

The Right Honourable Chris Grayling MP  
The Right Honourable Greg Clark MP

11 October 2018

Dear Secretary of State,

I wrote to you last December to provide my Committee's views on the priorities to reduce emissions from road transport. 'Road to Zero' was not published in time for our annual Progress Report to Parliament, I am therefore writing to you to provide a specific assessment.

Transport is now the largest greenhouse gas (GHG) emitting sector, accounting for 28% of all UK GHG emissions in 2017. There has been little change in the level of transport emissions since 2008. This trend must be reversed if the legally binding fourth and fifth carbon budgets are to be met. We welcome many of the initiatives set out in the Road to Zero, but our detailed assessment indicates that there remains a large gap to the most cost-effective path for reducing transport emissions. I would urge you to implement policies with greater ambition to reduce emissions even further.

The Department for Transport recently published forecasts for road traffic, using the National Transport Model. Almost all scenarios failed to include the policies and ambitions in Road to Zero, resulting in levels of electric vehicle uptake that fall short of the targets required to deliver the commitments in the Climate Change Act. Scenarios that support delivery of the legislated carbon budgets should be used as central planning assumptions.

Overall, our assessment of existing and newly agreed policies for road transport is that they are insufficient to ensure the reductions in emissions necessary to meet the 5<sup>th</sup> Carbon Budget in the most cost-effective way. Our advice for closing the gap in transport emissions is as follows:

– **Set out a vision for future travel demand.**

The continued rise in road transport emissions highlights the urgent need for stronger policies to reduce growth in demand for travel. Evidence from cities like Greater Manchester shows it is possible to plan for economic growth while reducing car traffic, by promoting walking, cycling and public transport and deterring car and van traffic.

– **Accelerate the uptake of the cleanest vehicles.**

The commitment to end sales of conventional petrol and diesel vehicles should be brought forward to 2035 to ensure road transport emissions are near-zero by 2050. A stretching target can be set now to give industry and consumers certainty. A minimum electric range for hybrid electric drive should also be established – at present the electric range of conventional hybrids and low range plug-in hybrids is too short and the majority of journeys are not completed in zero emissions mode.

Financial support for the higher upfront costs of electric vehicles (EVs) will be required beyond 2020. Minor amendments to vehicle excise duty (VED) and company car tax (CCT) can support continued improvement in fleet efficiency.

- **Reduce risks and costs to vehicle manufacturers by providing clarity on new car and van targets beyond 2020 and tighten testing procedures.**

Stretching CO<sub>2</sub> targets for new cars and vans are needed beyond 2020 to drive a higher uptake of EVs. While a number of loopholes in the emissions testing regime have been addressed with the move to WLTP, there is evidence that car manufacturers intend to report artificially high emissions under the new test, making it easier to report emissions reductions over the course of the 2020s. The consumer is cheated by this approach. A real-world driving test using a portable device or the monitoring of fuel consumption meter data would help reinforce the new standards, as recently endorsed by the European Parliament Environment committee.

- **Address supply issues and long waiting times for electric vehicles.**

This is an emerging market and it is important that consumers have confidence to purchase EVs. Vehicle manufacturers are releasing new EV models, but there is increasing evidence that production volumes are insufficient, with demand outstripping supply for many models, resulting in long waiting times. We recommend the Government reviews the operation of the EV market, to establish whether the willingness of manufacturers and dealers to sell EVs is a barrier to uptake.

- **Support the efficient rollout of affordable EV charging infrastructure.**

New steps to increase the availability of EV charge points were a welcome feature of Road to Zero, including the commitment that all new homes should be EV-ready and that new street lighting should include charge points. Next year we will publish advice on the number and types of charging points required to achieve high levels of EV uptake in the UK. A wider assessment of the barriers to uptake from reliability and unfamiliarity issues should also be undertaken. Drivers report that chargers are unreliable and difficult to use and that coverage in certain areas of the country is lacking.

- **Tackle emissions from trucks.**

New HGV CO<sub>2</sub> targets for 2025 and 2030, in line with the EU proposals, would provide a clear direction of travel for the truck sector. We welcome the target of a 15% reduction in emissions by 2025 from fleet operators. There will be a need to move beyond the current voluntary approach should real emissions reductions not be delivered, otherwise opportunities to improve logistics and encourage eco-driving techniques will be missed.

Detail to support my Committee's recommendations is contained in the Annex to this letter. I am confident that the implementation of the recommendations in the Annex will reduce emissions and bring significant benefits to the UK economy, in line with the vision the Prime Minister presented at the recent Zero Emissions Vehicle Summit.

I'm copying this letter to the Minister of State for Energy and Clean Growth, Claire Perry MP, and the Parliamentary Under Secretary of State for Transport, Jesse Norman MP.

Yours sincerely,



Lord Deben

**Chairman**, Committee on Climate Change

## Annex

The Committee's annual Progress Report in June highlighted that as emissions in other sectors have reduced, transport has grown as an overall share of emissions. At 126 MtCO<sub>2</sub>e, domestic transport is now the largest-emitting sector of the UK economy, representing 28% of greenhouse gas emissions (GHG) in 2017.

The Department for Transport (DfT) recently published its latest set of road traffic forecasts using the Department's National Transport Model. These forecasts represent the Department's strategic view of future road travel demand for a number of different scenarios. Almost all the scenarios (6 out of 7) do not reflect policies and ambitions laid out in the Road to Zero strategy, including only previously implemented, adopted and agreed policies. This results in a far lower level of electric vehicle uptake, with only 25% of vehicle kilometres powered by electric motors in 2050. This level of electric vehicle uptake is incompatible with meeting the Climate Change Act and should not be used as a central planning assumption as it is in violation of the Government's legal obligations. The low level of electric vehicle uptake forecast on the basis of existing policies also demonstrates the need for further action in this area.

### Set out a vision for future travel demand

As highlighted in our Progress Report, the work of the Commission on Travel Demand, an independent research group led by Leeds University, showed that policy can impact demand and local planners can use a combination of transport and land-use policy to support a vision for their area, rather than simply providing for forecasts of travel demand growth that may not adequately consider the wide range of potential societal and technological changes that may occur over the coming years (Box A1).<sup>1</sup> By not considering the potential to shift behaviour alongside the possible technological changes, the Road to Zero strategy has missed opportunities to reduce greenhouse gas emissions, alongside improving air quality, and delivering other health benefits.

#### Box A1. Transport planning policies in cities around the world

Globally, there are many examples of cities proactively planning for economic growth whilst reducing or holding steady car traffic. Common features of these strategies are setting a vision to achieve multiple objectives for cleaner, more prosperous cities with good travel connections. In 2016, Transport for Greater Manchester developed a 2040 Transport Strategy, in collaboration with District Councils, Local Bodies and Authorities. The strategy adopts a 'decide and provide' approach to transport planning. The new approach set out a vision for sustainable growth, protecting the environment, improving quality of life and developing an innovative city-region - through the creation of an integrated, sustainable, and well-coordinated transport system that supports a wide range of different travel needs. The strategy has received widespread support through public and stakeholder consultation.

The Norwegian Government has asked cities in Norway to estimate what kinds of investment they would need to enable them to thrive without growing traffic levels. Elsewhere, a number of cities already plan to reduce the number of cars in the city. Hamburg and Berlin have committed

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<sup>1</sup> Marsden, G. et al. (2018) *All Change? The future of travel demand and the implications for policy and planning*. First Report of the Commission on Travel Demand.

### Box A1. Transport planning policies in cities around the world

to increasing alternative walking & cycling infrastructure. Madrid is planning to ban cars from 500 acres in the city centre, redesign some of its busiest streets for walking and implement an accompanying penalty system. Mexico City and Bogotá have already implemented schemes which restrict the number of cars in the city on certain days of the week, and Paris is also considering a similar approach.

Reducing the number of cars in cities can have a number of benefits. Since introducing a car ban the Spanish city of Pontevedra has seen reduced traffic fatalities, a 70% reduction in CO<sub>2</sub> emissions and roughly 75% of car journeys are now made on foot or by bike. This was achieved by banning cars from crossing the city and removing surface parking. Underground car parks were opened on the periphery of the city, traffic lights were replaced with roundabouts and the outer city speed limit was reduced. Whilst the measures have not received with universal approval, they have been achieved with a modest budget, Pontevedra has had an influx of 12,000 inhabitants and supports a thriving small business sector.

**Source:** CCC analysis based on a number of sources including Marsden, G. et al (2018) *All Change? The future of travel demand and the implications for policy and planning*.

With substantial investment planned in the next few years through the Road Investment Strategy 2 and the creation of the Major Road Network, it is important to ensure that schemes funded by the Government make sense in a broad range of futures, including those with significant changes in the way we travel. By focusing on the economic, environmental and social goals of each area, costly investments in road infrastructure and maintenance which do not support these outcomes can be avoided:

- The Future Generations Commissioner for Wales recently published a report recommending that 'policy and public spending should be clearly contributing to the aspiration of the Wales we want rather than being limited to existing policy thinking.'<sup>2</sup> Large uncertainties in the level of traffic forecasted as well as the impacts of additional road building on physical and mental health, noise and air pollution, led to the conclusion that integrated transport solutions as an alternative to travelling by car represented a better contribution to Wales' Well-being goals.
- Housing developments must be designed to ensure new residents can travel without depending on a car. Transport for New Homes have published a report indicating that whilst we urgently need more homes, the places we are building are not sustainable.<sup>3</sup> Whilst the National Planning and Policy Framework is clear that walking, cycling and use of public transport should be encouraged in all new developments, the developments visited as part of the report were found to be shaped around the use of the car as the primary mode of transport, with new homes located away from major urban areas and public transport networks, and advertised on the basis of easy access to the motorway.
- The RAC's annual Report on Motoring has shown that driver's dependency on the car has increased in the last year, with 33% of drivers reporting that they are more dependent on their car now than a year ago.<sup>4</sup> A quarter of this group stated this was

<sup>2</sup> Future Generations Commissioner for Wales (2018) *Transport Fit for Future Generations*.

<sup>3</sup> Transport for New Homes (2018) *Project Summary and Recommendations July 2018*.

<sup>4</sup> RAC (2018) *RAC Report on Motoring 2018: The frustrated motorist*

due to a deterioration in public transport services, including poorer public transport reliability, higher fares and cuts to the number of local services.

- The Campaign for Better Transport found that there had been a 45% reduction in funding for bus services across England and Wales from 2010/11 to 2017/18, leading to over 200 bus routes being reduced or withdrawn.<sup>5</sup> This decline must be addressed and the Bus Service Operators Grant should be improved to further encourage operators to run the most efficient and cleanest buses. A national strategy for buses could help focus funding and policy across Government and support local investment.

### **Reduce risks and costs to vehicle manufacturers by providing clarity on new car and van targets beyond 2020 and tighten testing procedures**

The European Commission proposal for new car and van CO<sub>2</sub> post-2020 targets represents a 15% reduction in emissions from 2021 by 2025, and a 30% reduction by 2030. This is insufficiently ambitious. When considered alongside the UK's electric vehicle targets, it would require no increases in the efficiency of conventional vehicles. To meet the Fifth Carbon Budget, a 50% reduction in new car CO<sub>2</sub> is needed between 2021 and 2030. This need not require further investment in conventional powertrains, but instead full deployment of existing off-the-shelf technologies in conventional vehicles, combined with 60% of new car sales being electric vehicles. The EU Parliament's Environment committee has proposed increasing the level of ambition to a 20% cut in emissions by 2025 and a 45% cut by 2030.<sup>6</sup> The European Parliament acted on this advice and voted to increase ambition of the proposal to 40% in October. A final decision on the level of emissions cuts required by the EU regulation is expected by early 2019.

The EU proposals include voluntary targets of 15% electric vehicle sales in 2025 and 30% in 2030. Given current sales across different markets (and assuming the UK remains in this calculation in the event of an EU exit), this ambition could be met using only sales from France, Germany and the UK if all three achieve their ambition to be at the forefront of electric mobility and reach a 60% electric vehicle market share in 2030. Given that other countries also offer significant support for electric vehicles, such as the Netherlands and Sweden, a more stretching target would enable car manufacturers to plan electric vehicle sales trajectories in line with government ambitions. According to a recent survey by Transport and Environment, over 60% of British people think that the Government should require carmakers to sell electric cars.<sup>7</sup> The UK Government should set stretching CO<sub>2</sub> targets for new cars and vans beyond 2020 that go further than the current EU proposals, and should consider the inclusion of a more ambitious electric vehicle sales target.

The EU CO<sub>2</sub> proposed standards are based on a new test known as WLTP, which was designed to fix some of the issues that led to real-world efficiencies that were far lower than those measured by the previous test, NEDC (Box A2). However, there is new evidence from the Commission to indicate that the industry is manipulating the test results to falsely declare higher figures than those measured by WLTP to set a high baseline value, meaning that fewer

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<sup>5</sup> Campaign for Better Transport (2018) *Buses in Crisis: A report on bus funding across England and Wales 2010-2018*.

<sup>6</sup> Europarl (2018), *New CO<sub>2</sub> targets for cars explained*.

<sup>7</sup> Transport and Environment (2018) *Consumer attitudes to low and zero-emission cars*.

reductions need to be made in the real world to achieve the percentage reductions required by the 2025 and 2030 standards.<sup>8</sup> It is currently legal to declare a higher value than that measured by the test, with the rules only governing declaring a lower value. The test must be enforced with either real-world on-road testing or monitoring of data from fuel consumption meters, to ensure that the gap between the real world performance of vehicles and the performance measured by the test does not continue to grow. In October, the EU parliament voted in favour of introducing these real-world checks.

#### **Box A2.** Differences between the new (WLTP) and old (NEDC) test-cycles

The EU is introducing a new test-cycle, Worldwide Harmonised Light Vehicle Test Procedure (WLTP), which aims to reduce the gap between the results of the test-cycle used to measure the emissions of new cars and the actual emissions from cars driven on the roads, compared to the old test-cycle, NEDC (New European Driving Cycle). As shown in research conducted for the CCC in 2015, the gap between the efficiency measured using the test-cycle and the efficiency measured by cars driven in the real-world grew from 10% in 2002 to 35% in 2014, as a result of car manufacturers increasingly exploiting flexibilities in the NEDC test.

The new test procedure, WLTP, reduces the opportunities to cheat the test, by driving the vehicle for longer and using a wider variety of speeds and acceleration, as well as eliminating some practices that manufacturers have used to artificially lower test results (which include over-inflating tyres and choosing to test the lightest possible version of the vehicle). However, there are still some measures that manufacturers can exploit including using different tyres for testing than those available for sale, using special test drive modes and installing technologies that do not reduce emissions as effectively on the road. The gap between test-cycle and real-world driving performance for plug-in hybrids is also heavily dependent on how frequently they are charged, which will become increasingly important as they begin to represent a larger proportion of the fleet.

In the transition from the NEDC test to the WLTP test, the industry plans to test cars using both the old NEDC test, which will be used to assess whether car manufacturers have met the 2020/21 targets, and the new WLTP test, which will be used to establish a baseline for the proposed 2025 and 2030 percentage reduction targets. By configuring versions of cars that produce low NEDC test results whilst also inflating the WLTP test result, car manufacturers can artificially raise the baseline from which the percentage reductions required by the new targets are measured, giving themselves an easier target in 2025 and 2030.

In addition, whilst there are rules governing a declaring a lower value than those measured by the test, the WLTP regulation allows carmakers to declare a higher result. In July, the European Commission found evidence that the WLTP emission values officially declared by manufacturers may be inflated, without a corresponding increase of their NEDC emission values. The available data they found indicates that on average, the measured WLTP values were inflated by 4.5%. The largest inflations found were up to 13%.

To ensure that the regulations are not weakened by these opportunities to manipulate the test, the test must be enforced by a real-world emissions measurement. This could involve using a real-world

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<sup>8</sup> European Commission (2018) *Non-paper: CO<sub>2</sub> regulations for cars/vans: Risk of inflated starting point for calculating the 2025 and 2030 targets.*

### Box A2. Differences between the new (WLTP) and old (NEDC) test-cycles

CO<sub>2</sub> test, similar to those implemented to measure air quality emissions or by using real-world fuel consumption data from fuel-consumption meters. As of 2021, all new cars should be fitted with fuel consumption meters, but the Commission only plans to use this data to monitor the gap between the test and real-world driving in 2025. Instead, from 2021, data from these meters could be used to ensure that the gap between the test and real-world driving does not grow and therefore that all efficiency improvements introduced by manufacturers to achieve the 2025 and 2030 targets are also leading to real world reductions in emissions.

**Sources:** Transport and Environment (2018) *Ending the cheating and collusion: Using real-world CO<sub>2</sub> measurements within the post-2020 CO<sub>2</sub> standards*; Element Energy and ICCT for the Committee on Climate Change (2015) *Quantifying the impact of real-world driving on total CO<sub>2</sub> emissions from UK cars and vans*; European Commission (2018) *Non-paper: CO<sub>2</sub> regulations for cars/vans: Risk of inflated starting point for calculating the 2025 and 2030 targets*.

## Accelerate uptake of cleanest vehicles

Our previous advice set out the need to provide up-front support for EVs until they become cost-competitive with conventional vehicles. Whilst the current plug-in car and van grants provide the main source of funding for EV support, fiscal measures such as Vehicle Excise Duty (VED), Company Car Tax (CCT) and fuel duty also provide important signals.

As well as providing an important source of revenue, fuel duty is an effective way of encouraging fuel efficiency and reducing carbon emissions.<sup>9</sup> A fuel duty escalator, whereby the rate of duty on fuel rises above the rate of inflation, has been in operation intermittently since the early 1990s. Fuel duty rates have been frozen over the past 8 years, and the most recent announcement, in October 2018, is that they would remain so for another year. A recent study has pointed to the unintended consequences of this measure on the transport sector.<sup>10</sup> The research suggests that the direct result of the fuel duty freeze since 2011 has been:

- A 4% increase in traffic growth.
- An additional 4.5 million tonnes of CO<sub>2</sub> on UK roads.
- An increase in NO<sub>x</sub> and particulate matter, leading to poorer air quality.
- A fall in public transport usage of between 1-4% resulting in up to 60 million fewer rail and up to 200 million fewer bus journeys.

The growth in travel demand and shift away from more sustainable transport modes goes against some of the most cost-effective ways that we have identified to reduce transport emissions.

Plug-in car and van grants have been in place since 2011 and have helped incentivise the uptake of EVs, although they are not high enough to achieve full cost parity with conventional vehicles. We welcome government commitments for grants to continue in some form until 2020, although current rates have only been guaranteed until October 2018. It is important that government commits to extend support for EVs until they become cost-competitive with conventional vehicles, and that the level of the grant is sufficient to provide

<sup>9</sup> House of Commons Briefing Paper (2018) *Taxation of Road Fuels*.

<sup>10</sup> Professor David Begg and Claire Haigh (2018) *The unintended consequences of freezing fuel duty*.

an effective incentive for prospective EV customers. This would also provide greater certainty for vehicle manufacturers in research and development of the cleanest vehicles.

The current system of vehicle taxation is not doing enough to incentivise the purchase and leasing of lower-emitting vehicles. Vehicle Excise Duty (VED) is insufficiently differentiated in terms of gCO<sub>2</sub>/km when rates are considered over multiple years, and current company car tax arrangements could be encouraging the delay of battery electric vehicle (BEV) purchases until 2020/21. These issues should be addressed in the Autumn Budget to ensure that the UK's new car CO<sub>2</sub> does not continue to rise and the purchase of ultra-low emission vehicles (ULEVs) is sufficiently incentivised to support the still early market:

- Vehicle Excise Duty is differentiated by gCO<sub>2</sub>/km for all non-BEV vehicles. For the first year of ownership, rates range from £0 for cars <50gCO<sub>2</sub>/km to £2,070 for cars emitting over 255gCO<sub>2</sub>/km. For all cars other than battery electric vehicles, rates for the second year onwards are barely differentiated by emissions, with plug-in hybrids, regardless of range, being charged £10 less a year than sports cars and SUVs. This system fails to incentivise plug-in hybrid electric vehicle (PHEV) ownership over petrol/diesel vehicle ownership, as the price premium attached to PHEVs significantly outweighs the saving in VED (even including the Plug-in Car Grant). For example, the VW Golf plug-in hybrid is over £5000 more expensive than the standard petrol VW Golf (after the Plug-in car grant) but the difference in VED is only approximately £150 reduction in the first year, followed by a £10 reduction in following years. This system could be improved by further incentivising long range plug-in hybrids by imposing range constraints to achieve the lowest VED rates, using the same banding system as the planned changes to Company Car Tax (CCT) in 2020. Changing VED to use the same bands as CCT will also reduce confusion.
- The relatively gradual differentiation of VED rates by band in the first year and the lack of differentiation in subsequent years does little to halt the shift to larger cars, which was identified in our 2018 Progress Report as the main reason for the unprecedented rise in new car CO<sub>2</sub> observed last year. Sales of low emitting superminis declined by 14% from 2016 to 2017, whilst sales of SUVs rose 5%, suggesting the first year differentiation of VED isn't doing enough to dampen the current market preference for larger vehicles. This is working against new car CO<sub>2</sub> regulations. Our analysis suggests that if car sales of each size had remained the same in 2017 as in 2016, then average test-cycle CO<sub>2</sub> intensity would have fallen by 0.8% in 2017 rather than rising by 0.8% as actually happened. A recent study showed that countries with the most differentiated purchase and annual taxes on cars (e.g. the Netherlands and Sweden) tended to have the largest improvements in new car emissions intensity.<sup>11</sup>
- In its consultation on reform of VED for vans, we welcome the Government's option to include zero emission mileage within the band ranges, and believe there should be a strong incentive to purchase the cleanest vehicles, including for EVs, through steep differentiation of first year rates by emissions per km.<sup>12</sup> Van VED is currently levied at £250 per year for most light goods vehicles. The suggested new van VED bands in the consultation, which include first year rates of £0 for battery electric vehicles and rates

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<sup>11</sup> Denis Dineen, Lisa Ryan & Brian Ó Gallachóir (2017) *Vehicle tax policies and new passenger car CO<sub>2</sub> performance in EU member states*, Climate Policy, DOI:10.1080/14693062.2017.1294044

<sup>12</sup> HM Treasury (2018) *Vehicle Excise Duty for vans: consultation*.



of £5-20 depending on the mileage of plug in hybrids, rising to £500 for conventional vehicles, represent a significant improvement on the current system. The van benefit charge and the van fuel benefit charge should also be reformed to use CO<sub>2</sub> bands.

- Company car tax is also failing to incentivise ULEV sales in the short term. Employees in receipt of company cars that are also used in a private capacity are in receipt of a benefit in kind, and are taxed on this benefit accordingly. A finely graduated, best-in-class system is in place for 2020/21 to make sure this tax takes account of emissions, but until then, ULEV tax rates will be increasing from 2018/19 to 2019/20 and there is no tax incentivising the choice of BEVs over PHEVs (see Table A1.1), suggesting that some customers may delay getting a BEV or long-range PHEV until 2020/21 given the significant drop in tax rate that will occur in that year. The company car tax system should be addressed to avoid BEV uptake stalling until the lower rates come in. A survey conducted for the British Vehicle Rental and Leasing Association (BVRLA) showed that 42% of senior decision makers in small and medium size businesses who use vehicles would be likely to increase the number of electric vehicles they use if national and local government offered greater support, including tax incentives, free parking and more charging infrastructure.<sup>13</sup>

**Table A1.1.** Company car tax rates

CO <sub>2</sub> bands	Range (miles)	2018/19	2019/20	2020/21
0 gCO <sub>2</sub> /km		13	16	2
1 - 50 gCO <sub>2</sub> /km	>130	13	16	2
1 - 50 gCO <sub>2</sub> /km	70 - 129	13	16	5
1 - 50 gCO <sub>2</sub> /km	40 - 69	13	16	8
1 - 50 gCO <sub>2</sub> /km	30 - 39	13	16	12
1 - 50 gCO <sub>2</sub> /km	<30	13	16	14
51 gCO <sub>2</sub> /km and over		16 - 37	19 - 37	15 - 37

**Source:** HMRC (2018) *Company Car Tax Consultation*

<sup>13</sup> YouGov for BVLRA (2018) *BVLRA pledges to rapidly increase plug-in vehicle take up.*

## Address supply issues and long waiting times for electric vehicles

Overall, the number of ULEV models available has increased from 46 models in June 2017 to 57 in September 2018, consisting of 23 battery electric vehicles, 32 plug-in hybrid vehicles and 2 hydrogen fuel cell vehicles. There are also several high profile models being released over the coming year, including the Audi E-tron Quattro and E-tron Sportback, the BMW all-electric Mini, the Mercedes EQ C, the Porsche Taycan and the VW ID. However, some car manufacturers still have no electric vehicles models for sale within the UK, such as Vauxhall, Skoda, Seat and Fiat. Given many manufacturers attract strong brand loyalty (40-60% of car owners trade in the same brand of car), the lack of choice among some is a factor holding back EV sales.<sup>14</sup>

Analysis by Transport and Environment suggest that the 2020/21 new car CO<sub>2</sub> target is likely to be met by most manufacturers, and ICCT have estimated that announced future year sales from car manufacturers should be sufficient to meet the US, European and Chinese targets by 2025.<sup>15</sup> In the shorter term however, there is increasing evidence that there is currently a higher demand for EVs than there is supply, leading to closed order books and long waiting times for some models. In April, VW announced that the factories for the Passat GTE and the Golf GTE Plug-in hybrids were at full capacity and therefore orders were temporarily stopped from being accepted, while facing delays on delivering earlier orders. BMW has stopped Series 3 and X5 orders while the 225xe Active tourer is available with a five month waiting list.

Transport and Environment also reported that just 1.5% of advertising spend was on zero emission models and 1.4% on plug-in hybrids in the EU's largest car markets: Germany, France, UK, Italy and Spain. In Norway, which has over 50% electric vehicle market share, advertising spend on zero emission cars was much higher at 10%, indicating that companies are not focusing on increasing market share in countries with lower electric vehicles sales.

There is also evidence that increased uptake of alternatively fuelled vehicles is being hindered by confusion and inaccurate perceptions among consumers and by, in some cases, deliberate actions from within the automotive sector itself.<sup>16</sup> A survey of more than 1,000 drivers found that customers are confused about the relative capabilities of hybrids and electric vehicles (EVs).

Of those surveyed, a third cited range anxiety as a reason for hesitating to buy a hybrid model, despite it being a factor that only affects EVs. Moreover, the Financial Times reported in August that car manufacturers are excluding electric options from dealership bonus schemes. Recent research conducted in Denmark, Finland, Iceland, Norway and Sweden found that dealers were dismissive of EVs, misinformed shoppers on vehicles specifications and steered customers towards petrol and diesel vehicle options.

We recommend the Government investigate the way the EV market is operating in terms of:

- Whether the lack of choice of electric models among some manufacturers and willingness to sell EVs is presenting a barrier to uptake.
- Understanding of the issues around long delivery times and closed order books.

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<sup>14</sup> Edmunds (2018) *Loyalty report*.

<sup>15</sup> Lutsey, N. ICCT (2018) *The future is electric, but why's it taking so long?*

<sup>16</sup> Simpson Carter survey for Autocar (2018) <https://www.autocar.co.uk/car-news/industry/confusion-hinders-hybrid-and-ev-sales>

## Support the efficient rollout of affordable EV charging infrastructure

Commitments to improve charging infrastructure across the UK in the Road to Zero strategy are welcome and include:

- Introducing a requirement for charge point infrastructure to be installed in all new homes in the UK.
- Working with industry to set requirements for smart charge points.
- Expanding the On-street Residential Chargepoint scheme for local authorities to roll out infrastructure on residential streets.
- Updating guidance to ensure all new lampposts in appropriate areas include charging points.

We also welcome the main elements of the Automated and Electric Vehicles Act which received Royal Assent in July. This new legislation gives the government new powers to require motorway service stations to install chargers and allows metropolitan mayors to request that large fuel retailers in their area install chargers. Whilst the Alternative Fuels Infrastructure Regulations 2017 already gave the government powers to ensure charge point providers allow motorists to 'pay-as-you-go', the Act adds additional powers to prescribe which methods of payment must be available. It also gives the government power to ensure charging points are compatible with all vehicles and also to set standards for reliability. We will be assessing how these elements are working in our annual Progress Reports.

The CCC published research in January showing that to meet long distance en route charging requirements, the number of rapid chargers near the major roads network needs to expand to around 1170 by 2030. In addition, the number of publically available chargers for 'top-up' charging around towns and local areas must increase to over 27,000 by 2030. In our Progress Report next year, we will set an indicator to assess whether the government is on track in developing this infrastructure.

Charging provision across the country is developing at different paces. There have been large increases in the number of chargers in Central London, Eastern Scotland and South Western Scotland. However, four areas of the country installed less than 10 new chargers this year – East Yorkshire and Northern Lincolnshire, Bradford, Doncaster and Cardiff. It is important to understand the barriers to installing further charging infrastructure in these areas, so drivers across the country are able to choose an electric vehicle, regardless of where they live.

The charging infrastructure required near motorways and major roads to enable electric vehicles to complete trips longer than the range of their vehicle is also developing. The need for this infrastructure is concentrated near busy motorways, with Lancashire likely to require the highest number of additional chargers to enable long journeys using the M6, yet as of June 2018 no new chargers had been installed in the past year.

The Electric Nation project is the world's largest smart charging trial with approximately 700 participants with 40 different makes and models of EV, spanning the area covered by the distribution network operator Western Power Distribution - the Midlands, the South West and Wales.<sup>17</sup> They have tested two smart charging systems. The customers signing up to this trial are likely to be early adopters of EVs who are interested in the technology as the only financial incentive for joining the trial is a free smart charger. Even for this group of people, the trial found that for one of the systems, 50% of customers did not use the provided app at

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<sup>17</sup> Electric Nation (2018) *Presentation at Cenex-LCV 18: Electric nation update: Driver interaction with EV smart charging.*

all, and for the other system, 60% did not respond to the invitation to use the system. This likely demonstrates the need to provide financial incentives to charge at optimal times, otherwise the mass market customer seems unlikely to engage with smart charging.

There is mixed evidence on the reliability of EV charging infrastructure. A recent survey for Zap-Map found that most networks had a positive satisfaction score of above 50%. However, a significant proportion of the users of some networks are dissatisfied with the service they are receiving.<sup>18</sup> Poor reliability, unit communication issues, and higher-than-average charging costs were the main issues raised. The survey also found that, on average, the UK's public EV charging infrastructure reliability is improving. Analysis in July 2017 showed that 14.8% of devices were out of service (including 4.1% partially operational). By August 2018, this had reduced to 8.5% being out of service (1.1% partially).

It is important that government monitors closely the development of EV charging infrastructure, to ensure it is not preventing uptake of EVs across the UK. A wider assessment of the barriers to uptake from reliability and unfamiliarity issues should be undertaken. Further work also needs to be done to assess the infrastructure requirements for larger vehicles including heavy vans, trucks, blue light vehicles and tractors. These are likely to have different needs in terms of space for charging, type of charge points and could also be location specific.

### **Tackle emissions from trucks**

The European Commission released proposed standards for CO<sub>2</sub> emissions from trucks in May 2018, aiming to reduce the average CO<sub>2</sub> emitted from new heavy duty vehicles by 15% in 2025 and by 30% in 2030 (from a 2019 baseline). These standards apply to both articulated and rigid heavy duty vehicles, but apply to the tractor of articulated vehicles only. The inclusion of trailers in the standards would offers potential for greater efficiency reductions by reducing aerodynamic drag, rolling-resistance and the weight of the tractor-trailer combination.

The Road to Zero strategy includes a voluntary commitment by the freight industry to reduce emissions by 15% by 2025 from 2015 levels. It's important that emissions across the sector are monitored to ensure that a voluntary commitment leads to real emissions reductions, and that the target is made mandatory if necessary. For fleets which are especially successful at reducing emissions, best practice should be shared across the sector. The freight portal developed by the Energy Saving Trust to support operators in this transition would be a useful way to share case studies.

Results of recent testing of natural gas trucks to measure potential emissions reductions both from a greenhouse gas and an air quality perspective should be released, to ensure that operators can use these results to make decisions on the future of their fleets if they are proven to lead to real world reductions. For lighter trucks, electrification should be explored in the first instance.

The DfT have recently issued a call for evidence for proposals on how more 'last mile' deliveries can be carried out using electric cargo bikes and electric vans, and what incentives

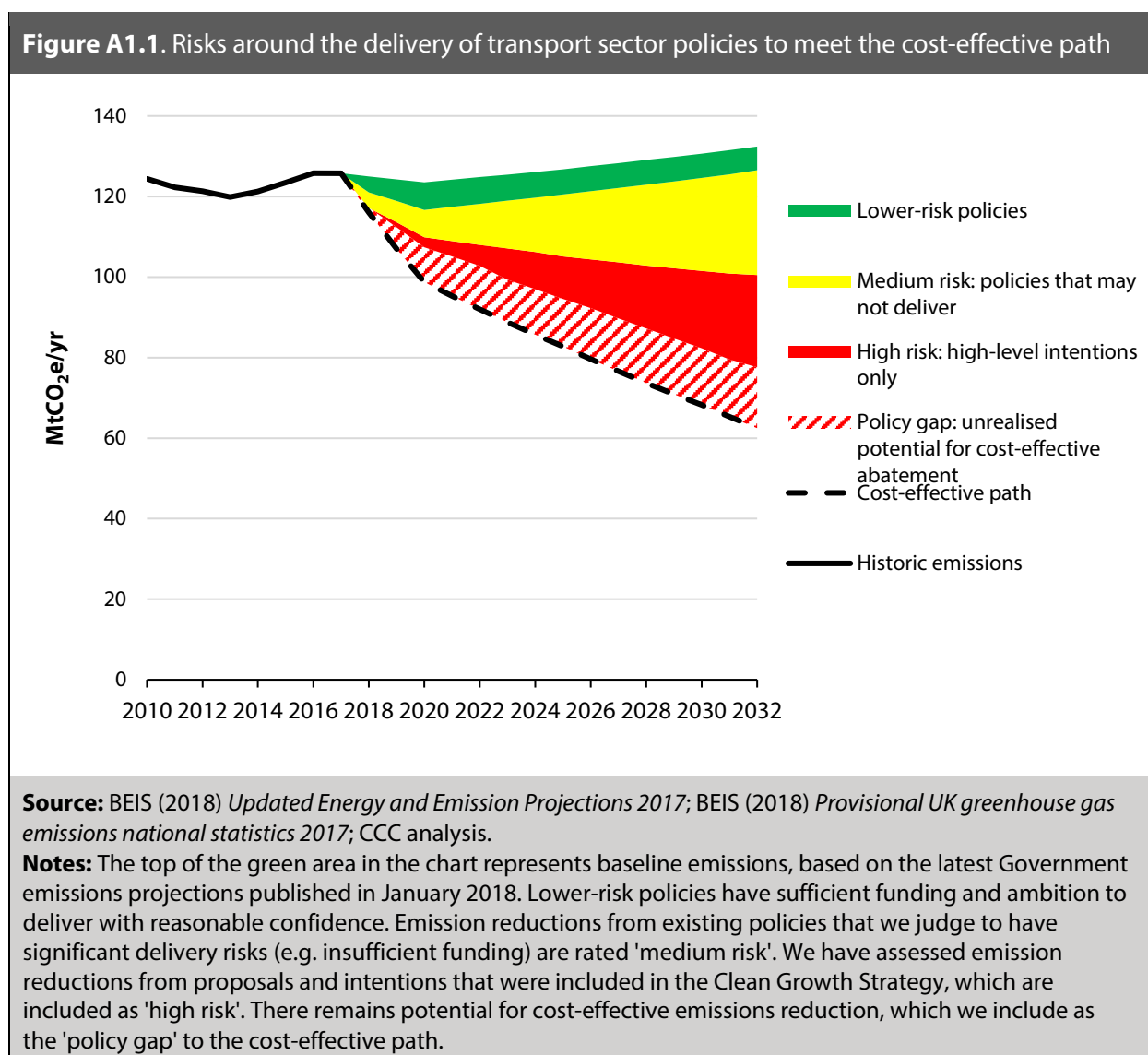
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<sup>18</sup> Zap-Map (2018) <https://www.zap-map.com/zap-map-survey-reveals-top-ev-charging-networks/>

might be appropriate to encourage a large-scale shift to cleaner last-mile delivery options. A recent trial of e-cargo bikes for Sainsbury's online grocery deliveries, funded by DfT, found that 97% of orders could be fulfilled in a single e-cargo bike drop, and that delivery routes and journey times were shorter due to the bikes making use of cycle and bus lanes.<sup>19</sup> The time spent dropping off the goods was also found to be shorter, due to the ability of e-cargo bikes to park at or closer to delivery locations. The Government has announced £2m to support the uptake of e-cargo bikes, but has not yet announced the level of funding available per bike.

## Policy gap

Our assessment of the Road to Zero strategy indicates that there remain significant risks to meeting carbon budgets. The analysis shows there is a policy gap of 14 MtCO<sub>2</sub>e by 2030 in cost-effective abatement potential for which there are no policies, and 42 MtCO<sub>2</sub>e at risk due to lack of firm policies and measures or those with delivery risks (Figure A1.1).



<sup>19</sup> DfT (2018) *The Last Mile: A Call for Evidence on the opportunities to deliver goods more sustainably*.

The Government must remove the policy gap for the fourth carbon budget by 2020, and by 2023 for the fifth carbon budget. Table A1.2 lists actions that must be taken to ensure policies with delivery risks, proposals and intentions become lower risk policies.

<b>Table A1.2.</b> Key actions required to remove risks around policy delivery and close the gap to the cost-effective path	
<b>Key action required</b>	<b>Timing</b>
<b>Set out the legislative procedure for the UK regulatory approach to the EU 2021/21 new car and van CO<sub>2</sub> targets in the event of an EU exit.</b> If the UK is not covered by these targets, there is little incentive for manufacturers to sell their most efficient and ultra-low emission vehicles here.	2019
<b>Stretching CO<sub>2</sub> targets for new cars and vans are needed beyond 2020 that go beyond current EU proposals.</b> These should require a high uptake of EVs and exploit the most efficient technologies available today for conventional vehicles. Flexibilities and loopholes in the current testing regime need to be removed in the transition to the new test procedure (WLTP) to restore public confidence in standards and deliver real-world emissions reduction. A real-world testing regime or use of actual fuel consumption data should be used alongside standardised tests.	2019
<b>Policies to deliver a high uptake of electric vehicles</b> to around 60% of new car and van sales by 2030. Barriers to EV uptake should be tackled by providing time-limited financial support and effective roll-out of infrastructure. Fiscal incentives for the purchase of electric vehicles should be set out over this time period to provide certainty for the industry, whether through grants, taxation or other local measures. Significant co-benefits from these measures include air quality improvement and opportunities for UK industry.	2018-2024
<b>Ensure that plug-in hybrid electric vehicles deliver near-zero real-world emissions by setting a minimum range for electric drive in 2035</b> so that almost all trips can be completed without using the petrol/diesel engine.	2019
<b>Policies, including fiscal instruments, must align with new car and van emissions targets to strengthen incentives to purchase cleaner vehicles.</b> The current move to higher emitting cars is undermining efforts to improve fleet efficiency and must be addressed. The cut to company car tax for zero emission vehicles should be moved forward from 2020/21 to 2019/20 to avoid penalising drivers who wish to buy a battery electric vehicle with the current planned rate increase.	2018
<b>The UK must set out an approach to the EU HGV regulation proposals in the context of EU exit.</b> Otherwise technologies with fuel savings which greatly exceed the up-front costs of technology and maintenance available today will not be installed on new HGVs.	2019

**Table A1.2.** Key actions required to remove risks around policy delivery and close the gap to the cost-effective path

Key action required	Timing
<p><b>Plans to increase cycling and walking must be implemented</b>, with the most cost-effective measures being identified from the evaluation of previous funding initiatives and prioritised for roll-out.</p>	2018-2019
<p><b>Public transport must be incentivised.</b> The decline in bus usage across the UK must be addressed.</p>	2018
<p><b>The Government must set out policies to encourage eco-driving training and logistics improvements in the freight sector</b>, including implementing recommendations from the Freight Carbon Review. Cost-effective shifting of freight from road to rail must also be encouraged. Emissions must be monitored to ensure that the voluntary commitment by the industry to reduce emissions by 15% from 2015 to 2025 is delivering real emissions reductions.</p>	2018-2019
<p><b>Enforcement of speed limits on major roads can reduce emissions</b> by ensuring cars are efficiently driven and increase road safety.</p>	2018
<p><b>Announce and implement updated plans for rail</b> electrification to achieve the full cost-effective potential over the Network Rail Control Period 6 (2019-2024).</p>	2019-2024
<p><b>Source:</b> CCC analysis.</p>	