



House of Commons
Transport Committee

Motoring of the future

Eighth Report of Session 2014–15

*Report, together with formal minutes relating
to the report*

*Ordered by the House of Commons
to be printed 23 February 2015*

HC 429
Published on 6 March 2015
by authority of the House of Commons
London: The Stationery Office Limited
£11.00

The Transport Committee

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Summary

Motoring is being transformed by new materials, new fuels and information technology. However, the Government must act if people and businesses in the UK are to obtain the full benefit of this ongoing automotive revolution.

We found that the Department for Transport (DfT) is yet to set out a comprehensive strategy to link the introduction of new automotive technology to the achievement of its policy goals. It should develop a comprehensive vision to shape motoring of the future in partnership with other Government Departments and agencies. This strategy needs to set out a co-ordinated set of actions to:

- reduce or eliminate fatalities and serious injuries on the roads;
- cut emissions from road transport;
- increase road capacity;
- facilitate social inclusion and accessibility of road transport; and
- support economic growth.

We welcome the publication of the DfT's regulatory review, *The pathway to driverless cars*. However, the DfT must set out the detail on how it will reform legislation and regulation to support that review. For example, manual, semi-autonomous and autonomous vehicles may well be running together on UK roads in the near future. The DfT must provide certainty for the public and for the automotive industry by explaining how vehicles will be certified and tested, how drivers will be trained and how driving standards will be regulated, monitored and enforced. It must also consider the issue of liability.

The application of new technology to motoring represents a one-off commercial opening for the UK automotive industry. We therefore welcome the leadership shown by Innovate UK in facilitating the ongoing trials of driverless cars in Greenwich, Bristol and Milton Keynes/Coventry. Looking beyond the domestic market, however, the Government must engage more positively in setting European and international standards to allow UK manufacturers to develop products that are suitable for export. This is a once-in-a-lifetime commercial opportunity, and UK industry needs the Government's help to seize it.

1 Introduction

1. Advances in fuels, materials and information technology are revolutionising motoring. *The Economist* described the application of such new technologies to vehicles as most significant development in automotive transport since Henry Ford and his engineers turned the car into a mass-market item in 1913.¹ Self-parking cars that read traffic signs, that maintain a safe distance from the car in front and that brake automatically are already on sale in the UK. Google is developing cars which drive themselves to a selected destination without a human driver.² New technology is being applied to infrastructure as well as to vehicles. For example, a digitised toll system was introduced on the Dartford crossing in November 2014,³ and the Highways Agency is planning to test a Scalextric-style system on a stretch of motorway to recharge electric cars on the move.⁴

2. In the future, we are likely to see vehicles that are increasingly autonomous, combine technologies to improve fuel efficiency and make driving safer. It is inevitable that such new technologies will transform motoring, although it is impossible to predict exactly when they will reach the mass market. Addressing such uncertainty around when new technology will be introduced is a major challenge for government. Changes in vehicles will be complemented by alterations in the infrastructure around roads to enable vehicle-to-vehicle communications and vehicle-to-infrastructure communications. The future will offer a mix of those different technologies, and they will become available at differing times.

3. Societal attitudes to motoring are also changing. Gerry Keaney, Chief Executive Officer, British Vehicle Rental and Leasing Association (BVRLA), stated that “Every demographic study you read about young people living in the major cities shows that they are increasingly less motivated to learn to drive. They are less motivated to take their driving test and, where they do learn to drive, they are less interested in owning a vehicle.”⁵ Such changing attitudes are reflected in the increased popularity of car sharing schemes.⁶

4. Changes in technology may mean that vehicle ownership carries new obligations in the future beyond ensuring roadworthiness. That might entail, for example, ensuring that the latest software updates have been applied to a vehicle. As vehicles takeover an increasing number of tasks from drivers, the question of liability in the event of an accident will become much more complicated. Will the driver of a vehicle remain liable even if a car is operating autonomously, or will the manufacturer of the vehicle bear some responsibility? Depending on how liabilities are apportioned, such technological changes might lead to different models of ownership and a different relationship between manufacturers, owners

1 The Economist, *The future of the car: clean, safe and it drives itself*, 20 April 2013

2 Innovate UK, *Driverless cars: 4 cities get green light for everyday trials*, 3 December 2014

3 Highways Agency, *Find out about the new Dart Charge scheme*, 19 September 2014

4 Highways Agency, *Preparing the strategic road network for electric vehicles*, 2014

5 Q88

6 Q88

and drivers. The role of the insurance sector may also change. Some traditional manufacturers may be displaced as new manufacturers enter the market.⁷

5. New technologies can make a major contribution to reducing fatalities and serious injuries, cutting emissions and improving traffic flows. Potential benefits include:

- improved fuel efficiency
- safer roads for all road users (drivers, passengers, cyclists and pedestrians)
- reduced congestion
- decreased pollution
- improved traffic flows
- improved mobility for elderly and disabled people
- more comprehensive data for insurers, policymakers and traffic managers
- commercial opportunities for UK business.

Inquiry

6. We decided to hold an inquiry to examine Government support for the development of new automotive technologies and the action the Department for Transport (DfT) is taking to set standards, shape markets and influence consumer choices, so that the potential benefits identified in paragraph 5 can be realised. We issued a call for evidence on 18 June 2014 and invited comments on developments in technology and the Government's role in supporting such developments. We held four oral evidence sessions in October and November 2014, when we heard from the automotive industry, academics, local government, the Office for Low Emission Vehicles (OLEV), and the Parliamentary Under-Secretary of State, DfT, Claire Perry MP. We are grateful for the written and oral evidence which we received, and in particular to witnesses who took the time to travel to London to provide oral evidence.

7 For example, Google, Uber and Tesla.

2 Planning for change

7. Automotive manufacturing is a global business conducted in a global market. Technological development is driven by the industry responding to or creating consumer demand. A key question for the Government is whether it should remain passive, or whether it should actively respond to such changes. The danger is that technological developments that would contribute to major policy objectives, such as making roads safer, managing improving and investing in the road network, reducing emissions from transport and making transport accessible to all, might not be priorities for industry. If the Government does not strategically influence the future of motoring, new technology may not contribute to the achievement of those objectives. If the Government remains passive, outcomes will be shaped by the market. If it executes a joined-up strategy, it can influence developments. The increased use of data and communications technology in vehicles and the road network infrastructure means that the Government will need to act in order to minimise the risk to transport networks from terrorism and other crimes.

Vision and strategy

8. Witnesses to our inquiry consistently highlighted the need for strategic leadership by central Government to shape the outcomes that could be delivered by new motoring technology. Andrew Miller, Chief Technical Officer, Thatcham Research, argued that “This is brand new technology—the biggest change in the motor car since it was developed—so let’s develop a way of getting the stakeholders together and a good strong strategy. This is a 30-year plus strategy, which the UK deserves so that it can be first in the race”.⁸ The Transport Systems Catapult called for a coherent, long-term UK transport strategy, for greater collaboration between Government, industry and academia and for the Government to underpin an investable environment for new motoring technology.⁹ The Transport Planning Society called for an overarching strategy, embracing vehicles, vehicle use, infrastructure and highway management.¹⁰ The RAC Foundation thought a comprehensive motoring strategy would cover technology, infrastructure, regulation, pricing, subsidies, governance and funding.¹¹ Professor Oliver Carsten, Professor of Transport Safety, University of Leeds, thought that the Government was in a reactive rather than proactive mode:

They are not identifying the big issues in advance; they are not mapping out a strategy for exploiting the technologies to meet policy goals, and that is what we really desperately need. We know what the policy goals are: lower emissions, better travel times, fewer crashes, less congestion in the network and all of that. What we need to be doing is taking a long-term view of how

8 Q188

9 Transport Systems Catapult ([MOF 027](#))

10 Transport Planning Society ([MOF 006](#))

11 RAC Foundation ([MOF 021](#))

best we can take advantage of the technologies, and harness them to achieve those goals.¹²

9. The DfT told us that “the Government has a clear strategy for motoring, which has been articulated in several key documents.”¹³ To support that assertion, it cited six documents: *Investing in Britain’s future*, *Action for roads*, *Driving success*, *Driving the future today*, the *Strategic framework for road safety* and the *Logistics growth review*.¹⁴ *Investing in Britain’s future* and *Action for roads* cover road maintenance; *Driving success* is an industrial strategy for the UK car industry; *Driving the future today* addresses ultra-low emission vehicles; the *Strategic framework for road safety* is a casualties reduction plan; and the *Logistics growth review* identifies barriers to growth in the logistics sector.

10. The six documents cited by the DfT were published between May 2011 and September 2013. With the exception of *Driving the future today*, which addresses emissions but notably fails to consider driverless technology, they cover current operations rather than setting out a joined-up strategy for the future. They were drafted by five different Departments or agencies, namely the DfT, the Treasury, the Department for Business, Innovation and Skills, the Highways Agency and OLEV. Government Departments and agencies naturally pursue their own interests, which may not always be congruent.

11. The Parliamentary Under-Secretary of State, DfT, Claire Perry MP, agreed with the witnesses to our inquiry who had highlighted the lack of strategy covering motoring of the future. She told us that “If you step back and look at what we are trying to achieve with the future of motoring, there is no overarching strategy.”¹⁵ We welcome the Minister’s candour on that point. However, the lack of strategy means that cross-Government activity may not be co-ordinated, that public money may be wasted, that commercial opportunities may not be seized and that potential benefits for people may not be maximised. She also explained that “we are trying, wherever we can, to be technology-neutral and intervening where we think the market is failing.”¹⁶ We agree that the DfT should not attempt to pick winners as new technologies are developed, but it will need to do more than address market failure if the UK is to secure the benefits of new motoring technology. For example, it will need to respond efficiently and effectively to new challenges in relation to liability for accidents, changing models of ownership, data ownership and privacy concerns and the threat that a cyber-attack would present to a motoring system that is increasingly reliant on data and communication networks. If it sets strategic targets, it can leave it to the market to determine how to deliver them, but industry still needs a clear vision from the DfT.

12 Q223

13 Department for Transport(MOF 004) para 4

14 HM Treasury, *Investing in Britain’s future*, 27 June 2013; Department for Transport and Highways Agency, *Action for roads: a network for the 21st century*, 16 July 2013; Department for Business, Innovation and Skills, *Driving success: UK automotive strategy for growth and sustainability*, 12 July 2013; Office for Low Emission Vehicles, *Driving the future today: a strategy for ultra low emission vehicles in the UK*, 4 September 2013; Department for Transport, *Strategic framework for road safety*, 11 May 2011; Department for Transport, *Logistics growth review*, 29 November 2011.

15 Q243

16 Q244

12. The DfT already negotiates international technical standards, directs research and development, subsidises new technologies, provides certainty to incentivise infrastructure investment, sets standards for driver training, mandates the fitting of particular equipment and updates regulatory and legal frameworks to facilitate technological innovation. These are legitimate and necessary functions of government. Industry dislikes uncertainty and values stability when it makes decisions on investment. The DfT needs to telegraph its longer-term intentions, but it can only do so if there is broad cross-party agreement on the strategy and key way points. **The DfT has not implemented a coherent, joined-up strategy to link the development and implementation of new automotive technology to the achievement of its wider policy goals.**

13. During our inquiry, the DfT was working on a regulatory review.¹⁷ This was published on 11 February.¹⁸ It is a timely recognition of the importance of addressing motoring of the future and a good example of cross-government collaboration between the DfT and the Department for Business, Innovation and Skills. While we welcome the publication of the regulatory review, it falls short of the kind of coherent, joined-up strategy that we have in mind. Having a strategy that requires someone to read and understand several different documents, each of which has been produced at a different time and for a particular purpose, could generate misunderstanding, hinder co-ordination and impose an unnecessary burden on industry. Car manufacturers are, after all, building one car rather than six different cars, one of which is safe, one of which is fuel efficient etc. It is unrealistic to expect the average motorist to take an interest in all the different detailed policy documents that currently make up the strategy. A single document that sets out the DfT's priorities, how it expects new technologies to contribute to its wider policy objectives and a roadmap for how its vision could be delivered would be useful not only to set expectations for industry but to raise public awareness and to build public confidence in new technologies.

14. There is a strong case for having a single document that draws together the separate strands of policy making to produce a single coherent vision and roadmap for motoring and the automotive industry. ***The DfT should develop a comprehensive, accessible vision to shape motoring of the future in partnership with other Government Departments and agencies. This needs to convey a coherent set of objectives, describe a co-ordinated set of actions necessary to deliver those objectives and make links to the delivery of wider policy objectives. We recommend that the strategy includes six key objectives:***

- ***reduced or eliminated fatalities and serious injuries on roads;***
- ***reduced emissions from road transport;***
- ***increased road capacity through the use of technology rather than road building;***

17 Q256

18 Department for Transport, *The pathway to driverless cars: summary report and action plan*, 11 February 2015; Department for Transport, *The pathway to driverless cars: a detailed review of regulations for automated vehicle technologies*, 11 February 2015

- *protection for citizens against the risk of cyber-attack;*
- *enhanced social inclusion through more accessible road transport; and*
- *support for economic growth.*

3 Advances in technology

15. In this chapter we briefly examine emerging technologies and the implications for Government policy.

Safety

16. In 1997, the Swedish Parliament set the target of eliminating fatalities and injuries on Swedish roads. In 2013, 264 people died in road crashes in Sweden, a record low. With three of every 100,000 Swedes dying on the roads each year, compared with 5.5 per 100,000 people across the European Union, 3.7 in the UK, 11.4 in the USA and 40 in the Dominican Republic, which has the world's most dangerous roads, Sweden's roads are the world's safest. The Swedes believe that new motoring technology will enable them to achieve their zero fatalities target.¹⁹

17. Professor Eric Sampson, Newcastle University, told us that “if you want literally zero fatalities, you would have to mandate the fitment of something. I do not know exactly what it is, but you would have to be certain that every vehicle on the road had one.”²⁰ Darren Capes, Transport Systems Manager, City of York Council told us:

The move from passive to active safety measures, which we are starting to see now with the move to technologies such as lane guidance and active cruise control—technologies that take the decision away from the driver—will make driving safer for car drivers, but that technology is equally applicable to the relationship between motorised vehicles and pedestrians and cyclists. In the same way as technology can be used to stop cars driving into each other, as part of radar enhancements to cruise control, it can also be used to find cyclists in blind spots and pick out moving pedestrians within a certain area at the front of a vehicle. There are real opportunities with those types of technology to make vehicles more aware of their surroundings and more aware of vulnerable road users within their vicinity.²¹

18. The Minister confirmed that road safety is of paramount importance to the Government. She explained that the Government preferred to “nudge people rather than mandate”, but said that it would intervene if there were market failure relating to certain types of technology or safety issues.²² She added that where the evidence and cost-benefits were clear, the Government would mandate the introduction of safety requirements.²³ She

19 The Economist, *Why Sweden has so few road deaths*, 26 February 2014

20 Q193

21 Q162

22 Q245

23 Q250

concluded by stating that the Government did not currently see a need to set a zero death target.²⁴

19. Andrew Miller, Chief Technical Officer, Thatcham Research, told us that automation raised the possibility of making vehicles aware of their surroundings and of vulnerable road users in their vicinity. He drew a distinction between technologies which provided warning information to drivers and those which overrode drivers when they were reacting too slowly or making a dangerous manoeuvre. In his view, technologies that could override drivers would need to be introduced on a Europe-wide basis, because they would entail such significant changes to vehicle technology.²⁵

20. Adding intelligent systems to vehicles or roadside infrastructure could dramatically improve road safety. It has been estimated that human error accounts for more than 90% of road accidents. While switching from human to automated systems will reduce the impact of human errors, human decisions will clearly continue to be required in the design of new systems. For example, Google's self-driving cars are designed intentionally to exceed the speed limit by up to 10 mph. Google has explained that this was introduced as a "safety feature", because it could be dangerous to drive slowly on a fast road when everyone else is breaking the speed limit.²⁶

21. A number of intelligent safety systems are already available. Thatcham Research told us that technologies such as Autonomous Emergency Braking (AEB) and autonomous steering interventions have the potential to deliver meaningful crash reductions.²⁷ It estimated that the UK would gain significant safety benefits if AEB systems were implemented throughout the UK vehicle fleet. It recommended that the Government should intervene to make that happen. It published evidence suggesting that introducing a fiscal incentive to increase the uptake of AEB would save 12,830 casualties and 120 lives between 2015 and 2025.²⁸ It proposed a legislative requirement to fit AEB systems to new cars, a regulatory programme to implement emerging technologies beyond AEB and a vehicle scrappage or tax incentive scheme to promote automated systems which improve safety.²⁹

22. Many high-end vehicles are already fitted with advanced driver assistance systems such as autonomous cruise control, lane departure warning, lane keeping assistance, automatic emergency braking and emergency steering assistance. Future developments include autonomous systems, where the vehicle takes over control from the driver to prevent a collision. Intelligent Speed Adaptation (ISA) is a system which uses a digital road map enhanced with speed limit information to provide drivers with warnings when they exceed the speed limit, or even to limit the vehicle to the speed limit.

24 Q243; Q255

25 Qq 160-164

26 Huffington Post, *Google's self-driving cars 'programmed to break the speed limit'*, 19 August 2014

27 Thatcham Research (MOF 023) para 2.1

28 Thatcham Research, *Autonomous emergency braking*

29 Thatcham Research (MOF 023)

23. Vehicle-to-vehicle communications systems could reduce intersection collisions but would be effective only if the majority of cars were fitted with the technology. The US National Highway Traffic Safety Administration has announced its intention to require vehicle-to-vehicle capability on all new cars, but even by mandating the introduction of vehicle-to-vehicle systems, it has been estimated that full deployment will take some 15 years.³⁰ Professor Carsten pointed out that the European Commission has acknowledged that with co-operative systems, “the real bottleneck seems to be in deployment”. Professor Carsten acknowledged that it was “reasonable to be sceptical about the case for moving ahead now with expensive co-operative technologies that are of unproven benefit” but added that “such systems should not be rejected wholesale”. He stated that “there has been no attempt to look systematically at how co-operative systems could be exploited to provide better management of the road network and no strategy has been put in place to deploy and exploit these systems.”³¹

24. Policy makers will need to be alert to the possibility of unintended consequences, such as changes in behaviour that lead to drivers becoming too dependent on technology and not being alert enough to take control of a vehicle when they need to. Research can help policy makers understand such effects and how best to guard against them.

25. We heard that networked transport systems may be subject to cyber-attack.³² That does not mean that such systems are not viable, but manufacturers and government must work together to produce appropriate cyber-security strategies to prepare for that possibility.

26. It is clear from the evidence that the DfT needs to conduct further research on the technical and behavioural aspects of safety systems in vehicles. The initiative to eliminate fatalities and injuries on Sweden’s roads demonstrates how government can link technological development to increase safety by setting targets. We recognise that this approach could deliver benefits in vehicle safety, vehicle-to-vehicle communications and vehicle-to-infrastructure networks. The DfT should consider what impact setting targets to reduce serious injuries and fatalities might have on road safety in the UK.

Autonomous and connected vehicles

27. We asked witnesses to anticipate what mass market vehicles will look like in the future. Chris Reeves, Commercial Manager, Intelligent Mobility and Future Transport Technologies, Motor Industry Research Association, said road safety and traffic flows would both improve if vehicles had an increased level of intelligence and connectivity that allowed them to operate co-operatively.³³ Professor John Miles, Board Director, Arup and Research Chair of Transitional Energy Strategies, Cambridge University, told us that “computing and connectivity will allow [traffic] flows to be much smoother and much

30 Professor Oliver Carsten (MOF 041)

31 Professor Oliver Carsten (MOF 041)

32 Q236

33 Q2

more intense.”³⁴ Smoother and more intense traffic flows would decrease congestion and reduce the expense and environmental impact of constructing new roads. TRL concluded that “the impacts of automation could be colossal and change the face of surface transport”.³⁵

28. Professor Paul Newman, Department of Engineering Science, University of Oxford, highlighted how new technology might revolutionise transport:

Computing changes it all, and computing has not changed transport much at all yet. If you look at what computing has done to telephones, media and finance, you will see that in cars and vehicles, and they will be better because of computing.³⁶

29. Professor Newman told us that demand from motorists would drive how quickly new technologies penetrated the market. He pointed out that for some people driving might come to be seen as a time wasting activity that carried environmental and safety risks. He suspected that in time demand from some motorists would drive the production of autonomous vehicles. He told us that “we are now starting to demand that we do not need to parallel park. This is not a life skill we need; cars will start to do it.”³⁷

30. Professor Miles told us that taken together small technological advances, such as automatic parking, lane change control and anti-collision systems, mean we are approaching the point where a car could drive itself and that autonomous vehicles are closer than many people think.³⁸ Professor Oliver Carsten, Professor of Transport Safety, University of Leeds, expressed a slightly different view. He told us that “real entry into the market will almost certainly not be as rapid as the optimists have predicted” but even he saw that the introduction of automated technologies was inevitable.³⁹

31. Gerry Keaney, Chief Executive Officer, British Vehicle Rental and Leasing Association (BVRLA), argued that the Government should plan how to get more cars containing new technology on the road quickly, so that “the benefits are seen, the manufacturers get scale, the prices come down and suddenly the whole thing becomes very much more attractive from a consumer point of view in terms of buying the product”.⁴⁰ New technologies tend to be introduced at the top end of the market, and it might take 20 to 30 years for such technologies to percolate through the entire vehicle fleet. For the next 30 years, manual, semi-autonomous and autonomous vehicles are all likely to run on UK roads. **The DfT should prepare for a transition period when manual, semi-autonomous and autonomous vehicles are all running together on UK roads. During the transition**

34 Q4

35 TRL (MOF 007) para 32

36 Q3

37 Q9

38 Q16

39 Professor Oliver Carsten (MOF 041) para 5

40 Q84

period only some of the benefits promised by autonomous vehicles and the application of modern communications technology to motoring will be realised. The full benefits cannot be realised until there is wide uptake of such technologies. It is also important that the DfT clarifies how liabilities will be apportioned in such circumstances.

32. The DfT should identify technologies whose introduction needs to be accelerated and devise a range of fiscal and other incentives to increase their rate of adoption. Such an approach would build on current policy in relation to vehicle emissions, where low-emission vehicles are subject to lower rates of vehicle excise duty. In the past, the gradual tightening of certification and testing requirements has reduced engine emissions, and a similar approach could be used now to accelerate take-up. Potential levers to nudge behaviour include type certification, road worthiness standards, mandating the fitting of particular technologies to new and existing vehicles by a specified date, scrappage schemes and fiscal incentives. Some of those levers may be helpful in tackling more than one issue—a scrappage scheme could see improvements to emissions and safety—and the DfT might wish to prioritise measures which help to secure more than one benefit. The DfT should also take account of the relative efficiency and effectiveness of these measures in delivering the changes required.

Telematics

33. Telematics—also known as ‘black boxes’—monitor the location of a driver and driving performance. Telematics are currently used by insurers to offer lower premiums to higher risk drivers and by commercial fleet managers to monitor vehicle locations and driving standards. The BVRLA explained that black boxes help organisations to improve the cost and time-efficiency of journeys. It proposed that such data could inform policy on issues such as road congestion, emissions reduction and motoring taxation.⁴¹ Professor Sampson predicted that by 2050 insurance companies will require all vehicles to be equipped with an in-vehicle black box, which would underpin the introduction of pay-as-you-drive insurance.⁴²

34. Professor Sampson told us that there is limited published evidence on the impact of telematics on reducing road accidents. He added that only insurers would know the extent to which black-box insurance had affected accident rates for novice drivers.⁴³ Richard Cuerden, Technical Director for Vehicle Safety, Engineering and Assurance, Transport Research Laboratory explained that fitting black boxes in fleets was associated with a reduced number of accidents and that black boxes tended to act as an incentive for people to drive better. However, he highlighted the limited data on their effect on higher risk groups, such as young and novice drivers. He concluded that black boxes could provide

41 British Vehicle Rental and Leasing Association ([MOF 030](#))

42 Professor Eric Sampson, *ITS in 2050*

43 Q192

valuable information on why accidents happen and that they have enormous potential as a research tool.⁴⁴

35. Professor Carsten pointed to the need for controlled, structured trials, rather than relying on data from people who had self-selected for a particular kind of insurance.⁴⁵ The Parliamentary Advisory Council for Transport Safety (PACTS) recommended that the DfT should develop legal frameworks and protocols to provide greater access to black box data for crash investigation and safety research purposes.⁴⁶ Ian Yarnold, International Vehicle Standards, DfT, told us that the DfT had a good working relationship with UK insurers and that he was not aware that the insurance industry was holding back any information.⁴⁷

Big data

36. “Big data” is data on a scale or of a complexity that makes it challenging to use. However, new ways to collect, manage and analyse such big data raise the possibility of maintaining a smarter and more efficient transport system.⁴⁸ Engineering the Future predicted that developments in big data will have a huge impact on national transport strategy.⁴⁹ Graham Grant, Transport Development Specialist, Newcastle City Council told us that that Newcastle City Council was engaging with local software developers to incentivise them to develop applications to improve local transport.⁵⁰

37. Telematics offers an invaluable source of data to inform policy making to improve driving behaviour and safety. For example, information derived from telematics could be used to manage traffic flows or to inform highways design. Fleet managers are using telematics to improve the driving of their vehicles and insurance companies are collecting data from a growing number of drivers. There is no evidence to suggest that the DfT has taken steps to determine how such new sources of information could be used to inform policy making. *The DfT should work with representatives from the whole of the insurance industry and others who hold data on driving—for example, motor manufacturers, manufacturers of satellite navigation systems and fleet owners and operators—to see what use it might make of anonymised data from vehicles and how this can be combined with existing information from the Highways Agency to inform policy. In analysing such data, the DfT must take into account the nature of the information and the extent to which its source may skew the conclusions that can be drawn from it—for example, telematics data from insurance companies may be drawn from self-selecting group of drivers and material from fleet operators who have large numbers of delivery drivers may be atypical.*

44 Qq 206-207

45 Q210

46 Parliamentary Advisory Council for Transport Safety ([MOF 047](#))

47 Q263

48 Parliamentary Office of Science and Technology, [POSTnote 468](#), July 2014

49 Engineering the Future ([MOF 033](#))

50 Q124

Data governance

38. The increase in the volume and variety of transport data presents new challenges in relation to data governance. Transport data collection, analysis and dissemination is sometimes fragmented and inconsistent, because there are many different infrastructure operators, service operators and information service providers. The Institute of Advanced Motorists commented that “the connected car of the future works on data and who owns that data and to what use it is put is an important part of the debate on the future of motoring”.⁵¹

39. Different issues are raised by different types of data. The BVRLA told us that it made sense for drivers’ data to be made available through systems such as eCall [see paragraph 72] which were designed to take care of a driver after an accident, but that some other instances of data sharing could be seen as an infringement on drivers’ personal liberty:

I can see that a driver, even if it is a car owned by one of our members, would not want to sign up to the fact potentially that somebody knows exactly where they are 24 hours a day, how that car is being driven, every time they break the speed limit or if they drive in a dangerous way or a safe way. Those are very personal data and there has been no discussion about how widely they should be shared and who with.⁵²

TRL told us that there was a gap in research into security of data and that issues relating to data reliability, security and ownership were missing from the government’s motoring strategy.⁵³ Thatcham Research stated that many insurers had concerns about the lack of progress in developing European legislation regarding access to vehicle security data.⁵⁴ The BVRLA recommended that the Information Commissioner should investigate the current rules regulating fleet and driver information and issue further guidance to improve consumer confidence.⁵⁵

40. The vast quantity of transport data now available presents tremendous opportunities to provide smarter, more efficient and more personalised transport systems. However, greater clarity is required on the practical application of data governance legislation. The DfT must ask the Information Commissioner to review the current rules and guidance on access to fleet and driver information and the rights of drivers and other interested parties to access vehicle data and to publish updated guidelines on the collection, access and use of vehicle data.

51 Institute of Advanced Motorists ([MOF 020](#))

52 Q73

53 TRL ([MOF 007](#))

54 Thatcham Research ([MOF 023](#))

55 British Vehicle Rental and Leasing Association ([MOF 030](#))

Low carbon vehicles and fuels

41. The UK is committed to reducing carbon emissions.⁵⁶ Carbon emissions from road transport must be reduced in order to meet that commitment. The Office of Low Emission Vehicles (OLEV) was established in 2009 with the objective of positioning the UK at the global forefront of ultra-low emission vehicle (ULEV) development, manufacture and use so as to contribute to economic growth and to help reduce greenhouse gas emission and air pollution on the UK's roads. Low carbon vehicles are set to become an increasing proportion of the vehicle fleet. OLEV has set itself the target that every new car in 2040 will be a ULEV.⁵⁷

Plug-in electric vehicles

42. Plug-in electric vehicles are a market-ready ULEV, and developing a market for them is a key part of OLEV's strategy. We commented on the Government's Plugged-In Places and Plug-In Grant schemes in our 2012 Report, "Plug-in vehicles, plugged in policy?", in which we noted that while consumer demand had increased since the introduction of those schemes, it remained relatively small.⁵⁸

43. DfT data show that the uptake of plug-in vehicles has remained slower than projected, but that it has recently started to accelerate.⁵⁹ Professor Phil Blythe, Professor of Intelligent Transport Systems, Newcastle University, told us that more plug-in and hybrid vehicles were sold in the last quarter than in the last four or five years, and that other countries had experienced similar issues with slower than expected adoption in the early stages.⁶⁰ Comparing progress in the UK with other countries, he stated that the leaders in the field were the USA, Japan and Norway, but that the UK was "probably in the top ten".⁶¹

44. Witnesses identified a number of issues affecting the rate of uptake of plug-in EVs and the contribution that plug-in EVs could make towards emissions reduction targets:

- i) Establishing an adequate recharging infrastructure is essential. There is still no single system enabling drivers to locate the nearest charging point.⁶² Range anxiety remains a key barrier to adoption of EVs. A basic network of recharging stations must be in place to ensure the market can grow, with recharging stations where people want them, not just where they are commercially profitable.⁶³ The evaluation of the Government's Plugged-In Places EV infrastructure pilots has been poor, and there has been a slow response to lessons learned from them.⁶⁴ In

56 The Climate Change Act 2008 requires the UK to cut greenhouse gas emissions by 80% by 2050, relative to a 1990 baseline.

57 Office for Low Emission Vehicles, *Driving the future today: a strategy for ultra low emission vehicles in the UK*, 4 September 2013

58 Transport Committee, Fourth Report of Session 2012-13, *Plug-in vehicles, plugged in policy?*, HC239

59 Department for Transport, *All licensed vehicles and new registrations*, various dates

60 Qq93-94

61 Q99

62 Q97

63 Institute of Advanced Motorists ([MOF 020](#))

64 [TRL \(MOF 007\)](#); [ITS UK \(MOF 013\)](#); Q97

addition, there is a risk of divergence on technical specifications for charging points.⁶⁵

- ii) More public exposure to EVs is required to convince people that they are a viable option. We heard that schemes involving seven-day trials of EVs are a good way of increasing public awareness and promoting sales.⁶⁶ More incentives are needed to persuade people to change from vehicles which already suit them to low emission alternatives such as EVs.⁶⁷ Norway, which has been very successful at adopting EVs, used a range of incentives such as free parking, use of bus lanes and exemption from toll charges to increase uptake.⁶⁸
- iii) Clean cars are dependent on clean power. As the uptake of EVs increases, emission reductions will increasingly be dependent on decarbonising power generation.⁶⁹ The electrification of vehicles will require a massive shift in the shape and management of the electricity system of the future.⁷⁰

Fuel cell electric vehicles

45. Fuel cell electric vehicles generate electricity from fuels such as hydrogen. Preparing for hydrogen FCEVs is one of OLEV's stated priorities, which it is carrying out through its UKH2 Mobility project. Professor Blythe stated that the challenge was to get the infrastructure in place to support FCEVs.⁷¹ Air Products, a hydrogen manufacturer and provider of hydrogen-fuelling stations, pointed to the potential air quality and environmental health benefits of FCEVs, but it identified a number of barriers inhibiting uptake. It called for:

- i) greater early support for fuelling infrastructure so as to create a safer market for industry to invest in;
- ii) greater support towards the cost of FCEVs during the early stages of market development to make them more affordable for consumers; and
- iii) Government support for the production of 'brown' hydrogen, generated using non-renewable sources of energy, until the market is sufficiently developed to justify investment in 'green' hydrogen production pathways.⁷²

65 Q97

66 Q96

67 Q136

68 Q94

69 HM Treasury, *The King review of low carbon cars*, October 2007

70 TRL ([MOF 007](#)); Engineering the Future ([MOF 033](#))

71 Q101

72 Air Products ([MOF 014](#))

Promoting a range of low carbon solutions

46. Electric vehicles are just one of many potential low carbon solutions available to motorists, and no single fuel or technology is likely to meet all future requirements.⁷³ The RAC Foundation's 2013 review of low carbon fuels and cars concluded that there was likely to be a range of options for consumers on fuels and on powertrains, and that there was likely to be a range of solutions for different transport applications.⁷⁴ Witnesses agreed that the Government should continue to encourage market adoption of a range of proven technologies.⁷⁵ We heard:

- i) Electric cars are one of a range of technical solutions and will not suit everyone. The Government should set targets in relation to emissions and energy-efficiency to encourage the development of alternative technical solutions to satisfy consumer needs.⁷⁶
- ii) There is a general lack of knowledge in the transport sector regarding the lifecycle emissions of different technologies when design, production, use and disposal are taken into account. More information is required to help drive effective commercial and public sector decision making.⁷⁷
- iii) Different solutions may be appropriate for different parts of the UK.⁷⁸ For example, hydrogen trials could be carried out more sustainably in the Teesside region, where hydrogen is produced locally.⁷⁹ However, motoring is a global industry, and products will need to be compatible across fuel infrastructures and vehicles.⁸⁰
- iv) Different solutions may be appropriate for different uses.⁸¹ For example, the Dearman Engine, which is powered by liquid air or liquid nitrogen, is designed to provide auxiliary power for refrigerated or air conditioned vehicles, which is a key challenge for electric vehicles.⁸²
- v) The slow uptake of new technologies means that Government funding will be required during this phase of development.⁸³
- vi) Government must not risk distorting the market by trying to pick winners.⁸⁴ Government should exercise caution in the use of subsidies to support fledgling

73 Institution of Mechanical Engineers ([MOF 034](#)); Toyota Motor Europe ([MOF 012](#))

74 RAC Foundation, *Powering Ahead: The future of low-carbon cars and fuels*, April 2013

75 Q102

76 Institution of Mechanical Engineers ([MOF 034](#))

77 TRL ([MOF 007](#)); Institution of Mechanical Engineers ([MOF 034](#))

78 Q143

79 Zero Carbon Futures ([MOF 002](#))

80 Q149

81 Q40

82 Dearman Engine Company ([MOF 040](#))

83 Zero Carbon Futures ([MOF 002](#))

84 British Vehicle Rental and Leasing Association ([MOF 030](#))

technologies or fuels, since withdrawing too early from incentive frameworks can negatively impact ULEV take-up.⁸⁵ It should learn lessons from the withdrawal of Government investment in LPG autogas, which had a serious impact on that market.⁸⁶

- vii) The supportive treatment of ULEVs within national tax and fiscal structures will continue to have an impact on take-up, and industry and drivers would welcome greater certainty about future policy.⁸⁷ A long-term plan is required to enable people to make decisions about how and when they might switch to a ULEV.⁸⁸
- viii) Government should articulate a clear and consistent strategy for transport fuels, with clearly defined timescales.⁸⁹

Rate of adoption of low carbon fuels and vehicles

47. Realising OLEV's vision of every car being a ULEV by 2040 will require more rapid uptake than has been achieved to date. Gerry Keaney, BVRLA, pointed out that with around 33 million cars on the UK roads, and with only around 2.4 million new cars being registered in a busy year for new car sales, replacing all existing cars with newer, cleaner and more efficient ones would take many years.⁹⁰

48. Witnesses made a number of proposals on how the Government could accelerate progress:

- i) The Carbon Trust suggested that targeted, strategic government support for research and development, investment and planning would help to bring forward changes within a more defined timeframe and convince consumers to adopt new technologies.⁹¹
- ii) TRL stated that more research was needed to understand what people want and why they might choose to change to low carbon vehicles.⁹²
- iii) The BVRLA recommended that Government consider incentives such as access to car rental and car clubs to encourage people to give up their older, more polluting cars, introducing green lanes for low emission vehicles in areas of high congestion and low air quality and conducting a full audit of local government corporate car

85 Autogas Ltd (MOF 009), UK Petroleum Industry Association (MOF 011), Toyota Motor Europe (MOF 012); British Vehicle Rental and Leasing Association (MOF 030); Q153

86 Autogas Ltd (MOF 009)

87 Toyota Motor Europe (MOF 012); ITS UK (MOF 013); Institute of Advanced Motorists (MOF 020)

88 Q153

89 UK Petroleum Industry Association (MOF 011)

90 Q61

91 Carbon Trust (MOF 025)

92 TRL (MOF 007)

- schemes so as to inform future guidance for local councils on their transport schemes.⁹³
- iv) Zero Carbon Futures suggested using planning legislation to encourage the inclusion of new technology infrastructure in railway station renovations, including plans for motoring technologies in new city developments and new car parks, developing carbon-free zones in cities, exempting low carbon vehicles on toll roads and allowing them to use bus lanes, and providing free or subsidised parking and charging for EVs.⁹⁴
 - v) TRL recommended new strategies such as using government fleets as test-beds for new technologies to enable an element of research and development while making new technology more visible and acceptable to the general public.⁹⁵
 - vi) The LGA called on Government to consider what more could be done to help local authorities with emissions reductions, including support and advice on the introduction of Low Emission Zones.⁹⁶

Role of OLEV

49. Witnesses supported OLEV's work to bring industry and different Government Departments together to work on the same challenges.⁹⁷ Professor Blythe told us that it was taking longer than expected to make progress, but that this was not surprising given OLEV's difficult remit and the challenges of working for different masters.⁹⁸ Denis Naberezhnykh, Head of Low Carbon Vehicles and ITS Technology, TRL, commented that more clarity was needed over OLEV's role and how it related to other bodies such as Innovate UK and the Transport Systems Catapult. He stated that an overarching strategy was needed to articulate not only research and development priorities, but how such priorities would be developed into demonstration and implementation.⁹⁹

50. Richard Bruce, Head of OLEV, said that OLEV's policy was "warmly supported" by Ministers, who were generally positive about its agenda.¹⁰⁰ The Minister explained that Government was not trying to pick technological winners, but rather was working towards the aspiration of reduced emissions to meet the UK's carbon plan by 2040.¹⁰¹ She asserted that Government's role was to set the framework and the output and then let industry innovate. She noted that the 2040 target was driving a huge amount of innovation.¹⁰² The

93 British Vehicle Rental and Leasing Association ([MOF 030](#))

94 Zero Carbon Futures ([MOF 002](#))

95 TRL ([MOF 007](#))

96 Local Government Association ([MOF 018](#))

97 Q107; Q143

98 Q105

99 Q106

100 Q260

101 Q246

102 Q273

Minister told us that Government was “trying very hard to offer stability of regulation and policy interest, at least over the seven years that are a typical product cycle for cars”,¹⁰³ but that the issue of reducing revenue from fuel duty was a matter for the Treasury.¹⁰⁴

51. Low carbon vehicles are set to make up an increasing proportion of the vehicle fleet and will form a key part of the UK’s motoring future. Adoption has been slower than projected, but it is now starting to accelerate. Different technologies are becoming available, but drivers need more incentives to switch to low emission vehicles, confidence that refuelling infrastructure will be available and certainty in the Government’s long-term policies on investment, subsidy and taxation regimes. The creation of OLEV has been a positive step, but implementing its strategy will be challenging. Future fuels can contribute to UK decarbonisation and air quality targets. Government cannot pick a winner, but it can provide certainty for market participants to incentivise investment.

52. *The DfT should ensure that OLEV:*

- *clarifies long-term policies on investment, subsidy and taxation regimes for ULEVs;*
- *sets out an action plan for accelerating the uptake of ULEVs, including an assessment of how different incentives could contribute to that objective; and*
- *defines a strategy to meet European Commission targets on refuelling infrastructure in UK.*

103 Q266

104 Q308

4 Managing change

Public confidence

53. Public confidence in new technologies is vital. Many new technologies that are a priority for the automotive industry are a response to demand from customers. The market has a major role in determining which technological developments become manufactured products. Unless the public are better informed about the potential benefits of different technologies, demand could skew development away from technologies that could make a real difference. For example, concern about refuelling infrastructure might affect take-up of alternatives to petrol and diesel. We heard anecdotal evidence that owners of electric vehicles sometimes struggle to find recharging points with a compatible plug for their vehicle. Whether or not those problems are real, the perception that they create has the potential to damage take-up of vehicles and to undermine the DfT's good work on initiatives such as the plug-in car grant.

Regulatory framework

54. Professor Miles told us that it might be possible to produce a driverless car within the next five years, but that the key question was whether such a vehicle would be allowed to drive autonomously on UK roads.¹⁰⁵ Similarly, Chris Reeves identified the key challenge as changing regulations and legislation to take people out of the decision-making process in driving.¹⁰⁶

55. Professor Sampson suggested that the capabilities of autonomous safety systems would need to be regulated, as would some form of certification and testing regime for them. He explained that various international bodies were looking at those issues, and that it was important that the UK remained actively involved. He observed that the UK was leading on some aspects, but that there were still “too many pockets of activity” and that “somebody somewhere ought to be joining up the thinking”.¹⁰⁷ The Institute of Mechanical Engineers told us that “legislation is not keeping up with the pace of technological change that allows for safety systems such as AEB and steering”.¹⁰⁸

56. An appropriate regulatory framework and testing regime is necessary to guide the development and deployment of autonomous vehicles. The public are understandably concerned whether self-driving vehicles are safe. Such concerns can be assuaged through effective regulation and action to educate drivers and raise public awareness. Legislation, regulation and standards have been used successfully in the past to encourage the take-up of particular technologies, and they have a role to play now. Thatcham Research told us that as technology becomes more complex, effective and autonomous, it “will pose

105 Q16

106 Q21

107 Qq176-177

108 Institution of Mechanical Engineers ([MOF.034](#))

significant challenges for implementation into the UK fleet and will demand Government legislative action”.¹⁰⁹

57. The failure to update legislation in line with the development of new technology may disadvantage the UK automotive industry. Professor Miles told us that developing autonomous vehicle technology presented real opportunities for the UK, but that unless Government moved quickly, “we are quite likely to lose the race.”¹¹⁰

He observed that

the very largest part of the activity in this area will almost certainly be driven by the established vehicle manufacturers or by people coming into the field, like Google, Tesla, Apple and players like those—people who have very deep pockets. They will choose to do their research in certain limited places around the world, often in the Far East, in the far west and sometimes in Europe as well. The UK has a very good opportunity ... but it needs something to make that happen.¹¹¹

We asked Professor Miles what that “something” might be. He told us that legislation was fundamental.¹¹²

58. Legislation covering driving, road use and vehicle type approvals—vehicle type approval confirms that a design will meet a particular performance standard—must be revised if autonomous vehicles are to operate on UK roads. The DfT must not allow UK legislation to fall behind both the pace of technological change and legislation in other countries. For example, the German Government has designated a stretch of autobahn for testing driverless vehicles. We note that the German transport minister is drawing up a legal framework to allow driverless vehicles to operate on all German roads with the intention of setting out the key points before the Frankfurt car fair in September 2015.¹¹³ **A failure to update legislation in line with the development of new technology may disadvantage the UK automotive industry.**

59. The Minister told us that the DfT is “publishing a regulatory review [...] which looks at all the regulatory questions around this technology.”¹¹⁴ The review was published on 11 February 2015.¹¹⁵ The action plan that this review recommends sees domestic and international regulations being amended between 2017 and 2018 and the production of highly or fully automated vehicles from 2017-18.¹¹⁶ **We welcome the publication of the Government’s regulatory review, *The pathway to driverless cars* and the roadmap that it**

109 Thatcham Research ([MOF 023](#)) para 2.1

110 Q26

111 Q27

112 Q27

113 The Guardian, [Germany creates laws for driverless cars](#), 1 February 2015

114 Q256

115 Q256

116 Department for Transport, [Driverless cars in the UK: a regulatory review](#), 11 February 2015

sets out for changes to the legislative and regulatory framework. However, this high-level consideration will need to be supported by further work to identify exactly which legislation requires amendment if it is to have a significant impact.

60. *The DfT should provide underpinning detail to support the legislative and other changes that it identified in its regulatory review. In doing so, it should articulate what changes it expects in the processes and systems for checking and enforcing compliance, and how it intends to ensure that its motoring agencies have the appropriate skills and knowledge to maintain and update testing and certification regimes.*

61. It is important that the certification and testing regimes keep pace with developments in technology. These regimes have been used successfully in the past to encourage the take up of particular technologies and they have a role to play now. The DfT must bear in mind that new technologies are already being deployed in production vehicles and that some of the issues that the evidence to our inquiry and the review have identified, such as clarification of liabilities, are already live issues.

Research and trials

62. In July 2014, the Business Secretary Vince Cable MP launched a £10 million competition for UK cities to host trials of driverless cars.¹¹⁷ Innovate UK, which is an executive non-departmental public body sponsored by the Department for Business, Innovation and Skills, was chosen to run the competition and trials. In December 2014, it announced the three locations had been chosen to trial driverless cars, namely Greenwich, Bristol and Milton Keynes/Coventry. Each trial is expected to last for between 18 and 36 months. The trials are expected to start in January 2015.¹¹⁸ The Minister told us that “the process was completely external to the Department ... Importantly, there is both a lead industrial partner and a local authority partner.”¹¹⁹

63. Professor Sampson told us that

the DfT agenda of seeing how these vehicles might operate in real life seems to have turned into a BIS exercise to encourage technology development by the automotive sector. There’s nothing wrong with that as an objective but it is not going to supply much new information about how we might incorporate highly or fully automated vehicles into UK traffic.¹²⁰

Professor Oliver Carsten, Professor of Transport Safety, University of Leeds added:

The Government has rather belatedly woken up to the promise of automated driving. But ... I am not aware of any attempt to consult the research community about the safety challenges that need to be overcome in order to

117 Department for Transport, *UK Government fast tracks driverless cars*, 20 July 2014

118 Innovate UK, *Driverless cars: 4 cities get green light for everyday trials*, 3 December 2014

119 Q284

120 Professor Eric Sampson (MOF046)

deliver safe automated driving. The focus is more on showcase demonstrations than on serious research.¹²¹

64. Witnesses discussed the research evidence for the effectiveness of different systems. Professor Sampson said that it was very difficult to research which technologies were most effective in terms of reducing accidents, because of the difficulties in running controlled trials of different features, with sufficient numbers of vehicles.¹²² Professor Carsten explained that the key struggle was with the continual monitoring and evaluation of technology, and developing an understanding of how casualty rates were affected over time by different technologies.¹²³ He explained that while it was statistically possible to show the safety benefits arising from car impact regulations, it was “really hard” to do this in relation to other safety approaches.¹²⁴ Engineering the Future told us that there were many competing technologies which could develop in different ways and which would need to be trialled in the real world.¹²⁵

65. In Chapter 3, we considered the use of telematics and black boxes to record information about when, where and how a vehicle was being driven [see paragraph 33]. Policy makers will need to take account of research on the impact of such technologies on driver behaviour. It is apparent that telematics has an introduction effect—people drive well because they know the box is watching—but there is little research on whether that behavioural change is sustained in the longer-term.

66. The public is understandably concerned about the testing of new technologies, particularly any ‘driverless’ technology. However, there are real advantages in making the UK the place where the global automotive industry tests and develops such technologies. **We welcome the trials of driverless cars announced in December 2014 and the leadership shown by Innovate UK on ensuring the UK is well positioned to seize the commercial opportunities created by new automotive technologies.** Showcasing the technology will be an important part of building public confidence. **Public confidence will depend on knowing that these technologies can be deployed safely on real roads and with all the unpredictability of real traffic flows.**

67. We are concerned that Innovate UK’s inevitable focus on identifying commercial opportunities might lead to the trials not testing issues such as safety and how autonomous vehicles might be incorporated in UK traffic flows. We are confident that the DfT and Minister understand that concern. In launching the report, *The pathway to driverless cars*, the Minister stated that “there’s no point in a driverless car that can navigate cones in a car park without navigating our busy streets”.¹²⁶ **We welcome the approach set out by the**

121 Professor Oliver Carsten ([MOF041](#)) para 5

122 Q198

123 Q210

124 Q210

125 Q166

126 Department for Transport, *Launch of ‘The pathway to driverless cars’ report*, 11 February 2015

DfT in *The pathway to driverless cars* and look forward to seeing the proposed code of conduct.

Driver training

68. Driver training must reflect new automotive technology. Gerry Keaney, BVRLA, told us that

the technology is way ahead of the training. What you have to do to pass a driving test today probably does not include the use of adaptive cruise control, autonomous braking devices or the various radar appliances in the car itself ... If you use autonomous braking in the wrong way it can be very dangerous. If you use it in the right way it is an absolutely fantastic feature.¹²⁷

The Minister told us that “changes are now being trialled in the new driving test proposals, for example, to try to focus much more on practical skills and take out things like reversing around a corner, which is not perhaps the most realistic thing that people do.”¹²⁸

69. **As well as updating the regulatory framework, the DfT will need to examine how drivers are taught and how driving standards are monitored and enforced. New technologies open up possibilities for monitoring driving and periodically testing drivers, but those technologies also raise serious questions about privacy. The DfT faces the challenge of ensuring that drivers keep up with evolving technology and maintain an appropriate standard of driving. *The DfT should undertake research on emerging models for driver training and the role new technologies might play in improving driving standards. Such research would need to address privacy, data ownership and data protection.***

International standard setting

70. The motoring industry is a global business, and autonomous and low emission vehicles will not be developed exclusively for the UK market. Jaguar Land Rover stressed the importance of co-ordinating policies at an international level, stating that “given global trends in investment, and the setting of regulations by major global markets, UK Government co-ordination with other markets or influence in the EU is critical if it is to have any role in shaping future standards.”¹²⁹

71. TRL called on the Government to engage ‘more proactively and positively with Europe on matters of common interest’. It stated that the Government’s unilateral approach to standard setting commercially disadvantages UK business.¹³⁰ Professor Carsten pointed out that “there is no evidence of concerted Government involvement in international and

127 Q90

128 Q274

129 Jaguar Land Rover (MOF036) para 4.1

130 TRL Ltd (MOF007) paras 38 to 39

European initiatives.”¹³¹ The RAC Foundation noted that much of the legislation and regulation that shapes motoring technology was defined at a European level and that it was therefore important for the UK to continue to help shape this and to ensure that national interests were given proper weight.¹³²

eCall

72. eCall is a European Commission initiative. It involves the mandatory installation of a device in all new vehicles which will call the emergency services in the event of a serious road accident. The European Commission initially aimed to implement eCall throughout the EU by the end of 2015. It now believes that eCall will be implemented by early 2018 at the latest.¹³³

73. The Minister explained Government policy on eCall:

According to our analysis, the benefit of making it [eCall] mandatory in all new cars does not justify the cost of implementing it; I believe it was something like £370-odd million. There was a view that, given the increasing responsiveness of our road network—in a way, smart motorways do the same thing, which is to make sure that the emergency services are alerted to any accidents—we did not feel that it was appropriate for the UK. However, we are entirely happy for other member states to implement it, if it is appropriate for their own networks—perhaps if they have a less responsive emergency service, for example. We do not support the measure, because it is not cost-effective for us, but we are very happy for it to be implemented elsewhere.¹³⁴

Even if one accepts the Minister’s argument that the excellence of the road network and emergency services renders the introduction of eCall otiose in the UK—this argument may not hold in remote rural locations—we note that a sizeable proportion of UK motorists drive in other EU member states. In 2013, for example, some 6.7 million accompanied passenger vehicles—in other words, cars and minibuses—travelled between the UK and overseas destinations.¹³⁵

74. In supporting the Minister’s argument for non-engagement by the UK Government with the eCall initiative, Ian Yarnold, International Vehicle Standards, DfT, pointed out that “manufacturers would pass the cost on to the consumer.”¹³⁶ We agree with Mr Yarnold that motor manufacturers are likely to pass the cost of introducing eCall on to consumers. However, we question whether international automobile manufacturers will

131 Professor Oliver Carsten ([MOF041](#)) para 6

132 RAC Foundation ([MOF 021](#))

133 European Commission, *eCall: Time saved = lives saved*

134 Q257

135 Department for Transport, *Sea Passenger Statistics: 2013*, February 2014

136 Q268

differentiate between consumers in EU member states that have implemented eCall and those that have not in passing on the costs. In other words, UK drivers may well pay for eCall without benefitting from it.

75. The Government should engage positively in setting European and international standards to allow UK manufacturers to exploit new technology by developing products that are suitable for export and to secure the benefits of new technology for UK drivers.

Other barriers to adoption

76. Many new safety systems are already technically feasible, but have been held back because of issues relating to implementation, cost, effectiveness and public acceptability. Some driver assistance technologies are available in higher-end vehicles but are currently considered too expensive for cheaper vehicles where competition on price is intense and so extra features are minimised. Other systems have been held back because of Government policy. PACTS told us that it was positive about the potential for new technologies to deliver substantial safety improvements, but that policy rather than technology was often the limiting factor. It pointed out that safety technologies, such as Intelligent Speed Adaptation (ISA), had been available but rejected in the past.¹³⁷ Professor Carsten pointed to research evidence for the predicted safety impact of ISA, which indicated that it could lead to a significant reduction in fatal crashes, and said that the fact that the UK had not moved ahead with ISA deployment was “a major missed opportunity for a very substantial improvement in road safety”. Brake, the road safety charity, urged the Government to produce a national digital speed limit map to exploit the potential of ISA technology to prevent speeding.¹³⁸ ***The DfT should set out how it will address barriers to the adoption of new technology other than the regulatory ones it has identified in The pathway to driverless cars.***

77. The question of a driver or owner’s civil and criminal liability for accidents and offences involving their vehicle will need to be settled if the public are to have the confidence that they will need to purchase cars fitted with new technologies. Resolving such questions will require further research and co-operation between Government, the insurance industry, motor manufacturers and organisations representing motorists, hauliers and public transport operators, cyclists and pedestrians.

137 Parliamentary Advisory Council for Transport Safety ([MOF.047](#))

138 Brake, the road safety charity, ([MOF.003](#))

5 Conclusion

78. New technologies can deliver transformative change in motoring. Reducing congestion through use of new technologies could free up millions of pounds from the cost of road expansion and river crossings; that money could be spent on improving roads in other parts of the network and ensuring that the benefits from new motoring technologies are seen beyond the strategic road network in urban and rural areas. Some technological developments which would contribute to achieving the Government's wider policy objectives might not be priorities for industry, and some may never be developed without Government incentives. The market alone is unlikely to deliver all the potential benefits. The insurance industry has its own set of priorities that are likely to shape what the automotive industry does, unless there is intervention by the Government to ensure that its wider policy objectives are met and common goods are realised.

79. The rapid proliferation of new motoring and information technology means that transport safety is an increasingly complex policy area. Much of the data which would inform a traditional cost-benefit analysis are not readily available, and some new technology would only deliver safety benefits if it were implemented throughout most or all of the UK fleet. There is a risk that technology will run ahead of Government processes for ensuring safe motoring outcomes.

80. The Government has a responsibility to ensure that the most beneficial safety measures are introduced to the vehicle fleet, as widely and quickly as possible. A long-term vision for a safe transport system free from death and serious injury is likely to require the Government to mandate the uptake of at least some autonomous features, which will require a coherent, strategic approach.

Conclusions and recommendations

Vision and strategy

1. The DfT has not implemented a coherent, joined-up strategy to link the development and implementation of new automotive technology to the achievement of its wider policy goals. (Paragraph 12)
2. The DfT should develop a comprehensive, accessible vision to shape motoring of the future in partnership with other Government Departments and agencies. This needs to convey a coherent set of objectives, describe a co-ordinated set of actions necessary to deliver those objectives and make links to the delivery of wider policy objectives. We recommend that the strategy includes six key objectives:
 - reduced or eliminated fatalities and serious injuries on roads;
 - reduced emissions from road transport;
 - increased road capacity through the use of technology rather than road building;
 - protection for citizens against the risk of cyber-attack;
 - enhanced social inclusion through more accessible road transport; and
 - support for economic growth. (Paragraph 14)

Safety

3. It is clear from the evidence that the DfT needs to conduct further research on the technical and behavioural aspects of safety systems in vehicles. The initiative to eliminate fatalities and injuries on Sweden's roads demonstrates how government can link technological development to increase safety by setting targets. We recognise that this approach could deliver benefits in vehicle safety, vehicle-to-vehicle communications and vehicle-to-infrastructure networks. The DfT should consider what impact setting targets to reduce serious injuries and fatalities might have on road safety in the UK. (Paragraph 26)

Autonomous and connected vehicles

4. The DfT should prepare for a transition period when manual, semi-autonomous and autonomous vehicles are all running together on UK roads. During the transition period only some of the benefits promised by autonomous vehicles and the application of modern communications technology to motoring will be realised. The full benefits cannot be realised until there is wide uptake of such technologies. It is also important that the DfT clarifies how liabilities will be apportioned in such circumstances. (Paragraph 31)

5. The DfT should identify technologies whose introduction needs to be accelerated and devise a range of fiscal and other incentives to increase their rate of adoption. Such an approach would build on current policy in relation to vehicle emissions, where low-emission vehicles are subject to lower rates of vehicle excise duty. In the past, the gradual tightening of certification and testing requirements has reduced engine emissions, and a similar approach could be used now to accelerate take-up. Potential levers to nudge behaviour include type certification, road worthiness standards, mandating the fitting of particular technologies to new and existing vehicles by a specified date, scrappage schemes and fiscal incentives. Some of those levers may be helpful in tackling more than one issue—a scrappage scheme could see improvements to emissions and safety—and the DfT might wish to prioritise measures which help to secure more than one benefit. The DfT should also take account of the relative efficiency and effectiveness of these measures in delivering the changes required. (Paragraph 32)

Big data

6. Telematics offers an invaluable source of data to inform policy making to improve driving behaviour and safety. For example, information derived from telematics could be used to manage traffic flows or to inform highways design. Fleet managers are using telematics to improve the driving of their vehicles and insurance companies are collecting data from a growing number of drivers. There is no evidence to suggest that the DfT has taken steps to determine how such new sources of information could be used to inform policy making. The DfT should work with representatives from the whole of the insurance industry and others who hold data on driving—for example, motor manufacturers, manufacturers of satellite navigation systems and fleet owners and operators—to see what use it might make of anonymised data from vehicles and how this can be combined with existing information from the Highways Agency to inform policy. In analysing such data, the DfT must take into account the nature of the information and the extent to which its source may skew the conclusions that can be drawn from it—for example, telematics data from insurance companies may be drawn from self-selecting group of drivers and material from fleet operators who have large numbers of delivery drivers may be atypical. (Paragraph 37)

Data governance

7. The vast quantity of transport data now available presents tremendous opportunities to provide smarter, more efficient and more personalised transport systems. However, greater clarity is required on the practical application of data governance legislation. The DfT must ask the Information Commissioner to review the current rules and guidance on access to fleet and driver information and the rights of drivers and other interested parties to access vehicle data and to publish updated guidelines on the collection, access and use of vehicle data. (Paragraph 40)

Role of OLEV

8. Low carbon vehicles are set to make up an increasing proportion of the vehicle fleet and will form a key part of the UK's motoring future. Adoption has been slower than projected, but it is now starting to accelerate. Different technologies are becoming available, but drivers need more incentives to switch to low emission vehicles, confidence that refuelling infrastructure will be available and certainty in the Government's long-term policies on investment, subsidy and taxation regimes. The creation of OLEV has been a positive step, but implementing its strategy will be challenging. Future fuels can contribute to UK decarbonisation and air quality targets. Government cannot pick a winner, but it can provide certainty for market participants to incentivise investment. (Paragraph 51)
9. The DfT should ensure that OLEV:
 - clarifies long-term policies on investment, subsidy and taxation regimes for ULEVs;
 - sets out an action plan for accelerating the uptake of ULEVs, including an assessment of how different incentives could contribute to that objective; and
 - defines a strategy to meet European Commission targets on refuelling infrastructure in UK. (Paragraph 52)

Regulatory framework

10. Legislation covering driving, road use and vehicle type approvals—vehicle type approval confirms that a design will meet a particular performance standard—must be revised if autonomous vehicles are to operate on UK roads. The DfT must not allow UK legislation to fall behind both the pace of technological change and legislation in other countries. (Paragraph 58)
11. A failure to update legislation in line with the development of new technology may disadvantage the UK automotive industry. (Paragraph 58)
12. We welcome the publication of the Government's regulatory review, *The pathway to driverless cars*, and the roadmap that it sets out for changes to the legislative and regulatory framework. However, this high-level consideration will need to be supported by further work to identify exactly which legislation requires amendment if it is to have a significant impact. (Paragraph 59)
13. The DfT should provide underpinning detail to support the legislative and other changes that it identified in its regulatory review. In doing so, it should articulate what changes it expects in the processes and systems for checking and enforcing compliance, and how it intends to ensure that its motoring agencies have the appropriate skills and knowledge to maintain and update testing and certification regimes. (Paragraph 60)

14. It is important that the certification and testing regimes keep pace with developments in technology. These regimes have been used successfully in the past to encourage the take up of particular technologies and they have a role to play now. The DfT must bear in mind that new technologies are already being deployed in production vehicles and that some of the issues that the evidence to our inquiry and the review have identified, such as clarification of liabilities, are already live issues. (Paragraph 61)

Research and trials

15. We welcome the trials of driverless cars announced in December 2014 and the leadership shown by Innovate UK on ensuring the UK is well positioned to seize the commercial opportunities created by new automotive technologies. (Paragraph 66)
16. Public confidence will depend on knowing that these technologies can be deployed safely on real roads and with all the unpredictability of real traffic flows. (Paragraph 66)
17. We welcome the approach set out by the DfT in *The pathway to driverless cars* and look forward to seeing the proposed code of conduct. (Paragraph 67)

Driver training

18. As well as updating the regulatory framework, the DfT will need to examine how drivers are taught and how driving standards are monitored and enforced. New technologies open up possibilities for monitoring driving and periodically testing drivers, but those technologies also raise serious questions about privacy. The DfT faces the challenge of ensuring that drivers keep up with evolving technology and maintain an appropriate standard of driving. The DfT should undertake research on emerging models for driver training and the role new technologies might play in improving driving standards. Such research would need to address privacy, data ownership and data protection. (Paragraph 69)

eCall

19. The Government should engage positively in setting European and international standards to allow UK manufacturers to exploit new technology by developing products that are suitable for export and to secure the benefits of new technology for UK drivers. (Paragraph 75)

Other barriers to adoption

20. The DfT should set out how it will address barriers to the adoption of new technology other than the regulatory ones it has identified in *The pathway to driverless cars*. (Paragraph 76)

Formal Minutes

Monday 23 February 2015

Members present:

Mrs Louise Ellman, in the Chair

Jim Fitzpatrick
Karl McCartney

Graham Stringer
Martin Vickers

Draft Report (*Motoring of the future*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 80 read and agreed to.

Summary agreed to.

Resolved, That the Report be the Eighth Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Monday 2 March at 4.00 pm]

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the Committee's inquiry page at www.parliament.uk/transcom.

Monday 20 October 2014

Question number

Chris Reeves, Commercial Manager, Intelligent Mobility and Future Transport Technologies, Motor Industry Research Association Ltd, **Professor John Miles**, Board Director, Arup and Research Chair of Transitional Energy Strategies, Cambridge University, and **Professor Paul Newman**, Department of Engineering Science, University of Oxford Q1-55

Gerry Keaney, Chief Executive Officer, British Vehicle Rental and Leasing Agency, **Neil Greig**, Director of Policy and Research, Institute of Advanced Motorists, and **Mike Hawes**, Chief Executive Officer, Society of Motor Manufacturers and Traders Q56-91

Monday 3 November 2014

Denis Naberezhnykh, Head of Low Carbon Vehicles and ITS Technology, Transport Research Laboratory, **Professor Phil Blythe**, Professor of Intelligent Transport Systems, Newcastle University, and **Graham Grant**, Transport Development Specialist, Newcastle City Council Q92-133

Andy Eastlake, Managing Director, Low Carbon Vehicle Partnership, and **Dr Colin Herron**, Managing Director, Zero Carbon Futures Q134-158

Monday 24 November 2014

Professor Eric Sampson, Visiting Professor, Newcastle University, **Andrew Miller**, Chief Technical Officer, Thatcham Research, and **Darren Capes**, Transport Systems Manager, City of York Council Q159-204

Richard Cuerden, Technical Director for Vehicle Safety, Engineering and Assurance, Transport Research Laboratory, **Professor Oliver Carsten**, Professor of Transport Safety, University of Leeds, and **Professor Pete Thomas**, Professor of Road and Vehicle Safety, Loughborough University Q205-240

Monday 8 December 2014

Claire Perry MP, Parliamentary Under-Secretary of State, Department for Transport, **Richard Bruce**, Head of the Office for Low Emission Vehicles, Department for Transport, and **Ian Yarnold**, International Vehicle Standards, Department for Transport Q241-316

Published written evidence

The following written evidence was received and can be viewed on the Committee's inquiry web page at www.parliament.uk/transcom. INQ numbers are generated by the evidence processing system and so may not be complete.

- 1 Air Products ([MOF0014](#))
- 2 Autogas Ltd ([MOF0009](#))
- 3 Autogas Ltd ([MOF0010](#))
- 4 Automobile Association ([MOF0029](#))
- 5 Beemcar Limited ([MOF0045](#))
- 6 Bird & Bird LLP ([MOF0038](#))
- 7 Brake, the Road Safety Charity ([MOF0003](#))
- 8 British Parking Association ([MOF0019](#))
- 9 BVRLA ([MOF0030](#))
- 10 Carbon Trust ([MOF0025](#))
- 11 Dearman Engine Company ([MOF0040](#))
- 12 Department for Transport ([MOF0004](#))
- 13 Department for Transport ([MOF0048](#))
- 14 Drivers' Union ([MOF0001](#))
- 15 Engineering the Future ([MOF0033](#))
- 16 Professor Eric Sampson ([MOF0046](#))
- 17 Firstco Ltd ([MOF0015](#))
- 18 Guide Dogs ([MOF0008](#))
- 19 IAM ([MOF0020](#))
- 20 Institution of Mechanical Engineers ([MOF0034](#))
- 21 ITS United Kingdom ([MOF0013](#))
- 22 Jaguar Land Rover ([MOF0036](#))
- 23 James S Welling ([MOF0032](#))
- 24 L W Price ([MOF0039](#))
- 25 Local Government Association ([MOF0018](#))
- 26 Mayor of London/Greater London Authority ([MOF0042](#))
- 27 Professor Oliver Carsten ([MOF0041](#))
- 28 PACTS ([MOF0047](#))
- 29 Peter Miller ([MOF0028](#))
- 30 Pupils 2 Parliament ([MOF0017](#))
- 31 RAC Foundation ([MOF0021](#))
- 32 Stephen Harding ([MOF0037](#))
- 33 Thatcham Research ([MOF0023](#))
- 34 The Caravan Club ([MOF0026](#))
- 35 The Society of Motor Manufacturers and Traders (SMMT) ([MOF0024](#))
- 36 Toyota Motor Europe ([MOF0012](#))
- 37 Transport Planning Society ([MOF0006](#))
- 38 Transport Systems Catapult Ltd ([MOF0027](#))
- 39 TRL Limited ([MOF0007](#))

- 40 UK Petroleum Industry Association (MOF0011)
- 41 UKLPG (MOF0031)
- 42 Zero Carbon Futures (MOF0002)
- 43 Zero Carbon Futures (MOF0043)

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the Committee's website at www.parliament.uk/transcom.

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2014–15

Seventh Report	Investing in the railway	HC 257
Sixth Report	Government motoring agencies—the user perspective	HC 287 (HC 884)
Third Special Report	Putting passengers first: disruption at Gatwick, Christmas Eve 2013: Airport Operators Association Response to the Committee's Fourteenth Report of Session 2013–14	HC 633
Second Special Report	Local transport expenditure: Who decides?: Government Response to the Committee's Seventeenth Report of Session 2013–14	HC 632
Fifth Report	Security on the railway	HC 428 (HC 792)
Fourth Report	Passenger transport in isolated communities	HC 288 (Incorporating HC 853, Session 2013–14) (HC 719)
Third Report	Cycling safety	HC 286 (Incorporating HC 852, Session 2013-14) (HC 718)
Second Report	Offshore helicopter safety	HC 289 (Incorporating HC 992, Session 2013-14) (HC 717)
First Report	Driving premiums down: fraud and the cost of motor insurance	HC 285 (Incorporating HC 286, Session 2013–14) (HC 716)
First Special Report	Forging ahead: UK shipping strategy: Government Response to the Committee's Thirteenth Report of Session 2013-14	HC 254

Session 2013–14

Sixteenth Report	National Policy Statement on National Networks	HC 1135
Fifteenth Report	Better roads: improving England's strategic road network	HC 850
Fourteenth Report	Putting passengers first, disruption at Gatwick,	HC 956

	Christmas Eve 2013	
Seventeenth Special Report	Land transport security—scope for further EU involvement?: Further Government Response to the Committees Eleventh Report of Session 2012–13	HC 1192
Thirteenth Report	Forging ahead?: UK shipping strategy	HC 630
Twelfth Report	Future programme 2014	HC 1143
Eleventh Report	Safety at level crossings	HC 680 (HC 1260)
Tenth Report	Ready and waiting? Transport preparations for winter weather	HC 681 (HC 1139)
Ninth Report	High speed rail: on track?	HC 851 (HC 1085)
Fifteenth Special Report	Cancellation of the InterCity West Coast competition: Government update on the Laidlaw and Brown reports	HC 1086
Eighth Report	Access to ports	HC 266 (HC 1083)
Seventh Report	Local authority parking enforcement	HC 118 (HC 970)
Seventh Special Report	The new European motorcycle test: Government Response to the Committee’s Sixth Report of 2009–10	HC 656
Sixth Report	Flight Time Limitation: Follow-up	HC 641 (HC 795)
Fifth Report	Access to transport for disabled people	HC 116 (HC 870)
Fourth Report	Cost of motor insurance: whiplash	HC 117 (CM 8738)
Third Report	The work of the Vehicle and Operator Services Agency (VOSA)	HC 583 (HC 678)
Second Report	Future programme: 2013–14	HC 438
Fifth Special Report	The European Commission’s 4 th Railway Package: Government Response to the Committee’s Twelfth Report of Session 2012–13	HC 439
Third Special Report	Rail 2020: Rail Delivery Group and Passenger Focus responses to the Committee’s Seventh Report of Session 2012–13	HC 81
Fourth Special Report	Land transport security—scope for further EU involvement?: Government Response to the Committee’s Eleventh Report of Session 2012–13	HC 177
Second Special Report	Marine Pilotage: Government Response to the Committee’s Ninth Report of Session 2012–13	HC 79
First Report	Aviation strategy	HC 78 (HC 596)
First Special Report	Cancellation of the InterCity West Coast franchise competition: Government Response to the Committee’s Eighth Report of Session 2012–13	HC 80

Session 2012–13

Twelfth Report	The European Commission’s 4 th Railway Package	HC 1001(HC 439)
Eleventh Report	Land transport security—scope for further EU involvement?	HC 875
Ninth Special Report	Rail 2020: Government and Office of Rail Regulation Responses to the Committee’s Seventh Report of 2012–13	HC 1059
Tenth Report	The Coastguard, Emergency Towing Vessels and the Maritime Incident Response Group: follow up:	HC 1018

	Government Response to the Committee's Sixth Report of 2012–13	
Ninth Report	Marine Pilotage	HC 840
Eighth Report	Cancellation of the InterCity West Coast franchise competition	HC 537
Eighth Special Report	Plug-in vehicles, plugged in policy?: Government Response to the Committee's Fourth Report of Session 2012–13	HC 884
Seventh Report	Rail 2020	HC 329
Sixth Report	The Coastguard, Emergency Towing Vessels and the Maritime Incident Response Group: follow up	HC 647
Fifth Report	Future programme: autumn and winter 2012–13	HC 591
Fourth Report	Plug-in vehicles, plugged in policy?	HC 239
Third Report	Competition in the local bus market	HC 10 (HC 761) (Incorporating HC 1861–i–iii)
Fifth Special Report	Flight Time Limitations: Government Response To The Committee's First Report Of Session 2012–13	HC 558
Fourth Special Report	Air Travel Organisers' Licensing (Atol) Reform: Government Response To The Committee's Seventeenth Report Of Session 2010–12	HC 557
Second Report	Road safety	HC 506 (HC 648) Incorporating HC 1738
First Report	Flight time limitations	HC 164 Incorporating HC 1838
Third Special Report	Sulphur emissions by ships: Government Response to the Committee's Sixteenth Report of Session 2010–12	HC 87
Second Special Report	Counting the cost: financial scrutiny of the Department for Transport 2011–12: Government Response to the Committee's Fifteenth Report of Session 2010–12	HC 15
First Special Report	Draft Civil Aviation Bill: Pre-Legislative Scrutiny: Government Response to the Committee's Thirteenth Report of Session 2010–12	HC 11
Session 2010–12		
Seventeenth Report	Air Travel Organisers' Licensing (ATOL) reform	HC 1798
Sixteenth Report	Sulphur emissions by ships	HC 1561
Fifteenth Report	Counting the cost: financial scrutiny of the Department for Transport 2011–12	HC 1560
Fourteenth Report	Cable theft on the Railway	HC 1609 (HC 1933)
Thirteenth Report	Draft Civil Aviation Bill: Pre-Legislative Scrutiny	HC 1694
Twelfth Report	Cost of motor insurance: follow up	HC 1451 (HC 1934)
Eleventh Report	Thameslink rolling stock procurement	HC 1453 (HC 1935)
Tenth Report	High Speed Rail	HC 1185–I (HC 1754)

Ninth Report	Out of the jam: reducing congestion on our roads	HC 872 (HC 1661)
Eighth Report	Bus Services after the Spending Review	HC 750 (HC 1550)
Seventh Report	Taxis and private hire vehicles: the road to reform	HC 720 (HC 1507)
Sixth Report	The Coastguard, Emergency Towing Vessels and the Maritime Incident Response Group	HC 948, incorporating HC 752-i (HC 1482)
Fifth Report	Keeping the UK moving: The impact on transport of the winter weather in December 2010	HC 794 (HC 1467)
Fourth Report	The cost of motor insurance	HC 591 (HC 1466)
Third Report	Transport and the economy	HC 473 (HC 962)
Second Report	Financial Scrutiny of the Department for Transport	HC 683
First Report	Drink and drug driving law	HC 460 (Cm 8050)
Tenth Special Report	The proposal for a National Policy Statement on Ports: Government Response to the Committee Fifth Report of Session 2009–10	HC 1598
Third Special Report	The performance of the Department for Transport: Government response to the Committee's Fourth Report of Session 2009–10	HC 549
Second Special Report	Update on the London Underground and the public-private (PPP) partnership agreements: Government response to the Committee's Seventh Report of Session 2009–10	HC 467
First Special Report	The major road network: Government response to the Committee's Eighth Report of Session 2009–10	HC 421