¹² provides a potential basis for differentiating the emissions performance of different vehicle and technology choices. Any approach should avoid creating unintended incentives for fuels or technologies that deliver limited real-world emissions savings, while allowing lower-carbon options to contribute where they are appropriate and deliver emissions reductions.

Give low carbon fuels a defined transitional role

The transition to zero-emission HGVs still has a long way to go. Even at the phase-out dates for the sale of new internal combustion engine (ICE) vehicles, those already on the road could have a substantial lifespan left in operation. This means that hitting emissions targets will depend on the use of alternative fuels in at least a proportion of that residual fleet. Low carbon fuels can provide an important transitional route for reducing emissions from the existing fleet and from applications where zero-emission vehicles are not yet commercially or operationally viable. However, government's expectations for the role that they will play are insufficiently clear to support widespread adoption.

The Renewable Transport Fuel Obligation (RTFO) currently requires suppliers of transport fuel to supply a minimum proportion of sustainable low carbon fuel, and the government's 2025 statutory review concluded that the scheme continues to deliver significant greenhouse gas savings across surface transport. The review also identified the need for further consultation on the future trajectory of the scheme and on the fuels it should support.

Government should use the next stage of RTFO reform, now scheduled for 2027, to provide an explicit, date-specific signal about the role that low carbon fuels are expected to play in road freight. This should include clarity about:

- how long low carbon fuels are expected to contribute to road freight decarbonisation;
- which fuels and feedstocks should be prioritised, taking account of their lifecycle emissions and competing uses;
- how support should evolve as zero-emission vehicles become more widely available; and
- how the RTFO will interact with the wider HGV emissions framework.

12. VECTO stands for Vehicle Energy Consumption Calculation Tool. It is a simulation tool developed by the European Commission to calculate the CO₂ emissions and fuel consumption of HGVs, including trucks, buses, and certain trailer categories. Its purpose is to provide a standardised method for assessing the environmental performance of heavy-duty vehicles and to support EU CO₂ reduction targets.

Freight needs a cross-government focus

Within industrial and energy policymaking, HGVs and logistics are often treated as a subset of other sectoral plans rather than as a strategic system. Decisions taken elsewhere in government can therefore have significant implications for the ability of the freight sector to decarbonise. Sector transition plans, with retail being a clear example, can have substantial logistics implications that risk being overlooked, while freight has also been under-considered in both the planning system and strategic energy planning.

Responsibilities are spread across several government departments. Electricity costs, for example, sit principally with Department for Energy Security and Net Zero (DESNZ) and HM Treasury, while freight policy sits with the Department for Transport (DfT). Planning is the responsibility

of MHCLG. Freight was largely absent from the strategic electricity demand process led by NESO; stakeholders felt that this had been dominated by the requirements of other forms of electricity demand, particularly data centres.

This fragmentation makes it harder to address issues that cut across departmental boundaries. HGV decarbonisation requires decisions about transport, energy, planning, land, skills and industrial policy to work together, with an understanding of how changes in one area affect delivery in another. A cross-government approach to freight decarbonisation needs to be established, with coordination of the relevant departments ensuring that the infrastructure, planning, energy and skills implications are incorporated into wider government strategies and investment decisions.



Recommendations

1. Strengthen cross-government ownership of freight decarbonisation

Government should build on the Freight Energy Forum to strengthen cross-government ownership of freight decarbonisation, with responsibility for coordinating policy across transport, energy, planning, land, skills and industrial policy. This should ensure freight requirements are reflected in wider government strategies and investment decisions, oversee dependencies across infrastructure and workforce development, and monitor delivery risks arising from decisions taken across government.¹³

Lead actors: *DfT, working with Cabinet Office, DESNZ, HM Treasury, MHCLG, BIST and the devolved governments.*

2. Maintain the long-term HGV phase-out trajectory

Government should maintain the established direction towards ending the sale of new non-zero-emission HGVs, providing clear arrangements for any genuinely necessary exemptions. This should provide a stable foundation for investment across vehicle manufacturing, infrastructure and freight operations.

Lead actor: *Department for Transport, working with industry and the devolved governments.*

3. Publish a long-term HGV transition roadmap

Government should bring the regulatory framework, infrastructure strategy, energy planning and freight policy together in a single published action plan. This should set out the expected sequence of decisions and milestones through to the phase-out dates, and be updated periodically as evidence on technology, costs and infrastructure develops.

Lead actor: *Department for Transport, working across government and with NESO, network companies and industry.*

4. Develop an interim regulatory framework that can tighten as the market matures while delivering CO₂ reductions in the near term

Government should retain the long-term phase-out dates while developing an interim framework that can strengthen progressively in line with improvements in vehicle capability, infrastructure availability and

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13. UK Gov. [Freight Energy Forum terms of reference](#).

commercial viability. It should establish clear conditions for introducing or tightening a zero-emission sales or adoption mandate, taking account of vehicle availability across different duty cycles, charging infrastructure and total cost of ownership.

In addition, the government should set out how any future zero-emission HGV sales or adoption mandate would interact with a CO₂-based regulatory framework for new HGVs. This should provide a backstop on the emissions performance of the remaining non-zero-emission market, while allowing appropriate compliance flexibilities and avoiding premature technology lock-in. Government should also assess whether lifecycle greenhouse gas emissions can be incorporated as methodologies and data become sufficiently robust, including using VECTO and other available emissions data. The framework should be designed to ensure that the overall regulatory system delivers genuine and sustained reductions in HGV greenhouse gas emissions.

Lead actor: *Department for Transport.*

5. Give low carbon fuels a clear and time-limited role in the transition

Government should use the next stage of developing the Renewable Transport Fuel Obligation (RTFO) to provide a clear, dated signal on the role of low carbon fuels in road freight. This should specify which fuels and feedstocks will be supported, how support will evolve as zero-emission vehicles become more widely available, and how the RTFO will interact with the wider HGV emissions framework. The RTFO should not lapse for road transport without a clearly defined successor framework.

Lead actor: *Department for Transport.*



CHAPTER 3



Making the commercial case investable

BEV HGVs can offer lower lifetime energy and maintenance costs, but their commercial case also depends on vehicle and charging-infrastructure costs, future asset values, and the availability and price of electricity.

These challenges are particularly significant for the small and medium-sized businesses that make up most of the road freight sector. Many have limited access to capital and rely on external finance to renew their fleets. If the risks associated with new technology are reflected in higher lease rates or borrowing costs, the transition can become more expensive precisely for those businesses least able to absorb the additional cost.

The financing gap

Commercial vehicle investment is usually made with a clear expectation of the asset's value over its lifetime. For established diesel HGVs, lenders and leasing companies have decades of market information on vehicle reliability, depreciation, maintenance costs and second-hand values. The market for zero-emission HGVs is much less mature.

A financier considering a five-year lease on an electric HGV must make judgements about the value of an asset several years into the future. That

value will depend on factors including how quickly battery technology and truck design develop; how much the battery has degraded during the first owner's use; the availability and cost of replacement batteries; the vehicle's remaining range and performance; the development of charging infrastructure; the future regulatory environment; and the strength of the second-hand market.

For a lender or leasing company, uncertainty about an electric HGV's future value carries a cost: it may lead to a higher interest rate, larger deposit or higher lease payment, even if the vehicle retains its value.

This creates an important distinction between the capital cost of a vehicle and the cost of capital used to finance it. The purchase price of an electric HGV may fall as manufacturing scales and technology improves, but if financiers continue to attach a substantial risk premium to the asset, operators may still face an unattractive monthly payment.

Why the impact is greatest for smaller operators

The financing challenge is not distributed evenly across the freight sector. Large logistics businesses

are more likely to have stronger balance sheets, established relationships with lenders and the ability to finance some investment internally. They may also be able to spread the risks of early deployment across larger fleets and multiple operating sites.

Smaller operators have fewer options. Many depend on external vehicle finance and operate on narrow margins. They may have less ability to absorb an unexpected increase in monthly finance costs, invest in charging infrastructure before it is fully utilised, or take a risk on an asset whose future value is uncertain.

The second-hand market is an important part of the HGV system. Larger operators frequently purchase new vehicles and later sell them into the used market. A healthy second-hand market for zero-emission HGVs will therefore be important not only for residual values, but for the eventual ability of smaller operators to participate in the transition.

Other factors also influence the cost and risk of investment.

Battery condition and asset information

The condition of a battery is a major determinant of the value and usefulness of a used electric HGV. However, the market has yet to adopt a universal standard for communicating battery health in a form that gives purchasers and financiers the same confidence they have in established vehicle information.

Standardised battery state-of-health information could help address this. State of health is a measure of how much of a battery's original ability to store and deliver energy remains. Reliable, independently verifiable information would allow second-hand buyers, lenders and leasing companies to distinguish between vehicles with different remaining battery performance. Over time, this should make residual values easier to assess and reduce the risk premium attached to financing them.

Electricity procurement

The operating-cost advantage of an electric HGV depends partly on the price at which the operator can obtain electricity. The price of electricity in the UK is causing challenges for all kinds of end users, and is a strong disincentive to investing in electrified technology. This substantially impacts on total cost of ownership calculations for haulage companies contemplating investment into BEVs.

Large fleets may have sufficient demand to negotiate competitive electricity contracts or manage charging to take advantage of lower-cost periods. Smaller operators may have less bargaining power and fewer options.

This means that the headline difference between diesel and electricity prices does not necessarily translate directly into the savings available to every operator. As the electricity market evolves, there may be opportunities to aggregate demand from smaller operators so that they can access some of the benefits of larger-scale electricity procurement.

Charging infrastructure

Electrification also requires investment beyond the vehicle itself. A depot may need new grid capacity, transformers, cabling, chargers and associated civil works. These costs can arise before the first electric HGV enters service and may therefore need to be financed alongside the vehicle. This creates a difficult investment sequence: operators need confidence that the infrastructure will be used before committing capital to it, while infrastructure needs to be available before operators can confidently commit to electric vehicles.

The financing framework needs to recognise these assets as part of the same transition rather than treating the vehicle and infrastructure as entirely separate investments. For instance, asset owners could in future be able to generate revenue from flexibility and bi-directional charging opportunities, subject to operational requirements.

Financing models

Traditional vehicle finance products were developed around established diesel assets with predictable residual values and operating characteristics. There is scope for the market to develop products better suited to zero-emission HGVs, including arrangements that spread risk between manufacturers, financiers, energy providers and operators. Other sectors, such as buses, are already developing innovative financing models of this type.

Potential approaches include leasing models linked to vehicle utilisation or mileage; battery performance guarantees; finance packages combining vehicles and charging infrastructure; standardised battery health certification; and aggregated energy procurement for smaller operators. These approaches should not replace conventional finance where that remains appropriate.

The role for government

Capital grants have so far been the UK's main intervention in support of BEV HGV roll-out, but they do not directly address the financing market failure. A purchase grant lowers the initial vehicle cost without necessarily reducing uncertainty about future value or giving lenders confidence to finance comparable assets across the market.

A more targeted approach would use public finance to reduce specific risks that the private market is currently poorly placed to price. This is where the UK's public financial institutions have a potential role. The National Wealth Fund has a mandate to support investment in areas of economic importance and to mobilise private capital, while the British Business Bank works to improve finance options for smaller businesses. Their respective roles mean that a carefully designed intervention could potentially address the financing barriers faced by HGV operators without creating a permanent subsidy for vehicle purchases.

The objective should be to establish a market in which private finance can increasingly take over as

evidence of vehicle performance, residual values and second-hand demand accumulates.

In addition, the government should take urgent action to push down the cost of electricity for HGV charging, either through addressing overall costs or through a targeted discount of some kind.

A targeted financing programme

Government should explore a targeted financing programme through the National Wealth Fund and British Business Bank to reduce the financing barriers facing operators adopting zero-emission HGVs. The programme should focus on three complementary areas.

1. Residual value support

The government could provide a partial guarantee against the future residual value of qualifying zero-emission HGVs. Under such a model, a public institution would guarantee an agreed proportion of the vehicle's value at the end of a defined financing period. If the vehicle subsequently retains its expected value, the guarantee would not be called. If its value falls materially below the agreed level, the public guarantee would absorb some of the difference.

This would reduce the risk faced by leasing companies and lenders and therefore enable them to offer more competitive finance. The advantage of this approach is that public support would be targeted at the market failure rather than automatically reducing the price of every vehicle purchased. It could also help create a functioning second-hand market. Greater confidence in residual values should encourage leasing companies to finance vehicles in the first place, increasing the number entering the used market and generating more real-world information about their performance and value.

Any such scheme would require careful design to avoid creating moral hazard or guaranteeing values that do not reflect genuine market conditions. Guarantees should therefore be partial, time-

limited and subject to clear eligibility criteria.

2. Loan guarantees for fleet renewal and infrastructure

The British Business Bank could provide targeted guarantees to commercial lenders financing qualifying zero-emission HGVs and associated charging infrastructure for smaller operators. A guarantee would reduce the amount of risk retained by the lender. This should improve access to finance for smaller operators; reduce borrowing costs; increase the number of lenders willing to offer finance; enable operators to finance charging infrastructure alongside vehicles; and mobilise private capital rather than replacing it with public funding.

The scheme should be designed to foster genuine additionality: public guarantees should be used where the market would otherwise provide insufficient or excessively expensive finance, rather than subsidising investment that would have happened anyway.

3. Develop the infrastructure and market architecture for new financing models

Public financial institutions should also work with industry to support the development of financing models that reflect the economics of zero-emission HGVs. This could include:

- **Per-mile or usage-based finance.**
Where an operator's revenues are closely linked to vehicle utilisation, finance linked to mileage or usage could reduce the importance of the upfront purchase price and align payments more closely with the vehicle's ability to generate revenue.
- **Battery performance warranties.**
Manufacturers and finance providers could offer clearer guarantees around battery performance over the financing period, reducing uncertainty about the asset's future value.

- **Standardised battery state-of-health certification.**

Government and industry should work towards a consistent method for independently assessing and reporting battery condition, giving second-hand purchasers and financiers better information.

- **Aggregated energy procurement.**

Smaller operators could potentially combine their electricity demand to secure more competitive contracts than they could achieve individually.

These are not all areas for direct government intervention. In many cases, government's role should be to establish standards, convene market participants or provide limited financial support while private-sector products develop.

An international example

Australia provides a useful example of how public finance can be used to address the cost of capital rather than simply subsidising vehicle purchases. The Clean Energy Finance Corporation (CEFC) has worked with industry to develop finance for electric HGVs, including a financing package with Volvo involving approximately A\$70 million. The package combined finance for electric HGVs with support for associated charging infrastructure and mechanisms intended to address the risks associated with emerging technology.¹⁴

The UK and Australian institutional and market contexts are different, but it is nonetheless a helpful example of how public finance can be used to reduce risk and mobilise private capital, rather than government having to bear the full cost of vehicle deployment. For the UK, a similar principle could be applied through the National Wealth Fund and British Business Bank, with the design tailored to the structure of the domestic freight market and the needs of smaller operators.

14. CEFC, 2025. [Case Study: Volvo backs switch to battery electric trucks](#).

Recommendations

1. Establish a targeted HGV financing programme through the National Wealth Fund and British Business Bank

Government should establish a time-limited programme to address financing barriers for zero-emission HGVs, with particular emphasis on SMEs. The programme should mobilise private capital rather than substitute for it, and be reviewed as the market matures.

Lead actors: *HM Treasury, National Wealth Fund and British Business Bank, working with the Department for Transport.*

2. Develop a residual value guarantee for qualifying zero-emission HGVs

Government should explore a partial, time-limited residual value guarantee to reduce the risk faced by lenders and leasing companies financing zero-emission HGVs. Support should be targeted at vehicle types and applications where uncertainty over future value is demonstrably restricting access to finance.

Lead actors: *National Wealth Fund and British Business Bank.*

3. Introduce targeted loan guarantees for SME fleet renewal and charging infrastructure

The British Business Bank should develop a guarantee product for lenders financing zero-emission HGVs and associated depot infrastructure for smaller operators, where technology risk makes finance unavailable or materially more expensive. Guarantees should address gaps in the market and mobilise additional private investment.

Lead actor: *British Business Bank.*

4. Establish a standardised battery state-of-health framework

Government should work with manufacturers, leasing companies, insurers, finance providers and independent technical organisations to establish a consistent methodology for assessing and reporting the condition of batteries in used electric HGVs. This would give lenders and second-hand purchasers more reliable information and help reduce uncertainty around residual values.

Lead actors: *Department for Transport and industry, with relevant standards and technical bodies.*

5. Encourage financing models that reflect the economics of zero-emission HGVs

Government-backed financial institutions should work with the private sector to develop and test financing models suited to zero-emission HGVs. These could include usage-based finance, battery performance guarantees, and packages combining vehicles with charging infrastructure, helping to share risk and reduce upfront costs.

Lead actors: *British Business Bank, National Wealth Fund and private finance providers.*

6. Help smaller operators access competitive electricity procurement

Government and industry should explore mechanisms that allow smaller freight operators to aggregate electricity demand and access more competitive supply arrangements, extending the operational cost benefits of electrification beyond the largest fleets.

Lead actors: *Department for Energy Security and Net Zero, Ofgem, industry and energy suppliers.*

7. Reduce the cost of electricity for HGV charging

The government should take urgent action to push down the cost of electricity, either for all UK end users or specifically for HGV users.

Lead actors: *Department for Energy Security and Net Zero.*



CHAPTER 4



Grid and charging infrastructure delivery

Connection costs and network capacity

Grid connections and network capacity, and associated costs and lead times, are consistently identified as the single biggest barrier to scaling up electric HGVs, particularly for smaller operators and those seeking to electrify depots in areas with limited existing network capacity.

The government's Depot Charging Scheme has been welcomed by industry, but the funding available for on-site charging equipment does not necessarily address the most significant cost of electrification. For many projects, the grid connection and associated network charges are substantially more expensive than the charging equipment itself. This creates a postcode lottery, in which operators with existing access to sufficient network capacity are better placed to secure funding and progress projects than those facing costly or lengthy connection upgrades. The experience of the Rapid Charge Fund illustrates the difficulty of supporting projects where the scale and cost of the required grid connections are prohibitive.

Network charging arrangements can also discourage operators from planning for future demand. Ofgem's shift towards capacity-based

rather than usage-based network charging means that operators can incur significant costs for securing capacity that they may not immediately use. This can penalise businesses that want to future-proof their depots by installing sufficient electrical capacity for the eventual electrification of their entire fleet, even where that capacity will be taken up gradually. Operators must therefore choose between paying for capacity well in advance of demand or risking costly and time-consuming upgrades as their fleets expand.

Role of battery storage

Battery energy storage systems (BESS) offer an increasingly practical solution. By combining batteries with smaller grid connections, charging sites could secure electricity capacity more quickly and at lower cost, while using stored energy to meet periods of peak demand. Batteries can be charged when electricity is cheaper or from on-site renewable generation, reducing exposure to high electricity prices and peak network charges. Although batteries add capital costs, these can be outweighed by savings from avoiding or reducing the scale of grid reinforcement and connections, alongside shorter project lead times.

Battery storage can also provide wider benefits to the electricity system. Batteries can participate in demand-side response (DSR) and grid-balancing services, either independently or as part of an aggregated portfolio, creating additional revenue streams for operators. Some battery solutions are also modular and mobile, allowing assets to be relocated if a tenant moves premises. This can reduce the risk of stranded investment where operators do not own the depot or have limited certainty over the duration of their leases.

Government support for battery storage at HGV charging sites could therefore offer a cost-effective means of accelerating deployment. Extending grant support to cover a proportion of the cost of battery storage, alongside charging equipment, could help operators reduce connection requirements, overcome network constraints and bring projects forward. Support should be designed to recognise the potential system-wide benefits of batteries, including avoided network reinforcement and the provision of flexibility services.

Strategic and spatial energy planning

As Chapter 1 set out, the scale and location of electricity demand from HGVs make strategic planning essential. Freight demand is geographically dispersed across a large number of depots, distribution centres, logistics parks and other sites, making it difficult to coordinate investment through individual connection applications. The scale and concentration of demand from other sectors, particularly data centres, also creates competition for available network capacity. Stakeholders have expressed concern that the government's recent strategic demand consultation¹⁵ was effectively oriented towards the needs of data centres, with insufficient consideration of freight and logistics.

HGV electricity demand needs to be explicitly incorporated into Regional Energy Strategic Plans (RESPs) and the wider strategic demand-planning process. This will require better information about the location, scale and timing of future electricity demand from the freight sector. Fleet operators, logistics companies, landlords and charging providers will need to work together to provide robust forecasts to the National Energy System Operator (NESO) and distribution network operators (DNOs), helping them anticipate where additional capacity will be required as fleets electrify.

Strategic planning should enable networks to invest ahead of need at known freight hotspots and logistics nodes, rather than relying solely on individual operators to trigger investment through connection applications. This could include major distribution centres, logistics parks, freight corridors and strategic road network locations where demand for high-powered charging is likely to be concentrated. Anticipatory investment would allow network upgrades to be coordinated with the expected development of freight infrastructure, reducing connection delays and avoiding repeated or piecemeal reinforcement.

Regional and spatial energy planning also needs to be closely integrated with transport, land use and industrial planning. Local authorities, regional planning bodies, network operators and the freight industry should share information about future logistics development and charging requirements, allowing electricity infrastructure to be incorporated into decisions about land allocation, site development and transport networks. This would help ensure that future freight demand is reflected in network investment decisions before capacity constraints become a barrier to deployment.

15. DESNZ, 2026. [Accelerating electricity network connections for strategic demand](#).

Charging models and business model flexibility

The electrification of HGVs creates opportunities to rethink where, when and how freight vehicles are fuelled, and how charging infrastructure is financed and operated. While the government's current support has focused primarily on depot charging, a range of complementary models could improve infrastructure utilisation, reduce costs and provide operators with greater flexibility.

Depot sharing has considerable potential to expand the availability of dependable charging infrastructure. Many depots are located close to key logistics routes and the strategic road network, making them potentially accessible to other operators outside their own fleet's operating hours. Shared depots could provide bookable, reliable charging for vehicles undertaking longer journeys, increasing their operating range while reducing reliance on dedicated public charging infrastructure. Sharing is also a relatively familiar concept for some fleet managers, particularly smaller hauliers who already operate fuel facilities and sell diesel to third-party operators.

Dedicated public and semi-public charging infrastructure for HGVs is beginning to emerge, with 66 operational sites and a further 75 planned across the UK as at October 2026, according to TwentyForty's HGV Charging Map.¹⁶ However, this remains well short of the scale needed to provide widespread confidence to operators. Shared depots, alongside dedicated public charging hubs and other charging models, could help bridge this gap while the wider network is developed.

There is potential to develop shared power parks and multi-use charging infrastructure, where HGVs, trailers, catering facilities and other logistics operations can draw on common electricity infrastructure. Such models could improve utilisation, spread capital costs across multiple users and support the development of larger charging facilities at strategic locations.

Charging-as-a-service models, in which third-party providers fund and operate infrastructure in return for charging fees or service contracts, could also reduce the upfront investment and technical responsibilities faced by fleet operators.

As businesses gain experience of operating electric fleets, effective energy management will become increasingly important. HGV depots can be substantial electricity consumers, so improving utilisation of charging infrastructure will be important to increasing returns on investment and reducing payback periods. This could encourage operators to make greater use of shared charging, optimise charging schedules and explore opportunities to sell flexibility services.

Smart energy management can also reduce the scale of grid connections required. Battery storage, smart charging and the use of vehicle batteries to provide demand-side response and grid-balancing services can help manage peak demand, avoid or defer network reinforcement and generate additional revenue. Combining these approaches with on-site generation and flexible connections can improve the economics of charging infrastructure while making more efficient use of available network capacity.

Flexible connections, under which operators receive access to electricity capacity in return for accepting potential curtailment at times of network constraint, could provide a faster and cheaper route to deployment. However, operators may struggle to understand the financial implications of curtailment, particularly where the frequency, duration and timing of restrictions are uncertain. Without sufficiently transparent information about the likelihood of curtailment, businesses cannot accurately price the associated operational risks or determine whether flexible connections offer a viable alternative to firm capacity.

Government support should therefore recognise the diversity of charging models and encourage investment in infrastructure that can serve multiple operators and uses. Funding arrangements should

16. twentyForty, 2026. <https://twentyforty.uk/tools/charging-map>.

provide sufficient flexibility to support shared hubs, power parks, charging-as-a-service and other innovative models, alongside dedicated depot charging. Support should also reflect the time required to develop new infrastructure projects. Stakeholders reported that application windows under the Depot Charging Scheme have been too short for some projects to complete the necessary planning, commercial and grid-connection work, making it easier for projects already in development to secure funding than for new schemes to emerge. Longer and more predictable funding windows would give businesses greater confidence to develop projects and coordinate investment.

Property and depot infrastructure

The structure of the logistics property market has significant implications for the deployment of charging infrastructure. Many HGV operators lease their depots, often under full-repairing-and-insuring arrangements, which can create uncertainty about who should fund, install and maintain charging infrastructure. The tenant may require charging facilities to electrify its fleet, while the landlord owns the property and may need to approve major electrical upgrades and physical works. Where responsibility for investment and the benefits it generates are not clearly aligned, projects can be delayed or abandoned.

The issue is particularly acute where substantial investment is required in the underlying electrical infrastructure, such as grid connections, substations and site-wide cabling. These improvements may have a long life and benefit future occupiers, while the tenant requiring the infrastructure may have limited certainty over how long they will remain at the site.

Greater clarity over the respective responsibilities of landlords and tenants would help address these barriers. Model lease provisions, clearer expectations around landlord consent and agreed approaches to the ownership and maintenance of charging infrastructure could make it easier for both parties to negotiate investment

arrangements. Flexible and transferable charging solutions, including modular battery storage, may also help tenants manage the risks associated with investing in leased premises.

Landlords and property developers play an important role in anticipating future charging demand, particularly at logistics parks and multi-occupier sites. Providing sufficient electrical capacity, reserving space for charging infrastructure and enabling shared energy solutions during site development or refurbishment can reduce the cost and complexity of subsequent electrification. However, without stronger demand signals from tenants and clearer expectations about future infrastructure requirements, there may be limited commercial incentive for property owners to invest ahead of need.

Government should consider how planning policy, funding and commercial property guidance can encourage the provision of future-ready electricity infrastructure at logistics sites. This should include support for shared charging facilities and greater coordination between landlords, tenants, developers and network operators, ensuring that infrastructure investment reflects the long-term needs of the freight sector.

The role of network operators

Distribution network operators (DNOs) will be key enablers of electric HGV charging. Their decisions on network capacity, connection costs, investment priorities and delivery timescales will directly affect the pace and cost of fleet electrification. Three areas of action could help them better support the transition.

1. DNOs should publish clear, accessible information on network capacity, connection costs, delivery timescales and likely curtailment. More detailed data on the expected frequency, duration and timing of curtailment would help operators assess the commercial risks of flexible connections and determine whether these offer a viable alternative to firm capacity.

2. DNOs should plan proactively with freight and logistics stakeholders to anticipate future demand. Working with fleet operators, property owners, local authorities and transport bodies to identify clusters of depots, distribution centres, truck stops and other freight locations would strengthen demand forecasts and help coordinate network upgrades with local planning and regional decarbonisation strategies. Where sites face shared capacity constraints, DNOs should consider coordinated solutions and anticipatory investment rather than relying solely on individual connection applications.
3. DNOs should make the connections process more accessible and support a wider range of delivery models. Clear guidance, named points of contact and proportionate technical requirements would help smaller operators navigate the process. DNOs should also facilitate flexible connections, demand management and smart charging where these can bring projects forward, while ensuring that technical standards and approval processes allow independent connection providers (ICPs) to compete effectively. Independent distribution network operators (IDNOs) can offer alternative approaches to network ownership and operation, particularly for larger depots, shared charging hubs and multi-site developments. Early consideration of these options, supported by effective cooperation between DNOs, ICPs and IDNOs, could improve commercial choice and reduce avoidable delays.

On-site generation and behind-the-meter solutions

On-site renewable generation and behind-the-meter energy solutions offer further opportunities to reduce the cost and complexity of electrifying HGV depots. Solar generation, battery storage and local energy networks can be combined to create microgrids or energy islands that reduce reliance on electricity imported from the wider network. By generating and using electricity on-site, operators can reduce the scale of grid connections required, manage peak demand and potentially lower their exposure to commercial electricity prices. At larger logistics parks, energy sharing between different businesses and facilities could improve the utilisation of local generation and storage, allowing electricity to be used more efficiently across multiple sites. This could also create opportunities for shared investment in generation, storage and electrical infrastructure, spreading costs and benefits across a wider group of users. It has recently been noted by the UK Warehousing Association that only 5% of UK warehouses currently have solar installations; so, although not all buildings will be suited to solar, there is still potential for a substantial increase.¹⁷

The deployment of these solutions can, however, involve planning and regulatory barriers, particularly where substantial new generation or storage infrastructure is required or where electricity is to be shared between separate businesses. Government should consider whether permitted development rights or other changes to planning processes could facilitate appropriate on-site renewable generation and battery storage at logistics sites, while maintaining relevant planning and environmental safeguards. It should also explore regulatory and commercial arrangements that enable energy sharing across logistics parks and support the development of local energy networks.

17. Freight Council, 2026. [Minutes of meeting 12 February 2026](#).

Recommendations

1. Support battery storage to reduce connection costs and delays

Government should extend financial support for depot charging to include battery energy storage systems where these can reduce grid connection costs, accelerate deployment or provide wider flexibility benefits.

Funding should recognise the potential for batteries to defer network reinforcement, reduce peak demand and generate revenue through grid-balancing services.

Lead actors: *Department for Transport (DfT) and Department for Energy Security and Net Zero (DESNZ), working with Ofgem and the National Wealth Fund.*

2. Incorporate freight demand into strategic energy planning

HGV electricity demand should be explicitly reflected in Regional Energy Strategic Plans and the wider strategic demand-planning process.

Government should work with the freight industry, the National Energy System Operator (NESO) and distribution network operators (DNOs) to improve information on the location, scale and timing of future demand, ensuring freight requirements are considered alongside those of other major electricity users.

Lead actors: *DESNZ and NESO, working with DfT, DNOs and the freight industry.*

3. Enable anticipatory network investment at freight hotspots

Ofgem and network operators should facilitate investment ahead of need at established and emerging logistics hubs, distribution centres, freight corridors and other locations where demand for high-powered charging is expected to grow. This should be coordinated with transport strategies, local development plans and logistics-sector investment.

Lead actors: *Ofgem and DNOs, working with NESO, DfT, local authorities and the freight industry.*

4. Broaden support for charging infrastructure and business models

Government should ensure public funding supports a wider range of charging models, including shared depots, public HGV charging hubs, power parks, charging-as-a-service and multi-use infrastructure. Funding

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windows should be sufficiently long and predictable to accommodate planning, grid-connection and commercial development timescales, while encouraging infrastructure that can serve multiple operators.

Lead actors: *DfT and DESNZ, working with the Department for Business, Innovation, Science and Trade (DBIST) and the National Wealth Fund.*

5. Improve the transparency and accessibility of grid connections

DNOs should provide earlier and clearer information on network capacity, connection costs, delivery timescales and likely curtailment, supported by published curtailment data. They should streamline connection processes, strengthen engagement with freight operators and facilitate flexible connections, smart charging, independent connection providers (ICPs) and independent distribution network operators (IDNOs) to accelerate delivery and improve commercial choice.

Lead actors: *DNOs, overseen by Ofgem.*

6. Clarify landlord and tenant responsibilities for depot charging

Government should work with commercial property owners, freight operators and industry bodies to develop model lease provisions and a voluntary code of practice covering investment, installation, access, maintenance and ownership of depot charging infrastructure. It should also consider how public funding and planning policy can incentivise landlords and developers to provide future-ready electrical capacity and shared charging facilities at logistics sites.

Lead actors: *Ministry for Housing, Communities and Local Government (MHCLG) and DfT, working with commercial property owners, freight operators and industry bodies.*

7. Facilitate on-site generation and energy sharing

Government should consider changes to permitted development rights and planning processes to facilitate appropriate on-site renewable generation and battery storage at logistics sites, while maintaining relevant safeguards. It should also explore regulatory and commercial arrangements that enable energy sharing across logistics parks, supporting local energy networks and reducing reliance on costly grid connections.

Lead actors: *DESNZ and MHCLG, working with Ofgem, local authorities and the freight and energy industries.*

CHAPTER 5



Practical measures to support implementation

Planning and regional policy

The planning system is a significant barrier to deploying electric HGV charging infrastructure. While many relevant decisions sit within MHCLG's remit, current planning policy does not appear to fully reflect the practical challenges facing the freight and logistics sector, risking a mismatch between planning policy and the infrastructure needed to decarbonise road freight.

The government should use Planning Practice Guidance to clarify how the revised National Planning decision-making policy E3 should be applied to support the deployment of zero-emission HGVs, including the provision of charging infrastructure at new and existing logistics sites. This should include guidance on incorporating future electricity capacity into site planning, coordinating with network operators and accommodating charging infrastructure at existing depots.

The government should also encourage local planning authorities and strategic planning bodies to incorporate future freight charging requirements into local plans and infrastructure strategies. It should review the effectiveness of these provisions

and consider strengthening national planning policy at its next revision, informed by evidence of barriers to delivery.

This would give local planning authorities, developers, landowners and operators a firmer basis for accommodating electric truck charging as part of new development, site expansion and the redevelopment of existing depots. It would also help ensure that the availability of suitable land is considered alongside grid capacity and vehicle deployment, rather than being addressed only once an operator is ready to install charging infrastructure.

Regional policy could also help create more effective demand signals. Government should consider how regional levers, including approaches linked to zero-emission zones, could accelerate demand for suitable charging provision. Such measures should be coordinated with planning, land and network-capacity policy so that regional objectives translate into deliverable infrastructure rather than creating obligations that operators and property owners cannot readily meet.

Skills and workforce

The transition to zero-emission HGVs will create significant new workforce demands. The Institute of the Motor Industry (IMI) projects that demand for EV-qualified technicians could exceed supply by more than 43,000 by 2035. It estimates that the UK has 74,734 qualified EV technicians, around 35% of the automotive technician workforce. Although 2,792 technicians gained an EV qualification in the fourth quarter of 2025, this was 17% below the same period in 2024.¹⁸

Both the number of qualified workers and their distribution and range of skills need to be expanded. EV expertise is concentrated in franchised dealer networks, limiting access for independent businesses and SMEs, while shortages in electrical, engineering and software skills are compounded by geographical and immigration barriers. More than 10,000 regulated electrical qualification courses operate in the UK, creating a complex landscape for prospective entrants. Qualification can be lengthy and reliant on practical experience, while differing manufacturer requirements can further restrict mobility between roles.

As demand grows, workforce development will need to expand both training and routes into the sector. Adult skills funding is devolved to mayoral combined authorities, creating opportunities for regional approaches, including industry-backed Centres of Excellence building on examples such as Suffolk New College. These could align accessible training with local demand, supported by long-term government and private-sector funding. A national reskilling offer could also help military personnel, unemployed adults, young people not in education, employment or training, and workers moving from sectors facing structural change. More than 130,000 engineers are on the Gas Safe Register, for example, representing a potential source of transferable technical skills.

Existing programmes such as Skills Bootcamps and Free Courses for Jobs support green skills, but

are not sufficiently tailored to EV requirements. More targeted approaches, including Green Personal Learning Accounts and ReAct+ in Wales, offer relevant models. Industry partnerships with education providers will be important to develop practical, employer-led training and support reskilling. Broadening participation is also essential: women account for just 11.3% of service, repair and recovery staff, according to the IMI, and more inclusive outreach and training could help expand the available workforce.

The transition will also require new capabilities within freight businesses. Fleet managers will increasingly need expertise in energy pricing, electricity demand and depot energy management alongside traditional fleet and fuel-cost management. Depot energy management is emerging as a distinct function, but established career pathways are lacking. Changes in financing and operating models may also alter fleet managers' responsibilities and incentives. Government, industry and skills providers should therefore develop clearer training, qualification and career pathways spanning EV maintenance, charging infrastructure, electrical engineering, software and depot energy management, alongside support for existing workers adapting to new roles.

Coordinating delivery

The practical delivery of HGV decarbonisation therefore depends on stronger coordination across government and across the wider freight system. Planning policy needs to reflect future charging requirements; property arrangements need to support investment at leased depots; network planning needs better information about future freight demand; and skills provision needs to anticipate the technical and managerial capabilities that operators will require.

Government should establish cross-government ownership of the freight transition, bring freight and logistics explicitly into national planning and energy-demand processes, define landlord and

¹⁸. Institute of the Motor Industry (2026): [EV TechSafe Technician Forecast - Q4 2025](#) (updated June 2026).

tenant responsibilities for depot infrastructure, and use national and regional policy to reinforce investment signals.

Alongside this, government, industry and training providers will need to develop the workforce required to support delivery. This should include expanding EV-specific training, developing regional Centres of Excellence, creating clearer qualification pathways, supporting reskilling and improving access to technical careers for underrepresented groups.

A coordinated delivery system would allow decisions about vehicles, land, electricity networks, infrastructure and skills to be made with a better understanding of future freight requirements. This would reduce the risk that progress in one part of the system is held back by a constraint elsewhere and give businesses greater confidence to invest ahead of demand.

Remove barriers created by vehicle weights and dimensions

Regulation also needs to address practical barriers that are specific to zero-emission HGVs. BEV HGVs are currently heavier than comparable diesel vehicles because their powertrain includes large battery packs as well as electric motors and associated power electronics. This matters most where the amount of freight that can be carried is constrained by weight rather than volume.

Weight-sensitive operations include the movement of dense goods such as aggregates, beverages, steel, paper, waste and bulk liquids. By contrast, many parcel and fast-moving consumer goods operations are primarily volume limited. Even in these sectors, however, the additional weight of an electric vehicle can cause some marginal operations to become weight limited.

The government currently allows a two-tonne increase in the maximum permitted weight for specified zero-emission HGVs, while retaining the overall 44-tonne limit for six-axle combinations and existing axle limits.

This is an important step, but it may not be sufficient for all applications.

Government should therefore prioritise a further assessment of the weight and dimensions framework for zero-emission HGVs, with particular attention to the applications that the existing allowance does not adequately address. This does not necessarily mean simply increasing the maximum permitted weight across the road network. Higher weights can have consequences for bridges, road wear, axle loading, vehicle handling and enforcement. Instead, government should examine a range of options, including:

- **Reviewing the current weight allowance:** assess whether two tonnes remains appropriate as battery energy density and vehicle design develop, including whether the allowance should vary according to the actual additional weight of the zero-emission powertrain.
- **Reviewing axle and vehicle configurations:** consider whether changes to axle loading or vehicle design, including additional axles where appropriate, could allow greater payload without imposing unacceptable impacts on roads and bridges.
- **Testing targeted higher-weight corridors:** explore whether specific routes could be designated for heavier zero-emission HGVs following appropriate assessment of infrastructure requirements. A controlled pilot could establish the evidence before any wider change.
- **Reviewing vehicle standards:** examine whether changes to certification requirements could safely improve the performance of heavier zero-emission HGVs, including braking, suspension and handling.
- **Strengthening enforcement arrangements:** task the Driver and Vehicle Standards Agency (DVSA) with developing the regulatory and enforcement framework needed to support any changes.

The aim should be to ensure that vehicle regulation does not inadvertently undermine the commercial case for zero-emission freight.

Recommendations

1. Integrate freight into planning and energy system decision-making

Freight and logistics should be explicitly incorporated into national planning, electricity-demand forecasting and strategic energy planning. This should recognise freight as a strategic source of future electricity demand, include its requirements in network planning, and systematically assess freight implications within wider sector transition plans.

Lead actors: *DESNZ and NESO for energy-demand forecasting and strategic energy planning; MHCLG and DfT for national planning and sector transition policy, working with network operators and the freight industry.*

2. Remove planning and property barriers to charging infrastructure deployment

Government should ensure that planning, land-use and property frameworks support the rollout of charging infrastructure for electric HGVs. This should include clarifying through Planning Practice Guidance how the revised National Planning Policy Framework in England, and equivalent policies in the devolved governments, support charging at new and existing logistics sites; and helping local planning authorities incorporate charging into development decisions. Government should also explore funding and planning measures to encourage shared and future-ready infrastructure, and ensure land availability, grid capacity and infrastructure planning are considered together.

Lead actors: *MHCLG and DfT, working with devolved governments, local planning authorities, commercial property owners and freight operators.*

3. Strengthen regional delivery mechanisms and investment signals

Government should use regional policy levers to accelerate investment in charging infrastructure, aligned with local delivery capabilities. This should include considering regional approaches linked to zero-emission zones and related policies, coordinating regional objectives with planning, land-use and network-capacity decisions, improving visibility of future infrastructure demand, and ensuring policies create deliverable investment opportunities rather than unfunded obligations.

Lead actors: *DfT and MHCLG, working with DESNZ, mayoral combined authorities, local authorities, DNOs and the freight industry.*

4. **Develop the workforce and career pathways needed for electric freight**

Government, industry and education providers should work together to ensure the workforce required for electric freight is available where and when it is needed. This should include expanding EV-specific training, supporting regional Centres of Excellence aligned with local industry needs, providing long-term support for industry-led training, and strengthening reskilling opportunities for workers moving from other sectors. Existing skills programmes should be better tailored to EV requirements, with greater support for participation by underrepresented groups, including women. Clearer and more accessible qualification and career pathways should be developed for EV maintenance, charging infrastructure, electrical engineering, software and emerging roles such as depot energy managers. Training should also support existing workers adapting to new operational, commercial and energy-management responsibilities.

Lead actors: *Department for Education and DfT, working with devolved governments, mayoral combined authorities, industry, further education providers and relevant skills bodies.*

5. **Review weights and dimensions for zero-emission HGVs**

Government should assess whether the existing two-tonne weight allowance adequately addresses the payload impacts of zero-emission HGVs across different applications. It should consider changes to axle limits, vehicle configurations, targeted higher-weight corridors, vehicle standards and enforcement where these can safely support the transition.

Lead actors: *Department for Transport and DVSA, working with National Highways, devolved governments and industry.*

