



Department
for Transport

Consultation on when to phase out the sale of new, non-zero emission heavy goods vehicles

Department for Transport
Great Minster House
33 Horseferry Road
London
SW1P 4DR



© Crown copyright 2021

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ or contact, The National Archives at www.nationalarchives.gov.uk/contact-us.

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is also available on our website at www.gov.uk/government/organisations/department-for-transport

Any enquiries regarding this publication should be sent to us at www.gov.uk/government/organisations/department-for-transport

Contents

Executive summary	4
How to respond	5
Freedom of Information	5
Data Protection	6
1. Introduction	7
Addressing the net zero challenge	7
HGV emissions	7
Scope	8
Plans to decarbonise HGVs	8
COP26	9
Developing zero emission HGVs	10
The road to zero emission HGVs – manufacturer commitments	11
The role of low carbon fuels	13
2. Consultation Proposals	14
HGV categories and their pathways to zero emission	14
How this consultation will support our environmental targets and ambitions	19
Key proposals to be consulted on	19
What will happen next	22
Annex A: Full list of consultation questions	23
Annex B: Consultation principles	25

Executive summary

1. Transport is the largest contributor to domestic UK greenhouse gas (GHG) emissions, accounting for 27% of emissions in [2019](#). Within transport, HGVs are second only to cars and vans in terms of total GHG emissions.
2. In November 2020, as part of the Prime Minister's [Ten Point Plan for a Green Industrial Revolution](#), the government announced that it would end the sale of new petrol and diesel cars and vans from 2030, with all new cars and vans being zero emission at the tailpipe from 2035, and launch a consultation on a date for phasing out the sale of new diesel heavy goods vehicles (HGVs.)
3. Along with [Decarbonising Transport: A Better, Greener Britain](#) this consultation is part of a programme of work which will put the transport sector on an ambitious but credible pathway to achieve net zero emissions by 2050.
4. The proposed phase-out dates for the sale of new, non-zero emission HGVs in this consultation reflect what is needed for the UK's HGV fleet to deliver its contribution to net zero by 2050. Zero emission vehicles (those without emissions at the tailpipe) offer an opportunity to create jobs, strengthen British industry, cut emissions and keep Britain moving.
5. We are interested in receiving views on the following phase out dates for new non-zero emission HGVs:
 - **2035** (or earlier if a faster transition seems feasible) for vehicles weighing from 3.5 tonnes up to and including 26 tonnes
 - **2040** (or earlier if a faster transition seems feasible) for vehicles greater than 26 tonnes
6. Also included in this consultation are questions on:
 - whether to extend these phase out dates to HGVs using low carbon fuels
 - whether the maximum permissible weights of zero emission or alternatively fuelled HGVs should increase to allow for their generally heavier powertrains.

How to respond

The consultation period began on 14th July 2021 and will run until 3rd September 2021. Please ensure that your response reaches us before the closing date. If you need alternative formats (Braille, audio CD, etc) of this consultation contact HGVconsultation@dft.gov.uk.

Due to remote working, we strongly encourage responses by email. If you are unable to respond by email, we would invite you to please let us know by asking someone to email on your behalf.

If none of the above is possible, then we invite you to send written responses to:

HGV phase out date consultation
Great Minister House
33 Horseferry Road
London
SW1P 4DR

Email address: HGVconsultation@dft.gov.uk

When responding, please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of a larger organisation, please make it clear who the organisation represents and, where applicable, how the views of members were assembled.

If you have any further questions about the consultation process please email HGVconsultation@dft.gov.uk.

Freedom of Information

Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the Freedom of Information Act 2000 (FOIA) or the Environmental Information Regulations 2004.

If you want information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

The Department will process your personal data in accordance with the Data Protection Act and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.

Data Protection

The Department for Transport (DfT) is carrying out this consultation to gather evidence on when to phase out the sale of new non-zero emission HGVs. This consultation and the processing of personal data that it entails is necessary for the exercise of our functions as a government department. If your answers contain any information that allows you to be identified, DfT will, under data protection law, be the Controller for this information.

As part of this consultation we're asking for your name and email address. This is in case we need to ask you follow-up questions about any of your responses. You do not have to give us this personal information. If you do provide it, we will use it only for the purpose of asking follow-up questions.

DfT's privacy policy has more information about your rights in relation to your personal data, how to complain and how to contact the Data Protection Officer. You can view it at <https://www.gov.uk/government/organisations/department-for-transport/about/personal-information-charter>.

Your information will be kept securely on a secure IT system within DfT and destroyed within 12 months after the consultation has been completed.

1. Introduction

Addressing the net zero challenge

- 1.1 The government is committed to going further and faster to tackle climate change and limit global warming to well below 2°C. That is why in June 2019 the UK became the first major global economy to [legislate](#) to end its contribution to climate change by [committing to net zero greenhouse gas emissions \(GHG\) by 2050](#).
- 1.2 To date the UK has made world-leading progress in cutting our GHG emissions while growing the economy. Between 1990 and 2019 we reduced our emissions by over [44%](#) while growing the economy by [78%](#).
- 1.3 Our net zero commitment requires all sectors of the UK economy to deliver substantial further emissions reductions. While other sectors have reduced their emissions significantly since 1990, transport emissions have only fallen by around [5%](#).
- 1.4 We know we need to go much further, much faster to decarbonise this sector, and this forms the basis for [Decarbonising Transport: A Better, Greener Britain](#) which was published alongside this consultation. [Decarbonising Transport: A Better, Greener Britain](#) sets out a holistic, bold and ambitious pathway for transport to deliver its contribution to net zero and announces further commitments for freight.

HGV emissions

- 1.5 Heavy goods vehicles (HGVs) accounted for 16% of the UK's transport emissions in [2019](#), second only to cars and vans. At this time the HGV fleet included around [426,000](#) rigid and articulated vehicles, making up 1% of UK road vehicles.
- 1.6 Cumulatively HGV carbon dioxide (CO₂) emissions have fallen by 5% since [1990](#). However, between 2012 and 2019 HGV emissions actually increased by [8%](#), from 18.0MtCO₂e to 19.5MtCO₂e. This was due to a combination of increased HGV traffic, which rose by 12% between 2012 and 2019, and [decreasing fleet efficiency](#).

- 1.7 The HGV fleet is predicted to grow which risks emissions increasing from the sector. According to the DfT's road traffic forecasts HGV traffic will grow by 8% by [2050](#).¹

Scope

- 1.8 This consultation looks at phasing out the sale of new non-zero emission HGVs. It does not consider existing vehicles or those on the second-hand market.
- 1.9 For the purposes of this consultation non-zero emission HGVs are those which produce harmful emissions at the tailpipe. This includes diesel, low carbon fuelled and hybrid HGVs. Only fully zero emission technologies will adequately address GHG emissions, air quality and other tailpipe pollutants from HGVs.
- 1.10 The consultation relates to GHG emissions from the use of HGVs in the UK. Emissions associated with construction, be that vehicles or infrastructure, and lifecycle emissions are out of scope.
- 1.11 This consultation relates to phase out dates for the sale of new non-zero emission HGVs only. Other types of heavy-duty vehicles, such as buses and coaches, non-road mobile machinery and agricultural equipment are out of scope.²

Plans to decarbonise HGVs

- 1.12 There are existing plans and legislation in place to decarbonise HGVs. In 2018 the government committed to continue supporting the haulage industry to reduce their GHG emissions through efficiency savings and reduced fuel consumption. This work is ongoing with information and advice to operators available via an [online freight portal](#) hosted by the Energy Saving Trust.
- 1.13 In addition, [regulations](#) came into force in January 2021 that require CO₂ emissions from newly registered HGVs in the UK to reduce by 15% by 2025 and 30% by 2030 compared to a baseline set out in 2021. This replicated the previous EU regime and adapted the transferred law to function correctly in the UK.
- 1.14 While these measures will deliver emissions savings and support the development of low and zero emission vehicles, our projections show this will not deliver road freight's necessary contribution to net zero. As such the government have set out a series of measures to decarbonise the heavy vehicle fleet further and faster.
- 1.15 Firstly, in March this year, the government announced £582 million to continue [plug-in grants](#) until 2022-23. The plug-in truck grant (PiTG) encourages the uptake of cutting-edge, zero emission HGVs by reducing the purchase price of zero emission commercial vehicles. From March 2021 the PiTG was increased to 20% of the purchase price, up to a maximum of £25,000, for large trucks greater than 12 tonnes. The grant rate was increased in recognition of the higher upfront cost of these vehicles. For large trucks, grants at the £25,000 rate are available for the first 100

¹ This calculation assumes that the number of annual HGV miles remains constant over time.

² A consultation on ending the sale of diesel buses closed in April 2021 and responses are being analysed. See: <https://www.gov.uk/government/consultations/ending-the-sale-of-new-diesel-buses> for more information.

orders per financial year, limited to five per customer. For smaller trucks (between 3.5 and 12 tonnes), a grant rate is available of up to £16,000 for the first 250 claims per financial year, limited to ten per customer. The £16,000 rate also applies to large trucks beyond the limits set out above. After these HGV grant caps are reached, a £6,000 rate applies for all further vehicles claimed.

- 1.16 Next is this consultation on setting phase-out dates for the sale of new non-zero emission heavy goods vehicles, building on the equivalent phase-out dates for new [petrol, diesel and hybrid cars and vans](#). The intention is that both phase-out date policies will be supported by regulation laid out by the [Green paper on a New Road Vehicle CO₂ Emissions Regulatory Framework for the United Kingdom](#).
- 1.17 We are also seeking views on a proposal to increase the maximum permissible weights for certain alternatively fuelled and zero emission HGVs and other vehicles on domestic journeys. We have already committed to permitting extra weights for these vehicles on international journeys under the terms of the UK-EU Trade and Cooperation Agreement.
- 1.18 We are investing £20m this year in planning zero emission road freight trials (ZERFT) which will support UK industry to develop cost-effective, zero emission HGVs and their refuelling infrastructure in the UK. The ZERFT will advance research and development in the technologies of hydrogen fuel cell, electric road systems (ERS)³ and battery electric HGVs, allowing us to begin the commercial roll out of new zero emission technology before the end of the decade. Winners of the first year of ZERFT funding will be announced shortly
- 1.19 Finally, [Decarbonising Transport: A Better, Greener Britain](#), which this consultation is published alongside, sets out the bold and ambitious steps needed to achieve our transport decarbonisation goals. It offers a holistic view of the actions we need to take across all transport modes, including road freight, to reach net zero and how we can maximise the opportunities for new jobs, enterprise and growth.

Question 1: Do you agree or disagree that introducing a phase out date for the sale of new non-zero emission HGVs will help us meet our legally binding net zero target? Please explain your answer.

COP26

- 1.20 In November 2021 the UK will host the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow in partnership with Italy. As joint President and host, the UK will seek to provide global leadership and continue to work with nations and delegates to help drive increased action to reduce emissions and build climate resilience.

³ Electric Road System (ERS) is a technology for powering and charging electric vehicles while they move along a road using either an electrical contact to a wire, or through wireless charging. The most common form of this technology is using overhead electric wires (catenary). This technology is already used on electric railways. The vehicle contacts the wires above using 'pantographs', electrical contact devices on top of vehicles.

- 1.21 The [clean road transport campaign](#) (or 'ZEV' campaign) is one of the five priority COP26 campaigns alongside the overall negotiations. The aim of the campaign is to accelerate decarbonisation of the automotive sector. In November 2020 ministers and representatives formed a new Zero Emission Vehicle (ZEV) Transition Council to discuss how to accelerate the pace of the global transition to zero emission vehicles.
- 1.22 The ZEV Transition Council's dialogues over this year and at COP26 will cover issues surrounding the transition of both light and heavy goods vehicles. It will bring in perspectives from the largest global markets for trucks and fleets via dedicated workshops and collaborations with existing and emerging global initiatives. This collective action will help overcome strategic, political and technical barriers to increase the transition to zero emission HGVs.
- 1.23 In advance of COP26 the UK Government will publish a Net Zero Strategy covering all sectors of the economy. It will set out the government's vision for transitioning to a net zero economy, making the most of new growth and employment opportunities across the UK.

Developing zero emission HGVs

- 1.24 The swift and efficient movement of goods is vital to the UK economy. While cars and vans started to electrify over the last decade, the development of zero emission HGVs is only just beginning. Alternative decarbonisation options are in their early stages, although battery electric models are appearing in the urban distribution market. Rapid progress and significant investment are needed. The development of zero emissions technologies that meet the needs of the road haulage industry and the rollout of supporting infrastructure are vital to ensure GHG emissions from road freight reach net zero by 2050. This must be coupled with a transformation of the vehicle supply chain.
- 1.25 In the small HGV/large van segment (N2 category - 3.5 to 12 tonnes), there are currently three models eligible for the plug-in-truck grant: the BD Auto eDucato, FUSO eCanter and Paneltex Z75. This number is expected to grow significantly in the coming years. Similarly, in the 12 to 26 tonne HGV range (the N3 category) there are already a small number of models available, or due to come to market over the next few years.
- 1.26 There are significant potential advantages to this change - new zero emission vehicles utilising electric or hydrogen fuel cell technologies are quieter since they don't have a combustion engine, more energy efficient due to their transmission and are cheaper to run. Additionally, switching to zero emission HGVs will reduce exhaust emissions of air pollutants like Nitrogen Dioxide (NO₂) and Particulate Matter (PM)^{2.5}.
- 1.27 The very first zero emission HGVs above 26 tonnes are arriving on the UK market, designed for specific, short range use cases. To help secure the supply of larger zero emission HGVs in the UK we will adopt an ambitious but deliverable pathway for the development of zero emission HGV technologies, simultaneously addressing vehicles and infrastructure. Initial plans, such as the commencement of the [ZERFT](#) programme, have been announced. A phase out date accompanying this pathway

will provide the impetus for the development of new zero emission HGV models for the UK market.

- 1.28 There is no straightforward alternative technology to lead HGVs towards our zero emission targets. Instead, decarbonising HGVs requires the sector to embrace new technology and innovation. Currently the three principle technology options for zero emission HGVs are pure battery electric, hydrogen fuel cell and ERS (catenary) enabled HGVs, where battery electric vehicles are dynamically charged via overhead catenaries. Our approach to delivering zero emission HGVs is technology neutral and we foresee a future where a mixture of technologies could be required. Our Zero Emission Road Freight Trials will help to inform which technologies are best suited to achieving a zero emission road freight sector in the UK.
- 1.29 Existing HGV manufacturers such as Leyland DAF, alongside new entrants including Tevva, Volta, Arrival and Electra are developing and investing in, zero emission HGVs in the UK. This will create new employment opportunities and help deliver the government’s commitment to levelling-up. As an early mover to fully zero emissions HGVs, there is the potential for the UK to become a pioneer and early leader in the global market for zero emission HGV production.

The road to zero emission HGVs – manufacturer commitments

- 1.30 Leyland Trucks, the UK’s largest HGV manufacturer, recently announced the zero emission DAF LF Electric, coming to market in this year. This 19-tonne, fully electric distribution truck has a range of 174 miles on a single charge and can complete a rapid recharge from 20% to 80% in 60 minutes. For urban distribution, this will allow the truck to charge during a driver’s rest break. The truck is also designed to power auxiliary equipment such as a refrigeration unit or a crane. The LF model is in addition to the heavier CF Electric, up to 37 tonnes, suitable for interurban, supermarket, and waste collection Leyland Trucks manufactures the full line of DAF models and is based in Lancashire, employing over 1,000 people in the UK.



Figure 1 DAF LF Electric, a nineteen tonne battery electric HGV

1.31 Volta Trucks, based in the south east of England, have launched the first purpose-built full-electric 16 tonne commercial vehicle designed for inner city freight distribution. Thanks to its full-electric powertrain, the Volta Zero has been designed with safety and sustainability at its core. The removal of the internal combustion engine facilitates a complete rethink of commercial vehicle design, offering a lower and central seating position, placing the driver at the same eye height as vulnerable road users around the vehicle, improving visual communication and removing blind spots. In addition to its zero emission electric powertrain, some of the Volta Zero's body panels are made from naturally grown flax fibre and biodegradable resin composite, that is near-carbon neutral in construction, and safer for pedestrians in the event of an accident. Volta Trucks will also provide an innovative 'Truck as a Service' offer, helping fleet managers and operators with all the non-vehicle elements of EVs such as charging infrastructure, both supporting and simplifying the transition to electrification. The Volta Zero was revealed in September 2020 and will start customer trials in late 2021 ahead of production 12 months later.



Figure 2 Volta Zero, a sixteen tonne fully electric HGV

1.32 In December 2020 the European Automobile Manufacturer's Association (ACEA), an alliance of Europe's largest truck makers, [announced](#) they will only sell fossil free trucks from 2040. This commitment from manufacturers including DAF Trucks, Man Truck & Bus, Scania and Volvo Group marks a shift away from fossil fuels as the main energy carrier for HGVs.

1.33 For operators the long-haul HGV market is highly competitive, with the majority of firms being small and medium sized enterprises (SMEs). These SMEs keep the industry highly competitive and drive down costs for customers. SMEs often purchase vehicles second hand and so may not initially be beneficiaries from new HGV technology. However, in the long run they will benefit from a more advanced roll-out of infrastructure and lower operating costs, enabling a smooth transition to zero emission technologies.

The role of low carbon fuels

- 1.34 Low carbon fuels (LCFs) contribute a significant proportion of transport emissions savings under current carbon budgets. They are an important and readily available source for decarbonisation of the freight sector and will play an even greater role as we kickstart our green transport recovery. LCFs include bioethanol and biodiesel which can be blended into the standard petrol and diesel used in existing vehicles, biomethane, which can be used in dedicated gas vehicles, and hydrogen.
- 1.35 There are opportunities to increase the GHG savings from LCFs further, such as through the use of drop-in fuels like hydro-treated vegetable oil or by using higher blends of biofuels above the existing blend walls. It is also possible that new LCFs may become commercially available in the future, increasing options for operators. We therefore expect long-haul HGVs to remain a significant user of LCFs in the short to medium term, prior to the large-scale commercial deployment of zero emission technologies. In this same timescale, the ambitious proposals to increase targets under the Renewable Transport Fuel Obligation (RTFO), a market-based trading scheme supporting the supply of low carbon fuels, will help maximise GHG savings from LCFs, predominantly in the road sector.
- 1.36 However, while LCFs can be net zero over their whole lifecycle, when used in internal combustion engines they offer limited air quality benefits, making them less suitable for urban areas. That is why our ultimate ambition is to support the development of zero harmful tailpipe emission HGVs.
- 1.37 Once zero emission technologies such as electrification and green hydrogen are commercially viable and readily available, the use of LCFs in HGVs will remain vitally important for minimising emissions from the remaining non-zero emission fleet while they remain in operation and will contribute to meeting UK carbon budgets for decades to come.

2. Consultation Proposals

HGV categories and their pathways to zero emission

- 2.1 To achieve net zero by 2050 we must decarbonise the HGV fleet and rapidly increase the share of zero emission vehicles in the road freight sector. The largest HGVs are assumed to be on our roads for between 4 and 7 years. Smaller vehicles, which run shorter daily distances, tend to have longer average lifespans of 6 to 14 years. In order to support net zero by 2050 we are therefore proposing the last GHG emitting HGVs are sold no later than 2040, and earlier for smaller vehicles.
- 2.2 It is not possible for all new HGVs to be zero emission at the same time due to the limitations of existing zero emission technology. Therefore, we are proposing to introduce different phase out dates for new non-zero emission HGVs depending on their size, to reflect the clearer decarbonisation pathway and longer typical lifespans for smaller HGVs.

Question 2: Do you agree or disagree with our approach to split the phase out dates for new non-zero emission HGVs into two weight categories? Please explain your answer.

- 2.3 Lighter zero emission HGVs are already coming onto the market in increasing numbers. Primarily using battery electric technology, they are suitable for a range of duty cycles and operations but are currently more expensive than their diesel equivalents. This technology is largely mature and, as batteries get cheaper and the supply chain scales up, this technology could be a direct swap for diesel vehicles in the lighter weight categories.
- 2.4 However, it is more challenging to apply zero emission technology to heavier HGVs. At their current stage of technological development, batteries take up considerably more of the vehicle's size and weight allowances than an equivalent diesel powertrain. This is particularly challenging for articulated HGVs where available space is limited. Presently battery powered vehicles are unable to carry the heaviest loads over longer distances, as the extra weight from batteries reduces the space and weight available for the payload.

- 2.5 With current technologies, compressed hydrogen is more energy dense than batteries, so fewer improvements are required to achieve the acceptable range and refuelling times for HGVs. However, hydrogen features similar limitations to batteries because hydrogen tanks are larger than diesel fuel tanks and therefore compromise available payload space.
- 2.6 The increased weight of zero emission technologies and the resulting impact on payload could diminish the business case for adopting zero emission HGVs. Increasing the maximum permissible weights for zero emission HGVs would alleviate this issue and increase their uptake. Similarly, alternatively fuelled but not zero emission HGVs, such as those powered by natural gas, LCFs, liquified petroleum gas or hydrogen combustion could have similar challenges with heavier powertrains. Therefore, increased vehicle weight limits can encourage the uptake of alternatively fuelled HGVs in the short to medium term, before zero emission alternatives are available.
- 2.7 To compensate for the additional weight from alternative fuel and zero emission technology, the UK-EU Trade and Cooperation Agreement obliges the UK to permit EU vehicles with weights that “are increased by the additional weight of the alternative fuel or zero-emission technology with a maximum of 1 tonne and 2 tonnes respectively”. However, this agreement does not permit additional weight over the standard UK maximum weight of 44 tonnes. At present there are no equivalent increased weights available for HGVs on domestic only journeys.
- 2.8 We propose to increase the maximum permissible weights for certain types of alternatively fuelled and zero emission HGVs completing domestic journeys. Weight limits would increase by the additional weight of the powertrain: up to a maximum of 1 tonne for alternatively fuelled HGVs and 2 tonnes for zero emission HGVs. This would help compensate for the additional weight of alternative fuelled and zero emission powertrains and remove a significant barrier to their adoption. As this would be to align with the UK-EU Trade and Cooperation Agreement, this would not apply to the largest vehicles and the maximum permitted weight on UK roads would remain 44 tonnes. Raising this maximum weight limit would be subject to a different, broader, piece of work on the capability of the UK’s roads to take heavier vehicles. We would welcome views on whether this would be beneficial.
- 2.9 While it is anticipated that the energy density by volume and weight of batteries will improve over time, it is not yet certain they will be able to satisfy the requirements of long-haul operators carrying the heaviest loads without needing frequent recharging.
- 2.10 These limitations could be alleviated by on-road charging options like ERS on major roads and motorways, which enable dynamic charging and therefore reduce journey interruptions. However, it would take time to roll-out sufficient infrastructure to cover the major regions of the UK where HGVs operate. It is also possible that in the future batteries will have improved sufficiently that they satisfy recharging requirements within existing driver breaks. However, this would require high-powered chargers at driver rest stops and this technology may not be available at scale in sufficient time to meet emissions targets.
- 2.11 Likewise, widespread use of hydrogen fuel-cell HGVs will require the roll-out of a nationwide green hydrogen refuelling network as the limited number of hydrogen

refuelling stations in the UK are predominantly aimed at cars and vans. Regardless of the power train, both hydrogen fuel cell and battery costs will need to fall to make these HGVs an attractive investment, even once reduced operating costs are factored in.

2.12 There have been a number of hydrogen and ERS demonstration projects internationally. An overview of some of these projects are detailed below:

- Ballard, a leading fuel cell manufacturer, claim to have achieved [75 million driven kilometres](#) as of March 2021, powered by polymer electrolyte membrane (PEM) fuel cells. These applications include heavy duty vehicles. In California, Kenworth have developed and tested a large truck to US specifications with a Ballard fuel cell.
- Hyundai have [developed](#) a nineteen-tonne hydrogen fuel cell powered heavy duty vehicle. Trials for 10 vehicles commenced in Switzerland in [2020](#). 40 further vehicles are due to be deployed this year, with another 1600 vehicles before 2025.
- [H2HAUL](#) - Deploying 16 heavy duty hydrogen fuel cell trucks in four European countries. The project began in 2019 and will run for five years.
- In a joint venture with Iveco, Nikola Motor Company will produce the [Nikola TRE](#) in Germany. The first battery-electric models to enter production will be articulated trucks with battery capacity up to 720kWh, and a powertrain that can delivery up to 480kW of continuous power. Electrical versions with fuel cells built on the same platform are to be tested as part of the H2- Haul program.
- [H2-Share](#) - developing one 27 tonne rigid hydrogen truck and a mobile refueller. The demonstration started in April 2020.
- Siemens have developed the '[eHighway](#)' concept since 2011 as part of a German government research project. Partners include Scania and the Technical University of Dresden. Three on road trials have been established in Germany since 2018. Routes are now being extended, taking the longest to 12 km in length in one direction.
- In June 2016, Siemens installed the first section of eHighway in [Sweden](#), on a 2-kilometre motorway section. Two specially adapted Scania diesel trucks operated on this route for two years, using energy supplied from the overhead lines. In 2020, the Swedish Minister for Transport announced a commitment to install 2,000km of ERS on major highroads by 2030.
- In late 2017, trials started in California on a 1-mile section of Alameda Street in Carson, using three converted trucks (one all-electric, a diesel hybrid and a natural gas hybrid).
- In late 2018, a project was announced to build an eHighway in [Italy](#). The long-term target is a 62km stretch of the A35 highway in Lombardy. The initial phase of the project will gather the business case and preliminary planning, with the initial trial scheduled to start in December 2020 on a 3km bi-directional section of the route.

2.13 The ZERFT programme will build on the results of international developments in hydrogen fuel cell and ERS technology, collecting data and helping to overcome barriers in a UK context. The trials intend to build on hydrogen and catenary expertise in the bus and rail sectors to ensure zero emission HGV technologies meet commercial requirements for use in the UK and interoperate with international

systems. These trials are in line with advice from the Climate Change Committee in their [Policy Report for the Sixth Carbon Budget and Net Zero](#).

2.14 HGVs conventionally fall into two distinct categories in the UK: 3.5 to 26 tonnes which are predominantly rigid and above 26 to 44 tonnes which are predominantly articulated. These two categories can be seen through the popularity of specific vehicle types and the drive cycles they are used for.

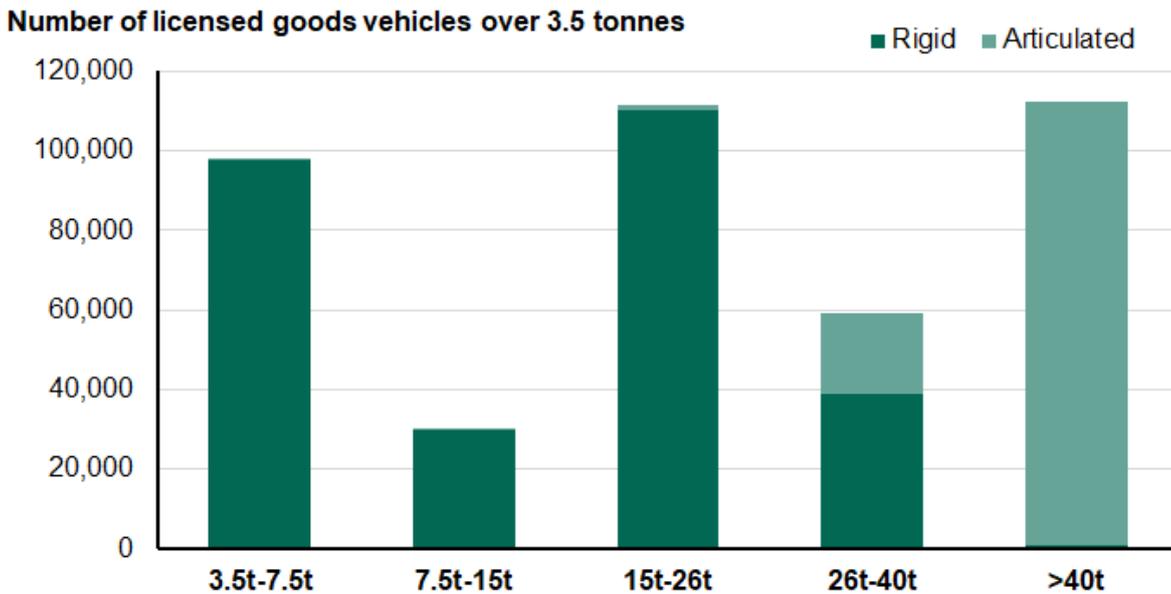


Figure 3 Number of licensed goods vehicles over 3.5 tonnes by weight category.

2.15 From a telematics data [sample](#), vehicles of 26 tonnes and under run around 150 kilometres on an average day, while heavier vehicles run just under 400 kilometres on an average day. This shows the different use cases for HGVs of different weights; lighter, rigid HGVs tend to service urban and regional routes, whereas larger, articulated HGVs are more widely used in long haul applications.

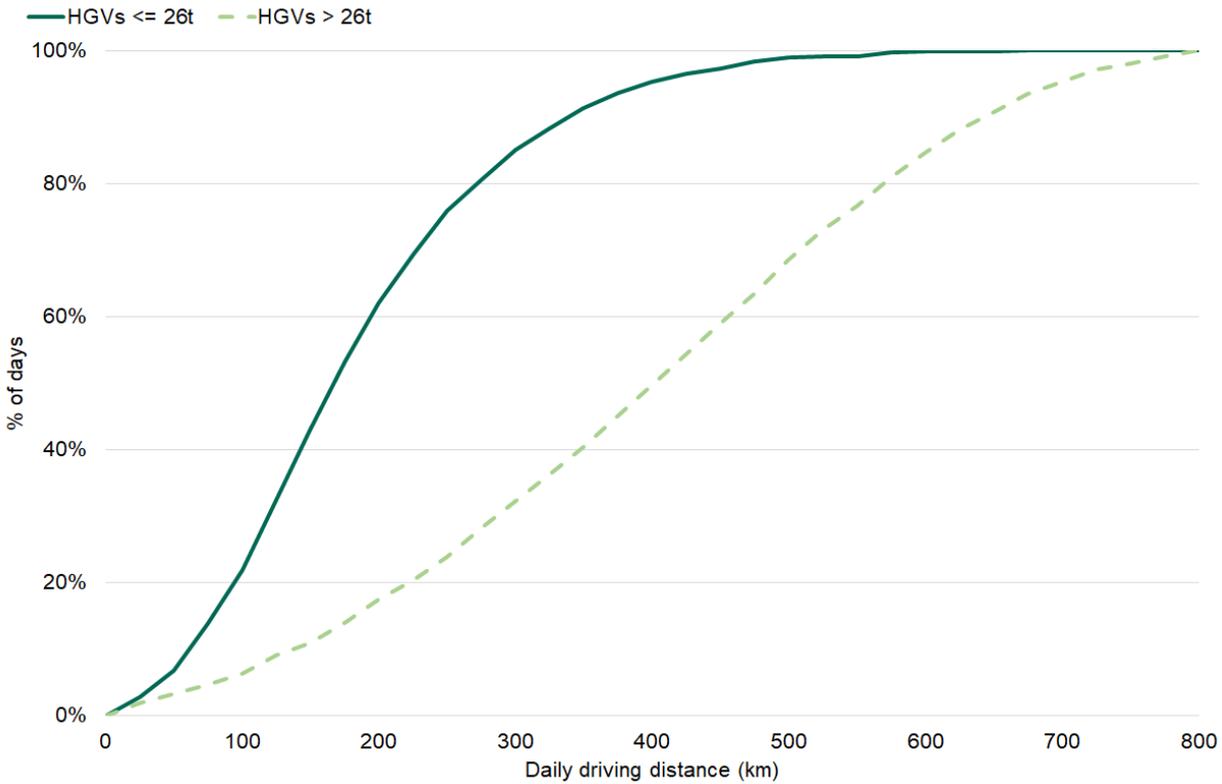


Figure 4 Distribution of daily driving distances (in km) of HGVs <=26t and >26t from telematics data [sample](#).

2.16 The commercial zero emission HGV market appears to be coalescing around these categories. Models such as the BD Auto eDucato, FUSO eCanter and Paneltex Z75 are in production in the 26 tonnes and under category, with a number of additional models expected to come to market in 2021 and 2022. However, there are few announced vehicles above 26 tonnes and none yet on the market, since current technologies do not offer the range required to complete a long-haul drive cycle.

2.17 Larger, long-haul zero emission HGVs will also rely heavily on suitable public refuelling infrastructure (whether this be high power chargers, ERS, hydrogen refuelling stations or a combination) which will take time to roll out on the scale required. Regardless of the technology used, it is likely grid upgrades will be needed across the country, at Motorway Service Areas and lay-bys for example, which will take time to construct. This means that, even as the zero emission HGV technology choice becomes clear, it will take time for long-haul HGVs to fully decarbonise.

2.18 Therefore, we are proposing that the phase out of the sale of new non-zero emission HGVs will be split into two distinct categories:

- HGVs above 3.5 tonnes up to and including 26 tonnes
- HGVs above 26 tonnes

Question 3: Do you agree or disagree that 26 tonnes and under, and more than 26 tonnes are the right categories? What evidence do you have for or against?

How this consultation will support our environmental targets and ambitions

- 2.19 Tackling the UK's environmental challenges requires the deployment of a range of policy measures of which phase out dates are a critical part. Putting end dates for the sale of new non-zero emission HGVs into legislation will significantly reduce GHG emissions from HGVs, as it will drive manufacturers, operators and individuals to adopt zero emission technology faster. This means they will play a key role in ensuring the UK meets interim carbon budgets as well as net zero by 2050. New zero tailpipe emission HGVs will enable towns, cities and businesses to deliver world class logistic solutions while reducing air pollution.
- 2.20 Meeting the government's ambitious 2050 net zero target requires equally ambitious technological developments. By clarifying the direction of the UK HGV sector, phase out dates will incentivise vehicle manufacturers to direct investment towards zero emission technologies, further pushing down prices. By positioning the UK at the forefront of the global drive to zero emission HGVs, phase out dates have the potential to bring skilled jobs and investment into our energy and automotive sectors.
- 2.21 Increasing the maximum permissible weight of alternatively fuelled and zero emission HGVs where this is needed to offset a heavier powertrain also has the potential to drive earlier uptake of zero emission vehicles, by ensuring that operators do not experience a payload penalty while using these vehicles.

Key proposals to be consulted on

- 2.22 This consultation proposes that the sale of all new non-zero emission HGVs, including hybrids and low carbon fuelled vehicles, are phased out at the same time as diesel HGVs using the weight categories set out above. The Government is therefore proposing:
- ending the sale of new non-zero emission HGVs, for vehicles weighing from 3.5 up to and including 26 tonnes, by 2035 or earlier if a faster transition seems feasible;
 - ending the sale of new non-zero emission HGVs, for vehicles weighing more than 26 tonnes, by 2040 or earlier if a faster transition seems feasible.
- 2.23 These dates align with the recommended phase-out dates from organisations including the Climate Change Committee and the National Infrastructure Commission.

Question 4: Do you agree or disagree with our proposal to end the sale of new non-zero emission HGVs, for vehicles weighing from 3.5 up to and including 26 tonnes, by 2035? What evidence do you have for or against?

Question 5: What do you consider the main challenges and barriers to meeting this target for HGVs 26 tonnes and under?

Question 6: How can these barriers be addressed?

Question 7: Do you agree or disagree with our proposal to end the sale of new non-zero emission HGVs, for vehicles weighing more than 26 tonnes, by 2040? What evidence do you have for or against?

Question 8: What do you consider the main challenges and barriers to meeting this target for HGVs weighing more than 26 tonnes?

Question 9: How can these barriers be addressed?

Question 10: Do you agree or disagree that these phase out dates should be extended to all non-zero emission HGVs, including those using low carbon fuels, in their respective weight categories? Please explain your answer.

2.24 The [Green paper on a New Road Vehicle CO₂ Emissions Regulatory Framework for the United Kingdom](#) is being published alongside this document. This is consulting on the framework to deliver the proposed phase out dates for the sale of new non-zero emission road vehicles.

2.25 At present, all commercial internal combustion engines produce harmful tailpipe emissions and would therefore be subject to these end of sale dates. However, some engine manufacturers are currently working to build internal combustion engines running on hydrogen that have zero harmful emissions, including zero CO₂ and zero NO_x. We welcome these developments and are interested in any responses or evidence on this technology which could be incorporated into future regulatory decisions.

2.26 The Government also proposes to increase the maximum permissible weights for certain alternatively fuelled and zero emission HGVs and other vehicles. Weight limits would increase by the additional weight of the powertrain, up to a maximum of 1 tonne for alternatively fuelled HGVs and 2 tonnes for zero emission HGVs. The proposal being consulted on here would not apply to the largest vehicles and the maximum permitted weight on UK roads would remain 44 tonnes.

Question 11: Do you agree or disagree that maximum permissible weights for certain zero emission vehicles (mainly HGVs) on both international and domestic journeys should increase by up to 2 tonnes (without exceeding 44 tonnes)? Please explain your answer.

Question 12: Do you agree or disagree that weight limits should increase by up to a maximum of 1 tonne for certain alternatively fuelled HGVs on both international and domestic journeys (without exceeding 44 tonnes)? Please explain your answer.

Question 13: Do you agree or disagree that weight limit increases should only offset any additional weight due to the alternatively fuelled or zero emissions technology? Please explain your answer.

2.27 The vehicle types with the proposed allowance of up to two tonnes for zero emission technology are:

- articulated lorries and road trains with 5 or 6 axles whose conventional technology weight limit is 40 tonnes. Under these proposals, weight limits for types already allowed at 42 tonnes and 44 tonnes would not change;
- articulated lorries and road trains with 4 axles, normally limited to 38 tonnes;
- two axle motor vehicles (other than buses, which already have a higher limit), normally limited to 18 tonnes;
- three axle motor vehicles, normally limited to 25 to 26 tonnes;
- three axle articulated buses, normally limited to 28 tonnes.

2.28 In the first two cases an extra one tonne allowance for alternative fuelled vehicles is also proposed. Under these proposals, limits for individual axle weights would not change.

What will happen next

We will publish a summary of responses and a government response in due course. Paper copies will be available on request. The enforcement of the end of sale dates for new non-zero emission HGVs will be via the [Green paper on a new road vehicle CO₂ emissions regulatory framework for the United Kingdom](#). Consulting on ending the sale of new non-zero emission HGVs is part of [Decarbonising Transport: A Better, Greener Britain](#).

This consultation also follows two recent DfT led consultations relating to HGVs, the [48 tonne intermodal freight trial consultation](#) and the [consultation on ending the longer semi-trailer trial](#). These consultations considered measures which could reduce greenhouse gas emissions from the existing HGV fleet by reducing the number of vehicles on the roads in specific operations. The responses to both these consultations are being considered and will be published shortly.

- A.1 When responding to the consultation, please comment on the analysis of costs and benefits, giving supporting evidence wherever possible.
- A.2 Please also suggest any alternative methods for reaching the objective and highlight any possible unintended consequences of the policy, and practical enforcement or implementation issues.

Annex A: Full list of consultation questions

Question 1

Do you agree or disagree that introducing a phase out date for the sale of new non-zero emission HGVs will help us meet our legally binding net zero target? Please explain your answer.

Question 2

Do you agree or disagree with our approach to split the phase out dates for new non-zero emission HGVs into two weight categories? Please explain your answer.

Question 3

Do you agree or disagree that 26 tonnes and under, and more than 26 tonnes are the right categories? What evidence do you have for or against?

Question 4

Do you agree or disagree with our proposal to end the sale of new non-zero emission HGVs, for vehicles weighing from 3.5 up to and including 26 tonnes, by 2035? What evidence do you have for or against?

Question 5

What do you consider the main challenges and barriers to meeting this target for HGVs 26 tonnes and under?

Question 6

How can these barriers be addressed?

Question 7

Do you agree or disagree with our proposal to end the sale of new non-zero emission HGVs, for vehicles weighing more than 26 tonnes, by 2040? What evidence do you have for or against?

Question 8

What do you consider the main challenges and barriers to meeting this target for HGVs weighing more than 26 tonnes?

Question 9

How can these barriers be addressed?

Question 10

Do you agree or disagree that these phase out dates should be extended to all non-zero emission HGVs, including those using low carbon fuels, in their respective weight categories? Please explain your answer.

Question 11

Do you agree or disagree that maximum permissible weights for certain zero emission vehicles (mainly HGVs) on both international and domestic journeys should increase by up to 2 tonnes (without exceeding 44 tonnes)? Please explain your answer.

Question 12

Do you agree or disagree that weight limits should increase by up to a maximum of 1 tonne for certain alternatively fuelled HGVs on both international and domestic journeys (without exceeding 44 tonnes)? Please explain your answer.

Question 13

Do you agree or disagree that weight limit increases should only offset any additional weight due to the alternatively fuelled or zero emissions technology? Please explain your answer.

Annex B: Consultation principles

The consultation is being conducted in line with the Government's key consultation principles which are listed below. Further information is available at <https://www.gov.uk/government/publications/consultation-principles-guidance>

If you have any comments about the consultation process please contact:

Consultation Co-ordinator
Department for Transport
Zone 1/29 Great Minster House
London SW1P 4DR

Or email consultation@dft.gov.uk.