



Department  
for Transport

# Phasing out the sale of new petrol and diesel cars from 2030 and Support for the Zero Emission Transition

December 2024

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London  
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## Ministerial Foreword

The UK automotive industry drives growth right across the country. It directly employs 152,000 people in brilliant jobs, is our most valuable exported good, and it adds £19 billion to our economy. This is an industry full of history and heritage, but it is now undergoing a once in a lifetime technological change. Our world is changing and our habits as consumers have to change with it. As the Prime Minister set out in his speech at COP29 in Baku, the need to transition away from a reliance on fossil fuels to power the global economy has never been clearer. And it offers a huge opportunity for the UK to lead the world in the industries and technologies of the future - ensuring the prosperity and security of our nation, with higher growth, better jobs, and cheaper bills.

In the move away from combustion vehicles to those powered by electricity, the automotive sector is almost uniquely placed in its ability to deliver huge cuts in carbon emissions, and to deliver them quickly. The transition to electric vehicles brings with it multiple other benefits for the UK. It means increased energy security as we reduce our reliance on imported foreign oil and instead power our transport system through a diversified array of domestic energy sources as the UK moves to becoming a clean energy superpower by 2030. And it means cleaner air and quieter streets in our towns and cities, forever removing one of the prime sources of local air pollution.

British consumers are already revealing their preferences: in 2024 roughly one in every five new cars purchased in the UK will be electric. Five years ago the equivalent figure was less than one in every fifty. The British people are embracing electric vehicles because they are cheaper (consumers can save hundreds of pounds a year and they have the potential to be run from as little as 2 pence a mile), they are great to drive, and simpler to maintain.

Overwhelmingly the transition also represents a clear industrial opportunity - for all parts of the UK. All major automotive manufacturers recognise the inevitability of the shift to electrification. All are having to invest huge sums in developing new vehicles and new technologies at pace, at great cost, and in the face of new competitive and international headwinds. We should not pretend that this is easy or that it will happen without a government willing to listen and respond to global trends. This Government is determined to support automotive companies as they revamp their production lines, adjust their business plans, and develop the technology needed for the next generation of zero emission vehicles. The UK now has an extensive automotive innovation ecosystem from fundamental research though to manufacturing. This includes the Advanced Propulsion

Centre R&D programme to develop strategically important zero emission vehicle technologies including batteries, electric motors and power electronics.

The last Government did great harm to the UK's reputation as a leading nation in the EV transition by moving goalposts on phase out dates, and creating doubt in the minds of investors and boardrooms. Their actions imperilled the billions of pounds of committed investment in the automotive sector and in key areas such as the UK's burgeoning chargepoint sector. We will not repeat this mistake. All new cars and vans will need to be 100% zero emission by 2035. And no new petrol or diesel cars will be sold after 2030.

This consultation is largely technical in nature. It concerns what sort of vehicles should be allowed for sale in the 2030-2035 period, and seeks views on potential adjustments to the UK's largest carbon saving measure.

More importantly, it represents the first step in a new phase of engagement between this Government and all those involved in ensuring that the UK's transition to zero emission vehicles is a success. We want to work in partnership with industry to make sure that our approach to the transition supports a thriving UK automotive sector now and in the future. It is fundamental to our Growth and Clean Energy missions and will help lead Britain and the world into a cleaner, safer, a more prosperous future.

Rt Hon Heidi Alexander MP

Secretary of State for Transport

Rt Hon Ed Miliband MP

Secretary of State for Energy and Net Zero

Rt Hon Jonathan Reynolds MP

Secretary of State for Business and Trade

# Executive summary

## Introduction

1. Through our manifesto and our plan for the automotive sector, this government is committed to supporting the transition to zero emission vehicles (ZEVs). We will provide certainty to manufacturers, the chargepoint industry, and to consumers by restoring the phase out date of 2030 for new cars with internal combustion engines (ICE) and by accelerating the rollout of charging infrastructure.
2. This transition is an unprecedented transformation of our transport system and delivering it will require support both from government and the private sector, but businesses cannot operate in a shifting policy environment. Sticking to commitments matters. This is why reinstating the 2030 phase out date will give much-needed clarity to industry, two thirds of which had announced plans to meet the phase out when it was delayed. It will also give confidence to consumers considering making the switch and will invigorate the charging infrastructure sector that is already putting billions of pounds of investment into our networks.
3. Households, consumers and businesses will benefit from the transition to ZEVs. Already, in many cases ZEVs are significantly cheaper to run, maintain, and repair than their petrol and diesel equivalents,<sup>1</sup> and they emit fewer dangerous particles which can damage health and worsen air quality. Lower running costs can help drive down the cost of living in the long term – and, for company vehicle fleets, it means a lower cost of doing business. So, the ZEV transition will also support the government in meeting its economic growth mission and in raising living standards. At the same time, by switching to ZEVs, consumers can insulate themselves from fossil fuel price spikes and, as we deliver our clean energy mission, the electricity that EV owners use will increasingly be clean, cheap, and homegrown. These benefits mean more than 97% of ZEV buyers would not switch back to an ICE.<sup>2</sup>
4. The ZEV transition is also critical for tackling climate change. For the 11th consecutive year, domestic transport is the largest emitting sector of our economy accounting for 28% of UK greenhouse gas emissions in 2022<sup>3</sup> and, as such, it must

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<sup>1</sup> ECIU, <https://eciu.net/media/press-releases/2023/new-analysis-petrol-car-drivers-paid-a-700-petrol-premium-in-2023>

<sup>2</sup> ZapMap, <https://www.zap-map.com/news/annual-survey-key-findings-2024>

<sup>3</sup> Government Statistics, <https://www.gov.uk/government/statistics/transport-and-environment-statistics-2024>

be front and centre of our efforts to accelerate to net zero and to tackle the global climate crisis. The government is committed to meeting legally binding targets for reducing greenhouse gas emissions across all sectors, including transport. These targets – known as carbon budgets – will keep us on track to deliver net zero by 2050.

5. Countries, cities, and companies across the globe are committed to tackling climate change and delivering zero emission transport, and we want to ensure the UK is at the forefront of this transition. Fortunately, there are already over one million battery electric vehicles on our roads, with increasing numbers of models becoming available and purchase costs for consumers falling. Billions of pounds of investment have already been committed to UK manufacturing and battery supply chains, supporting an increase in the numbers of jobs and the reindustrialisation of Britain, whether at Nissan's global EV manufacturing hub in Sunderland or Tata's gigafactory in Somerset that will power JLR. But to accelerate this investment at the right pace, we need to ensure that demand for ZEVs continues to grow and that consumers feel able to take advantage of the benefits that ZEVs can bring.
6. The reinstatement of the 2030 phase out date will build on the regulatory framework put in place by the previous government. That framework – the Zero Emission Vehicle (ZEV) Mandate – is among the most ambitious regulatory frameworks of its kind in the world, shaped through continued engagement with industry. It was introduced in January 2024. The Mandate is implemented through the Vehicle Emissions Trading Schemes Order 2023 (VETS) and sets out the percentage of new cars and vans that must be zero emission each year. This regulation has provided investment certainty, already unlocking over £6bn of charging infrastructure investment, with the potential for further automotive investment to come.
7. At the same time, the UK market for ZEVs is maturing. In the first 11 months of 2024, the UK has been the second largest market in Europe for zero emission cars.<sup>4</sup> Vehicle manufacturers representing 67% of the UK's new car market have already committed to being fully zero emission by 2030. With the transition already in full-flight, and business and consumer certainty a critical priority, we are fully committed to maintaining the fundamentals of the ZEV Mandate, including the current trajectories for annual ZEV sales. But the ZEV transition as a whole can only be achieved in partnership with industry. For this reason, we are seeking views on the flexibilities in the ZEV Mandate which allow manufacturers to meet the mandate in a way that fits with their individual transition plans. This includes whether we should extend flexibilities already in place out to 2026 and whether we should consider new flexibility to trade emissions across van and car fleets.
8. Part 1 of this consultation therefore seeks views on options to deliver our manifesto commitment to end the sale of new cars powered solely by internal combustion engines from 2030. We are seeking views on what types of cars could be sold from 2030 onwards, which are not fully zero-emission including hybrids. In 2035, all car sales will be pure-electric vehicles, in line with commitments made by the previous government and phase out dates set elsewhere in Europe. Part 1 also seeks views

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<sup>4</sup> ACEA November Car Registrations, [https://www.acea.auto/files/Press\\_release\\_car\\_registrations\\_November\\_2024.pdf](https://www.acea.auto/files/Press_release_car_registrations_November_2024.pdf)

on demand measures to support the uptake of zero emission vehicles as the transition unfolds.

9. Part 2 of this consultation seeks views on flexibilities in the ZEV Mandate up to 2030 and other, technical updates to support the efficient running of the regulation. We look forward to your responses.



## How to respond

10. The consultation period began on 24 December and will run for eight weeks until 18 February. Please ensure that your response reaches us before the closing date. If you would like further copies of this consultation document, it can be found at <https://www.gov.uk/dft#consultations> or you can contact [zevmandate@dft.gov.uk](mailto:zevmandate@dft.gov.uk) if you need alternative formats (Braille, audio CD, etc.). See the "Ways to respond" section of [the consultation home page](#) for a Word document form that you can use to add your responses.

11. Please send written consultation responses to:

Department for Transport, ZEV Regulations, 3rd Floor Great Minster House, 33 Horseferry Road, London, SW1P 4DR

Or via email to: [zevmandate@dft.gov.uk](mailto:zevmandate@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.

## Next steps

12. We will undertake extensive engagement with stakeholders to discuss the issues in this consultation, including hosting a series of workshops, roundtables and engaging in bilateral discussions. Correspondence will follow to those who responded to previous ZEV consultations, or you can email [zevmandate@dft.gov.uk](mailto:zevmandate@dft.gov.uk)

## Freedom of Information

13. 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.
14. 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.

15. 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.

## Data protection

16. This consultation is seeking your views on phasing out the sale of new petrol and diesel cars from 2030 and support for the zero-emission transition.
17. Your personal data collected through this consultation is processed in line with our online forms, surveys and consultations privacy notice.

## Consultation Principles

18. This consultation is being conducted in line with the government's consultation principles (<https://www.gov.uk/government/publications/consultation-principles-guidance>).
19. If you have any comments about the consultation process, contact:

Consultation Co-ordinator

Department for Transport

Zone 1/29 Great Minster House

London SW1P 4DR

Email: [consultation@dft.gov.uk](mailto:consultation@dft.gov.uk)

## Part 1: 2030 phase out of new ICE cars, and CO<sub>2</sub> requirements for vans

20. The UK Government is committed to phasing out the sale of new cars powered solely by internal combustion engines from 2030. In many cases, there are significant benefits of zero and low emission vehicles including lower running, maintenance and repair costs,<sup>5</sup> and it is right that we push to fully decarbonise and clean up our vehicle fleet as quickly as possible to ensure that those benefits can be enjoyed by an ever increasing number of people.
21. Following the introduction of the ZEV Mandate, delivered by the Vehicle Emissions Trading Schemes Order 2023 (VETS) in Great Britain in 2024, and its recent extension to cover the entirety of the United Kingdom from 2025, 80% of all new cars, and 70% of all new vans are already required to be zero emission from 2030. The existing regulatory framework to 2030 does not require any improvements to CO<sub>2</sub> emissions of new non-ZEVs but rather that they are maintained at 2021 levels.
22. This section (part 1) of the consultation seeks views on the treatment of new cars and vans from 2030 that are not required to be zero emission under the current ZEV Mandate targets. This segment of the market will be a decreasing proportion through to 2035, assuming indicative trajectories are maintained on a pathway to 2035<sup>6</sup>, when all new cars and vans will be required to be fully zero emission. It also considers demand measures to support zero emission vehicle uptake, the role of niche vehicle types from 2030, and proposals for how small and micro volume vehicle manufacturers will be regulated from 2030.
23. To deliver a path forward that will deliver for the UK economy while reducing our emissions we will carefully consider the impacts on consumers from all walks of life, and businesses of all sizes. We want to work with vehicle manufacturers, the

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<sup>5</sup> ECIU, <https://eciu.net/media/press-releases/2023/new-analysis-petrol-car-drivers-paid-a-700-petrol-premium-in-2023>

<sup>6</sup> In the joint consultation response issued by the UK Government, Scottish Government, Welsh Government and the Northern Irish Department for Infrastructure in October 2023, a preference for a linear trajectory from 2030-2035 was put forward. For cars this would be 80%-100%, increasing by 4% each year. For vans, this would be 70%-100%, increasing by 6% per year. Targets from 2031 will be set out in future legislation, later in the decade.

charging infrastructure sector, and other key industries to set an ambitious but achievable framework that will drive investment across the UK.

24. This consultation seeks views only on the treatment of different technologies under the phase out rather than how the phase out will be implemented. As part of the evolution of this policy, we envisage that any options for delivery, on which further details will be set out in due course, will apply on a UK-wide basis from 1 January 2030 until 31 December 2034, with the phase-out of all non-zero emission vehicles, including hybrids, coming into effect from 1 January 2035. Part A of the consultation that addresses this definition, is reserved to the jurisdiction of the UK Parliament and, as a result, the UK Government alone is consulting on this policy. The UK Government works closely with the Department for Infrastructure in Northern Ireland, the Scottish Government, and the Welsh Government on the ZEV transition, and this will continue.

## Eligibility Options and Thresholds for cars

25. To restore the phase-out date of 2030 for new cars with only internal combustion engines, a definition is needed to ensure that new cars powered solely by petrol or diesel, and that do not have any form of electrification or energy recovery as part of the drive train, are explicitly ruled out.
26. We consider there to be three broad approaches that could be used to enact the phase-out of ICE-only cars from 2030, which could be used alone or combined, and all of which have different considerations:
  - A. technological definition;
  - B. vehicle level CO<sub>2</sub> cap; or
  - C. non-ZEV fleet average CO<sub>2</sub> cap.

### A. Technological Definition

27. A technological definition would define which cars are permitted by how the vehicle is powered, known as the drivetrain. There are several non-zero emission or hybrid drivetrain technologies available in the UK today that do not solely rely on combustion for the propulsion of the vehicle, which vary in their levels of electrification.
28. In order to phase out the sale of new cars powered by internal combustion engines, a technological definition is required. Establishing a technological definition, requiring sustained propulsion independent of the internal combustion engine, provides clarity and certainty to vehicle manufacturers on the vehicles that may be sold in the UK from 2030. Table 1 is an overview of these technologies.

Technology	Definition
Full hybrid electric vehicle (HEV)	HEVs are conventional petrol or diesel vehicles with an electric propulsion system. When battery charge and driving conditions allow, the engine can switch off, and the vehicle can be propelled by the electric motor alone. They cannot be plugged in to take power from an external source so are charged from braking or energy recovery on board.
Plug-in hybrid electric vehicle (PHEV)	PHEVs have a battery that can be plugged in and recharged, and an electric motor to deliver continuous zero emission mileage, as well as a conventional petrol or diesel engine to power the vehicle.
Range extended electric vehicle (REEV or REX)	REEVs are a form of PHEV permanently driven using a battery and electric motor, but also have a small auxiliary power unit. This is usually a petrol or diesel engine (but could be gas or hydrogen), that powers an electric generator to charge the battery or provide power to the motor. For the purpose of this consultation, they are not differentiated from PHEVs.

*Table 1 Technologies capable of sustained zero emission propulsion.*

29. Whilst some models of mild hybrid electric vehicle (MHEV) are capable of short duration zero emission propulsion at low speeds, they are not capable of sustained zero emission propulsion and instead rely on their internal combustion engine. As such, this type of technology is proposed to be phased out alongside other kinds of car that are reliant on internal combustion engines. MHEVs are counted alongside petrol and diesel combustion vehicles in the Society of Motor Manufacturers and Traders (SMMT) published vehicle registration statistics. As full hybrid and plug-in hybrid vehicles are capable of more sustained fully zero emission propulsion (i.e. the internal combustion engine is disengaged) they are compatible with the Government's intention.
30. If a PHEV definition was adopted, to ensure that PHEVs continue to deliver for consumers as the technology develops, it may also be necessary to apply a minimum WLTP<sup>7</sup> zero emission range, for example 50 miles,<sup>8</sup> for the purpose of the 2030 technical definition, with PHEVs that fall below this standard being phased-out. A reasonable zero emission range ensures that consumers can truly get "the best of both worlds" with a functional range alongside an internal combustion engine.
31. Requiring vehicles to be electrified in some way does not, on its own, guarantee that any carbon emissions reductions would be realised. While many hybrid vehicles (under any of the technologies listed above) may be relatively cleaner and more efficient than the equivalent petrol or diesel model, there are a number of petrol and diesel car models that emit lower levels of CO<sub>2</sub>, in absolute terms, than many HEVs and PHEVs. As an example, the cleanest petrol cars on the UK's roads emit approximately 110g CO<sub>2</sub>/km according to their WLTP CO<sub>2</sub> value - the internationally agreed test procedure that all new vehicles must undertake before being sold in the UK, and many other countries and jurisdictions around the world. While many HEVs and PHEVs are more efficient, some also have CO<sub>2</sub> emissions above 110gCO<sub>2</sub>/km.

<sup>7</sup> The Worldwide harmonized Light vehicles Test Procedure (WLTP) is a global standard for determining the CO<sub>2</sub> emissions of cars and vans.

<sup>8</sup> Equivalent All Electric Range (EAER) as determined by WLTP.

In 2023, WLTP emissions from conventional hybrids ranged between approximately 85 – 180gCO<sub>2</sub>/km.<sup>9</sup>

32. As a result, establishing a technological definition on its own could permit less efficient hybrids to be sold but prevent efficient petrol and diesel cars from being sold – contrary to the overarching policy aim of reducing carbon emissions from the new car fleet.

## B. Vehicle Level CO<sub>2</sub> cap

33. To complement the technical definition and guarantee carbon emissions reductions, an additional approach could be for a vehicle level CO<sub>2</sub> emissions cap to delineate the maximum acceptable WLTP CO<sub>2</sub> emissions of an individual vehicle. Under this approach, if a vehicle had emissions beneath this threshold and met the technical definition, it could be sold alongside ZEVs after 2030 and up to 2035. If it had WLTP CO<sub>2</sub> emissions above the threshold, then it could not be sold.
34. Previously, CO<sub>2</sub> emissions have been able to be used as a proxy for some vehicle technologies, with PHEVs having lower emissions than HEVs and ICE cars. However more recent data has demonstrated that PHEVs can have higher emissions in the real world than had previously been assumed. Under the WLTP CO<sub>2</sub> test, the methodology makes an assumption about the amount of driving that a PHEV would undertake in zero emission mode (using the battery), in order to generate an overall CO<sub>2</sub> value for the vehicle.
35. Recent research using real-world data has demonstrated that the current test may overestimate the amount of time that the vehicle is in zero emission mode, and underestimate the amount of time that the vehicle runs on the internal combustion engine. As a consequence, the test can produce a CO<sub>2</sub> value that is significantly lower than the real-world emissions of the vehicle. The research has led the European Union to introduce changes to the WLTP methodology to ensure that the PHEV CO<sub>2</sub> values are increased – to better reflect the real-world emissions of the vehicle.
36. This change has also been adopted in the internationally standardised version of the WLTP methodology, controlled by the United Nations Economic Commission for Europe (UNECE) – a UN-run body designed to standardise technical requirements around the world. The UNECE version of WLTP applies across the United Kingdom.
37. Figure 1: This chart shows the estimated distribution of test-cycle CO<sub>2</sub> emissions for vehicles sold in 2023 of ICEVs, HEVs and PHEVs, both before and after the proposed UNECE utility factor changes. ICEVs and HEVs are estimated to have an estimated average grams of carbon dioxide equivalent per kilometre of 146 and 128 respectively, while PHEVs currently have an estimated average of 32. After the first phase of utility factor changes, it is estimated that the average PHEV would emit 80 grams of carbon dioxide equivalent per kilometre, and 109 grams after the second phase. While on average, PHEVs are still likely to have lower emissions than ICEVs and HEVs even after the second phase changes, there is expected to be a large

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<sup>9</sup> Internal DfT analysis using DVLA registration data from 2023. Upper range value is the 95th percentile.

degree of overlap in their distribution ranges. Note that mild hybrids can be included within both ICEV and HEV categories, due to variability in data reporting.

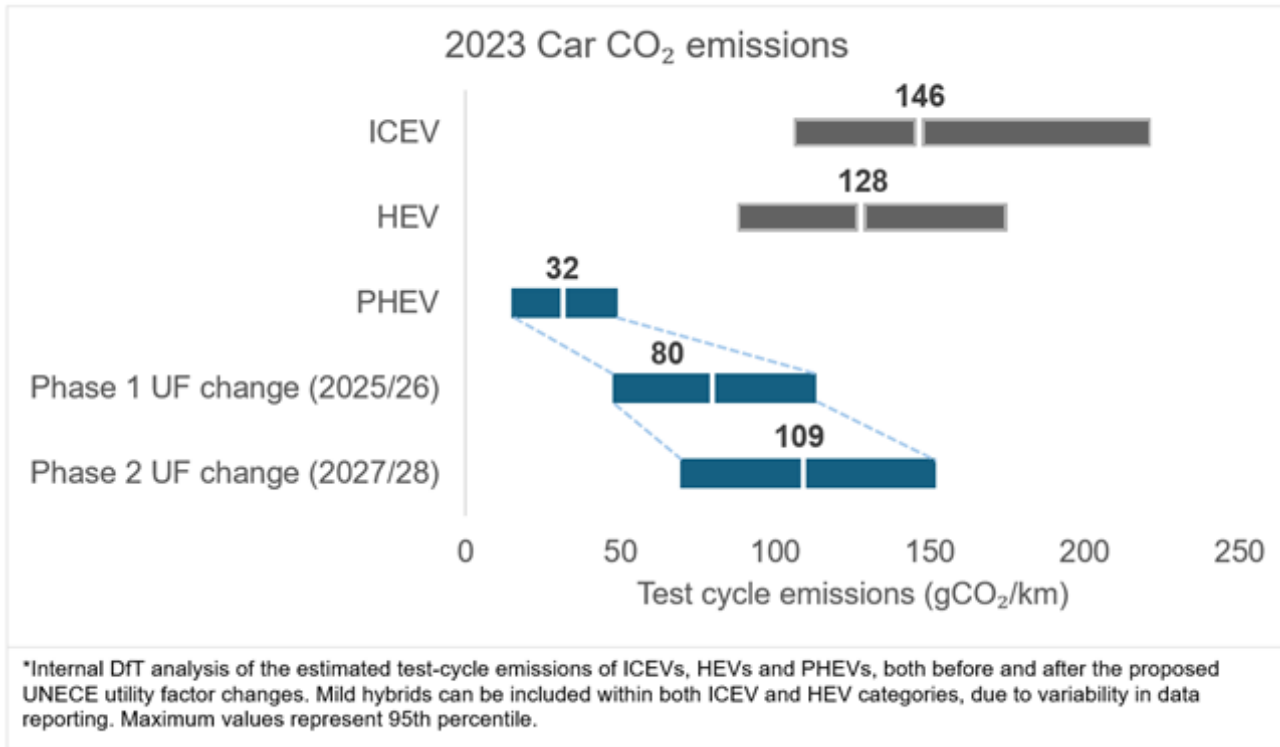


Fig.1 – visual demonstration of CO<sub>2</sub> emissions ranges of car drivetrain technologies in 2023

38. Establishing a vehicle-level CO<sub>2</sub> emissions cap could rule out many HEV cars, as well as a number of PHEVs. If the cap were set at the level of the lowest emitting ICE vehicles, then, based on the most recent data, a vehicle-level cap of approximately 105gCO<sub>2</sub>/km would be required. This would rule out most HEVs and a significant proportion of PHEVs.
39. The average non-ZEV registered for the first time in the UK in 2021 emitted 135gCO<sub>2</sub>/km. A 115g CO<sub>2</sub>/km cap would represent a significant improvement compared with ICE emissions, whilst still likely permitting a significant number of PHEV models<sup>10</sup> and a large number of HEV models to be sold, based on the vehicles on sale in 2023. 115gCO<sub>2</sub>/km is therefore our proposal for consultation.
40. Establishing a vehicle-level cap that permits all HEVs and PHEVs that were on the market as of 2023 to be sold would mean a cap of around 180gCO<sub>2</sub>/km, which, on its own, would not deliver a meaningful reduction in emissions compared with ICE vehicles.

### C. A non-ZEV fleet average CO<sub>2</sub> cap

41. The final option is a non-ZEV fleet average CO<sub>2</sub> emissions cap. This approach would establish a maximum CO<sub>2</sub> emissions value that car manufacturers would need to

<sup>10</sup> Subject to a decision on the adoption of Euro 6e utility factors in Great Britain and any potential revision from 2027/28 based on real-world fuel consumption monitoring data.

meet. Rather than applying to each new car sold, it would apply to the manufacturer's average CO<sub>2</sub> emissions of new cars sold in a calendar year.

42. Manufacturers already have their non-ZEV fleet average CO<sub>2</sub> emissions regulated through the Vehicle Emissions Trading Schemes Order 2023. This requires that their non-ZEV emissions remain at least the same level as the manufacturer's average in 2021, alongside implementing the ZEV Mandate.
43. As a result, any target established under this option could be set in two ways – either as a fixed target based on a given level of CO<sub>2</sub> emissions, or as a percentage reduction against each manufacturer's performance in prior years. As with the vehicle level CO<sub>2</sub> emissions cap, any target would be measured and set using the WLTP CO<sub>2</sub> test methodology.
44. Given the differing types of cars being sold by manufacturers, and in line with regulatory precedent both in the UK and around the world, it is considered that an approach that requires a percentage reduction against existing performance, rather than a fixed target, would be the most appropriate. A fixed target for all manufacturers would not consider the vehicle types being sold – meaning that manufacturers that focus predominantly on smaller models would be able to meet targets easily, while those focussing on larger vehicles would find it far more challenging to meet requirements.
45. As any target would only apply to a maximum of 20% of the new car fleet in 2030 as per the ZEV Mandate, with that percentage decreasing every year thereafter if indicative targets are legislated for, it would not be appropriate to set a target that requires very significant efficiency improvements through technologies that would have a very limited shelf life. Any target should complement the ZEV targets, and encourage manufacturers to consider low emission, hybrid options.
46. There are a number of options for determining what the degree of the reduction could be. Given the vehicles that were sold in the UK in 2023, and given that the manufacturer CO<sub>2</sub> targets that are set under VETS use 2021 as a baseline, which by 2030 will be 9 years old, reductions in the range of 10%-20% over the period 2030 to 2035 may be appropriate. The consultation analysis annex provides further detail and analysis for both a 10% and 20% reduction requirement.

## **D. Defining the 2030 Requirement**

47. In summary, there are a number of options available to deliver the Government's commitment, that could be delivered in different combinations. A form of technological definition to rule out ICE is required, and this definition could either allow both HEVs and PHEVs or PHEVs only. Given the intent behind the requirements is the reduction of CO<sub>2</sub> emissions by cars, this technological definition could be combined with some form of CO<sub>2</sub> requirement, either a vehicle level cap set at an appropriate level, or a tightening of the current fleet-wide CO<sub>2</sub> targets.
48. Some stakeholders might prefer a PHEV-only definition with a 115g CO<sub>2</sub>/km vehicle level cap to ensure that the potential emissions reductions of PHEV technology are realised. Others might believe a HEV and PHEV definition with a moderate 20%



tightening of fleetwide average CO<sub>2</sub> emissions is more appropriate. A range of indicative options are assessed for their impact on carbon emissions in the consultation analysis annex.

49. The complete list of possible combinations is as follows:
- A. PHEVs and HEVs; no CO<sub>2</sub> requirement.
  - B. PHEVs and HEVs, vehicle cap CO<sub>2</sub> requirement.
  - C. PHEVs and HEVs, fleetwide CO<sub>2</sub> emissions requirement.
  - D. PHEVs only; no CO<sub>2</sub> requirement.
  - E. PHEVs only, vehicle cap CO<sub>2</sub> requirement.
  - F. PHEVs only, fleetwide CO<sub>2</sub> emissions requirement.
50. The below table sets out the options as a matrix, and includes possible figures for the CO<sub>2</sub> reduction requirements, or vehicle level cap.

Type of vehicle	No CO <sub>2</sub> Requirement	Vehicle level CO <sub>2</sub> Cap 105g/115g/180g	Fleetwide CO <sub>2</sub> Requirement No reduction/ 10%/20% reduction
HEVs and PHEVs	Option A	Option B	Option C
PHEV Only	Option D	Option E	Option F

*Table 2 Matrix of possible options for the 2030 requirement for new non-ZE cars.*

**Question 1: Do you agree with the Government’s view that full hybrid and plug-in hybrid technologies only should be considered? Please explain your answer.**

**Question 2: Do you prefer a technological definition that permits both HEVs and PHEVs, or a technological definition that permits PHEVs only? Please explain your answer.**

**Question 3: Do you support no further CO<sub>2</sub> requirements, a vehicle level CO<sub>2</sub> cap, or a fleetwide CO<sub>2</sub> requirement? Please explain your answer.**

**Question 4: Should a minimum range be required for new PHEVs and, if so, at what level should it be set? Please explain your answer.**

## Vans

51. We are committed to the ZEV Mandate trajectory for new vans, and ensuring the sales of all new cars and vans are fully zero emission by 2035. This section

considers and seeks views on whether new non-ZE vans from 2030 should be subject to the same, or different, requirements compared to cars.

52. The zero emission and hybrid van markets in the UK are very different from the car equivalents. While many cars are now offered with an electrified variant, few vans in the UK are currently offered with an electrified option. Indeed, of the 351,426 vans or light goods vehicles that were sold in the UK in 2023,<sup>11</sup> only 23,757 were electrified in any form. Of those light goods vehicles, 21,811 were fully zero emission, meaning fewer than 2,000 hybrid vans were sold.
53. The majority of van models that are available in the light goods vehicle space are actually large cars that have been modified to carry goods rather than passengers, thus counting as a van for vehicle approval purposes. Only three models that were sold in the UK in 2023 were designed to be hybrid vans from initial manufacturing.
54. Any decision on whether to apply a requirement to new vans from 2030 therefore needs to take this significantly different starting point into account. Few van manufacturers are planning to launch hybrid van products, with the vast majority preferring to make the switch directly from petrol or diesel to zero emission models. Establishing a technological definition in the same manner being proposed for cars risks manufacturers having to 'create' a hybrid van market for the brief 2030-35 period – potentially diverting resource and investment away from zero emission technologies. Vans play a vital role in the economy and the requirements must be carefully calibrated to account for potential business impacts during the transition to zero emission models.
55. The Government is therefore not proposing to set a technological definition that all new non-zero emission vans sold in the UK must meet from 2030. However, we are seeking views on whether either a vehicle level CO<sub>2</sub> cap or a more ambitious non-ZEV fleet average CO<sub>2</sub> requirement should apply.
56. The government believes that a fleet average CO<sub>2</sub> requirement would be the most appropriate form of CO<sub>2</sub> target to deploy, given the lack of hybrid technologies available in the van sector.
57. A non-ZEV fleet average CO<sub>2</sub> reduction target would provide manufacturers with more flexibility, and would ensure that consumers are still able to purchase the most appropriate commercial vehicle to suit their needs from 2030.
58. Indicative 2030 options for a 10% and 20% CO<sub>2</sub> reduction, compared to 2021 non-ZEV performance, are assessed for their impact on carbon emissions in the consultation analysis annex. However, given the limited availability of hybridised powertrains for vans, a 20% improvement relative to manufacturer's 2021 CO<sub>2</sub> baseline targets (i.e. the targets currently used in the UK's existing CO<sub>2</sub> emissions regulation, the Vehicle Emissions Trading Schemes) could be challenging to meet. We welcome respondents' views on the credibility of each of these indicative reduction options.

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<sup>11</sup> VEH1153: Vehicles registered for the first time by body type, keepership and fuel type  
<https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables>

59. We are also seeking views on the impacts that any new or additional non-ZEV CO<sub>2</sub> emissions requirement from 2030 would have on the van industry and on van users. In particular, we are seeking views from both the supply side (van manufacturers, parts suppliers etc) as well as van users (whether fleet, large business, small business, or self-employed) to determine the overall impact to the economy of proposed regulations from 2030 to 2035.

**Question 5: Do you agree with the Government's intention not to establish a technological definition for the specification of new non-ZE vans that may be sold from 2030? Please explain your answer.**

**Question 6: What are your views on establishing a CO<sub>2</sub> requirement for vans from 2030? What is your preferred measure, if any, and at what level should the target be set? Please explain your answer.**

**Question 7: What would be the impact to the economy and to UK society of any new or additional non-ZEV CO<sub>2</sub> requirements in the van sector from 2030? Please explain your answer and provide evidence where possible.**

## **Demand Measures for Zero Emission Vehicles**

60. The UK Government already provides a range of measures to support the uptake of zero emission vehicles. These include tax incentives, investment in charging infrastructure, £2bn support for zero emission vehicle manufacturing and supply chain, and targeted grant support for consumers such as the plug-in van grant. These measures are designed to give drivers the confidence to make the switch to zero emission vehicles and industry the certainty to invest in the transition. However, we continue to keep these measures under review to deliver a balance between accelerating this transition, while delivering value for money to the taxpayer.

**Question 8: What are your views on current measures to support demand for zero emission vehicles? What additional measures could further support the transition?**

## **Low Volume Manufacturers**

61. In establishing the 2030-2035 requirements for new non-ZE cars and vans, we must also consider the role of smaller volume manufacturers to meet these requirements. Smaller volume manufacturers account for a very small proportion of overall UK vehicle sales, and limited amounts of CO<sub>2</sub>. They play a vital role in supporting jobs, investment, skills and expertise within the UK automotive industry, and will play an important role in the transition to ZEVs. In the UK, roughly 18 manufacturers are responsible for 90% of all car sales, while 14 van manufacturers are responsible for 95% of all van sales.
62. It is clear that all manufacturers must decarbonise according to the ambitious timetable for all new cars and vans to be ZEV by 2035, including those made by low volume manufacturers, but this must be in a manner that is sustainable. While large volume, mass market vehicle manufacturers generally have the infrastructure and financial capability to invest in new technologies, by virtue of their size, small volume manufacturers may not, with few developing any form of hybrid product.

63. There is precedent for treating the small volume manufacturers differently from large volume manufacturers when it comes to both new regulatory requirements and to new decarbonisation measures. In the UK, under the VETS Order, small volume manufacturers (SVMs) are defined as manufacturers registering <2,500 cars and/or <2,500 vans in any calendar year. Any manufacturer falling beneath this threshold is eligible for a derogation from the ZEV targets, with those registering <1,000 non-zero emission cars and/or <1,000 non-zero emission vans (defined as micro volume manufacturers (MVMs)) also being exempted from the CO<sub>2</sub> targets.
64. For all manufacturers of all sizes, new cars and vans must be 100% zero emission by 2035. However, in considering the requirements for small and micro volume manufacturers in this transition, we are seeking views on whether small and micro volume manufacturers should be subject to the 2030 requirements for cars and for vans.

**Question 9: What are your views on whether small volume manufacturers (between 1,000 and 2,499 registrations) should be subject to the 2030 requirements for cars and/or vans?**

**Question 10: What are your views on whether micro-volume manufacturers (fewer than 1,000 annual registrations) should be subject to the 2030 requirements for cars and/or vans?**

## Special Purpose Vehicles and Kit Cars

65. The Government recognises that for a limited number of vehicles with special use cases, a 2030 phase-out date is inappropriate. Special purpose vehicles (SPVs) are a specific group of vehicles defined in Annex I of Regulation (EU) 2018/858<sup>12</sup> that includes ambulances, armoured vehicles, and wheelchair accessible vehicles. SPVs are engineered to meet exact requirements to service a particular societal need, are often produced in low numbers as they face additional engineering challenges compared with conventional vehicles that limit or entirely prevent the production of zero emission and/or hybrid variants.
66. Taking the combination of these factors into account, it is proposed that all SPVs be exempt from the new 2030 requirements for cars or vans.

**Question 11: What is your opinion on exemptions for Special Purpose Vehicles from the 2030 requirements for cars and vans?**

67. Kit cars represent a very small overall segment of the market. It is proposed that applying the requirements to kit cars would therefore not be proportionate.

**Question 12: What is your opinion on exemptions for kit cars from the 2030 requirements for cars and vans?**

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<sup>12</sup> Defined in point 5, annex I to Regulation (EU) 2018/858.  
<https://www.legislation.gov.uk/eur/2018/858/annex/I/part/A/division/5>



# Part 2: Vehicle Emissions Trading Schemes Updates



## Introduction

68. While the primary purpose of this consultation is to seek views on phasing out the sale of new petrol and diesel cars from 2030, it presents an opportunity to ensure that the Vehicle Emissions Trading Schemes Order 2023 (VETS), which implements the ZEV Mandate, remains effective.
69. VETS implements the ZEV Mandate and CO<sub>2</sub> standard which was consulted on in 2023 and came into force in Great Britain in January 2024. An amendment to VETS for Northern Ireland to join the schemes from 1 January 2025 recently became law, following approval in the Northern Ireland Assembly, Senedd Cymru, Scottish Parliament, and UK Parliament.
70. VETS is devolved legislation and in accordance with the Climate Change Act 2008, the devolved governments and the UK Government each has a duty to consult on changes, which must be agreed by all four governments before they can be legislated for. As such, the devolved governments and the UK Government are undertaking this part of the consultation jointly.
71. This part of the consultation presents three emerging considerations for VETS. The first is ensuring that vehicle manufacturers have access to the right flexibilities to comply with targets, and specifically asks whether a van to car mechanism should be included. The second looks at the utility factor in plug-in hybrid CO<sub>2</sub> emissions calculations and considers whether VETS should be amended to account for changes in UNECE and EU type approval methodology in monitoring compliance against the baseline CO<sub>2</sub> targets. The third describes a discrepancy in how specific emissions targets under the previous assimilated regulation, Regulation (EU) 2019/631, were calculated and applied in regard to the UK market.
72. Following the completion of this consultation, the Department for Infrastructure (NI), the Scottish Government, the UK Government, and the Welsh Government will jointly determine whether further legislation to amend VETS is appropriate and respond in due course. The Department for Infrastructure (NI), the Scottish Government, the UK Government, and the Welsh Government are committed to ensuring that VETS remains fit for purpose as it delivers on an ambitious transition to ZEVs for the UK. We look forward to reviewing your responses.

## A. Flexibilities in the ZEV Mandate

73. When the ZEV Mandate was originally consulted on in 2021, it was collaboratively designed with industry to support a broad range of ZEV transition strategies. To do this, a series of options for flexibilities were proposed in the 2022 technical consultation and refined through close working with industry in the final consultation in 2023. The flexibilities that were implemented in the final design of the ZEV Mandate were:
- Borrowing: In the years 2024, 2025, and 2026, manufacturers are permitted to sell fewer ZEVs than the target in each year, in exchange for delivering them in a later year with a 3.5% compounding interest rate. This flexibility is subject to a cap that decreases in the three years borrowing is permitted.
  - CO<sub>2</sub> Conversion: In the years 2024, 2025, and 2026, manufacturers that beat their CO<sub>2</sub> baseline target, calculated in reference to their previous emissions performance, are permitted to use any overcompliance to offset their ZEV target. This flexibility is subject to a cap that decreases in the three years that conversion is permitted.
  - ZEV Conversion: Manufacturers that beat their ZEV target are permitted to use any overcompliance to offset their CO<sub>2</sub> target at an exchange rate. This is not subject to a cap or a time limit.
  - Banking: Allowing manufacturers that overcomply against the ZEV target to save that overcompliance for use in a future year. This is not subject to a cap or a time limit.
74. The ZEV Mandate includes several further provisions to support the market. These are derogations and exemptions for low volume manufacturers, pooling for connected manufacturers, and trading. Bonus credits are also available for zero emission vehicles sold to car clubs and zero emission special purpose vehicles, including wheelchair accessible vehicles.
75. Over the first year of the ZEV Mandate, pressures on vehicle manufacturers have emerged that present additional challenges compared with when the original ZEV Mandate design was consulted on. As a result, it is appropriate to seek views on whether the current flexibilities are still fit for purpose in meeting the existing ZEV trajectory, the phase out date for new cars that rely solely on an internal combustion engine in 2030, and the phase out of new non-zero emission cars and vans from 2035.

### **Question 13: Are the time limits on the current flexibilities in the ZEV Mandate for cars and for vans still appropriate? Please explain your answer.**

76. Vans are a crucial segment of the transport economy, and accounted for 16.5% of the UK's domestic transport emissions in 2021.<sup>13</sup> Transitioning vans to zero emission as soon as possible is crucial to delivering significant reductions in CO<sub>2</sub> emissions,

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<sup>13</sup> Figure 4, Transport and environment statistics: 2023 <https://www.gov.uk/government/statistics/transport-and-environment-statistics-2023>

as well as improving air quality and realising cost savings for businesses and consumers.

77. Between January and November 2024, industry data suggest that zero emission vans comprised around 5.8%<sup>14</sup> of total van registrations compared to a headline ZEV target of 10%. While the existing mechanisms of trading, borrowing, conversions from CO<sub>2</sub> overperformance, and derogations, mean that all manufacturers have a clear path to compliance, further incentive for zero emission vans could help stimulate the market.
78. The Vehicle Emissions Trading Schemes Order contains four individual trading schemes;
  - The Non-Zero-Emission Car Registration Trading Scheme (CRTS) – Car ZEV Targets;
  - The Non-Zero-Emission Car CO<sub>2</sub> Trading Scheme (CCTS) – Car CO<sub>2</sub> Baseline Targets;
  - The Non-Zero-Emission Van Registration Trading Scheme (VRTS) – Van ZEV Targets; and
  - The Non-Zero-Emission Van CO<sub>2</sub> Trading Scheme (VCTS) – Van CO<sub>2</sub> Baseline Targets
79. We have been considering whether there should be greater flexibility in using van allowances. Previously, car and van emissions regulations have been kept separate. However, now with VETS in place there is greater flexibility, where overachievement against the van targets could be transferred for use against the car ZEV targets, to widen potential compliance pathways for manufacturers.
80. There is therefore an option for a new compliance flexibility to be introduced into VETS to allow the one-way transfer of excess van allowances to the car scheme. An exchange rate of 1 VRTS allowance for 1 CRTS allowance would ensure that there are no reductions in the carbon savings delivered by VETS while granting van manufacturers additional options to benefit from overcompliance.
81. If this flexibility were to be introduced, it is proposed that a manufacturer would need to meet some or all of the following requirements to transfer VRTS allowances to CRTS allowances, similar to the current rules on conversions between CRTS/VRTS and CCTS/VCTS schemes.
  - The manufacturer must have complied with the VRTS target for the year through VRTS allowances allocated. VRTS credits earned for the registration of special purpose and car club ZEVs, and VRTS credits converted from VCTS (van CO<sub>2</sub> targets) would not be counted in assessing this criterion. Allowances and credits gained through trading and borrowing would also not be counted in assessing this criterion.

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<sup>14</sup> N1 5.3%, N2 <4.25t 0.5%. <https://www.smmmt.co.uk/2024/12/van-market-posts-second-best-ever-november-but-evs-and-pick-ups-need-support-to-keep-pace/>



- A manufacturer may not use this flexibility while in deficit against the VRTS target and the result of the transfer must not place the manufacturer in a deficit against the VRTS target.
  - Borrowed VRTS allowances would be ineligible for transfer to CRTS. VRTS credits would be ineligible for transfer to CRTS. Provided that the manufacturer meets the transfer criteria, VRTS allowances that are available through trading and banking would be eligible for transfer.
  - Transfer of VRTS allowances to CRTS would be allowed from 2025-2030, the full duration of the current legislation, and not be subject to a cap.
82. Analysis set out in the analytical annex indicates that implementation of this measure would create a small annual average CO<sub>2</sub> saving of 0.02 MtCO<sub>2</sub>e in carbon budget (CB)4, 0.10 MtCO<sub>2</sub>e in CB5 and 0.01MtCO<sub>2</sub>e in CB6.
83. While this proposed implementation is a one-way transfer, some stakeholders may prefer a bi-directional model, allowing transfers from CRTS to VRTS (car to van). Respondents interested in CRTS to VRTS transfer are encouraged to explain this in their responses and to include suggestions for a carbon neutral implementation.

**Question 14: What are your views on the proposal to implement a van-car transfer in VETS? Please explain your answer.**

**Question 15: Are there other flexibilities that should be considered within VETS for cars and vans?**

## B. Implementation of PHEV utility factor updates in VETS

84. Plug-in hybrid electric vehicles (PHEVs) are propelled by an internal combustion engine (ICE) or an electric motor. The electric battery is charged when the fuel is used or by connecting the PHEV to a mains electricity supply. The official CO<sub>2</sub> emissions value for PHEVs is calculated through the Worldwide harmonised Light vehicle Test Procedure (WLTP) using a variable known as the utility factor (UF). The UF represents the assumed share of driving done by PHEVs in electric mode (using the battery) compared to driving done using the internal combustion engine.
85. Research has shown that the UF overestimates how often drivers charge their PHEVs. In the real world PHEVs tend to be driven much more in petrol/diesel mode, which causes real-world PHEV CO<sub>2</sub> emissions to be higher than as determined by the UF calculations. This has resulted in a globally-recognised performance gap between PHEV official type-approval figures and real-world CO<sub>2</sub> emissions. This gap is estimated to equate to a 243% increase in the UK, relative to values recorded under the WLTP test cycle.
86. In the relevant UNECE Regulations and in the EU, the UF is being updated in 2025 (applying to all new vehicle registrations a year later), and again in 2027, to better reflect the real-world performance of PHEVs. As the UK is a signatory to the relevant UNECE Regulations, new vehicles type approved according to UNECE regulations are allowed to be sold on the UK market. New vehicles sold in NI will also be required to be approved in accordance with the latest EU standards.
87. As a result, vehicles with CO<sub>2</sub> emissions calculated with the new UF will be on the UK market from 2025 onwards. Separately, the UK Government is planning to consult in 2025 on a proposal to mandate the latest UNECE Regulation, including the UF update, in GB for all vehicle registrations from 2026.
88. The change in how PHEV CO<sub>2</sub> emissions are calculated will have an impact on compliance with the CO<sub>2</sub> baseline targets in the Vehicle Emissions Trading Schemes Order 2023 (VETS). The CO<sub>2</sub> baseline target is calculated from each manufacturer's CO<sub>2</sub> emissions performance in 2021 and remain the same from 2024. This CO<sub>2</sub> baseline target is then compared to the manufacturer's average CO<sub>2</sub> emissions each year. If a manufacturer's average CO<sub>2</sub> emissions are higher than the baseline target, then they will have a compliance deficit (deficit of CO<sub>2</sub> allowances). Conversely, if average CO<sub>2</sub> emissions are lower than the target, they will have a compliance surplus (surplus of CO<sub>2</sub> allowances). Manufacturers that have a surplus of CO<sub>2</sub> allowances are allowed to convert those allowances to ZEV credits that contribute towards the ZEV targets in VETS (among other flexibilities).
89. The updated UF in the CO<sub>2</sub> emissions calculation for PHEVs would increase the CO<sub>2</sub> values of these PHEVs, increasing manufacturers' average CO<sub>2</sub> emissions relative to the manufacturer's baseline CO<sub>2</sub> target, making compliance with the CO<sub>2</sub> baseline target harder. The intention of the baseline CO<sub>2</sub> target remaining the same from 2024 onward is that manufacturers should be incentivised to focus on zero emission technology, rather than incremental improvements in CO<sub>2</sub> emissions. The change in UF does not align with this intention for the purposes of compliance with VETS, as a PHEV sold in 2021 would have lower recorded emissions (and therefore have

resulted in a lower CO<sub>2</sub> baseline target) than the exact same vehicle once the UF changes take effect.

90. We have considered two options for the continuing administration of VETS in relation to PHEV CO<sub>2</sub> emissions. The first is to make no changes at this time and the second is to amend VETS to recognise the changes to the UF.

### Option 1: No changes to VETS

91. This approach may lead to additional CO<sub>2</sub> emissions savings in the long term but at the expense of making targets more challenging for manufacturers to comply with. It risks dampening growth in the vehicle market as manufacturers take steps to comply, for example by reducing the sales of certain models of vehicle.
92. Analysis set out in the analytical annex indicates that the widespread adoption of the new UF in the UK, with no changes to VETS, would create a small annual average carbon saving of 0.3 Mt CO<sub>2</sub>e in Carbon Budgets 5 and 6 respectively.

### Option 2: Amend VETS to account for changes to utility factors

93. As set out in the previous consultation, the CO<sub>2</sub> target was designed with the intention that a manufacturer should do no worse than their 2021 performance, including on PHEV CO<sub>2</sub> emissions, while increasing their ZEV sales. That consultation stated that there would be a re-examination of baseline targets if there were updates to vehicle testing protocols. On this basis, option 2 would be to amend VETS to limit the impact of the UF change, potentially for a limited timeframe, allowing manufacturers to focus investment efforts on delivering ZEVs to the UK market and still saving carbon emissions.
94. To do this, a formula could be included in VETS that would amend the recorded CO<sub>2</sub> emissions for PHEVs registered in the UK to maintain them at the equivalent 2021 levels for a short transitional period, with the result that PHEV CO<sub>2</sub>, for the purposes of VETS only, would continue to be accounted for as if UFs were not implemented.
95. This could be implemented on an “opt-in” basis, with vehicle manufacturers that wish to have their PHEV CO<sub>2</sub> considered with the old UF required to submit an application. For ease of administration, for vehicles type approved prior to 1 January 2025, manufacturers that wish to opt-in would supply a valid test report or emissions certificate from a recognised technical services provider (for the purposes of this application, a recognised technical services provider is one recognised by the Vehicle Certification Agency<sup>15</sup> or, for the time being, the European Commission<sup>16</sup>) that meets the Euro 6d-ISC-FCM emission standard.
96. For vehicles type approved after 1 January 2025 (including extensions of type approvals granted prior to 1 January) or for vehicles type approved prior to 1 January

<sup>15</sup> <https://www.vehicle-certification-agency.gov.uk/vehicle-type-approval/technical-services/designated-technical-services/>

<sup>16</sup> <https://ec.europa.eu/docsroom/documents?tags=technical-service-auto&pageSize=30&sortCol=title&sortOrder=asc>

but the manufacturer is unable to attest the Euro 6d-ISC-FCM emissions, vehicle manufacturers would be allowed to submit an additional PHEV CO<sub>2</sub> emissions figure that has been calculated using the Euro 6e emissions equation with the EA utility factor as calculated using the theoretical phase distances. DfT would publish a look-up table of the EA UF using each theoretical distance for manufacturers to use when calculating EA emissions. So that this figure can be validated, the manufacturer would be required to submit the following:

- Individual vehicle charge sustaining CO<sub>2</sub> (not required to be from documentation).
  - Individual vehicle charge-depleting CO<sub>2</sub> (not required to be from documentation).
  - Number of phases driven up to the end of the transition cycle for vehicle low from the test report covering the vehicle's IP family.
  - If the vehicle follows a Class 3a or 3b WLTC cycle (given on the certificate of conformity, point 47.2.1.)
  - If a Capped-speed WLTC was applied (given on the certificate of conformity, point 47.2.3.)
97. This arrangement would be time limited and end in 2028, to bring the UK's emissions framework into line with international comparators and would apply to both cars and vans.
98. Analysis set out in the analytical annex indicates that implementation of this measure, alongside the potential introduction of Euro 6e should that be agreed following a consultation, would create a small annual average carbon saving of 0.1 MtCO<sub>2</sub>e in carbon budget (CB) 5 and 0.2 MtCO<sub>2</sub>e in CB6.

**Question 16: Do you agree that VETS should be amended to account for the UF change? If so, do you agree with the proposal set out? Please explain your answer.**

## C. Interpretation of assimilated EU law Regulation (EU) 2019/631 in the UK

### Background of regulation

99. Carbon dioxide (CO<sub>2</sub>) emissions for new cars and vans have been regulated in the UK since 2009<sup>17</sup> and 2011<sup>18</sup> respectively. First, as part of the EU, and since EU Exit, through assimilated EU law.
100. In 2018, DfT held a public consultation<sup>19</sup> to prepare for a no deal EU Exit scenario. The consultation explored how the EU regulations should be brought into UK legislation. The response noted the UK's long-standing commitment for vehicle emissions regulations after EU Exit to be at least as ambitious as they were before.
101. From September 2018, the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) replaced the New European Drive Cycle (NEDC) test procedure and became mandatory for all new cars and vans (from 2019). The new testing regime provided a closer representation of 'real-world' fuel consumption and CO<sub>2</sub> emissions figures.
102. In 2019, the EU replaced previous regulations with Regulation (EU) 2019/631 to regulate CO<sub>2</sub> emissions for both cars and vans. Regulation (EU) 2019/631 established annual EU-wide average CO<sub>2</sub> emissions targets of 95gCO<sub>2</sub>/km (for cars) and 147g CO<sub>2</sub>/km (for vans) from 2020 to 2024, both according to the NEDC test procedure. The regulation included mechanisms to help manufacturers comply with targets such as 'pooling' which allowed manufacturers to group together as one entity. Special purpose vehicles, such as, wheelchair accessible vehicles (WAVs) and ambulances, were excluded from the CO<sub>2</sub> emission target calculations. Manufacturers that registered fewer than 1,000 vehicles in a year were also exempt from the regulations.
103. In 2020, DfT held another consultation<sup>20</sup> to give manufacturers the opportunity to shape those aspects of Regulation (EU) 2019/631 that were due to be retained. Manufacturers requested clarity on whether the EU or UK/GB new vehicle dataset would be used for the correlation procedure to convert previous NEDC-derived targets to WLTP-derived targets. The Government response noted that the full EU dataset would be used as the basis for this correlation, in line with the Government's commitment to ensure that the regulations remained at least as ambitious after EU Exit as they were before. DfT determined that using only EU values to calculate each manufacturer's WLTP preference target would ensure that the WLTP preference target, as a baseline (for specific emissions target setting), would be just as ambitious of a

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<sup>17</sup> Regulation (EC) 443/2009 for cars, until it was replaced by Regulation (EU) 2019/631.

<sup>18</sup> Regulation (EC) 510/2011 for vans, until it was replaced by Regulation (EU) 2019/631.

<sup>19</sup> The consultation was held from 6th to 28th November 2018

( <https://www.gov.uk/government/consultations/regulating-co2-emission-standards-for-new-cars-and-vans-if-theres-no-brexite-deal>) and explored the contents of SI 2019/550, which was drafted based on a no deal scenario.

<sup>20</sup> The consultation was held from 10th July to 21st August 2020

(<https://www.gov.uk/government/consultations/regulating-co2-emission-standards-for-new-cars-and-vans-after-transition>) and was based on the contents of both SI 2020/1418 and SI 2020/1402 which were drafted on the basis of a post EU exit deal between the UK and EU.

baseline in the UK regime as it would have been for manufacturers under the EU regime – as both baselines would be identical.

104. On 31 January 2020, the UK left the EU, and on 31 December 2020, the implementation period in the UK–EU Withdrawal Agreement ended. At that point, Regulation (EU) 2019/631 was retained in UK domestic legislation. The European Union Withdrawal Act (EUWA) 2018 permitted the correction of any inoperabilities within the newly retained EU legislation but did not otherwise allow changes to be made to the retained law to take alternative policy objectives into account. S.I. 2020/1418 therefore came into force in December 2020, amending Regulation (EU) 2019/631 to ensure it operated effectively in UK law. Later being further amended by S.I. 2021/898.
105. Since 1 January 2021, the UK Government has enforced Regulation (EU) 2019/631 for all new cars and vans registered in the UK. In March 2021, Government guidance on Regulation (EU) 2019/631 was published.<sup>21</sup> The guidance document (Section 7. Calculation of emission targets and performance) remains available and explains in detail the methodology for calculating the specific emissions target. It states which values should be taken as EU and which values should be UK.
106. Targets are calculated using a three-part formula that takes into account the manufacturer's 2020 NEDC target, 2020 NEDC performance, 2020 WLTP performance, and weight of vehicles being sold in the relevant year being assessed. Two of these formulas solely utilise 2020 data, and feed into a third formula.
107. The WLTP specific emissions reference target converts the manufacturer's NEDC 2020 specific emissions target into a comparable WLTP specific emissions reference target, by using the ratio of the manufacturer's average WLTP and NEDC specific emissions from 2020. The WLTP specific emissions reference target acts as baseline for a manufacturer's specific emissions target. Effectively, manufacturer's emissions are 'baselined' in 2020, with adjustments being made in subsequent years depending on the weight of vehicles being sold by the relevant manufacturer. The specific emissions target formula then adjusts the WLTP specific emissions reference target using the difference between the manufacturer's UK average mass and the EU-fleet average mass in 2020 and in the current reporting year.
108. On 30 March 2021, DfT held a workshop to discuss the cars and vans regulations, including the calculations (noted in the published guidance) and where EU and UK figures would be used. On 9 December 2021, DfT held an additional workshop with manufacturers to discuss the regulations. The formulae establishing car targets can be found in Part A, Annex I of Regulation (EU) 2019/631 and Part B of Annex I for light commercial vehicles (vans).<sup>22</sup>

## Proposed changes

109. A discrepancy between the wording within Regulation (EU) 2019/631 and the New Car and Van CO<sub>2</sub> Regulations Guidance 2022 V3 has been identified. We recognise that we must provide clarity on this discrepancy in a manner that is fair to the

<sup>21</sup> <https://www.vehicle-certification-agency.gov.uk/fuel-consumption-co2/average-emissions-monitoring/>

<sup>22</sup> <https://www.legislation.gov.uk/eur/2019/631/annex/i>

manufacturers subject to the regulation. We believe that allowing vehicle manufacturers to use either all EU or all UK values when calculating (up to and including) the WLTP specific emissions reference target would achieve this and would mitigate the discrepancy between Regulation (EU) 2019/631 and the New Car and Van CO<sub>2</sub> Regulations Guidance 2022 V3.

110. The Vehicle Emissions Trading Schemes Order 2023 (VETS) revoked Regulation (EU) 2019/631 from January 2024 in Great Britain but saved provisions for monitoring and enforcement for 2021-2023. Following the approval of the relevant statutory instrument by both Houses of Parliament and the Devolved Parliaments in Autumn 2024, the VETS Order comes into force in Northern Ireland in January 2025.
111. Subject to this consultation, we will seek to implement the proposal through legislation and/or such other measures as are required, to apply to specific emissions targets that will be calculated for use in the years 2021, 2022, 2023 in the UK, and 2024 in Northern Ireland.

## Potential Impact on VETS CO<sub>2</sub> Baselines

112. For those manufacturers whose specific emissions targets would be increased by the proposed change, there would be a consequence for their baseline targets under VETS, which partially relies on the calculation of specific emissions targets as they were applied in 2021.
113. As per Schedule 1<sup>23</sup> to VETS, for cars and vans, a vehicle manufacturer that was subject to Regulation (EU) 2019/631 in 2021 and complied<sup>24</sup> receives a VETS CO<sub>2</sub> baseline target that is the higher of the average emissions of their non-zero emission registrations in the calendar year 2021, or their specific emissions target in 2021, as calculated under Regulation (EU) 2019/631.
114. For those manufacturers whose specific emissions target would change if the proposal outlined above were applied, the same process would be re-applied. If they complied with their new specific emissions target in 2021, they would receive a VETS CO<sub>2</sub> baseline target that is the higher of the average emissions of their non-zero emission registrations or their new specific emissions target, calculated in accordance with the proposal.
115. Analysis set out in Annex A indicates that implementation of this measure would create a small reduction in annual average carbon savings achieved by VETS of 0.03, 0.05 and 0.04 Mt CO<sub>2e</sub> average annual in CB4, CB5 and CB6 respectively.

**Question 17: Do you agree with the proposal to allow UK derived or EU derived WLTP specific emission reference targets to apply from 2021-2023 in the United Kingdom, and in 2024 in Northern Ireland? If not, why?**

<sup>23</sup> <https://www.legislation.gov.uk/ukxi/2023/1394/schedule/1/made>

<sup>24</sup> Compliance in the context of VETS CO<sub>2</sub> baseline target calculation means that the manufacturer did not receive a fine in relation to the 2021 compliance year under Regulation (EU) 2019/631.

# Annex A: Analysis

## Introduction

116. This consultation sets out a series of options for achieving the government's manifesto commitment to phase-out new internal combustion engine car sales from 2030 (Part 1). It also considers potential updates to the Vehicle Emissions Trading Schemes (VETS) Order (Part 2).
117. In accordance with the Climate Change Act 2008, the UK Government has a legal obligation to ensure the UK achieves net zero carbon emissions by 2050, and interim carbon budget targets. The Scottish Government, the Welsh Government, and the Northern Ireland Executive are similarly bound by net zero targets.
118. Over the last year, significant progress has been made in setting out policies to decarbonise road transport, with the VETS Order 2023 expected to deliver 420 MTCO<sub>2</sub>e of carbon savings between 2024-2050 across the United Kingdom, the single largest carbon saving measure across the whole economy. As such, any proposals to amend these regulations should transparently present expected carbon impacts, for consultation respondents to consider alongside alternative factors.
119. This annex sets out the analytical approach and tailpipe carbon analysis results for the proposed VETS amendments and 2030 requirements policy:
- 119.1 Potential options to deliver the government's manifesto commitment to phase-out new internal combustion engine cars from 2030:
- Technology definitions i.e. the type of vehicle permitted to be sold from 2030.
  - A secondary CO<sub>2</sub> element of either a vehicle level CO<sub>2</sub> cap or a fleet average CO<sub>2</sub> cap.
  - A standalone CO<sub>2</sub> element for vans.
- 119.2 Transfer from the Van Registration Trading Scheme to the Car Registration Trading Scheme:
- VETS remains unchanged.



- An option to allow ZE van – ZE car transfers.

#### 119.3 Implementation of PHEV utility factor updates in VETS:

- No changes to VETS
- Amend VETS to account for changes to utility factors

#### 119.4 Interpretation of assimilated EU law Regulation (EU) 2019/631 in the UK

120. This analysis of each policy option has been undertaken in line with HMT Greenbook guidance and follows the same core modelling process and methodology as the carbon analysis underpinning the Zero Emission Vehicle Mandate Cost-Benefit Analysis. More information can be found [here](#).

121. Our analysis finds that the options presented could save up to 0.5 and 1 annual average MTCO<sub>2e</sub> across the UK in carbon budget (CB) 5 and CB6 respectively. All carbon saving estimates in this document are derived from the tailpipe (emissions from the vehicle's usage) and are presented in average annual MTCO<sub>2e</sub>.

122. The VETS regulations are treated as imputed tax-and-spend measures and are therefore outside of the remit of the Regulatory Policy Committee.

## Part 1: 2030 phase out of new ICE cars, and CO<sub>2</sub> requirements for vans

### Background

123. This consultation proposes a series of high-level options for achieving the government's manifesto commitment to phase out new internal combustion engine car sales from 2030.

124. The VETS Order sets a regulatory target for zero-emission vehicle (ZEV) sales. This rises over time and requires at least 80% of new cars and 70% of new vans to be zero emission in 2030. The options set out in this consultation extend beyond the current VETS Order, setting the policy direction for the maximum of 20% of cars, and 30% of vans, that are not required to be ZEV in 2030.

125. The ZEV targets after 2030 are subject to a future consultation. However, for the purposes of this assessment, we assume that ZEV targets are aligned to the indicative targets set out in the previous governments' response to the ZEV mandate consultation. These indicative targets gradually increased the proportion of new car and van sales that are required to be ZEV between 2030 and 2035, when all new cars and vans will be required to be fully zero emission. Figure 1 illustrates this policy landscape for cars.

126. Figure 1: This chart shows the projected proportion of zero-emission car uptake from 2024-2035. From 2024-2030, ZEV uptake will be determined by the legislated ZEV mandate (otherwise known as the VETS order 2023), with the remaining portion of the fleet subject to CO<sub>2</sub> targets. The projected proportion of ZEVs and the types of non-ZEVs permitted to be sold beyond 2030 is dependent on future legislation.

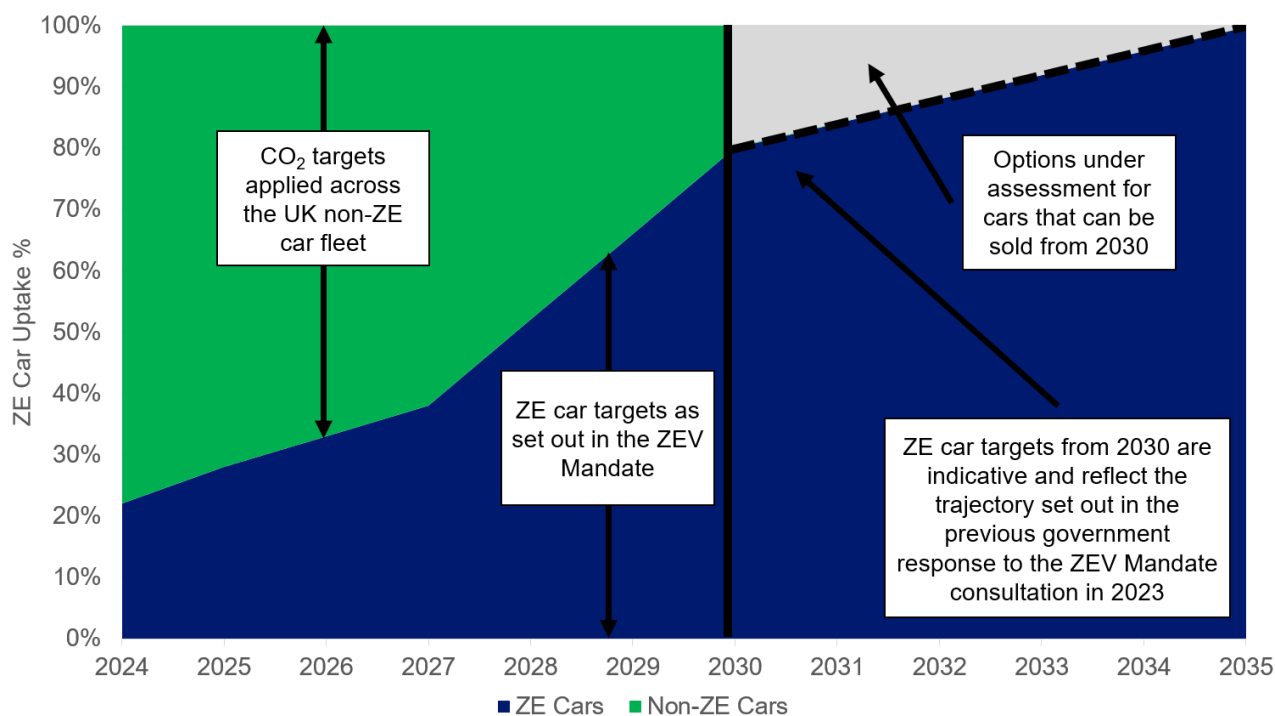


Figure 1 - Policy landscape for new car sales, pre and post 2030

## Options under consideration - cars

127. To achieve the manifesto commitment to phase out new internal combustion engine car sales from 2030, at a minimum this involves a “technology definition”. This would require all new cars to be at least a mild-hybrid electric vehicle (MHEV), hybrid (HEV), plug-in hybrid (PHEV) or full zero emission vehicle (ZEV).

128. The average hybrid vehicle is cleaner and more efficient than the average petrol or diesel vehicle, but there are a number of petrol and diesel car models that emit lower levels of CO<sub>2</sub> than many MHEVs and HEVs. As an example, the cleanest petrol cars on the road emit approximately 110gCO<sub>2</sub>/km according to the Worldwide harmonised Light vehicle Test Procedure (WLTP), which is the internationally agreed CO<sub>2</sub> emissions test procedure that all new vehicles must undertake before being sold in the UK, and many other countries and jurisdictions around the world. While many MHEVs and HEVs are more efficient, a number also have CO<sub>2</sub> emissions above 110gCO<sub>2</sub>/km.

129. As a result, establishing a technological definition on its own would permit less efficient hybrids to be sold, while preventing efficient petrol and diesel cars from being sold – contrary to the overarching policy aim of reducing carbon emissions from the new car fleet.

130. As such this consultation principally proposes that the technology definition is paired with a secondary CO<sub>2</sub> requirement; either a (i) vehicle-level CO<sub>2</sub> cap, or (ii) a non-ZEV fleet average CO<sub>2</sub> cap. Any of these variants could be set to meet a particular level of ambition, with varying levels of carbon savings. The complete list of possible combinations is as follows:

- PHEVs and HEVs; no CO<sub>2</sub> requirement.
- PHEVs and HEVs, vehicle cap CO<sub>2</sub> requirement.
- PHEVs and HEVs, fleetwide CO<sub>2</sub> emissions requirement
- PHEVs only; no CO<sub>2</sub> requirement.
- PHEVs only, vehicle cap CO<sub>2</sub> requirement.
- PHEVs only, fleetwide CO<sub>2</sub> emissions requirement

131. In this analysis, illustrative non-ZEV fleet wide CO<sub>2</sub> reduction targets of 10% and 20% are assumed, alongside a 115gCO<sub>2</sub>/km vehicle cap option.

## Options under consideration - vans

132. Both the zero emission, and hybrid van markets are very different compared to the car equivalents. While many cars are now offered with an electrified variant, fewer vans in the UK are currently offered with an electrified option.

133. Licensing data from the DVLA shows that less than 1% of new vans registered in 2023 were hybrid, of which almost none were plug-in hybrids.<sup>25</sup> The hybrid van market is expected to remain constrained between now and 2030, with many van manufacturers planning to switch their internal combustion engine models directly to zero-emission.

134. As outlined in this consultation, we are not proposing to mandate any particular technology definition that all vans must meet from 2030. Instead, we will consider a primary CO<sub>2</sub> requirement from 2030. Due to the differentiated nature of the van market, and the lack of hybrid alternative, a vehicle-level CO<sub>2</sub> cap would have a disproportionate impact on larger vans. A vehicle-level cap could implicitly require larger models to become zero-emission.

135. As such, the consultation proposes that a non-ZEV fleet average CO<sub>2</sub> cap is most appropriate for vans. Similarly with cars, this analysis tests two variants of a reduction in manufacturer CO<sub>2</sub> targets under VETS of 10% and 20%. These figures are used to illustrate potential carbon savings from different levels of ambition in this area and it does not indicate preferred options. Given the limited availability of alternative hybridised powertrains for vans, a 20% improvement relative to

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<sup>25</sup> [Vehicles registered for the first time by body type, fuel type and keepership \(private and company\): Great Britain and United Kingdom](#)

manufacturer's CO<sub>2</sub> targets under VETS could be challenging to meet. We welcome respondents' views on the credibility of each of these illustrative reduction options.

## Changes in carbon emissions

136. The assessment of changes in carbon emissions has been undertaken against a baseline of the indicative ZEV targets as set out in the joint government response to the ZEV Mandate consultation carried out under the previous UK Government, with all non-zero emission vehicles permitted to be sold up until 2035, up until a 100% ZEV target for cars and vans.
137. The baseline also assumes that manufacturer CO<sub>2</sub> targets remain unchanged from the pre-2030 period, and continue out until 2035, despite the VETS Order only legislating out until the end of 2030. This baseline is slightly different from one considering 'firm and funded' policy only – which would only include the targets mandated in the VETS Order until 2030. However, it is in line with stated policy intentions, and therefore should provide a more accurate estimate of additional carbon savings from this policy package.
138. Table 1 sets out the average annual tailpipe carbon saving estimates for a range of different illustrative options for cars and vans.

Vehicle type	Technology definition	CO <sub>2</sub> requirement	Variant	CB5 (2028-2032)	CB6 (2033-2037)	(2024-2050)
Cars	HEVs and PHEVs	Non-ZEV fleet average cap (Option C)	10% reduction	0.1	0.2	0.1
			20% reduction	0.1	0.4	0.2
			Vehicle-level cap (Option B)	115gCO <sub>2</sub> /km	0.2	0.4
	Plug-in hybrids only	Non-ZEV fleet average cap (Option F)	10% reduction	0.1	0.3	0.1
			20% reduction	0.2	0.5	0.2
			Vehicle-level cap (Option E)	115gCO <sub>2</sub> /km	0.3	0.7
Vans	No exclusion	Non-ZEV fleet average cap	10% reduction	0.0	0.1	0.0
			20% reduction	0.1	0.1	0.1

*Table 1 - Estimated changes in net average annual tailpipe carbon savings (MTCO<sub>2e</sub>), from 2030 policy options, for each carbon budget period and from 2024-2050, rounded to 1dp.*

139. The illustrative options do not represent preferred levels of ambition, but are only used to help inform on the potential carbon savings associated with different levels of policy ambition. We welcome views from consultation respondents on these options and alternative variants.

## Uncertainty in the future vehicle market

140. New makes and models are constantly coming to market, which makes it challenging to predict with certainty the composition and emission values of vehicles sold from 2030.

141. Currently, we assume that the non-ZEV vehicles sold today are the same as vehicles sold in all future years, with their market share of the non-ZEV market remaining the same. However, we recognise the limitations of this approach.
142. Based on current data, for any non-ZEV model which meets a certain technology definition but would not be permitted under a certain CO<sub>2</sub> vehicle cap, we assume that manufacturers improve the model's efficiency in order to meet the cap. For example, under the option of any hybrid permitted at or below 115gCO<sub>2</sub>/km, a hybrid vehicle at 130gCO<sub>2</sub>/km is assumed to improve to 115gCO<sub>2</sub>/km, rather than assuming the hybrid market loses a model offering.
143. It is possible, that manufacturers could decide to replace vehicles that have emission values above the cap with additional zero-emission vehicles, resulting in a reduction in non-zero emission models on sale. It is also possible that, faced with a technology definition, manufacturers may choose to reduce the amount of hybridisation of existing HEVs or PHEVs and increase their CO<sub>2</sub> emissions to minimise the cost of meeting the regulation.
144. We encourage consultation respondents to provide further information they may have to help address these evidence gaps, as we seek to refine our analysis for future assessments.
145. We will explore these elements of uncertainty as part a future consultation on the implementation of the 2030 requirements.

## Wider considerations

146. The analysis presented here provides an initial indication of the scale of carbon savings expected under different options.
147. Whilst many vehicle manufacturers have committed to being fully ZEV from 2030 these options will present a significant change for manufacturers selling non-ZEV vehicles from 2030, imposing new costs of compliance to meet both the technology definition and to increase average vehicle efficiencies to meet any CO<sub>2</sub> component.
148. A full cost-benefit analysis will be undertaken to detail the potential costs and benefits to industry, consumers and society of the short-listed proposal, as part of a future consultation on the technical aspects of the 2030 requirements.

## Part 2: Vehicle Emissions Trading Schemes Updates

### Transfer from VRTS to CRTS

#### Background

149. To date, car and van emissions regulations have been kept separate. However, with the interoperability of trading schemes under the Climate Change Act overachievement against the van ZEV targets could be transferred for use against the car ZEV targets.
150. The Vehicle Emissions Trading Schemes (VETS) are divided into four parts;
- The Non-Zero-Emission Car Registration Trading Scheme (CRTS) – Car ZEV Targets;
  - The Non-Zero-Emission Car CO<sub>2</sub> Trading Scheme (CCTS) – Car CO<sub>2</sub> Baseline Targets;
  - The Non-Zero-Emission Van Registration Trading Scheme (VRTS) – Van ZEV Targets; and
  - The Non-Zero-Emission Van CO<sub>2</sub> Trading Scheme (VCTS) – Van CO<sub>2</sub> Baseline Targets
151. To further stimulate ZEV delivery in the van market and to provide extra utility from additional ZE van allowances, this consultation proposes options to permit the trading of van-to-car ZEV allowances i.e. VRTS to CRTS.

#### Options under consideration

152. This consultation considers the following options:
- Option 1 – No change to VETS
  - Option 2 – Introduce a mechanism to allow overcompliance in ZE vans to be transferred to the car scheme at an exchange rate of 1:1.
153. Under Option 2, for every additional ZE van sold above and beyond the ZEV target, this would reduce the number of ZE cars required by 1.

#### Changes in carbon emissions

154. This proposed technical amendment to the transfer flexibility permitted under the VETS could result in marginal carbon savings. This is because one zero emission van removes larger gCO<sub>2</sub>/km relative to cars, due to vans having higher average emissions, with vans travelling greater miles and being larger on average. So, despite a reduction in carbon savings from cars, the increased savings from vans is larger.

155. Due to the relative difference in the size of markets, significant overcompliance in the van market has a small effect on the number of car ZEVs still required to meet targets.
156. However, the size of carbon savings is dictated by the extent to which this mechanism increases the utility of van ZEV allowances and incentivises overcompliance.
157. Table 2 provides the change in tailpipe carbon savings for each option when assuming that van manufacturers over comply on ZEVs by 5%. With greater levels of ZE van overcompliance, we would expect greater levels of carbon savings.

Option title	CB4 (2023-2027)	CB5 (2028-2032)	CB6 (2033-2037)	2024-2050
Option 2	0.02	0.10	0.01	0.04

*Table 2 - Estimated changes in net average annual tailpipe carbon savings (MTCO<sub>2e</sub>), from additional ZEV transfer options, for each carbon budget period and from 2024-2050. All estimates rounded to 2dp.*

158. Our analysis assumes that on aggregate, vehicle manufacturers achieve full and on-time compliance with the regulations, and that any overcompliance by one manufacturer is absorbed by an under compliant manufacturer through trading.
159. However, if over-achieving van manufacturers who operate in both markets are given an opportunity to drain liquidity from the van market to the car market and restrict trading as a compliance route, there is a potential risk that this mechanism inadvertently erodes carbon savings from vans, with some van manufacturers becoming non-compliant.
160. As with the ZEV mandate Cost Benefit Analysis, the carbon savings associated with flexibility mechanisms are not included in the core assessment of carbon impacts. This is because there is significant uncertainty associated with individual compliance strategies. It is challenging to predict the extent to which flexibilities will be utilised across the market, and the level of overcompliance against either the ZEV scheme or CO<sub>2</sub> scheme that may take place.

## Implementation of PHEV utility factor updates in VETS

### Euro 6e regulations and updates to utility factors

161. Research<sup>2627</sup> has established that plug-in hybrids vehicles (PHEVs) have much higher CO<sub>2</sub> emissions in the real world than their laboratory generated type approval values imply. This is largely due to these vehicles not being charged as frequently in the real world as is assumed by the test cycle, resulting in a higher proportion of

<sup>26</sup> [theicct.org/wp-content/uploads/2022/06/real-world-phev-use-jun22-1.pdf](https://theicct.org/wp-content/uploads/2022/06/real-world-phev-use-jun22-1.pdf)

<sup>27</sup> [European Commission report on the evolution of the real-world CO<sub>2</sub> emissions cap for passenger cars and light commercial vehicles](#)

driving in petrol/diesel mode than the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) cycle currently assumes.

162. Following extensive research, the United Nations Economic Commission for Europe (UNECE) has updated the WLTP as part of Euro 6e emissions standards to bring PHEV CO<sub>2</sub> emissions test cycle values into line with the real-world observations. This is possible by changing the utility factor (UF) assumed as part of the test procedure. A utility factor is the expected share of driving powered by electricity mode, relative to total distance travelled (with the remainder of mileage completed using the PHEV's alternate means of propulsion, e.g., petrol). A vehicle with a higher utility factor is assumed to run greater distances in electric mode, and therefore emit less, relative to vehicles with lower utility factors.
163. The UNECE will update UFs in two stages, with the first phase applying to all new vehicle types in 2025, and all new vehicles from 2026. The second stage will apply to all new vehicle types in 2027, and all new vehicles in 2028. The second stage uplifts are subject to a review ahead of implementation, using on board fuel consumption monitoring data.
164. The utility factors updates will first be implemented in the UK through the UNECE type approval routes. These utility factors updates will also be implemented for vehicles registered in NI through EU-derived or UK(NI) approval routes, by virtue of the Windsor Framework.
165. The UK government is yet to decide on the introduction of the Euro 6e standard to the GB type approval route. If introduced, this will align GB emissions testing requirements with those under UK(NI), EU and UNECE routes, and will raise the test procedure emissions for PHEVs registered through this route, reducing their efficacy in compliance with the UK's car and van CO<sub>2</sub> regulations.
166. As a result of Euro 6e, some manufacturers who intend to use plug-in hybrids as part of their future compliance strategy would be exposed to potential non-compliance with VETS targets, unless they change their strategies. An example of this is provided in Box 1.

If in 2021 a vehicle manufacturer sold 50,000 non-ZEVs of which 10,000 were PHEVs with 40gCO<sub>2</sub>/km emissions and 40,000 were petrol cars with 110gCO<sub>2</sub>/km emissions, their baseline CO<sub>2</sub> target would be 96gCO<sub>2</sub>/km.

After phase 2 UF changes, the CO<sub>2</sub> emissions of the same PHEVs could be approximately 135gCO<sub>2</sub>/km. In 2028, if the vehicle manufacturers sold the exact same 50,000 vehicles as in 2021, average emissions would be 115gCO<sub>2</sub>/km against the 96gCO<sub>2</sub>/km, under compliant by approximately 19g per vehicle on average.

*Box 1 - A hypothetical example of the impact of Euro 6e utility factors on CO<sub>2</sub> compliance*

167. In addition, whilst the change introduced in first phase does not seem as impactful as the second phase, it is possible that manufacturers may find the first phase challenging to react to. This could be particularly the case in 2025/26 if manufacturers plan to utilise allowance transfers from the CO<sub>2</sub> scheme to ZEV scheme for compliance purposes.



168. To avoid being exposed to potential non-compliance, there are a series of alternative strategies that manufacturers could pursue. Plausible routes to compliance will include:

- Reducing the average carbon intensity of their remaining internal combustion engine vehicles and conventional hybrid vehicles.
- Increasing sales of relatively more efficient non-ZEVs.
- Selling a greater number of ZEVs, over and above the ZEV target and capitalising on ZEV to non-ZEV CO<sub>2</sub> emissions allowance transfers, which are currently permitted up to 2030.
- Trade with an over-compliant manufacturer.
- Some combination of all options.

169. Each of these alternative strategies could result in carbon savings, but could introduce additional costs for manufactures.

#### Options under consideration

170. This consultation considers the following technical amendment options in response to the utility factors changes:

- Option 1 – No changes to VETS
- Option 2 – Amend VETS to account for changes to utility factors

171. Option 2 proposes that DfT disapplies the UF updates for the purposes of compliance under VETS until 2028.

172. Both of these options make the simplifying assumption that Euro 6e is adopted for the GB type approval route, which is currently under active consideration by the UK Government. The potential adoption of Euro 6e would be subject to a future consultation.

173. Option 2 is expected to partially reduce the carbon savings created by the Euro 6e change but wouldn't affect the existing carbon savings resulting from the current VETS Order.

#### Changes in carbon emissions

174. Table 3 provides the estimated average annual tailpipe carbon savings for Euro 6e, and subsequent changes due to technical amendment options.

Measure	CB4 (2023-2027)	CB5 (2028-2032)	CB6 (2033-2037)	2024-2050
Proposed introduction of Euro 6e	0.0	0.3	0.3	0.1
Option 1	0.0	0.3	0.3	0.1
Option 2	0.0	0.1	0.2	0.1

*Table 3 - Estimated changes in net average annual tailpipe carbon savings (MTCO<sub>2e</sub>), due to Euro 6e and technical PHEV methodology amendment, for each carbon budget period and from 2024-2050. All estimates rounded to 1dp.*

175. The estimated carbon impacts are uncertain, as we are unable to predict which individual compliance strategies would be most favorable amongst manufacturers. In reality, the choice would vary and depend on individual manufacturer circumstances, such as pre-existing and new investments in technology platforms or their ability to divert vehicles from other markets.
176. Strategy (a) would require manufacturers to either make improvements to specific vehicles through efficiency technologies, or increase the sales of lighter / more efficient vehicles to reduce the average ICEV/HEV CO<sub>2</sub> intensity.
177. For most manufacturers, their PHEV offerings would remain more efficient than their HEV and ICEV offerings, even after the UF changes. Given this, strategy (b) seems initially counterintuitive, as PHEV emissions have increased relative to the position under current utility factors. However, even under the new UFs, PHEVs are still likely to be more efficient than many ICEVs and HEVs, and so increasing sales could still form part of many compliance strategies. However, the new UFs could erode current favorable tax incentives on PHEVs, which may suppress demand (particularly across company fleets). This may limit the ability of manufacturers to use this alternative strategy.
178. Strategy (c) would require a manufacturer to achieve a certain level of over-compliance under the ZEV targets. It is conceivable that manufacturers that have publicly committed to be 100% zero-emission by 2030 could exceed ZEV targets from 2028 onwards without significant challenges. However, in line with our central assumptions, we do not expect general overcompliance with the targets.
179. Some manufacturers are likely to utilise strategy (d), and trade to deliver compliance. Nevertheless, across all manufacturers as a whole, we assume no overcompliance, and so any overcompliance at an individual manufacturer level would be traded to an under compliant manufacturer, with zero carbon emission implications.
180. While it is plausible to expect manufacturers would use a combination of these strategies, our central analysis simply assumes manufacturers would primarily use improvements in the average efficiency of their remaining non-zero emission vehicles to offset the increases in PHEV test procedure emissions.
181. These assumptions form a pessimistic lower-bound of the potential carbon savings on offer.

## Interpretation of assimilated EU law Regulation (EU) 2019/631 in the UK

### Background context

182. The VETS Order sets an annual baseline CO<sub>2</sub> emissions target for the non-ZEV portion of each vehicle manufacturer's new car and van fleet. This target is set based on a manufacturer's emissions performance in 2021, using the higher value of a manufacturer's "non-ZEV CO<sub>2</sub> average performance" or their "derived fleet CO<sub>2</sub> target" for 2021.<sup>28</sup>
183. Following the identification of a discrepancy between Regulation (EU) 2019/631 and the published guidance/policy intention, this consultation proposes a technical amendment which would see some manufacturers receive a higher derived fleet target for 2021 under the assimilated regulation.
184. A higher fleet target for 2021 could see some manufacturers receive a higher CO<sub>2</sub> target under the VETS. With higher VETS CO<sub>2</sub> targets, a manufacturer could:
- Increase the future emissions intensity of their new sales.
  - Transfer greater possible CO<sub>2</sub> overcompliance to reduce zero-emission vehicle (ZEV) delivery under the ZEV scheme.
  - Or trade with other manufacturers to reduce CO<sub>2</sub> compliance elsewhere in the market.
185. This is likely to result in small increases in carbon emissions each year, relative to the baseline under the previous guidance.

### Changes in carbon emissions

186. The change in the target setting methodology has an impact on both car and van markets. However, it has a larger impact on van manufacturers, with a greater number of van manufacturers now receiving a higher target than they would have done under the previous guidance.
187. Based on internal DfT analysis of the change in targets for each manufacturer, we estimate the following change in the market-wide average annual CO<sub>2</sub> targets:

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<sup>28</sup> The baseline CO<sub>2</sub> emissions target for 2021 is based on assimilated EU regulation 2019/631. If a manufacturer was non-compliant in 2021, they receive their non-zero emission vehicle emissions in 2021, tightened by the percentage in which they missed their derived fleet CO<sub>2</sub> target. Manufacturers that were exempt or not in the UK market in 2021 but entered the market the year 2022 or 2023 receive their average non-ZEV emissions in the first year they are register vehicles in the UK. Manufacturers that register vehicles in the UK for the first time in 2024 or any subsequent year receive a target of the UK non-ZEV fleet average CO<sub>2</sub>.

Vehicle Type	% change in weighted average target
Cars	0.1%
Vans	1.5%

*Table 4 - Percentage change in average CO<sub>2</sub> target across each market, weighted by the market share of non-ZEV sales for each manufacturer in 2021*

188. For this change in target, we assume that manufacturers would fully utilise the additional headroom. This means on average, each year, we expect vehicle manufacturers with a new target to produce vehicles with marginally higher emissions than they would have otherwise done under the previous guidance. Table 5 provides the resulting change in average annual tailpipe carbon savings for each carbon budget period and from 2024-2050.

Measure	CB4 (2023-2027)	CB5 (2028-2032)	CB6 (2033-2037)	2024-2050
Changes to the CO <sub>2</sub> target setting methodology	-0.03	-0.05	-0.04	-0.03

*Table 5 - Estimated changes in average annual tailpipe carbon savings (MTCO<sub>2e</sub>), due to changes in the CO<sub>2</sub> target setting methodology, for each carbon budget period and from 2024-2050. All estimates rounded to 2dp.*

189. As shown above, this change is estimated to result in a relatively small increase in carbon. However, this analysis assumes that each manufacturer's market share remains the same in future years as it was in the target baseline year of 2021.

190. If a manufacturer with a relatively large change to their target captures greater market share in the future, the overall impact could be larger. Conversely, if this same manufacturer loses market share, the overall impact could be smaller.

191. Our assumption of constant market share is considered to be proportional given the uncertainty; particularly as we head into a period of significant market change, with the future non-ZEV market reducing in size overtime and with some manufacturers pursuing faster decarbonisation strategies than others.

### Summary of impacts

192. This section aggregates the carbon impacts, showing the largest potential carbon savings from the illustrative options presented in the sections above. The results are presented in Table 6 below. This is presented to show the relative carbon savings from each element of the consultation. As noted earlier, this does not represent a preferred policy package.

193. As noted above, additional ZEV transfer options are not included in the core carbon assessment, due to uncertainty associated with flexibilities.

Measure	Notes	CB4 (2023-2027)	CB5 (2028-2032)	CB6 (2033-2037)	2024-2050
VETS Order		0.1	5.7	15.7	15.6
2030 Requirements	Cars: PHEVs only vehicle-level cap at 115gCO <sub>2</sub> /km, Vans: 20% average non-ZEV CO <sub>2</sub> reduction	0.0	0.4	0.9	0.4
Implementation of PHEV UF updates	Disapply UF updates until 2028	0.0	0.1	0.2	0.1
Changes to CO <sub>2</sub> target setting methodology		-0.0	-0.1	-0.0	-0.0
Total impact from illustrative package		-0.0	0.5	1.0	0.5

*Table 6 - Estimated changes in net average annual tailpipe carbon savings (MTCO<sub>2e</sub>), from an illustrative package of policy proposals, for each carbon budget period and from 2024-2050. All estimates rounded to 1dp, and therefore individual policy impacts may not exactly sum to total impacts. VETS Order UK-wide savings are taken from the ZEV Mandate CBA and provided on an average annual basis.*

## Methodology and modelling approach

### Modelling platform and assumptions

194. DfT's Road Carbon Fuel Fleet Model (RoCaFF) is a business-critical model used to estimate the national emission and fleet impacts from changes in road policies. For each of the policy options described above, we have tested alternative inputs of vehicle efficiencies and sale projections to estimate the impact the change in emissions overtime. Figure 2 provides an overview of the RoCaFF model.
195. The modelling approach for all of the carbon analysis set out within this annex follows the same approach as the ZEV mandate Cost Benefit Analysis, with further detail provided in Annex A - modelling methodology of the document.
196. Figure 2: This chart shows the range of inputs and outputs for DfT's Road Carbon and Fleet Fuel model. The model takes in variable inputs such as the projected sale proportions and vehicle efficiencies of each powertrain, alongside static inputs on variables such as annual mileage by powertrain, projected growth rates of the vehicle fleet, vehicle survival rates, and prices and taxes. Model calculations are calibrated against DfT's National Transport Model. Model outputs include sales and the stock of vehicles by powertrain, and total CO<sub>2</sub> emissions.

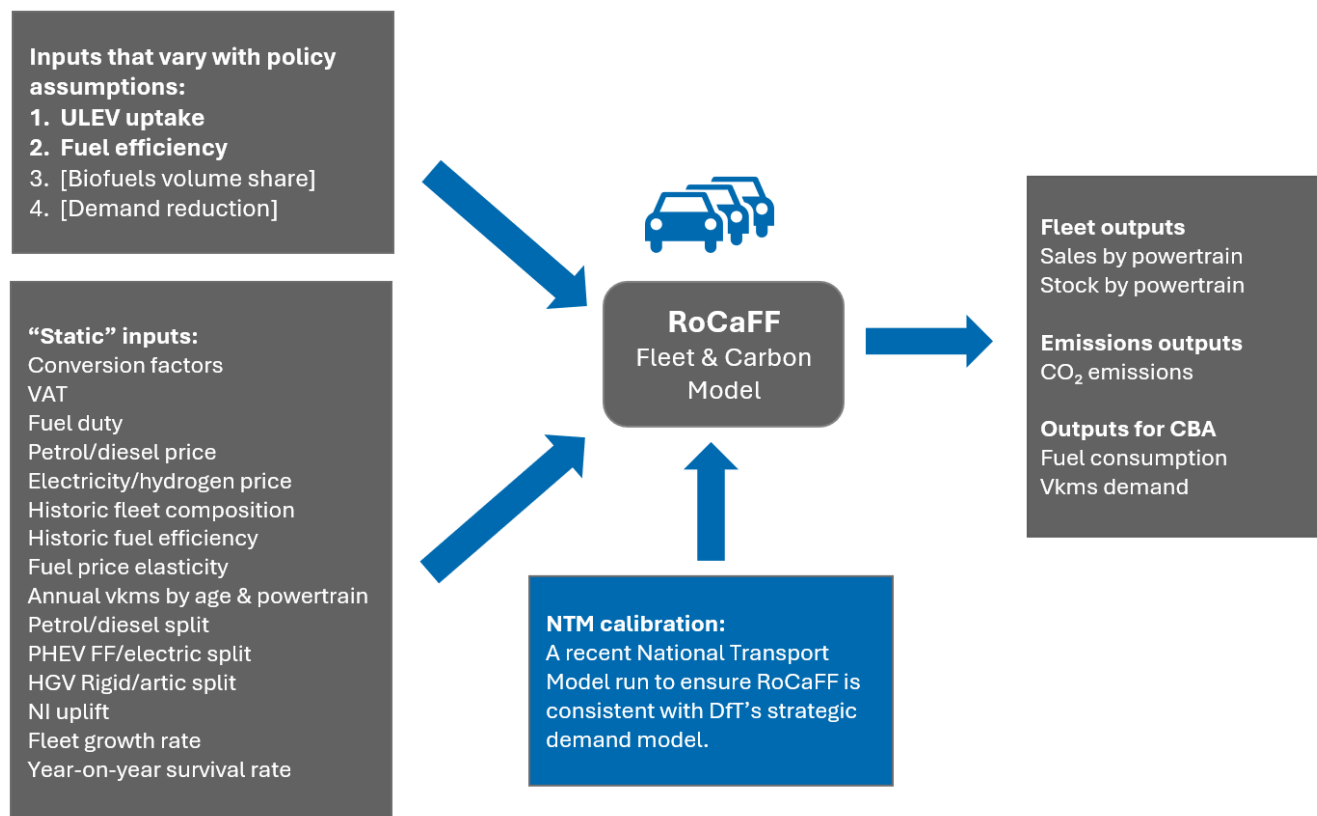


Figure 2 - The Road Carbon Fleet Fuel (RoCaFF) model inputs and outputs overview

197. Our modelling represents alternative policy scenarios using a consistent approach. All policy scenarios assume full, on-time compliance with the regulations. We do not assume any overcompliance with the regulations unless specifically stated for a specific policy test. This applies to both assumptions related to the percentage of ZEV sales in any one year, as well as the fleet average vehicle CO<sub>2</sub> emissions; both of which are assumed to align with ZEV and CO<sub>2</sub> targets as set out in VETS.
198. As with the ZEV mandate Cost Benefit Analysis, our analysis incorporates the latest evidence on real world emissions. There is significant evidence of a performance gap between manufacturers' test cycles (WLTP) and vehicles' real-world performance.
199. Historically real-world emissions exceed test cycles such as the New European Driving Cycle (NEDC) and Worldwide Harmonised Light Vehicle Test Procedure (WLTP), with NEDC test cycles estimated to be downwardly biased by 33%-45%. This gap has also grown over time from an estimated ~8% in 2000 to 39% in 2018 (to the NEDC test cycle) which has reduced the carbon savings from historic policies based around delivering carbon savings based on a test cycle. ICCT research suggests that test cycles have recently moved over to WLTP to mitigate this measurement error, although some downward bias remains, and there is still the potential for the gap between measured and real-world performance to grow.
200. More recently, research has shifted into measuring PHEV real-world performance against emissions test cycles. Evidence from 2019-2022 suggests that there are very significant performance gaps for PHEVs in the range of 160-500%. This research

was undertaken by the ICCT and covers a wide range of models, in several countries, and both privately-owned and company cars.

201. It is important to reflect the gap between test cycle and real-world emissions, in order to accurately model fleet emissions and the effect of the various policy options. Further information can be found in Annex G – real world emissions evidence of the ZEV mandate Cost Benefit Analysis document.

## Uncertainty associated with utility factor changes

202. There is a considerable level of uncertainty associated with the impact of Euro 6e utility factor changes on specific vehicle models. The updates to PHEV utility factors as part of UNECE will take place in two stages: The first will take effect for new type approvals in 2025 but will affect all vehicles from 2026; the second will take effect for new type approvals in 2027 but affect all vehicles from 2028.5. The second step may be modified based on ongoing real world data collection.
203. Predicting the impact of this change for a given vehicle model is uncertain and difficult to quantify. The implications for changes in future type approval CO<sub>2</sub> emission values will depend on the current CO<sub>2</sub> emissions when a vehicle operates in charge-depleting mode (when the vehicle principally operates using the battery), charge-sustaining mode (when the vehicle operates using the internal combustion engine), and the charge-depleting mode range.
204. All PHEVs will see large increases in their estimated emissions, but they will continue to be sensitive to the vehicle's all electric range as well as the size and power of the vehicle. Generally, it is expected that vehicles with low current type approval CO<sub>2</sub> emissions values and relatively high all electric ranges will experience larger changes to CO<sub>2</sub> emissions values.
205. There is very limited publicly available data on all of the variables needed to accurately calculate the new emissions of a specific model, post-utility factor changes, without specific model tests. Due to this lack of evidence, simplifying assumptions have been used to predict the future emissions of PHEV models when accounting for the new UF changes. This carbon analysis assumes that the new UFs will fully close the average real-world performance gap of PHEVs.

## Annex B: Questions

### Part 1

**Question 1: Do you agree with the Government's view that full hybrid and plug-in hybrid technologies only should be considered? Please explain your answer.**

**Question 2: Do you prefer a technological definition that permits both HEVs and PHEVs, or a technological definition that permits PHEVs only? Please explain your answer.**

**Question 3: Do you support no further CO<sub>2</sub> requirements, a vehicle level CO<sub>2</sub> cap, or a fleetwide CO<sub>2</sub> requirement? Please explain your answer.**

**Question 4: Should a minimum range be required for new PHEVs and, if so, at what level should it be set? Please explain your answer.**

**Question 5: Do you agree with the Government's intention not to establish a technological definition for the specification of new non-ZE vans that may be sold from 2030? Please explain your answer.**

**Question 6: What are your views on establishing a CO<sub>2</sub> requirement for vans from 2030? What is your preferred measure, if any, and at what level should the target be set? Please explain your answer.**

**Question 7: What would be the impact to the economy and to UK society of any new or additional non-ZEV CO<sub>2</sub> requirements in the van sector from 2030? Please explain your answer and provide evidence where possible.**

**Question 8: What are your views on current measures to support demand for zero emission vehicles? What additional measures could further support the transition?**

**Question 9: What are your views on whether small volume manufacturers (between 1,000 and 2,499 registrations) should be subject to the 2030 requirements for cars and/or vans?**

**Question 10: What are your views on whether micro-volume manufacturers (fewer than 1,000 annual registrations) should be subject to the 2030 requirements for cars and/or vans?**



**Question 11: What is your opinion on exemptions for Special Purpose Vehicles from the 2030 requirements for cars and vans?**

**Question 12: What is your opinion on exemptions for kit cars from the 2030 requirements for cars and vans?**

## **Part 2**

**Question 13: Are the time limits on the current flexibilities in the ZEV Mandate for cars and for vans still appropriate? Please explain your answer.**

**Question 14: What are your views on the proposal to implement a van-car transfer in VETS? Please explain your answer.**

**Question 15: Are there other flexibilities that should be considered within VETS for cars and vans?**

**Question 16: Do you agree that VETS should be amended to account for the UF change? If so, do you agree with the proposal set out? Please explain your answer.**

**Question 17: Do you agree with the proposal to allow UK derived or EU derived WLTP specific emission reference targets to apply from 2021-2023 in the United Kingdom, and in 2024 in Northern Ireland? If not, why?**