



Transport Committee

Oral evidence: [Motoring of the future](#), HC 429

Monday 8 December 2014

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Written evidence from witnesses:

- [Department for Transport](#)

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Members present: Mrs Louise Ellman (Chair); Sarah Champion; Jim Fitzpatrick; Mr Tom Harris; Karen Lumley; Karl McCartney; Mr Adrian Sanders; Graham Stringer; Martin Vickers.

Questions 241-316

Witnesses: **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, gave evidence.

Q241 **Chair:** Good afternoon. Welcome to the Transport Select Committee. Minister, I would like to welcome you here particularly.

Claire Perry: Thank you.

Q242 **Chair:** I think that this is the first time you have appeared in front of the Committee. We are pleased to see you. Would the members of your team like to tell us who they are?

Richard Bruce: My name is Richard Bruce. I am the head of the Office for Low Emission Vehicles, also known as OLEV.

Ian Yarnold: Good afternoon. My name is Ian Yarnold. I head the team in the Department called International Vehicle Standards.

Q243 **Chair:** Thank you very much. Minister, during this inquiry we have heard a great deal about new technology in motoring—technology that is here now and potential technology. What do you see as the main benefits of the new technology?

Claire Perry: If you step back and look at what we are trying to achieve with the future of motoring, there is no overarching strategy. Instead, we are being guided by a number of principles. That is really what is driving our technology investments. I should start by saying that we try to be technology-neutral; perhaps I'll come back to that in a second.

With the roads, we are trying first to support road users. If you look at the investment strategies that we are laying out—the work that is going on in terms of smart motorways or intelligent transport systems—we are absolutely trying to work with the fact that more than 90% of distance travelled in this country is by car. We think that people deserve a better transport network.

We are trying to make transport much more sustainable. I will talk a little about OLEV, along with my officials. Anticipation of the step-down of carbon emissions from Britain's car fleet is very much driving our technological views.

We are trying to make road usage much safer. In everything that we do, we are guided by the fact that road safety is of paramount importance to us. While we celebrate the fact that Britain's roads are among some of the safest in the world, we have every intention of trying to improve safety. We are also trying to deal with the fact that road usage is increasingly shared, so we are looking at cycling strategies and ways of interacting between different road users, using technology.

The other thing with technology is that we are mindful of two very important things in Britain. The first is the fact that we have a fantastic manufacturing base and some extremely good academic research centres. That is influencing our technologies. We are also trying to solve some of our very specific problems in this country, in that we have a congested and relatively small road network, in mileage terms. All of that sets the boundaries, if you like. In terms of specific technologies, we are trying, wherever we can, to be technology-neutral and intervening where we think the market is failing. I am very happy to talk more about certain examples there, if you would like.

Q244 Chair: We will come on to some specific questions. In a more general way, what do you see as the major benefits of the technologies that are now being developed?

Claire Perry: It is about trying constantly to improve both driving conditions for users and the sustainability—the emissions performance—of Britain's fleet. We sometimes forget, perhaps, the fact that road usage is shared; it is not just people in cars—it is people in trucks or on bicycles as well. It is about trying to manage the sharing of road usage between different groups. The benefits are very much around improvements for passengers, to do with driving experiences or safety, improvements in emissions across the UK and improvements in road usage sharing.

Q245 Chair: You said that the Government had no strategy. Did you mean that? One issue that has been raised repeatedly during this inquiry by different participants is that they all feel there is no overriding strategy from the Government. They feel that they are working in specific areas but there is no overriding strategy from the top.

Claire Perry: I am trying to present it in a more positive light. To me, strategy implies mandation. You could look back on certain times in Britain's history and say that we had a sort of anti-driver strategy. There was not a lot of investment going into our road network, so our technology investments were not what they should have been. Now we are trying to be guided by the aspirations for lower carbon emissions right across the UK—clearly, transport is a huge contributor to our emissions—improved safety and improved usage of a tight-capacity asset. We can debate whether or not that constitutes a strategy. What we are trying to do is nudge people rather than mandate, because I do not think that works as well

as it could. If there is market failure, specifically around certain types of technology or around safety issues, of course Government rightly should intervene—and does.

Q246 Chair: Which are the areas where you think it is legitimate for the Government to intervene or to be involved?

Claire Perry: When we have looked at technologies, we have found that in some areas Government intervention is required to help to get technologies to a more market-ready position. For example—Richard will talk about this, if necessary—what we have done in terms of investment in R and D in the ultra-low emissions vehicles area is incredibly important. But we are not trying to pick technologies. One of the problems we can get into is to say, “It’s all about this sort of technology,” or, “It’s all about this sort of fuel.” What we are trying to do is within the aspiration of getting to very much reduced emissions to meet our carbon plan by 2040; we see the destination, but we are not trying to pick winners along the way. I will give you a very specific example. One thing we are very keen to do is decarbonise the HGV fleet, which is more difficult, arguably, than decarbonising passenger cars. We have recognised that a barrier to that is the lack of refuelling stations for gaseous lower-carbon fuels. We are trying, with some OLEV investment, to stimulate investment in that sort of infrastructure.

Q247 Chair: Mr Bruce, do you want to add to that?

Richard Bruce: In terms of where Government can intervene, there is a key issue around market failure on infrastructure. We have a chicken and egg problem on charging points for electric vehicles and on hydrogen refuelling stations for hydrogen vehicles, potentially. If Government do not intervene, the adoption of vehicles will probably be slower than it might otherwise be. That is a clear case where Government can intervene proportionately to facilitate the adoption of technology.

In terms of which technologies are important, there is a huge and probably singular industrial opportunity in the transition to new technologies in cars. This is a transition that is going to happen; it is not a question of if—it is a question of when. There is an opportunity for the UK to make the most of that transition over the next 10, 20 or 30 years, to ensure that the technologies are built in the UK and that we adopt them faster than other countries.

Q248 Chair: Mr Yarnold, do you want to add to that? In which areas do you think Government should become involved?

Ian Yarnold: In terms of technology, it has the opportunity to unlock new potential. If you think about safety systems in vehicles, in particular, we have done a huge amount of work over a number of years to improve the crash performance of vehicles. That has delivered really significant improvements in our casualty toll, not just in the UK but across the wider market. If we think about some of the advanced technologies that are now starting to emerge in the market, we have the potential to capture accident avoidance technologies in a meaningful way. In my view, the real opportunity is to capture or unlock new potential.

Q249 Chair: Minister, should beneficial changes be mandatory?

Claire Perry: That is a very interesting question.

Q250 Chair: Should they be?

Claire Perry: Yes, where there is a clear cost-benefit suggestion that they should. If you look at eCall, for example, which is being mandated in other countries, we are unconvinced that in the British motoring environment the cost-benefit analysis of that is robust enough to mandate it. Equally, on electronic stability systems, which we are in the process of introducing now, it depends on whether the evidence is there. As you know, Madam Chair, transport policy is very much an evidence-based series of steps. Where the evidence is clear and the cost-benefit analysis is clear, we will absolutely mandate the introduction of safety requirements.

Q251 Chair: Where does safety come into that cost-benefit analysis?

Claire Perry: As you will know, there are quite careful analyses, including for safety, in terms of numbers of deaths avoided versus cost of implementation. We are always guided by the evidence and the proposals for that. Of course, all of us celebrate the fact that we have an excellent safety record in the UK. It depends on whether a system is right for Britain to introduce—appropriately, where it is required. We have no issue with eCall being introduced by other EU member states, should they think it appropriate for their own driving conditions, but the evidence does not suggest that it would lead to a significant safety improvement versus the cost of introduction.

Q252 Chair: Where there are changes that will make driving safer, should they be compulsory?

Claire Perry: When the evidence suggests that the cost of introducing them is not disproportionate, absolutely.

Q253 Chair: You are looking at cost, not safety in its own right and the saving of lives.

Claire Perry: No, it would be wrong to say that. It is absolutely clear that in Britain we have an excellent safety record on our roads. We have to be guided by the evidence in all introductions, just as we are in respect of new driving technology—or driverless technology, which hopefully we will come on to. It sounds very heartless to say that we want to quantify a safety benefit, but if we are going to make a case, particularly in a world that is trying to reduce the levels of red tape in some cases, it is important to quantify the safety benefits as well as the cost of any mandatory introduction.

Q254 Chair: Would you have a target of no deaths on the road? That has been done in some countries.

Claire Perry: It is an interesting point. Sweden, in particular, has that. Interestingly, our performance data are almost exactly the same as Sweden's, in terms of deaths on the road per capita. We do not have a target. We have a target on our trunk roads of reducing deaths by 40%; I believe that was published in the road investment strategy.

Q255 Chair: But would you consider having a target like Sweden's of no deaths on the road, as new technology makes that more realistic?

Claire Perry: There is an enormous drive to improve safety. Most crashes, I am told by my team, are caused by driver error. I am not sure how you ever get driver error out of the

equation, unless you move on to the driverless question, which I hope we might talk about. At this point we do not feel the need to set a zero death target. It is very important to point out that Britain is a world leader in terms of its road safety, so arguably the mix of regulation and manufacturer involvement is working.

Q256 Chair: The Department's written evidence refers to "a review of the regulations to remove unnecessary barriers that would impede the testing of the new technology whilst ensuring public safety, reporting by the end of 2014." Can you tell us where that is up to?

Claire Perry: Yes. When we talk about new technology, specifically around driverless technology, it always sounds like what someone described as zombie robot taxis. It is not. With the trials, we are talking about the technology assisting drivers—trying to work out how in real-world conditions cars can operate better when drivers are heavily assisted by technology. In addition to setting up and successfully getting funding for those trials, we are publishing a regulatory review—I think on 29 January—which looks at all the regulatory questions around this technology. By the way, other countries are also going through this process.

There is currently no regulatory barrier to running the trials, with the caveat that there has to be a qualified driver in the driver's seat at all times, and it has to be clear that a trial is being undertaken. Your Committee members could not just drive through Milton Keynes, take their hands off the wheel and say, "I'm participating in the trial." We are also considering publishing a code of practice at the same time, to make that very clear.

There are three main barriers in addition to the regulatory barriers. There is the legal liability question, which we are working hard to establish: who is actually in charge of the vehicle? There is also the insurance question. Importantly, there are the safety perceptions of other road users. We have amended the trial to include an assessment of other people's perceptions of these vehicles, because the biggest barrier to adoption of the technology is the view that it is unsafe. Another thought on barriers is cyber-security. The more we move to technologically assisted forms of transport, whether it is smart motorways or driver-assisted vehicles, the greater the risk of cyber-hacking. We are mindful of that, but at the moment the biggest barriers are around the legal question of liability and the question of insurance.

Q257 Chair: You referred in your introductory comments to eCall, which is the system where equipment would be fitted in new cars so that the emergency services were alerted automatically to any accident. I understand that that has been passed by the European Parliament. Can you tell us a bit more about that?

Claire Perry: Yes. As you said, this is the proposal for automatically calling the emergency services. We have taken evidence on it and looked at the results of independent research. According to our analysis, the benefit of making it 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.

Q258 Chair: What happens now in terms of procedures?

Claire Perry: I am afraid that I am not sure; I will happily write to the Committee. I suppose that we will continue to oppose it in any write-rounds, as I believe we are allowed to do under our delegated authorities, but if I may come back to the Committee on the actual steps of the proposal, I should be happy to do so.

Q259 Chair: Mr Bruce, what strategic direction do you get from the Department on the work that you do?

Richard Bruce: As OLEV? We have a strategy document, which we published in September last year, setting out the UK Government's long-term approach to our area of decarbonising motor vehicles. OLEV is a slightly strange beast in Government, in that it is a team of about 20 people from three different Government Departments, based together. It is pooled from DFT, BIS and DECC. Day to day, we report to two Ministers, one in BIS and one in DFT. The Cabinet Minister responsible is the Secretary of State for Transport. We get strategic direction from our Ministers in BIS and DFT, and we agreed the overall direction of travel in our strategy document, published last year.

Q260 Chair: Do you ever have any conflicts in directions or suggestions from BIS and DFT?

Richard Bruce: To be honest, no. This is an unusual policy, in that it is warmly supported by almost every Minister I have ever met. We have a lot of support from lots of Ministers, and generally they are all very positive about this agenda.

Q261 Chair: Everyone is happy together.

Richard Bruce: Most of the time, yes.

Q262 Chair: Mr Yarnold, how does your work fit into what the Department is doing?

Ian Yarnold: My work fits into a key element of how we deliver our better regulation agenda. My work is primarily around vehicle regulation, standard setting and the international negotiations that underpin those, both through the European Union in Brussels and through the United Nations Economic Commission for Europe in Geneva, which—although this may seem a bit strange—is another regulatory body. My work is about creating the evidence base—I run accident investigation programmes—and, as the Minister said, ensuring that we have a balanced approach on the safety benefit from real crash information, versus the cost of the new measures. We try to balance that and apply a consistent approach.

Q263 Chair: One concern that we have heard is that the insurance sector keeps information that it obtains on safety issues—for example, on the impact of black boxes in cars and whether they help to improve driving and prevent accidents. That information is not generally released. Are you aware of that problem?

Ian Yarnold: No. I am not aware that the insurance industry holds information back. We have quite a good working relationship with the UK insurers. We work jointly with them,

quite effectively, on a programme called Euro NCAP; we are one of the lead sponsors for that. The insurance industry, through its Thatcham organisation, is a partner with us, along with 11 other member states and organisations. That is a really good opportunity to share information. I would not say that I have any knowledge of the insurance industry holding information back.

Q264 Chair: Are you aware of the specific issue about information relating to the use of black boxes in cars?

Ian Yarnold: I am not aware of information being withheld in that respect. I have a little bit of knowledge about event data recorders from crash information, but not how those data are used by the insurers, I am afraid.

Q265 Chair: Are you telling us that you are not aware of any problem in getting hold of that information?

Ian Yarnold: Yes, that is what I am telling you.

Q266 Chair: There are a number of different organisations involved in this field, such as the Transport Systems Catapult and Innovate UK. How does all this come together?

Claire Perry: It is rooted in what we think Britain is good at. This goes back to trying to spend the investment where we think it will have the most impact. We have auto manufacturing, which is absolutely central to the Government's strategy for growth. We want to be a world leader in ULEV technology. We also have hugely world-leading places in lightweight vehicle and powertrain structures and intelligent mobility. We are trying to root it in what we think the UK is good at, very much guided by organisations such as the Automotive Council, who are very helpful in this respect. We are trying to pool the money together. A very substantial R and D budget is going, via OLEV in many cases, into Innovate UK, and is then fed out to the various transport catapults.

If you look at what manufacturers are starting to do in terms of moving their R and D and their businesses here, we are starting to see some of the benefits of that investment. I forgot to add that one of the most important things Government can do is to have a stable policy platform. We have very much learned the lessons of things like the LPG issues at the turn of the century and we are 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. Ford is moving its drivetrain R and D business to the UK, and Tesla, very excitingly, is moving its R and D; we have other examples as well. We are trying to root it in what we think we are good at, and to spend the money wisely, guided by Innovate UK, so that we use it to bring in external R and D that we can all benefit from.

Q267 Sarah Champion: Minister, if I could take you back to what you said at the beginning—that 90% of journeys are done in cars—it seems as though you do have a strategy, which is about safety, quality of journey and getting emissions down. When you are thinking about things like that, do you think holistically about travel and what is the best way of transporting people and freight? Would roads sometimes be the wrong option? Should we look at more investment in railways, for example?

Claire Perry: That is a very good point. As the Railways Minister, I think, yes, in many cases for freight. Forgive me—I have been thinking about whether I misled the Committee

by what I said. I think there is a very clear strategy, but it is rooted in some very specific things, rather than being a generic, airy-fairy view.

Yes, absolutely; we are trying to decarbonise the sector, to reduce congestion and to use very limited road capacity more intelligently. We are also trying to think about people. I am always very struck by that in the transport sector. On the roads, people are driving cars. Trains are not moving items—they are moving people. We often forget that there are people behind the steering wheel and getting on and off the trains. We are absolutely trying to do what you suggest, wherever appropriate; for example, the modal shift from road freight to rail freight is very much based on that.

The interesting question may be, what is the best way to join it up? Is it for the Department or for industry to come up with a sort of smart network, or is it for other companies to take advantage of all the information we are carrying around in our mobile phones and to come up with door-to-door journey plans for us? It is a question we are all wrestling with. I invite the Committee to look at something like Waze—I am sure that it has done so—which is a crowd-sourced road condition application. It is really interesting. We are talking about whether somebody might do something similar on the railways. The fundamental point is that we should be agnostic. It should be about how people want to travel, not how we want to specify their travel.

Q268 Sarah Champion: You said that the cost of eCall was £380 million. How much of that would be borne by the manufacturers?

Ian Yarnold: Most of it would be borne by the consumer, because the manufacturers would pass the cost on to the consumer. That is the real challenge, as it is a really significant cost. The basis for our accumulating that amount of money is that the manufacturers estimate that it would cost £150 per vehicle, and we register 2.3 million or 2.2 million vehicles a year, which multiplies to that grand total.

Q269 Sarah Champion: Shouldn't the choice be down to the consumer—for me, it would be a good one-off insurance policy—rather than the Government making a decision that we cannot have it?

Claire Perry: You can have it. It is available, and some manufacturers offer it, just as they offer telematics for young drivers. It is a question of mandation of it in all cars. As with so much safety equipment, it is very much up to the consumer. Where technology is absolutely effective to introduce, we will mandate that that is done. I want to reference electronic stability controls, where the evidence was clear that they would save lives and were cost-effective to introduce; we have mandated those for the industry, and I believe that they are being introduced in the current manufacturing cycle. It is not a question of mandating not to have the choice. It is giving consumers the choice, if they are prepared to pay for it.

Q270 Sarah Champion: So the door is still open, if the evidence starts to stack up.

Claire Perry: Yes, absolutely. One of the things that I like about this Department is that it is very evidence-based. I go back to the road fatality statistics, where we have done remarkably well in the UK. If there is an evidence base for all of these things, we can always revisit them, of course.

Q271 Mr Sanders: Is there not a danger that we are running away with ourselves about driverless vehicles? My train was an hour late today because of signalling problems between Reading and Paddington. We have had 150 years to try to control a limited number of vehicle movements on rails. Imagine the concept of doing it just between Reading and London on the M4 motorway and the number of vehicle movements there. Shouldn't we be focusing more on getting our existing transport infrastructure right and working properly, before we go off on a tangent?

Claire Perry: I was caught up in that Acton mess today. The answer is to try to do both. By the way, I am still trying to investigate whether it was an electrification-related problem or another problem.

There is an unprecedented level of investment in the railways, and in the roads. The road investment strategy did two things. One was to shovel in a lot of money for the roads. More importantly, it put that on a sustainable five-year basis. One of the shortcomings of previous budgeting was to make road investment almost a discretionary item. Putting it on a sustainable five-year basis means that you can afford to invest in things like smart motorways, which will have a really big impact on many drivers' experiences.

Driverless vehicles are important. First, playing to Britain's strengths, there is a lot of investigation of this around the world, and it seemed to us, given that we have a lead in many of these new technologies, that it would be appropriate for us to run the trials. Secondly, it is always important to pilot these things. We have three really successful bids that have come forward, which will all be funded, so we will learn a lot about whether these are actually transformational technologies, whether they are nice to have or whether they might have a very limited but, hopefully, useful application. They will be accompanied by a regulatory review. Again, a lot of this will be consumer-led. Manufacturers already include a lot of this technology in cars, although people often do not use it. The review will mean that Britain will be ready from a regulatory point of view to deal with the new technology.

I absolutely take your point. I do not think it is an either/or question. It is about fundamental, transformational investment in our road and rail network, but also about keeping abreast of the new technology so that we can lead the world in that, too.

Q272 Mr Sanders: For this to be consumer-led, there needs to be consumer confidence. That is knocked when existing infrastructure does not seem to work in the way it should. There are also some real legal questions about driverless cars. For example, many people have their licences taken away because of motoring offences or a medical condition, or partly taken away because of a medical condition. Would they be allowed to be in charge of a driverless vehicle? I do not expect you to have the answer to that, but these are things people will need to start thinking about.

Claire Perry: I completely agree. Again, we are starting with the trial; we have mandated that you have to be a fully qualified, non-banned driver in order to be in that. This is absolutely at the heart of the legal challenges. There is the question of manslaughter—what happens if the system breaks down and there is somebody responsible. We are in a position to try to answer some of those questions.

On the point about user perception, there is a misconception that this is scary technology—cars driving themselves. Actually, it is about drivers being assisted in how they drive. The trials are really well supported by the local authorities, which is really important. They are embedded in proper driving environments, with the support of the local authorities. Analysing how other road users interact with the technology is also crucial. The psychological dimension is quite important.

Q273 Mr Harris: There is Government-led innovation and there is consumer-led innovation, but more and more there is industry-led innovation. Would you agree that a lot of the innovation in the transport industry in recent years has come from the industry? For example, black-box technology has not been mandated by the Government and was not demanded by the consumer, but the insurance industry saw that it would benefit them and, ultimately, consumers. I believe that in Russia the proliferation of video technology aboard most private cars has been mandated by insurance companies trying to clamp down on fraud, rather than by the Government.

To what extent are the Government prepared to take a step back and to allow innovation of whatever type, whether it is driverless cars or an increase in tachograph and black-box technology? To what extent will the Government be willing to step back and say, “We are going to allow the industry and consumers to work out what they need, rather than come in and mandate it”? Is that a discussion that is being held at the DfT?

Claire Perry: To some extent, but there is always the concern around road safety and regulatory questions; if we allow free innovation to happen, what laws might it potentially run up against? I will turn it around slightly. You are right to say that in many cases manufacturers are hugely innovative; we have an astonishingly good innovation base in the UK, which we are building on. But the drive to low emission vehicles, which are probably the most significant area of innovation in the global auto industry, has been driven very clearly by the EU’s reduction in carbon targets. In order to meet our carbon plans, we need all new cars sold in the UK to be zero emission by 2040. That is driving a huge amount of innovation. It is appropriate for us to set the framework and the output, if you like, and then let the industry innovate.

Fascinatingly, low emission vehicle registrations are running slightly ahead of where you might expect them to be, because cars such as the Mitsubishi Outlander have suddenly picked up. There is now an enormous waiting list, in the sense of what was planned—about 3,000 people—so you are starting to see a tipping point. There is a lot of innovation and competition among the manufacturers, but that is against a backdrop of very clear regulation coming out of the EU and the UK.

Q274 Jim Fitzpatrick: Good afternoon. Minister, you mentioned young drivers and telematics. Everyone knows that the biggest killer of young drivers is crashes. A policy on graduated licences was being advocated by the Department for over 12 months, before there was a U-turn and you decided that you were not going in that direction. You said that the great thing about the Department for Transport is that policy is evidence-based, which is clearly of interest. Does that mean that the civil service advice changed from what was being advocated before, which was why you came forward with the proposal for a Green Paper; or did Ministers look at it after 12 months and say, “We don’t accept the advice”?

Claire Perry: I am afraid that it was before my time, so I cannot answer specifically. However, 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. Forgive me for not commenting specifically on the Green Paper and what happened before my time, but we continue to be really interested in measures to improve safety on the roads.

Q275 Jim Fitzpatrick: What encouragement is the Department giving to young drivers to use telematics or to buy vehicles equipped with telematics?

Claire Perry: Correct me if I am wrong, but I think the incentive for that is coming out of the insurance premium. I have a child who will turn 18 next week and who has just applied for a provisional licence. I am already looking at the cost of insurance, which becomes prohibitive for a parent. The incentive is very much coming out of the insurance industry at this point. Do you have anything to add to that, Richard?

Richard Bruce: No.

Claire Perry: I can find out and write to the Committee, if that is all right.

Q276 Jim Fitzpatrick: Given the fact that you have volunteered that you have an 18-year-old and that this is still the biggest killer of 17 to 25-year-olds in the UK, is it an area you will take particular interest in?

Claire Perry: There are a lot of contributory factors. I represent a rural constituency. One of the biggest issues is the appalling crashes that we often get in rural areas, when someone hits a tree at high speed and takes out an entire car-load of youngsters, which has just happened again. I really support some of the work that has been done on the rural roads THINK! campaign. It is clearly of interest. Overall, as you know, the UK is among the countries with the safest roads. I am really proud of that fact.

Q277 Chair: Are you aware, Minister, of this issue of the insurance sector having information on the effectiveness of black boxes but that not being released more generally?

Claire Perry: I am not aware of that. There is a broader question of who owns what data in cars—

Q278 Chair: But you are not aware of that specific point.

Claire Perry: No, I am not.

Q279 Mr Sanders: Coming back to the idea of zero emission vehicles, which is wonderful, I wonder whether the same challenge faces vehicle manufacturers as faces the building industry in trying to reach zero emission homes: the cost of getting from 3% to 0% is so great that it might be better to invest the money in older vehicles, to help them to lower their emissions. Have you come across that in the motor industry?

Claire Perry: Before I turn to Richard, who is the expert on this, I think the focus is on the blend. You are quite right to say that we may get to a point where we have a mix of zero and low emission vehicles. Rather than trying to invest in the last 2%, it may be worth decarbonising some of the fuel the existing fleet is running on, for example. Richard, what would you say on that?

Richard Bruce: The thing about cars is that the fleet turns over maybe every 10 to 12 years, whereas the housing stock does not turn over that fast—maybe every 100 or 150 years. If you are looking to get speedy improvements on carbon emissions, it is perfectly reasonable to look at cars.

The car industry is reluctant to be regulated too tightly, because regulation imposes cost on them and they worry about passing that cost on to the consumer. It is interesting to look at the effect of the EU CO₂ regulations since 2007. You have seen a cut of about 22% in carbon, no increase in the price of vehicles and significant fuel savings for consumers. There is probably an optimum level of regulation where you are squeezing ever more efficiency out of the cars, you are not putting on a price premium for consumers to pay a penalty, but they get the benefits of lower running costs. The UK's approach to regulation has always been stretching but realistic, and that is where we will maintain it. At the moment car companies are approaching the point where they will have to electrify their cars in greater numbers, which may cost more, so we need to tread carefully there.

Q280 Graham Stringer: When we had the RAC here a couple of weeks ago, they said that they doubted whether there would ever be a time when petrol and diesel were not used in cars, because of the energy intensity that you get from fossil fuels. Do you accept that, or do you think that they are wrong?

Richard Bruce: The internal combustion engine will be around for many years to come, but there are cars on the road now—hydrogen fuel cell vehicles—that would be effectively zero emission at the point of use and in life-cycle terms, if you generated the hydrogen from renewable sources. Technologically, it is perfectly possible. The question is how to get that at a price acceptable to the consumer, and ensure that you are looking at the entire life cycle of the product, not just the bit in the car.

Q281 Graham Stringer: It is perfectly possible to have hydrogen cars: they exist and have existed for more than a decade. It's their range. Going back to the energy intensity issue, the problem is the range that they can travel and refuelling.

Richard Bruce: There is a Toyota car coming to the UK next year that will do 400 miles and refuel in two or three minutes. It is pretty much the same as an internal combustion engine car, but at the point of use it is zero emission.

Claire Perry: The refuelling barrier is an enormous disincentive for consumers, even though 99% of car journeys are less than 100 miles, which is the sort of range that you get. I was interested that, under the road investment strategy, by 2020 there will be an electric refuelling point every 20 miles on the strategic road network, which will go a long way towards persuading consumers that this is a viable technology. Of course, in many cases people are not paying to fill up or are paying a de minimis amount on an annual basis to a club, so it becomes a much more cost-effective purchase.

Q282 Graham Stringer: Hydrogen is a great fuel, because water comes out of the exhaust pipe. As you said, the issue is the source of the hydrogen. If a high percentage of vehicles in this country were using hydrogen, what would be the source of that hydrogen?

Richard Bruce: It depends. You can make hydrogen from methane. In that case, the CO₂ profile is not as good as when you make it from renewable energy sources, when it can be zero.

Q283 Graham Stringer: You are still creating greenhouse gases.

Richard Bruce: Yes, but hydrogen may not be the only option. The density of batteries is getting better and better. Billions are being poured into battery research globally year by year. If you talk to the vehicle manufacturers, there are lots of very positive noises about long-range battery vehicles coming out over the next two or three years, from big players like Volkswagen and others. You can already buy an electric car that will do 300 miles. The question is, in order to be willing to buy a car, how much of a range do you need in it to do the long journeys that you want to do? Is it 300, 400 or 500 miles? What is the limit that you need it to do?

You can also buy a car today that will do 30 or 40 miles purely on electricity but has the capacity of a back-up internal combustion engine to go on longer journeys. Although we will definitely need internal combustion engines for many decades to come, they will probably start to play a more supportive role over the next 10, 20 or 30 years and eventually be superseded by some sort of electric power, be it through hydrogen fuel cells or through batteries.

Q284 Chair: The autumn statement had an announcement about trials of driverless cars. It suggested that the areas where the trials are to take place are Bristol, Greenwich and Milton Keynes with Coventry. Can you tell us how those places were selected?

Claire Perry: In the autumn statement of 2013, we set up a £10 million prize to a town or city to trial driverless cars. We launched that competition in July and closed it in October this year. We received five proposals. The process was completely external to the Department and very clearly assessed against published criteria. Those three projects were considered to have exceeded the criteria set by Innovate UK. Interestingly, the total cost of the bids was a little higher than originally proposed. The DFT and BIS have put in £7.75 million each and the Treasury has topped up the difference so that they can take place. Importantly, there is both a lead industrial partner and a local authority partner. Getting local authority buy-in was incredibly important to us.

Q285 Chair: Why those places? Why not somewhere else?

Claire Perry: Those were the best bids.

Q286 Chair: Was there nothing suitable in the north?

Ian Yarnold: We published the invitation. Any town council or whatever could have applied. We can only respond to the bids that we receive. We had conversations with other towns and cities around the country to see whether they would put forward bids and we hoped that we would have a broader spread, but we had five bids. As the Minister explained, they went into the external process undertaken by Innovate UK to evaluate them.

Q287 Chair: Are you saying that these were the only places that submitted bids?

Ian Yarnold: They were the successful ones.

Q288 Chair: Yes, but why?

Ian Yarnold: There were two other bids, as the Minister said.

Q289 Chair: Did any towns or cities in the north of England submit bids?

Ian Yarnold: I cannot answer that, because I would have to check. I cannot tell you at the moment where the other bids were based.

Q290 Chair: What criteria were used to select those places?

Ian Yarnold: The basic criteria will have been, do they have all the relevant parts—a lead industrial partner, SMEs and a local authority? Then it will have been around how they were going to trial the vehicle and whether they had a road vehicle. We had two principal criteria—a passenger car for use on the road and another form of land-based transport—because we wanted to create the widest possible opportunity not just for road vehicles but for other transport systems. It could have been a light goods vehicle—a van—the kind of thing that we have seen in Milton Keynes, which is a pedestrian-type transporter, or, indeed, a passenger-type vehicle for use on the highway. We tried to create the vision to allow as many participants as possible to join in. We received those bids; that is just how the bids came in. We could not influence that.

Q291 Mr Harris: On the same question, Innovate UK is sponsored by BIS, not the DFT. Presumably, I am guessing from its title, it is a UK-based organisation, not an English one. Were Scottish local authorities invited to make bids?

Ian Yarnold: The invitation was published by Innovate UK, which may then still have been the Technology Strategy Board, so it would have been open to anyone across the UK—in all the parts of the UK.

Q292 Mr Harris: But you are not aware of any local authority in Scotland bidding.

Ian Yarnold: No. I do not know whether anybody did—

Mr Harris: Disgraceful.

Ian Yarnold: But I could check.

Mr Harris: Thank you.

Q293 Chair: Could you send us information on all those who submitted a bid?

Ian Yarnold: We will provide what we can, but the Innovate UK process has certain controls and balances because of the way in which things are undertaken.

Q294 Chair: What does that mean?

Claire Perry: There is a level of commercial confidentiality, I am told. Innovate UK is audited by the NAO, so we will provide whatever is available for release. There is also a trial going on of truck platooning, which is the other application—

Q295 Chair: On this one, who will conduct the trials? Who is in charge?

Claire Perry: Innovate UK will assess the ongoing work. The vehicles will launch from the middle of next year, when the trials will be up and running. We will be gathering evidence on this from day one, but Innovate UK will, I believe, be doing the assessments.

Q296 Chair: What criteria are they going to use? Will this be open? Will we be told that there are commercially confidential aspects? Do we know what the assessments will be based on?

Ian Yarnold: The lead partners will be the ones conducting the trials, under the oversight of Innovate UK. For example, TRL Ltd will look after the Greenwich trials. A company called Atkins will look after the Bristol trials, and a company called Arup will oversee the Milton Keynes and Coventry trials. They are the lead partners and are responsible for delivering the programme they set out. They will compile their own evidence bases as they go through, to understand what is happening. In conjunction with BIS, we will assess how that feeds into our knowledge and understanding.

Q297 Chair: But how are these things going to be assessed? Is it possible that a business-led assessment will look at what is a commercial proposition, but a Department-led initiative might look at what technology is feasible? Will we have different criteria operating and one dominating the other?

Ian Yarnold: No.

Claire Perry: There is an independent panel of experts from industry and academia. As I understand it, they will look at the trials on the same basis. The beauty of the trials is that potentially they will be in different environments, so there will be a lot of learning around different road conditions in different environments, but the assessment of the trials will be done on the same basis. The assessment will be reviewed by Innovate UK, as the umbrella organisation.

Q298 Chair: Mr Bruce, will OLEV be involved in this?

Richard Bruce: No, we are not involved in the driverless cars activity. We are focused very much on electrification of existing vehicles on sale. The driverless cars stuff is a bit further down the line technologically.

Q299 Chair: Why were Milton Keynes and Coventry put together?

Ian Yarnold: That was the proposal we received. It is for the proposers to determine how they shape their bid.

Q300 Chair: Minister, you were telling us about a different trial.

Claire Perry: I was just going to mention that the other trial that is going to happen is around HGV platooning, which is potentially another application for smarter driver assistance to reduce distances between HGVs, so that we can improve safety and capacity. I do not know where that trial is going to take place. Ian, do we know?

Ian Yarnold: No.

Claire Perry: We will find out, to see whether it is in a location slightly further north.

Q301 Mr Harris: I want to come back in on this. Minister, I am all in favour of having more efficient use of roads, but did you just say that the trial was to reduce the distance between HGVs in order to improve safety?

Claire Perry: As I understand it, there is a challenge around stop-start with HGVs. We have all been stuck behind a vehicle that is just doing 56 in the middle lane. The idea is to see whether platooning—using technology between the vehicles—is a way of improving the usage of road capacity and making it safer for all vehicles.

Q302 Mr Harris: Isn't there a contradiction there? I understand the purpose of that particular experiment, but surely you are framing it wrongly. Surely it should be to reduce the amount of space between vehicles while at the same time minimising any increase in the danger that drivers will face. You cannot improve safety by reducing the distance between cars and other vehicles on the road. For years Governments have been telling drivers, "Keep your distance." You cannot reduce that distance and increase safety automatically.

Claire Perry: You are absolutely right. The challenge is more if you have units of HGVs travelling. We have all been in the situation where we are overtaking and someone is going just a mile or two faster than the HGV in the inside lane, which can create more overtaking accidents as people try to get around. Would that safety issue be reduced by having the HGVs travel in a platoon? That is part of the trial.

It is really important to get back to the idea of shared road space. Whenever we do anything, whether it is driver related, HGV related or passenger car related, the question is, what does that do for other road users? Is there an improvement in safety? We will not make changes that improve capacity utilisation if there is a safety risk.

Ian Yarnold: In terms of your question about "Keep your distance," it is because of the braking/thinking time for the driver to take action when the vehicle in front brakes or does something. The platooning technology will link the vehicles electronically; some people refer to it as an electronic tow bar. The vehicles will be controlled by the lead driver and they will all act in concert with the vehicle in front, so, when the lead vehicle brakes, they all brake.

Claire Perry: To preserve the distance.

Ian Yarnold: When the lead vehicle accelerates, they all accelerate.

Q303 Mr Harris: That is a good principle and a good innovation. Being familiar with Department-speak, I think that some Ministers—not you, Minister—are sometimes guilty of immediately trying to dismiss safety concerns with their first pronouncement on a subject. You mentioned platooning and said in the same breath that it was to improve safety. Actually I do not think that is an entirely accurate description of the situation. There are safety issues that arise from the platooning that you then have to address. I do not think that you address safety by platooning. That is the only point that I would make, but I agree with the direction of travel, as it were.

Claire Perry: We do not want to get carried away, but there is the same question around safety and driverless cars. The idea that you can preserve safe driving distances more

effectively with technology assistance is important. We want to do the trials because of better capacity utilisation and, potentially, better safety outcomes.

Q304 Chair: Can driverless cars be tested on public roads?

Claire Perry: Yes.

Q305 Chair: There is no barrier to that.

Claire Perry: No—in the context of the trial. There is no regulatory barrier to these trials happening on public roads, as long as there is a qualified driver and the vehicle is known to be taking part in the trial.

Q306 Chair: There is no barrier as long as it is the trial.

Claire Perry: Not for the trial. The regulatory review, which we will publish at the end of January next year, is a very detailed analysis of all the sorts of questions that Mr Sanders raised about regulatory and legal issues.

Q307 Chair: I want to ask you about future fuels. What do you see as the Department's role in looking at alternative fuels?

Claire Perry: As we have discussed, it is to be technologically neutral in terms of future fuels but to encourage the most sustainable fuels, or those that have very specific benefits. As Richard said, right now there is effectively a portfolio of low emission fuels. We are trying to incentivise, where necessary, if something looks particularly attractive, but to remain technologically neutral overall.

Q308 Chair: The incentives seem to be mainly to do with reducing fuel duty and financial liabilities. How will the Government make up for lost income?

Claire Perry: This is a challenge for the Treasury. Everyone across Government has signed up to the idea of lower emission vehicles. Clearly, that has economic impacts for the Exchequer. I fear that how that gap might be filled may be a question for a Treasury Minister, but you are right to say that a lot of the incentives have been expressed through fuel duties, and will remain so going forward.

Q309 Chair: We are passing that to the Treasury.

Claire Perry: We are going to pass that to the Chancellor.

Q310 Chair: Very wise. What research has the Department conducted into motorists' attitudes to the new technology? Has any research been commissioned?

Richard Bruce: Yes. We do a regular study that is published. I do not know the detail of it, but I have seen some results on the main drivers behind the choice of vehicle that people make—that sort of stuff. There is some DFT-published research on that.

Claire Perry: With the driverless cars trial, we are looking very specifically at consumer behaviour, particularly other road users, because there is a fear factor associated with the technology.

Q311 Chair: At the weekend, Professor Hawking made some comments about the dangers implicit in handing over control of transport to what he defined as an artificial intelligence. Are you aware of that? Do you see any dangers in the making?

Claire Perry: The Hal problem. I suppose I see the technological changes as an evolution, not a revolution. If you look again at technology assistance from the driver's seat, we have come a huge way already in the last 20 years on things such as stability systems. Many vehicles on the road today already have parking sensors and lane-changing alerts. We are on an evolution, rather than a sort of revolutionary bang, where we are handing over control.

Again, it is a question of perception. The assessments the Department is looking at do not involve flying robotic cars. They are about how you make it safer and easier for people to drive using existing technology, or, potentially, technology that is one or two years away. It is a valid point, but the challenge overall is more about cyber-security—the more that we are all dependent on cyber-information to work out where we are on the road network, or to have the road networks communicate if there is a particular breakdown. That is a huge challenge across Government and society. I do not see the work that the Department is doing as particularly stimulating Professor Hawking's concerns.

Q312 Chair: What does all this mean for the driving test? Will it have to change, and when?

Claire Perry: That is a very good and interesting point. We have constant conversations about the driving test and the Highway Code as to new technologies. There is evidence that fleets will not rent hybrid cars because they do not think that people know how to drive them. We are looking specifically at some trials of changes to the driving test, particularly on the practical side—for example, asking candidates to follow directions on a sat-nav, to see whether they can drive independently using the technology that they are likely to find in a car currently, not even in the future. Those will continue to evolve as needed.

Q313 Martin Vickers: From a driver's point of view, we have all become more reliant on automated systems and so on. Does that make us less alert when we are behind the wheel? If there is an electronic or mechanical failure, or whatever, does that make the driver less able to cope with the situation?

Claire Perry: You can have my personal opinion. It is a continuum, isn't it? On the one hand, we know that most accidents are caused by driver error. If you can take driver error and tension out of the process, in theory you could have a perfectly safe road network, but there is a continuum to get there. I will let Ian answer.

Ian Yarnold: We refer to it as driver in the loop: how do you ensure that the driver retains cognisance of what is going on in the driving control? Even though the vehicle may be undertaking a number of typical driving functions, how do you ensure that the driver is still engaged in the process? That is why it is important, as the Minister described in terms of the trials, that you have a qualified driver who is able to take control of the vehicle; even though they may be allowing the vehicle, under a number of automated systems, in effect to carry out the driving function, they are ready and able to take it back as and when they need to.

Q314 Martin Vickers: I note that the data section of our briefing notes refers to all the information that is now being fed back by vehicles, which, as it rightly points out, is completely unknown to the owner and driver. One of the points that it makes is that, presumably, that will tell some central computer at Peugeot, Ford or somewhere whether the vehicle is likely to break down. It would be useful if they passed that on to the owner. If the information indicates that the vehicle is actually unsafe, where will the legal responsibility lie? In effect, the person who has that information is surely an accessory to an accident.

Claire Perry: It is a good point. I have just changed cars. I now have a car without a sat-nav, so I have gone back to relying on a road atlas—what a marvellous invention that still is—and am probably much better at navigating. If a car has and is giving information about vehicle condition, the current legal situation, which is unchanged by anything that we are doing, is that the person in charge of the vehicle effectively has the liability and responsibility for the vehicle's roadworthiness and condition, and for safe driving. Nothing that we are doing changes that. Clearly, as we get to smarter vehicles, there is a dividing line, but we are not there yet.

Q315 Martin Vickers: But consideration is being given to the legal status of this.

Claire Perry: Yes. Absolutely. I have referred to the regulatory review. By the way, this is a problem for the industry globally. Other countries are looking at exactly the same challenges. There has been quite a lot of international co-operation on vehicle standards over the years. This is absolutely a challenge for the industry globally.

Q316 Chair: How do you look on the whole area of intelligent driving systems? Do you see it as something exciting, challenging or worrying? How would you express it?

Claire Perry: My personal view is that it is incredibly exciting, because there is an opportunity to use time and capacity more effectively. We are short of road capacity in this country and we are all short of time, so anything that we can do to use capacity more intelligently, to preserve safety and to give people more time is a good thing. I also think that there is a lot of hype about this. Many of our daily journeys are a long way from the 3D flying cars that people in Silicon valley might consider to be just around the corner, but it is really important to do the trials, particularly if there is an opportunity for Britain's manufacturing industry. We are incredibly fortunate with our research and manufacturing base. Anything we can do to put Britain in a world-leading position in this technology is really exciting.

I have a vision of the school run driverless car, where you put your children in, wave them off to school and they come back at 3.30. I know that driverless buses make people very nervous, but anything that you could do to make mass vehicles a little more cost-effective would be interesting as well. There is huge potential, but we are on an evolution. It is important that we take it step by step and deal with the safety and regulatory questions, which are paramount.

Chair: Thank you very much.