

Written evidence submitted by RAC Foundation (EVP0045)

The RAC Foundation is a transport policy and research organisation which explores the economic, mobility, safety and environmental issues relating to roads and their users. The Foundation publishes independent and authoritative research with which it promotes informed debate and advocates policy in the interest of the responsible motorist.

Accelerating the shift to zero emission vehicles

What are the feasibility, opportunities, and challenges presented by the acceleration of the ban of the sale of new petrol and diesel vehicles to 2030 etc.?

Focusing specifically on the motoring world (not bus or HGV which is not our area of expertise) we would advise the Committee that the Government's decision to bring forward the date from which internal combustion-engined vehicles (cars and vans) can be sold will have sent a shock wave through the automotive sector which, together with other actions on the world stage, is likely to bring forward the development of a wider selection of zero-tailpipe vehicle types, at greater volumes than would otherwise have been the case. Hopefully this will drive down the cost of those vehicles, through mass production, and supercharge the industry's efforts to tackle the challenges posed by current battery technology i.e. – the sustainable sourcing of battery component materials, the up-scaling of battery production, the ability of batteries to hold charge to provide for longer range, and the ability of batteries to accept ever faster charging.

The opportunity for the UK automotive sector is closely linked to the extent to which the UK can itself be a centre for the production of batteries.¹ The motor car of the latter 2020s looks set to comprise three main elements: an integral chassis and drivetrain – including batteries – plus bodywork (the shell of the vehicle, plus interior), plus connectivity (the connections that run from in-dash sat nav systems through to those required for autonomous operation). For manufacturers, moving batteries around once assembled is a weighty, and consequently an expensive, business hence the 'anchor' for manufacturing looks set to be proximity to battery manufacture².

From the consumer perspective, once vehicles offering the right capabilities at the right price start appearing in showrooms and trickling into the used car market, the challenge is one of the convenience and reliability of recharging. This is not straightforward. For consumers with the option of off-street parking at home or at the workplace where chargers can be installed the likelihood is that on-street or public charging will only be a niche requirement – for example topping up the battery on a long trip. A recharge time running into several hours would not be a problem if the vehicle is destined to be sat still for that period anyway. The right electric vehicle could be hugely attractive if it offered lower (fuel) running costs, lower maintenance costs (with fewer moving parts) and the convenience of the vehicle being refuelled not as a discrete activity but while the driver is getting on with other things (like sleeping).

For those without the convenience of home/workplace charging, however, public charging at a faster rate is set to be a bigger issue, and that is not just a matter of getting a network of higher-powered chargers installed, but also of tackling the commercial drivers for their installation, including the price per kilowatt hour of the electricity and, crucially, the ongoing development of vehicles able to *accept* ever faster charging.

Near term, there are ongoing issues with the reliability and ease of use of the public re-charging network which the government has recognised and which clearly need addressing – too many chargepoints are not reliably in service, information about where to find them is improving but could be better, and connecting to them is far from the universal and well-understood process of refilling a petrol or diesel fuel tank at a service station and paying on the spot with cash or card. We have published two reports drawing attention to a lack of standardisation of connectors and charging protocols which has resulted in a bewildering array of types of charge point, connectors and tariffs, along with recommendations on what needs fixing in this regard³⁴. There is also the issue of how much electricity should cost at public chargepoints – is the premium over domestic electricity supply levied at some locations reasonable⁵? Of course, we should balance the highest rates which only apply at a tiny number of chargers in exceptional circumstances against the fact that at many locations charging is free. Nevertheless, this is something we would expect the Competition and Markets Authority’s review to address.

A further report, published at the end of 2020, covered a real-world trip around the North Coast 500 route in Scotland, which, alongside flagging the problems of unreliability and inadequate maintenance, put a particular spotlight on the problems with app-based systems for activating chargers where signal coverage is not 100% reliable – this suggests that a standard card-based system (a credit or charge card, or at most a separate, single card akin to a retail loyalty card) would be better than reliance on app-based connections⁶.

A challenge that has not gone unnoticed, though, is one for the Treasury, which feeds into the Committee’s second question: as the consumption of fossil fuels falls so will income from fuel duty, and the VAT levied on top of it. What should be done to plug the hole this would otherwise leave in the Exchequer’s balance sheet?

Road pricing

- **The case for introducing some form of road pricing and the economic, fiscal, environmental and social impacts of doing so**
- **Which particular road pricing or pay-as-you-drive schemes would be most appropriate for the UK context and the practicalities of implementing such schemes**
- **The level of public support for road pricing and how the views of the public need to be considered in the development of any road pricing scheme**
- **The lessons to be learned from other countries who are seeking to decarbonise road transport and/or utilise forms of road pricing**

The Committee has posed a number of questions about the potential road pricing may offer to support the move to carbon neutrality, tackle other environmental issues and the fiscal challenge noted above.

It is important to start by noting that the term ‘road pricing’ covers a multitude of options, from the simplest (a tolled road such as the M6Toll) through to the time-distance-place charging beloved of economists where the driver is faced with the full external social marginal cost of their decision to drive along a particular road at a particular time. For the purpose of answering the Committee’s questions we are making the simplifying assumption that what’s in question is whether some form of charge could be applied that relates to the

consumption of road capacity, be that a simple, standard distance charge through to the more complex, highly variable charges of a complex scheme.

Hitherto – until relatively recently - the case for considering some form of road pricing has been linked mostly to the desirability of tackling road congestion. By setting a higher price for using the roads in most demand when that demand is greatest it is in principle possible to see how freer flowing traffic could be achieved through the efficient application of a price mechanism. Previous Foundation reports have focused on this⁷ as did the then government's Feasibility Study of Road Pricing in the UK published in 2004. But what experience revealed was a considerable degree of public opposition to the use of pricing to tackle congestion for a variety of reasons including the social inequality (the impact on low-income households) and privacy (the 'big brother' aspect of having all a vehicle's movements – including the speed at which it was travelling – tracked by the state).

Looked at now as more of an environmental policy tool, any measure that results in less fossil fuel being burnt – wherever that happens – is good for hitting our carbon reduction targets. Reducing air quality impacts is different, because the location of the emissions then comes into play – whether and to what extent humans are exposed to particulate matter and NOx emissions (plus brake dust, tyre and road surface wear). But in both cases it is important to note that the consequence of what might be an entirely rational policy on economic grounds is that someone, somewhere will not be making a trip that they would otherwise have made – albeit other trip options and other modes of travel may be available – and those likely to be hit first and hardest by price signals are those with the least income.

In 2017 the Foundation assisted author Gary Raccuja with his Wolfson Economics Prize winning answer to the question of whether there could be a better way of paying for roads⁸. In that report we advocated a distance-based charge to replace fuel duty and VED. The single, per-mile charge, would depend on the vehicle's weight (hence taking into account the damage it does to the road) and its tailpipe emissions. We argued that such a tax could be designed to be:

- Transparent – because the price per mile would be posted and the in-car odometer would display real-time the miles one drives;
- Relatively easy to collect – because there would be options from an up-front annual payment based on estimated mileage through to a pay-as-you-go system, possibly piggy-backing off pay-as-you-go telematic insurance policies;
- Relatively hard to cheat – since every on-road vehicle in the UK is required to have motor insurance and vehicle mileages could be cross-referenced against service and MoT records; and
- Acceptable to the public if it came with guarantees about a fixed proportion of tax income being reserved for funding highway maintenance and road improvements.

Of course, that was a different question to the one the Committee is now raising, but we think that many elements of the proposal may remain valid, subject to identifying what, exactly, the question is for today – is it to plug the hole in the Exchequer coffers, but do so in as environmentally useful way as possible? Or to go all-out for an environmentally-focused outcome that may, or may not, help balance the Chancellor's books? For example, the London Congestion Charge was introduced to achieve a traffic outcome, with the promise that any net revenue would be spent achieving better transport outcomes, but accruing

revenue was not the primary aim. Similarly, the London Mayor's decision to accelerate and then considerably expand the Ultra-Low Emission Zone is clearly about achieving air-quality benefits, with any net-revenue gain being a bonus over and above the operating cost of the scheme.

From a purely net-zero-carbon perspective it is hard to see how a wholesale switch away from fuel duty in the near term would achieve a better outcome than retaining it allied to the development of complementary measures to encourage the rapid take-up of cleaner vehicles, though it is fair to note that, once the coronavirus is tamed, the return of pre-covid traffic levels could result in congestion that results in fuel being wasted as vehicles sit in jams.

More to the point, though, adding in the practicality and public acceptability issues, our view is that government would be best advised to take a long view – if its policies for encouraging the take up of electric (or hydrogen) cars pay off, and if, as seems likely, measures to reallocate road-space and tame traffic, to achieve air quality and other benefits, results in less private motoring, then the fuel duty yield from motoring will decline.

If, and it is a choice, the government view is that motorists should continue to contribute to the Exchequer at a similar level as they have to date through fuel duty and other taxes there will come a point where the contribution from the drivers of zero-tailpipe vehicles will have to be addressed.

This leads us to the view that rather than contemplate a root and branch reform of motoring taxation – an enterprise on a massive scale fraught with IT challenges and public hostility – the best approach would be a gradual move towards a distance charge, in the first instance only applying that to non-internal-combustion-engined vehicles (recognising that an answer would have to be found for plug-in hybrids).

If, as seems the case, the government's view is that motoring *should* continue to contribute, then implementing the simplest possible model – a distance charge – appears to us to be the most attractive first step, and applying it only to those vehicles not already contributing through fuel duty would mean a smaller-scale initial roll-out. Once established such a scheme could be refined, but at its inception we would advocate keeping it simple.

Clearly the biggest drawback to this approach would be that it could be seen to run counter to the need to incentivise the adoption of electric and other zero tailpipe vehicles if it only applied to those vehicles – however, the key to this is to look at motoring taxes in the round and ensure that the rates payable by zero-tailpipe vehicles result in a lower cost than the equivalent sum that would have been payable through fuel duty. That still results in a loss to the Exchequer, but a loss that should be regarded as a cost – an investment – in achieving the overall environmental goal.

In closing, we would note that there are many initiatives worldwide to reduce the environmental impact of travel, each of which reflects the particular circumstances, social, geographical and economic, that each country and city faces. But on the specific deployment of road pricing we observe that nowhere in the world is there a scheme on a national scale akin to that as would apply to the UK. The most advanced scheme is in Singapore, a country that would as a land-mass fit comfortably roughly three times over within the M25. This despite all the attention road pricing has attracted in academic circles over seventy-years or more. That is telling us something about the sheer scale of practical and political challenge

involved in implementing a national scheme, however strong the economic arguments for so doing.

We would be happy to expand on any of the material in our response.

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Endnotes

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- ¹ <https://www.theguardian.com/business/2021/feb/16/coventry-to-see-planning-permission-for-electric-car-battery-gigafactory>
 - ² <https://www.driving.co.uk/news/environment/material-used-make-ev-batteries-now-mined-uk/>
 - ³ <https://www.racfoundation.org/research/environment/ultra-low-emission-vehicle-infrastructure-dermott>
 - ⁴ <https://www.racfoundation.org/research/environment/development-of-the-uk-public-chargepoint-network>
 - ⁵ <https://www.racfoundation.org/media-centre/costs-of-charging-electric-car-vary-dramatically>
 - ⁶ <https://www.racfoundation.org/research/environment/an-electrifying-trip-around-scotland>
 - ⁷ <https://www.ucl.ac.uk/transport/sites/transport/files/UCL-smeed-memorial.pdf>
 - ⁸ <https://www.racfoundation.org/research/economy/racf-contributes-to-winning-wolfson-prize-entry-economics-2017>