

Business, Energy and Industrial Strategy Committee

Oral evidence: Electric vehicles: developing market and infrastructure, HC 383

Tuesday 27 February 2018

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[Watch the meeting](#)

Members present: Rachel Reeves (Chair); Vernon Coaker; Drew Hendry; Stephen Kerr; Peter Kyle; Albert Owen; Mark Pawsey; Antoinette Sandbach.

Questions 1 - 76

Witnesses

I: Mark Squires, Chairman, National Franchised Dealers Association; Steve Gooding, Director, RAC Foundation; Andrew Benfield, Group Director of Transport, Energy Saving Trust; Georg Ell, Director, Western Europe, Tesla.

Written evidence from witnesses:

- [National Franchised Dealers Association \(NFDA\) - written evidence](#) | [PDF version](#) 
- [RAC Foundation - written evidence](#) | [PDF version](#) 
- [Energy Saving Trust - written evidence](#) | [PDF version](#) 
- [Tesla - written evidence](#) | [PDF version](#) 

Examination of witnesses

Witnesses: Mark Squires, Steve Gooding, Andrew Benfield and Georg Ell.

Chair: Thank you very much, all four of you, for coming to give evidence to our Select Committee today on electric vehicles. This is the first evidence session that we are taking as part of this inquiry, although we have received a huge amount of written evidence, and we are very interested to hear from all of you today.

Q1 Stephen Kerr: Good morning. Let me start with a broad question, which I would like to invite each of you to answer. What are the main barriers to development of the electric vehicles market in the UK?

Andrew Benfield: The Energy Saving Trust gives advice to businesses and consumers, as an independent organisation, on cleaner transport in general. A big part of that is promoting and telling people about where electric vehicles work for them. The key barrier that we are seeing in that work is the range of vehicle choice that is available on the market at the moment. A number of sectors of the market are quite heavily supplied, particularly at the upper end of the market: larger vehicles, SUV vehicles; whereas some other sectors are less provided for.

We are finding that is a blockage to certain audiences being able to take up the vehicles. The best example of that is that we have done a lot of work with the private hire industry. It does a lot of mileage in cities, which is where the cleanest vehicles need to be. But, at the moment, there is a very limited range of vehicles that suit its needs, so there is not a people carrier that is battery-electric, for example.

Q2 Stephen Kerr: There is a limited range of options in terms of choice. There is a limited choice.

Andrew Benfield: Yes, absolutely. The other area is around complexity and the current cost of the charging infrastructure. Where it comes to electric vehicles, we have to think slightly differently about them, because there is not an existing fuelling infrastructure that is there in the same way as for a conventional vehicle. A lot of our advice is really focused around getting people to think about how they are going to use the vehicles, how they are going to charge them and when they are going to charge them.

One of the big bits of feedback, from our clients and people we help, is that there is not confidence, at the moment, in the availability of charging, in terms of rapid chargers where they need them as they are out doing their business, or in the availability of solutions at home, if they are one of the 30% of people who do not have a drive where they can fit a charge point at home.



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Mark Squires: I am here representing the franchise dealers across the country. There are about 4,800 of us. We represent over 80% in membership of the people who sell new cars and used cars, and look after them in aftersales care thereafter.

We see and hear consistently from consumers that there are three key barriers. Andrew has alluded already to some of them. Range anxiety is still a very important one to the pure electric vehicle. It is solved by a plug-in hybrid, of course, where those anxieties are taken away. There is a perception, which might not necessarily be the fully reality for many, that easy charging access is going to be an issue, and that is putting consumers off.

Q3 Stephen Kerr: That is true of pure electric vehicles but not of hydrogen vehicles.

Mark Squires: No, it is not true of hydrogen vehicles. Andrew was talking about limitations on the range of models available in the plug-in electric space. There is very little visibility, let alone any product on the ground.

Stephen Kerr: Yes, no one talks about it.

Mark Squires: There is the Toyota Mirai, but as dealers we see very little coming down the pipeline from manufacturers and very few of them talking about hydrogen fuel cell beyond Toyota, which has invested billions over the last 10 or 15 years.

Q4 Stephen Kerr: The Japanese are very big in hydrogen, are they not? They have embraced it, whereas we have less so.

Mark Squires: Yes. From what we see in our viewers, we cannot see hydrogen any time soon, and the game is very much around electric vehicles of the hybrid variety or the pure variety.

A key barrier I ought to talk about, which it is worth understanding up front because it relates to the way Government can support us, is the price and the cost of ownership to the consumer. This is still a major hurdle. The cars are still more expensive; we have not dropped through that scale efficiency curve. The batteries are a very big part, as much as half of the price of the car alone to build, so the up-front price of the car is still more expensive. The depreciation is the other part of the equation of making a competitive pricing offer to consumers, and they are still very much driven by the economics of this. That is a principal driver and principal barrier to the car.

Q5 Stephen Kerr: What are you saying about depreciation?

Mark Squires: What is the car typically worth after, let us say, three years, when you come to trade the car in, get your next car and pass that car down the chain into the used car market?

Q6 Stephen Kerr: Sorry, just help me understand. It depreciates faster, does it, than a conventional car?



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Mark Squires: Yes. Let me give you an example that really helps illustrate the point. Take, in the Renault brand, the Zoe, which is a pure electric vehicle. It is a small car, and small cars make up a very large part of the overall market. Compare the price of a Zoe with the equivalent Renault Clio; they would be very comparable in every other respect except for the power train.

There is a differential in the recommended retail price of £2,500, after the £4,500 subsidy is enjoyed: it would be £7,000 otherwise. The depreciation is faster too, and the bigger depreciation over the three-year life of that car creates a further gap of something of the order of £2,750. You have a gap, even after the plug-in grant of £4,500, of another £5,250 or £5,500. That is a big gap in terms of a small car for consumers to bridge.

Q7 **Stephen Kerr:** I might be missing something, and it might be obvious to everyone else, but why does that particular car depreciate faster? Is it because the technology is changing so quickly that it dates?

Mark Squires: It is because there is not sufficient appetite and demand in the second-hand market.

Stephen Kerr: Okay. We will probably come back to that.

Mark Squires: The second-hand market is key, because there are three times as many second-hand cars sold as new. If you do not get a good second-hand market going, you will not have a new car market that is going well either.

Stephen Kerr: That is obvious, when you say it that way.

Chair: Albert Owen is going to come on to this. It is a key issue.

Steve Gooding: We are probably all going to say subtly different versions of the same thing here, so I do not want to repeat anything.

Vernon Coaker: We are used to that!

Steve Gooding: We will try our best. The way we think of it is four Rs through the life of the vehicle. It is retail, range, recharging and residuals.

Retail: are there enough of the right models in the showroom, at the right price? Range: we have heard a bit about range anxiety. It is still there for some people, worrying about how far they can go. That is starting to go away a bit. Recharging: I suspect we will be talking quite a bit about how easy it is to recharge. How easily does recharging fit into people's lifestyles if they are used to going to a petrol station and now they are being asked to recharge a vehicle in a different way? We will probably come back to that. Residuals: as you have just heard, there is a concern about how long the battery itself will last. It is a significant part of the cost of the vehicle. The second-hand market has not developed, in part because of the first three.



Q8 Stephen Kerr: Are there significant differences in these barriers between personal users and business users, or are they the same?

Steve Gooding: In the business market, roughly 51% of new vehicles are bought by fleet buyers. There is no more avid watcher of the bottom line of a business than the manager of a vehicle fleet. They are looking at the whole cost to them of running vehicles, and I suspect they are the market that will be targeted for vehicles that would offer a lower whole-life cost in due course. But, at the moment, they, like everyone else, are still wondering about the challenges there, about the use those vehicles will be put to and about the opportunities for recharging them and how convenient that is.

Q9 Stephen Kerr: At this stage in the development of the market, the barriers are the same as for personal.

Steve Gooding: The barriers are very similar. If you look at the folk who are early movers into this market, they are going to be the sort of people who have spotted that it fits their lifestyle. They are people with off-street parking, so they can have charging facilities at home. They possibly have charging facilities at their workplace.

Two-thirds of people who go to work in this country today will drive there. Some of them will carry on going out and about, but an awful lot of them will stay put for eight hours, so that is an ideal opportunity for charging. The more people can see this could be more convenient for them than having to go to a refuelling station somewhere just for that purpose, the more they are likely to switch.

Stephen Kerr: I am sure we are going to come back to all that.

Georg Ell: Thank you very much for the question, and to the Chair and the members for inviting us to take part. As Steve said, I will probably build on what the other three have said. We are optimistic. We think that the transition to a zero-emissions transport fleet for the UK will happen, and for us a lot of the focus is on how we can accelerate that to happen as quickly as possible, for all the potentially obvious health and economic benefits that that can afford the country.

The biggest barriers that we see would also be in relation to managing the price and helping motorists understand the total cost of motoring, and that is true in both the personal and the company car fleet space. For many personal buyers, we have to work on the sticker price: the price equivalency that has been mentioned between a combustion engine vehicle and its equivalent. That sticker price equivalency in all segments is a really important factor.

As an example, in the Norwegian market, where the VW Golf and the eGolf are priced equivalently, the eGolf outsells the Golf, whereas in the UK there is almost a two times difference between the two products; as a result, the eGolf is a fraction of total Golf sales. That is quite a good



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example of the power of price equivalency, which can be achieved in a variety of ways and is important in all segments.

The charging point is critical. The UK is making some great progress there, but there are certain specific things that could be done to further accelerate the infrastructure in the home and in the workplace, as Steve mentioned. Anywhere that a car is stationary, a car could be charged. Then, of course, we need to facilitate long-distance travel as well.

- Q10 Stephen Kerr:** We are going to come back to that. I have two quick questions. One is about larger vehicles. Are there additional barriers there? Weight is an obvious one.

Andrew Benfield: The same issue exists in terms of availability. A lot of people are looking to utilise a larger van, for example, so the classic white van transit size. There is not currently a vehicle available. Literally, every fleet that we have given advice to could use a vehicle like that, and there is nothing for them at the moment.

I was talking to Royal Mail recently. It is very keen to switch to electric vehicles. It is having to develop its own bespoke vehicle for urban delivery, because there is not a vehicle that is coming to market quickly enough. It has to buy literally hundreds of vans every month, and it is buying diesel vans at the moment to operate in London, which it does not want to do, but it has to.

- Q11 Stephen Kerr:** In addition to options in terms of a range of choices, are there any other significant barriers? Does anyone want to add, in the interests of time?

Mark Squires: A commercial vehicle is going to be that much larger and heavier. Government should give dispensation over weight, so they are not treated equivalently. It is important that is understood.

Georg Ell: To build on Steve's point around the 51% of the market that is bought by companies, roughly 1 million people a year pay benefit in kind. The current scheme for benefit in kind is not particularly supportive of zero-emissions vehicles and it could be improved.

- Q12 Stephen Kerr:** We are going to come back to all that later on. In one sentence—please just one sentence—10 years from now, what does the successful transition to EV look like?

Andrew Benfield: We have mapped the current market trends and the exponential growth that we are seeing at the moment. We estimate around 4 million vehicles on the road.

- Q13 Stephen Kerr:** From a user's perspective, what does it look like?

Andrew Benfield: For most passenger vehicles, there will be a fully electric option for drivers. We should be approaching something like price equivalency.



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Stephen Kerr: In 10 years' time?

Andrew Benfield: A recent report from Bloomberg suggests that prices will be the same for equivalents in 10 years' time.

Mark Squires: I would say the same things as Andrew, and that price parity would provide a tipping point.

Steve Gooding: In 10 years' time, success for the consumer means: "I really will not have to think about it, because the business of owning, recharging and refuelling a vehicle will be as familiar to me as buying a vehicle and going to a petrol station today".

Georg Ell: The result of that will be that the Government's own Committee on Climate Change target will have been met, which is that 60% of all new vehicle sales will be zero emissions by 2030.

Q14 **Mark Pawsey:** We all agree that we need to, as Georg put it, accelerate the move to electric, but the question is the levers that are available for Government to do it. Up until now, the policy has been to provide a subsidy for the cost of the vehicle, but I was very struck by Mark. You told us that, despite the £4,500 subsidy, the Renault Zoe, as a like-for-like car, is £2,500 more expensive than the Clio.

Mark Squires: Yes, and that is for the lower-mileage range. If you want the 250-mile range, it is much more.

Q15 **Mark Pawsey:** Is the current strategy the right one? Is the subsidy at the right level? Is it the right thing at all to have a subsidy on the capital cost of the vehicle? Is it inadequate? Should it be more, or should there be a subsidy for a charging point? Why is the existing subsidy not adequate to start to move the sales on these products? I know they are going in the right direction, but they are going rather slowly.

Mark Squires: It is probably simply because the gap is still too big for most consumers to bridge.

Q16 **Mark Pawsey:** Would you argue that Government should spend taxpayers' money in increasing the subsidy per vehicle? Is there a case for that?

Mark Squires: There is a case for that, depending on how quickly you want to move with uptake. Without that, the alternative is to wait for the scale efficiencies to kick in and for the price to drop accordingly.

Q17 **Mark Pawsey:** How much would you like the subsidy to be? How much taxpayers' money do you want every consumer to be given, in order to start to move the dial on this?

Mark Squires: Ideally, you would bridge that £5,000 gap, I suppose, and then you would really see things take off. There are three categories of grant, but one is pretty much redundant, so there are effectively two. One could consider rewarding a larger grant for larger-mileage-range vehicles, and that would be really helpful. It pushes you in the direction



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that we all want to go and acknowledges the fact that these larger-range vehicles are still much more expensive to produce, and that price is inevitably getting passed on to the consumer right now.

Q18 Mark Pawsey: Does anybody else want to talk about the current subsidy regime and how it might be made better?

Georg Ell: Subsidies are a part of it. You mentioned levers the Government can pull, so I might touch on a few. First of all, it is important to recognise that there needs to be a transition to a future state in which the market is self-sustaining and subsidies should not last forever.

In that regard, one of the ideas that we think is smart, and we see other countries in Europe considering at the moment, is to link incremental changes in subsidy to uptake, such that the subsidy is stepped down over time as uptake goes up, which has the benefit of providing clear line of sight to zero subsidy for Government, but also sends a fairly clear signal to the consumer and may accelerate uptake, as consumers will want to come in early in such a scheme. We think that is quite a good idea.

We also think there should be some consideration to where the subsidies are placed, while we are talking about subsidies. As Mark mentioned, to focus on the issue of range, which has come up as a potential barrier, it is a necessity for many of our customers. That is what they tell us. It is not a luxury. How can you facilitate ranges with a long-range battery? A long-range battery at the moment is more expensive than a short-range battery, but a long-range battery vehicle displaces a combustion engine car to more than twice the range of a short-range battery vehicle.

We could follow the example that the Chinese have just set for us which is to structure their subsidies based on the zero-emissions range of the vehicles and provide more subsidy to the cars with the longer zero-emissions range. That is on the subsidy point.

In terms of other levers and addressing some of the other barriers, for context, if you look at our very fast charging stations, we have installed almost 50 of them in the UK. We have scattered over 1,000 sites to find them. We have hit most barriers that one can hit along the way, and a significant one that could be addressed in the upcoming Bill is around wayleaves and giving code rights to the installation of these types of charging points that are similar to telephone masts, so that we can more easily navigate that path in order to connect power to a site. That alone would help us on quite a number of existing sites, to open them much more quickly.

Mark Pawsey: On the question of subsidy, you told us that in Norway the VW Golf electric version is the same price as the diesel version. We are going to be visiting Norway as the Select Committee, but how is that achieved in Norway? Is that achieved by virtue of a greater subsidy for the electric version?



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Georg Ell: The Norwegians operate a bonus system, and are aiming for a general neutral impact to the Government. They are outside of the European Union, so they have some other levers they can pull. There is zero VAT on zero-emissions vehicles; there is also no luxury car tax on zero-emissions vehicles, so those are two things. There is a malus on combustion engine cars and a bonus on zero-emissions cars, with the result that over 20% of new vehicle sales in Norway are now zero emissions.

Q19 **Mark Pawsey:** Are there any other markets overseas that we could look at, to give us a steer as to the action we might take?

Georg Ell: Definitely. The Dutch provide a really good example on both the incentives and the charging front. On incentives, they have a low benefit in kind rate of 4%, which means that, per head, they are very successful in selling zero-emissions cars. We sell almost as many cars there as we do in the UK, for example. They do that on the company side.

On the charging side, they have an on-demand system for home charging. You go to your local council and say, "I am buying an electric car." and they will come and install, typically, multiple charge points very close to your home, with the result that the next person on the street already has that charging infrastructure. By doing it on demand rather than in a planned way, they get a much better return on the government investment, because the charge points are going to be used versus not.

Steve Gooding: Another point about the Netherlands is they have a very low tolerance for public charge points being out of commission. When we looked, last summer, in this country, 13% of them were not working at any one time. The Netherlands has an expectation that 99% will be working at all times, and sets specific expectations for what the charge points are capable of doing and how reliable they will be.

Q20 **Chair:** That is quite interesting: 13% of them were not working. When was that?

Steve Gooding: Last June, when we published a report.

Q21 **Chair:** Was it in particular local authority areas, or who has responsibility for that?

Steve Gooding: It is a fairly wide-ranging problem across the country. Part of the problem has been that, once charge points are installed, they need to be maintained.

Q22 **Chair:** Who is responsible for maintaining them?

Steve Gooding: If they are installed by a local highway authority, it falls to cash-strapped local councils to look after them, which, in many cases, they did not. It is possibly worth you talking to the guys at Transport for London, which has taken over the borough charge points to make sure that the London network is managed and maintained as a whole.



Q23 **Chair:** Is that improving things?

Steve Gooding: It is improving in London, but the rest of the country we have not re-surveyed yet, so I cannot tell you what the 2018 figures are.

Q24 **Chair:** I have not seen, but maybe others have, that piece of work from last June, Mr Gooding.

Steve Gooding: I am very happy to provide that.

Georg Ell: Steve's statement reflects our own experience of talking to the London councils. In particular, they feel that they have easier access to capital expenditure budget than operating expenditure budget, and that is the challenge.

Q25 **Mark Pawsey:** I wanted to follow up the line of questioning on levers of government. Seven or eight years ago, the Government decided that we should all be driving diesel, so they changed the vehicle excise duty system to encourage us to do that. We now discover that people, like me, who bought a diesel have perhaps not done the right thing in terms of air quality. Are there lessons to be learned from Government trying to steer a market on diesel that we might pay heed to in trying to steer a move towards electric?

Steve Gooding: Any instance where Government decide to back a particular technology or a particular solution runs the risk that hindsight discovers that there were downsides to it. For example, the company car tax affected diesel uptake and there have been problems as a result, which are very well known.

The current debate about the extent to which Government should encourage pure electric, plug-in electric vehicles as opposed to hydrogen will be an example. The Government are right to be cautious about choosing winners, but the sense we all have, looking at the global auto market, is, if we are going to carry on having the convenience that the motor car has brought us, it is going to be a zero-emissions future and to get to the zero-tailpipe-emissions future electric, in some form, looks like the answer. Therefore, Government backing it looks right to us.

Q26 **Mark Pawsey:** Andrew, what do you think about the levers Government have? What can we learn from the past and what should we be doing in the future?

Andrew Benfield: We have a lot of experience of running various different schemes and incentive schemes. We agree generally that things need to change, that particularly the plug-in car grant needs to be tweaked. Coming back to one of the main barriers, around the range of vehicles available, you could ask, because plug-in car grants have been around since 2011, what impact they have had on the range of vehicles that are available; it is not very much. You need a mixed range of both in-use and upfront benefits, approaching parity.



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You mentioned diesel. Diesel is a fantastic example of where people will pay more for a technology that, in theory, delivers benefits in use. Diesel vehicles largely, particularly during their main period of growth, cost more than the petrol equivalent. People bought them on the basis that they had confidence that they would deliver the benefits they said, which were, in theory, lower CO₂ and better MPG, so lower fuel costs.

We need to ensure that the benefits from electric vehicles are capable of being realised. The one thing that has not come up, so far, on that is the cost of growing the infrastructure, ensuring that affordable charging is there when it is needed. You can follow that up the chain to talking about the energy infrastructure, because in many cases the growth of charging infrastructure is restrained by availability of power and very expensive grid upgrades.

If we are talking about where money should go, I would argue for more investment in bolstering the grid to ensure that rapid charge hubs can be built on arterial roads, which is where drivers want them, so they have the confidence to say, "I know I can go and get a charge for my vehicle and realise the benefits", which are proven. We know lots of organisations that are saving £100 for every 1,000 miles driven, which does not sound huge, but when you calculate the billions of miles driven by both businesses and individuals, it is a massive saving.

Q27 Mark Pawsey: One of our respondents spoke about the need to recognise people who are using their vehicles for their livelihoods as well as a means of transport, so there is perhaps a bigger subsidy. In that regard, our next visit is going to be to the London Electric Taxi Company, which is a business I know well; it is based in my constituency. To be specific, Andrew, you said that Royal Mail could not find a suitable electric vehicle. Why is the modified version of the taxi, which is the platform for a delivery vehicle, not suitable for Royal Mail?

Andrew Benfield: Hopefully it will be when it is ready for production, which could take another two or three years; I do not know the latest on when they said they will be bringing a model to market. As well as vehicle availability, Royal Mail is a great example, because it has worked out that if it switched all its small vans, for which there is a product available, to electric—assuming that it could get them from the manufacturer, which is another problem—it would melt the substation in Mount Pleasant, in London, where it is based, because the power is not available to charge the vehicles that it would need to run.

Q28 Mark Pawsey: This is perhaps for you, Steve. In terms of the financing of electric vehicles, a lot of cars have been bought on PCPs, personal contract purchases, which are based on the residual. Is PCP going to work on an electric vehicle? Are PCP deals available for electric?

Mark Squires: Yes, it is the way the vast majority of new cars and more and more used cars are bought and owned these days. The advantage of PCP is it takes the risk of the residual value away from the consumer;



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they are not carrying that burden or that risk. It helps manage a more attractive monthly payment as well. We believe that PCP is absolutely the right sort of vehicle for financing an electric vehicle.

Q29 Mark Pawsey: One of the concerns was that if residuals are low the payments, again, will be significantly higher than for an equivalent petrol or diesel vehicle.

Mark Squires: Yes, but where residuals are is going to reflect any model of cost of ownership. It is where the risk is and where the potential hit goes.

Steve Gooding: It is one of the ways that the auto companies can help here, for precisely the reasons that Mark says. If the auto company can reassure me not only that in three years' time it will take the vehicle back but at what price it is going to take it back, that has taken a worry away from me. I suspect we are going to see the PCP model extended into the second-hand market for similar reasons, given concerns people have about just how long a battery will last and what the cost of that will be to replace.

Q30 Mark Pawsey: We understand that the situation in Scotland is rather different and there is a loan scheme for electric vehicles. Andrew, could you tell us a bit about that and whether it would work in England and Wales?

Andrew Benfield: We have been running the loan scheme since 2011 for Transport Scotland, which uses capital funding and provides an interest-free loan over six years for private individuals, consumers and businesses. We have seen quite a rapid growth in the demand for that. It started off, in 2011, around £200,000 and this year we will be distributing £8.4 million. That is a revolving fund pot, which means that the money is coming back. We are getting very low levels of default. It is proving popular in terms of stimulating the growth of the market in Scotland and obviously there is a cost effectiveness aspect to it, because we are able to put that money back into further growth of the market.

Q31 Mark Pawsey: What would be the equivalent funding requirement if that were to be rolled out in England and Wales? Do you know how much money that would entail?

Andrew Benfield: It really depends on the market, because even in the Scottish model we split it between domestic, business and taxis, on which there is a particular focus in Scotland.

One of the other key points I wanted to make on this is that we need to be more targeted in terms of the audiences that can switch. We do not want to encourage blanket uptake, because the vehicles are not there currently, so we need to be very specific about which vehicles are the dirtiest, which we want to remove from the roads and switch to ultra-low emission as quickly as possible, which audiences use those vehicles and how we target them.



As another example, Uber announced last year that it was looking to potentially help its drivers to switch in London, so that it is ready to do business for when TfL's ultra-low-emission zone switches over for private hire vehicles. We are starting to see the private sector also coming in here to support on finance, which is important.

Q32 Albert Owen: A number of you have touched on the second-hand or used car market. How important is that for the transition away from diesel and petrol to EVs?

Mark Squires: It is very important, in that if you do not have a good used car market you will slow down and will ultimately have no new car market either.

Q33 Albert Owen: What actions are needed, by whom and who should support that?

Mark Squires: It is still in its infancy, because there is very limited supply currently. You are relying on used cars to be generated via new cars that were sold three years ago, and three years ago the numbers were still very low, so there will be a gradual rise. In dealerships, people are reporting that there is sufficient general interest and that second-hand, pure electric vehicles, for example, are proving popular with a number, but we are still in very small numbers.

There are a couple of things I would say. There needs to be general education for the second-hand market, both on the consumer front and within the market itself. We have been doing some work with Andrew's organisation and with our sister body, the National Association of Motor Auctions, to start educating the remarketing sector, the second-hand sector, in used vehicles.

One practical thing that the Government could have in their sights and do right now is to improve the quality of the information on the V5 registration document. There is no useful information, but remarketers and auctions use this document vitally to understand exactly what this car is.

Q34 Albert Owen: Sure. I do not like using the terminology "educating people", but I understand what you mean. Mr Gooding, you said that people have concerns or perceptions about longevity of the batteries, et cetera. Is that a major barrier in itself?

Steve Gooding: It is not the major barrier, but for example, if you are thinking of going and buying a car, you might have a look at one of the car purchase magazines, *Auto Express* or the like. You will see quite a few cars coming to market, but then you will look towards the back pages and see that the residuals for the electric cars, the early ones, are quite low, that their value falls quite quickly.

That is fuelled by the sense that we are not quite sure how long those batteries are going to last for. We think it is perhaps eight or nine years,



something of that order; it could be a bit longer. That is perhaps less of a problem if you are buying new and trading in at three years, but you might think twice about it if the vehicle is already six years old. That is something that is in people's minds. The more that we have these vehicles running around and we become familiar with them, how long they last and how much they cost to maintain, the more that concern is going to ebb away.

- Q35 **Albert Owen:** Do we need a petrol and diesel scrappage scheme to encourage people? When we first had the downturn in 2009, we had a scrappage scheme and it was very successful. We are talking about reducing emissions as well. When we had the boiler scrappage scheme that was, again, hugely successful. Is this the kind of thing the Government need to be looking at?

Steve Gooding: We have had a go at looking particularly at diesel scrappage in light of the concerns about air quality. The thing to bear in mind is the previous Government scrappage scheme was very much a joint initiative with the auto sector, 50:50 funding from each side, and it was about pressing the sale of new cars for people who were in the market for buying new cars. With some of the issues around air quality, where Government are looking to get some of the older cars away, it is very hard to make it work and to be a value for money proposition. As to whether that will be the case here, again, you need to have enough vehicles in the showroom in enough quantity.

- Q36 **Albert Owen:** It did boost the automotive industry as well.

Steve Gooding: It was definitely something that the auto industry found very popular and, indeed, a number of the auto companies are running their own versions of scrappage schemes right now; several of them are live. As to whether you could make the numbers add up, though, bearing in mind you would be scrapping one vehicle of a certain age with the expectation that the person scrapping it is going to buy a brand new vehicle, we are a little sceptical.

- Q37 **Albert Owen:** Are you as sceptical?

Georg Ell: On scrappage schemes in particular, as Steve said, there might be more effective ways to spend government money, partly because many other manufacturers are already running similar schemes. There is a real risk around value for money. It is an expensive type of scheme to run and that same money invested into infrastructure, for example, could work more on creating a long-lasting demand.

The infrastructure point links back to the second-hand car market, which is important, because we want to accelerate the world's transition to sustainable transport and that means that all price points in the second-hand market can really help with that. There you could look at other levers than the scrappage scheme. For example, in multi-unit dwellings, apartment blocks, where people do not have access to



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off-street parking, you could look at a presumption in favour of charging installation with landlords.

For scrappage, another interesting concept we have seen is the idea of clean mobility credits, which could be spent in a variety of ways. They could be spent on public transport or put towards a new vehicle, ideally a zero-emissions vehicle.

Q38 Albert Owen: The reason why I am interested in the scrappage scheme is that, as Mark said, many people were encouraged to go on to diesel and some of them now do it not out of choice, but for economic reasons, and they travel quite considerable miles. They are going to need some incentive to give up their vehicles. Do you understand that? You talk about education, but for most people it is finance that is the biggest barrier to swapping your car and that encouragement.

I want to ask Andrew, with regard to his organisation: the incentive is now that we are going to encourage people to give up their petrol and diesel. Do you support the scrappage scheme?

Andrew Benfield: I would echo lots of the points that have been made here, to be honest. We need to be clear about what we are trying to fix with a scrappage scheme. If we are trying to get people to transition to electric and ultra-low-emissions vehicles, there is not the range of vehicles available to be able to provide a scrappage scheme at the moment.

Q39 Albert Owen: Will it not give an incentive to the manufacturers to start producing more, and get the technology and local authorities to work together to roll out these charging points?

Andrew Benfield: A lot of the vehicles that are needed are not coming to market for another two to three years, so if you were asking me this question in 2020 or 2022 you might get a very different answer.

Q40 Albert Owen: I am a little downbeat listening to your responses this morning, to be honest with you. Like many colleagues, I am quite excited about this inquiry and about electric vehicles, but I am hearing that you do not want a scrappage scheme or you think it has downsides to it, which I understand. There are issues regarding price and there might, in 10 years' time, not be a big discount for people. We really need to be positive about this, because the Government are already making noises about moving away from petrol and diesel, and we need a bit of excitement from the industry as well. I am not hearing that this morning.

Andrew Benfield: Can I just touch on the used market and, more in general, consumer experience? We are very supportive of low-emission transport and the role that electric vehicles can play, because clearly that is part of our mission as an organisation, so I do not mean to bring you down.



For us, this is an emerging industry and we do not want to see a situation where people are encouraged to make the wrong decisions and to repeat the problems we have had with diesel. Particularly in terms of the automotive supply chain, in its broadest sense, this is 100% about skills and accessibility of good information. We are seeing out there at the moment that organisations are putting off the decision to buy because of lots of the things you are hearing today, so we are, in part, reflecting back what those organisations are saying.

The advice that we give to people is that there are examples right now of organisations and individuals who are using these vehicles effectively to save money and to travel around in a cleaner way. The savings are available now, but you have to approach that in an educated and informed way—informed, I stress.

Steve gave an example of how people buy, looking in magazines for that. A friend of mine spoke to me and said, "I want to buy an electric vehicle. I am going to buy a certain brand. Can you tell me how I charge it?" I am an expert and I spent about 20 minutes trying to find out what type of charging system that car had, because it was not in any of the car reviews or the magazines. We need a skills strategy on this.

Q41 Albert Owen: I understand. Before I move on to my brief final point, I travelled in a hybrid electric diesel bus in the 1980s in Oxford. This was going to be "the future" then and it did not happen. I am excited by the Government's Bills that are coming through and the noise, which is why I am a little bit down today. I do not think you are as up to speed in enthusiasm as many others are, the public, so I think you need to have a bolt forward a little and encourage people a bit more. The policy is important; I understand that. What amendments are required? We heard about zero VAT on electric vehicles. Is that the kind of radical policy that we need to hear, bearing in mind if diesel and petrol go the Treasury is going to lose a lot of money on petrol duty, et cetera?

Georg Ell: Perhaps to offer a little ray of sunshine and some optimism, there are some very viable electric vehicles coming to the market in the next 18 months—from us and other manufacturers, so let me stress that point too—at different price points. By "viable" I mean cars that will do over 200 miles and that really will cater for the vast majority of the driving public.

It is all about accelerating uptake. It is about not just allowing a natural genesis of this to take place, because the Government have made a fantastic commitment to 2040. We have about 25,000 people a week coming through our stores and they heard that message loud and clear; 2040 did resonate. If the Government want a 100% zero-emissions fleet on the road by 2050 and the average life of a car is 15 years, you could make a case to go even faster. It really is about accelerating that uptake so that we get up the S curve more quickly. That is about infrastructure and price equivalency, because there are some great options coming to market in the next 18 months.



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Steve Gooding: While we are being positive, I would like to add that we have talked about constraints, but I have driven a number of these vehicles, and one thing we have not touched on is that they are really nice to drive.

Q42 **Antoinette Sandbach:** How do you see the current competition between electric vehicles and hydrogen fuel cell vehicles? Perhaps I will ask the Energy Saving Trust.

Andrew Benfield: There is no competition at the moment. There is only one hydrogen fuel cell vehicle available from a mainstream manufacturer, so we are not seeing that as a market-viable solution at present.

Q43 **Antoinette Sandbach:** What about for lorry-sized vehicles?

Andrew Benfield: Hydrogen definitely has a role to play in longer-range vehicles and heavier vehicles. Indeed, there are a couple of cases where some of the larger supermarkets have started to invest in hydrogen trucks. We definitely think that it is part of the mix for longer-term solutions. It is interesting, and I will leave colleagues from the manufacturing side to talk about where the manufacturers are focusing their effort, because that seems to be more on cars, which need much higher-pressure hydrogen. We are a little concerned about the cost of the infrastructure, because it is very expensive to compress hydrogen to that level and to have it available all round the country, whereas we have an electrical infrastructure that, albeit it needs some work, is suitable.

But there are very good examples, such as in Scotland, where, if you can site those vehicles near to the hydrogen production and operate a hub, there is a powerful solution there. There is a range of commercial and refuse vehicles that operate on hydrogen at a hub there. It definitely has a part to play and this comes back to Albert's point.

The reason why we might be tempering the enthusiasm towards electric vehicles is that we probably all agree that it will be a multi-fuel future and we do not want to say to people, "The answers are over here now", so that everyone rushes from buying diesel vehicles to buying electric vehicles and we have a bunch of disappointed people who do not realise those benefits. It is really important that we slightly temper the enthusiasm and give people a bit more information about what vehicle to choose for what type of solution.

Antoinette Sandbach: Do you agree with that, Mr Gooding?

Steve Gooding: I agree that we are heading towards a multi-fuel future. From a consumer perspective, only one vehicle available and practically nowhere to refuel it does not feel very viable to me.

Antoinette Sandbach: I would not expect Tesla to say anything different.

Georg Ell: I would probably steer away from commenting on hydrogen too much, except that that is not where we have made our investment.



On the commercial vehicle side, we have announced a commercial semi-truck. That is now for sale in the US, and we are already taking reservations for that in the UK and have been since December.

Q44 Antoinette Sandbach: From that starting point, are the Government's policy aims best served by following a technology-neutral approach or by concentrating support on ultra-low-emission vehicle technologies, which are considered to be of the most strategic value to the UK?

Steve Gooding: For the time being, as I said earlier, given the imperative of doing something about air quality, given the ongoing imperative to do something about CO₂, the things the Government are doing and seeking to do under the Automated and Electric Vehicles Bill look to be right and proportionate to us.

If we are going to have the option of many more of us driving electric vehicles, we need somewhere to plug them in and to top them up, at its simplest. It is appropriate that the Government encourage us to do that. If other technology comes on, such as hydrogen, there will always be the need for Government to be thinking, "Are we still doing the right thing today and do we need to trim what we are doing?", for example trimming the purchase grant as the volume of vehicles coming to market at a decent price changes.

Government also need to look at the different sectors. It is something we are not really talking about here today, but hydrogen might have more of a role to play, for example, in rail than we are currently thinking, as opposed to pure electrification there.

Antoinette Sandbach: Do you agree with that, Mr Squires?

Mark Squires: I am not sure I am in a place to comment.

Antoinette Sandbach: I mean in terms of ultra-low-emission vehicles and concentrating support.

Mark Squires: We would take a fairly neutral view. It is for Government to create an appropriate environment that encourages zero emissions through the levers that they can pull. The market will then respond and follow.

Georg Ell: I would like to make a comment on the ultra-low emissions versus zero emissions. There is a distinction and we have been careful, at times, to talk about zero emissions and at other times we have talked more broadly.

We are concerned—and we see this reflected in the recent Chinese decision and in the way the Dutch Government have changed their incentive structures—that the real world performance of so-called ultra-low-emission vehicles just does not turn out to be what it should be. There is some data from 2015 in the Netherlands and 2017 in the UK suggesting that a UK company car part-hybrid achieves an average of



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roughly one-third of the stated fuel efficiency and emits roughly three times as much CO₂ as it is supposed to, which would technically put it in the highest tax bracket for company car tax. That is the average company car part-hybrid vehicle in the UK.

- Q45 **Antoinette Sandbach:** Is that because the technology is older, it is changing at the moment, they are getting more efficient and batteries are getting more efficient? When you are looking at 2015, things have moved on quite considerably.

Georg Ell: Sorry, 2015 was the Netherlands; late 2017 was the UK figures. Those are the ones that I quoted to you. As a result, the Dutch have changed their incentives dramatically, and that is one of the reasons why the Chinese have moved so strongly towards zero-emissions vehicles rather than supporting hybrids with their incentives.

Our thesis is that there are two main reasons for this behaviour. One is that people take advantage of the incentive and then do not plug them in. The other is that, even when they do, they tend to have a very short zero-emissions range, after which you have a small engine carrying a heavy battery around and it is not efficient.

- Q46 **Antoinette Sandbach:** Your point has answered part of my next question, which is about the relative strengths and weaknesses of fully electric vehicles and plug-in hybrids. Mr Gooding and Mr Squires, you have spoken about the concerns over range. Does that account for why plug-in hybrid electric vehicles have proved to be more popular in the UK so far? Are they more important for some vehicle sectors or segments than others?

Mark Squires: The short answer is yes. It takes away immediately the anxieties around charging access when you are a desperate for it and around range.

Plug-in hybrids are very important. As to whether they ultimately turn into a phase on the journey to pure electric vehicles, it is perhaps too early to tell. It depends on a lot of things, such as how the infrastructure and battery ranges develop in time, but they have a really important place in terms of the uptake and adoption, changing consumer behaviours, and getting comfortable and used to a different form of the power train in transportation.

The actions that are reflected in the company car tax show some of the concerns and issues that Georg outlined before, in recognising that true zero-mileage ranges should be captured and be part of the incentives that you use.

Steve Gooding: The plug-in hybrid plays to a number of the anxieties that people potentially have about range and the familiarity of refuelling. People who are used to being able to go to a refuelling station and fill up are pretty confident that they will find one and, as of today, they are less



confident that they are going to find a recharging point. That might well change over time.

As Georg mentioned, over the next 18 to 24 months we are going to see a slew of new models with a long, 200-mile range, which is going to change how people start to think about those things. It is also worth bearing in mind that there are hybrids and there are hybrids. As Georg said, there is no point in us buying a hybrid and then just driving it on its small, conventionally fuelled engine, lugging a big battery around. If we think instead of something that is more like the BMW Range Extender—it is the fallback, the just-in-case that makes you feel a bit more relaxed about making the change—perhaps there are more merits in that.

Q47 Peter Kyle: Mark, do you think that the lack of choice is hindering market development in any way?

Mark Squires: Yes, it is currently, because, as Andrew has already commented, a broad range of pure electric vehicles is not available. There are more coming on stream, but there are more of the plug-in hybrid models coming across the model range, which people are familiar with.

From the showroom and what we hear from consumers, the early adopters and those who love new tech might love some of the more futuristic-looking specific electric vehicles that are coming to market, but an awful lot of people tend to renew the model they had before. They want the familiarity of the Volkswagen Golf, of which they are on their third, fourth or fifth.

Q48 Peter Kyle: It looks like people who are choosing an electric car are doing so for different reasons at the moment. Some of the evidence we have had has said that they are put off by the futuristic look of some of the cars; other people are attracted to it. I saw research years ago that said that people were turning to the Prius when the hybrid first came out because they wanted it to be identified as their lifestyle choice. They wanted to be associated with a car that looked different.

Mark Squires: Yes.

Q49 Peter Kyle: At the time, VW had a car out that was more efficient but was not getting the same kind of recognition. This is not something that applies to the other parts of the automotive sector, the petrol and diesel side. Is this something that you believe is going to change over time and people will be making choices differently going forward?

Mark Squires: If we take the German manufacturers, pretty much all of them have plans to introduce plug-in hybrid and electric variants across their conventional model ranges. When it comes—and it is coming—that will be very well received.

Q50 Peter Kyle: Steve, does the RAC Foundation have a view as to whether the Government can do something to help increase the choice? Is there



something practically Government can do when it comes to the choice? It is predicted that there will be 80 electric cars by 2025; it is not a huge choice when you compare it to diesel and petrol.

Steve Gooding: I think we are going to see a transition over the next even two or three years from a world where the vehicles are positioned very much as a “look at me; I am an environmentally sensitive person” lifestyle choice to, “I went out to buy a Mini and I bought a Mini that was an electric one”. In the choice that people have, there will increasingly be a different drive train for a familiar body shell.

Q51 **Peter Kyle:** Can I ask what you are basing that on? I share the view, but it might just be me being hopeful.

Steve Gooding: I have been accused of being an eternal optimist, although not by Mr Owen. I base it on the fact that, as part of my job, I sit and read the reviews of the vehicles that are coming to market and we will see a pure electric Mini, an electric Jaguar; we will see pure electric models from the German manufacturers. They are going to be coming to us in a familiar body shell form. Indeed, more of those are going to be coming through in the next 18 months than ever before. It is still not the whole range and it is still not every vehicle, but it is not such a limited range as it has been.

In terms of Government encouragement for that to happen, the role of the Government here is not in directly interfering with the auto companies, subject to the fact that, for the time being at least, if that grant for each vehicle went away, there would be problems. It is the Government's confidence in investing more broadly in the recharging infrastructure that we keep coming back to. We are all going to be nervous about having pure electric vehicles if we are not as confident about our ability to recharge them as we are today about our ability to refuel petrol and diesel cars.

Andrew Benfield: This is a mixture of the last two points. Plug-in hybrids have been popular, particularly with manufacturers, because they help them to hit the 2021 EU CO₂ targets. For every plug-in hybrid they can add to their range, it means that, overall, they are in compliance. That is why we are seeing a slew of plug-in hybrid vehicles coming to market, and more of them than there are battery electric vehicles certainly.

The other thing that has stimulated their growth has been the massively beneficial company car tax. I can remember when the Mitsubishi Outlander arrived and they were completely taken by surprise, because they had a vehicle that was at price parity. I was speaking to leasing companies at the time. They were having a look at the vehicle and their company car drivers were the first customers, because they had worked out how much they could save on these vehicles if they ran them.



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What we saw was out-of-control uptake of those vehicles without anybody checking if they could charge them at home. If you cannot charge it at home, you cannot realise the benefits and you cannot drive it on electric, so it becomes a two-tonne SUV driven by a petrol engine. If used properly, they can deliver real savings and have a wider range of applications.

Q52 Peter Kyle: Where can the Government go in terms of an incentive that is non-financial or non-direct subsidy? Do any of you have views on this?

Andrew Benfield: If you come back to the EU point, could the UK set targets for manufacturers around the percentage of ultra-low or zero-emissions vehicles they are producing as a percentage of their overall production? That would stimulate a greater range and will give a very clear signal that this is the way the UK is going.

Q53 Peter Kyle: That is the stick; what about the incentive? Georg, you are chomping at the bit.

Georg Ell: On the first point, around choice, it is helpful to look again at the Norwegian example where, although they have the same range of vehicles to choose from, in 2017, 20% of new vehicle sales were zero emissions. Some of it is about range of choice. Clearly the manufacturers can do better there, but also when they hit that price equivalency people are actively making that choice.

To Steve's earlier point about the satisfaction of driving the cars, in 2016, there was a consumer award here in the UK, and the number one and number two vehicles in terms of consumer satisfaction were both 100% electric vehicles at two very different price points. There is an element there that we need not necessarily have the same full range, because the cars are great to drive and people choose them.

Q54 Peter Kyle: That is a bit Stalinist, is it not? You can have what you want—

Georg Ell: As long as it is black, yes. There is still a huge difference between, say, the Nissan and the Renault and some of the vehicles we produce, so there will still be enormous choice.

On the non-financial incentive, it comes back to BIK, to the extent we talked about that, and then the infrastructure, i.e. what can be done on wayleaves and multi-unit drives.

Q55 Peter Kyle: Finally, your pathway to your job has gone via Yammer and Microsoft. That is not the standard pathway to becoming a head of a motor industry. Everyone else on the panel and most of the other people who have given evidence to us have had a professional life in the automotive industry, mostly in the oil bit of it and then coming across to it now. Is this the future or is this a Tesla thing? Are you a technology company or a car company?

Georg Ell: We are the world's first vertically integrated energy business.



Peter Kyle: In English?

Georg Ell: To explain, we think about the problem that we are trying to solve as being the world's generation, storage and consumption of energy; that is, the generation through sustainable means, and the storage of that through batteries, everything from a very local level in the home up to grid-scale batteries.

We have just, in partnership, opened a five-megawatt battery in Wales, for example, as part of both a grid fluctuation stabilisation and peak-shaving project. It is not just south Australia where we are doing these big batteries but also right across Europe, the Middle East, Africa and here in the UK too, and we are bidding on some much bigger projects. Those elements, to Tesla, are pretty key to the broader vision. Then we think a large proportion of the world's energy is consumed through vehicles, so let us make that more sustainable.

Perhaps there is a related point to this that is more cause for optimism, which is that, in 2017, 85% of Europe's new energy coming on stream was sustainable. The direction of travel here is for the greening of the grid, which is supportive of the dream.

Q56 **Vernon Coaker:** Peter and Antoinette have talked about the choice available in terms of cars, but the crucial bit is the charging infrastructure. We have talked a bit about that. Can you say a bit more about the availability, the accessibility of the infrastructure, the regional variations and differences there are in it? The crucial point is the interoperability. If you get loads of models and you have to have a Honda one, a Hyundai one and a Vauxhall one, how is all that going to work and who is responsible for doing that?

Andrew Benfield: Can I start on that one, because I have some data?

Vernon Coaker: That is always handy.

Andrew Benfield: Some analysis we have done shows that accessibility to charging infrastructure varies massively according to where you are in the country.

Q57 **Vernon Coaker:** Do you want to share some of that with us?

Andrew Benfield: Yes, I am happy to. We classified it in terms of average distance that you are from any charge point. Let us start with England, Scotland and Wales. In England, it is four miles on average; in Scotland, it is three, reflecting the additional work they have done on infrastructure there; in Wales, it is 12.

Q58 **Vernon Coaker:** Did you do Northern Ireland?

Andrew Benfield: I do not have that.

Q59 **Vernon Coaker:** Do you have it, but not here?

Andrew Benfield: We can probably find it.



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Q60 **Vernon Coaker:** It would be quite helpful if you could, because we are a UK-wide committee.

Andrew Benfield: Indeed. We have done it on borough level.

Q61 **Chair:** We would be very interested to see all that, Andrew.

Andrew Benfield: Yes, we can share that, certainly. You will not be surprised that in rural areas you are far away from a charge point. The worst area is Devon with 45 miles, but I do not want to particularly pick out Devon.

Q62 **Vernon Coaker:** Do you have a figure for Nottinghamshire, for no particular reason? Seriously, perhaps you can write to the Chair with that.

Andrew Benfield: Yes, I am sure we can share that with you. Again, you will not be surprised that the best is a 10th of a mile in some of the London boroughs. There is some disparity there.

Q63 **Chair:** Are they publicly accessible charging points or just charging points?

Andrew Benfield: That is total charging points. That is partly why Scotland is closer, because it has nationally publicly accessible charge points.

Q64 **Chair:** It is all well and good if there are loads of them in Westminster, but not if they are in driveways that are not accessible to the average person to charge their cars.

Andrew Benfield: Exactly. Accessibility and, coming back to your point, interoperability are absolutely key, because at the moment there is rapid growth in infrastructure and investment coming from lots of different sources, but as a result people are confused about how to charge. They do not know if they need a home charger or should join a public network. The pricing is very different for the various options and we are seeing something of a postcode lottery, to use the phrase, depending on where you are.

Q65 **Vernon Coaker:** It is a postcode lottery with respect to the availability of charging points.

Andrew Benfield: Yes, availability and access of charging.

Q66 **Vernon Coaker:** Whose responsibility is it to ensure that there are properly and publicly easily available charging points across the country? Is it the Government, the council? Who is responsible for it?

Andrew Benfield: Government can enable this to happen. Should they be paying for all the charge points? I do not think so.

Q67 **Vernon Coaker:** Not at all?



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Andrew Benfield: At the moment, to stimulate, there needs to be some support for things like domestic and on-street charging. We are running a scheme right now that aims to tackle that particular problem using OLEV funding. There is lots of funding available for charging infrastructure, but does there need to be a mix? I would say yes. It is not just Government that need to foot the bill for that.

Q68 **Vernon Coaker:** Let me play devil's advocate here. How are we going to ensure that, in rural areas as well as urban, Wales, Scotland, Northern Ireland and England all have properly available, accessible, interoperable charging points, which everyone understands and knows about, if the Government do not take a lead role in ensuring that? Is the market going to do that?

Andrew Benfield: At the moment, it is not doing it. There are not charge points in rural areas.

Q69 **Vernon Coaker:** That is the point I am making. Without the Government being involved—

Andrew Benfield: Yes, exactly. They will need to be involved.

Georg Ell: There are a few nuances. First, we must not lose sight, when we focus on the public charging infrastructure, of the importance of home and workplace charging. If we look at central London, you might be 0.1 miles from a public charge point, but you are very unlikely, relatively speaking, to be able to charge at your home versus in other parts of the country, where you would be more likely to be able to charge at home. In that case, your experience of convenience is much better than having to drive 15 miles to the filling station. That is a very good experience, because you wake up to 200 to 300 miles on your driveway in the morning, in one scenario.

The second point comes back to the Dutch example of the demand-driven planning approach. If you want to be really sure that you are putting infrastructure in the right places, let the consumers tell you where they need it to be, because they are buying the car and they will tell you they need it to be near to where they are.

Q70 **Vernon Coaker:** Should there be priorities in the rollout of these charging points? Should home charging or public charging be a priority? What should the priority be?

Georg Ell: It is a multi-factorial approach. Home is important; workplace is key. There is some great innovation, for example, with lamppost charging that we are seeing in central London and other areas, which might enable residential on-street charging in areas of London where there is no driveway. It is multi-factorial, and the Government have some role to play. Highways England has a mandate that could probably be more tightly defined around charging points every 20 miles on the strategic road network, which could be looked at. Broadly speaking, it is



local councils and encouraging them to take advantage of the money that is available. The uptake of that has been generally low.

Steve Gooding: We would agree. There are priorities, not a priority. The fact that the Government have been supporting installation of home charging units is sensible, for all the reasons Georg has said; the early adopters of this technology are most likely to be people who have the opportunity to charge at home, because they have off-street parking and they can do it; it fits with their lifestyle and is very convenient.

The other thing to look at, from our report, is motorway service areas. If you have folk who are largely filling up their vehicle at home, but they occasionally need to make a long trip, they want the reassurance that they are going to be able to get recharged when they make a long trip. Where do they make long trips? It is on the motorway, so we would probably highlight those as particularly important.

Next up would be workplace charging. As I said earlier, if a vehicle is going to be sitting idle for eight hours, what better opportunity is there for a fast or even slow charger being available than the workplace? We would probably point to those as key.

Q71 **Drew Hendry:** I have a quick question to follow up on the charging infrastructure. Andrew Benfield, you mentioned earlier those figures on the success we have had in Scotland by the Scottish Government having a strategy for charging infrastructure. Obviously, it is about to take another step forward with the A9, which coincidentally runs through my constituency, becoming an electric highway. It is not just the public sector but the private sector.

Springfield Properties in the north of Scotland is now building a 3,000-home development in Perth, with charging points built into the infrastructure it is developing. Do you feel that the UK Government could do a lot better in terms of encouraging both that public and private sector development, if they had a formalised strategy on charging points?

Andrew Benfield: I tend to agree, yes. From delivering and working with Transport Scotland and seeing the impact that has had, you cannot argue with the figures, with the average distance in Scotland being three miles. Bearing in mind the size versus population, that is a significant achievement, it has to be said. There are some gaps currently.

I do not think money is a problem particularly, to come back to your point, Vernon. We work a lot with local authorities. I was at a workshop with a lot of officers last week on this very issue. The problem is that there is a lack of skills, understanding and capacity at that level to make this happen. They need more support around understanding the technologies, the type of procurement, the business models; they have issues around parking. They have a huge list of priorities and, at the moment, central Government are giving them a big pot of money and saying, "Right, come and compete for this".



Surprisingly enough, in the first round there were very small numbers looking to do it. That is changing rapidly, but it is being left to individual authorities to go as quickly or as slowly as they want and the lack of a framework means it is down to political will locally.

There was one rural authority at that meeting, from Wales, Powys. I was very surprised to see it there, because we do not generally see those rural, particularly Welsh rural, authorities there. Its reason for getting involved is that it is worried about isolation for people living in rural areas. It is worried about its residents being able to visit cities with their current vehicles because of clean air zones. It is also worried about tourism and where tourists are going to charge their vehicles when they pass through Powys. It is really interesting to see the political will and the reasons for doing things are very different around the country, but there is no framework or strategy, certainly in England.

Q72 Mark Pawsey: You have all told us about range anxiety and that the range of the vehicles is getting better, but we know from our conventional cars that it depends on how you drive them and what load you put on them, and that is dealt with by a strict basis on MPG claims. Is there an equivalent for range on electric vehicles and, if not, should there be?

Georg Ell: There is. The new European driving cycle, the NEDC, is a measure that is used to standardise range.

Q73 Mark Pawsey: Do all manufacturers adhere to that?

George Ell: Yes, and it is published.

Andrew Benfield: We have done some research on how well you drive and how it translates into mileage and range in electric vehicles. We are looking to repeat that again, but from when we did it previously, if you drive in a more economical way, less heavy on the accelerator, you can reduce the energy usage of the battery by 15% to 17%, which translates into 20% more range.

We cannot forget the role of the driver in this, in terms of the success of those vehicles. It is down to them having proper training, understanding how to drive the vehicle properly, and we are seeing that as a problem with fleets that are putting lots of vehicles on fleet. The driver gets in, drives it like they would normally do and then they say, "Well, I cannot get 80 or 100 miles out of it. It is only doing 60." When you teach them how to use the vehicle a bit better, they see the range starting to go up.

Q74 Mark Pawsey: Would you argue that, in time, there should be a special driver instruction and perhaps a separate driving test?

Andrew Benfield: We are working with AA DriveTech at the moment. It is the largest UK trainer and it has just launched an electric training package. The problem is, at the moment, it needs to train its driver trainers to know how to use all the different vehicles, because their



nightmare is that they will get in a car with an enthusiast who knows more about the vehicle than they do. The controls are different; the way that you set the charging and the eco modes in those vehicles are different, so we are looking at how you address that issue. It comes back to understanding, education, awareness and information.

Steve Gooding: There is a big role for the retail outlets here. If I were one of the people who pass through one of the Tesla outlets, I would be talking to people who are very expert in the product. This is not always the case and the more we can expect, when we go into a car showroom, there will be someone there to explain what the different modes are and how you would drive subtly differently, the better.

Regenerative braking is a big part of this story; it is good both for energy consumption and for brake dust, which is another aspect of the air quality problem. It means that, instead of putting your foot on the brake, you let the regenerative braking take the strain for you. It is a win-win, but, if no one has told you that, you are going to put on the full brake.

Q75 **Vernon Coaker:** On the Automated and Electric Vehicles Bill, which has gone through the Commons and is in the Lords now, it is essentially regulation-making. It gives the Secretary of State powers to make all sorts of regulations in different areas.

From that, is there one top ask that you would make of the Secretary of State, above all, given where we are now, at the beginning of this journey, rather than where we will be in 10 years, 20 years or whatever? What is the one ask from each of you that you would make of the Secretary of State, in terms of the first regulation to try to accelerate this process?

Georg Ell: It is wayleaves, meaning our ability to connect our charging stations to the local power transformer, so access to land, who owns which bit of it, and making sure that the people installing electric charging have the same rights as, say, in the mobile telephony space.

Steve Gooding: The powers the Government are seeking are a sensible package. If I am asking for one thing, I would say that, when the Government are giving themselves the authority to require the installation of charging units, they do so with local storage capacity as well, like the Tesla model, so that the units require a less high-power connection and they can play their part in balancing the demands on the grid.

Mark Squires: Continue to support and potentially extend the plug-in grant while we are in this momentum-gathering and nurturing stage. If I could offer a couple of small ones, one is to help us with the process. We have talked about the lack of information on the V5, which is important to develop the second-hand market.

It is very bureaucratic to go for this grant; it is not joined up with DVLA and AFRL. Some of our members have got into real problems and trouble



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by getting caught through the bureaucratic hoops. Finally, home charging is really important. Take a lead in what could be a potential problem down the line, which is if the network operators have the ability to charge individual houses and companies to upgrade the required infrastructure. Please take a lead in that.

Andrew Benfield: Ensure that interoperability happens: i.e. wherever you go you can always get a charge irrespective of who operates that charge point, whether you are a member of their scheme, whether you are carrying one of the six cards that you might need to have at the moment to go around the UK in an electric vehicle. With your contactless payment card, you should be able to turn up at any charge point and get a charge at a reasonable cost.

Q76 **Chair:** One of the things that I have been struck by today is that, at the moment, the only beneficiaries, in terms of the people who own electric vehicles, are people who are better off, for a whole range of reasons: it is easier to charge them up if you have a driveway; the cost of them compared with more conventional vehicles; and the fact, which came up quite early on with Stephen Kerr's questions, that there is not really a second-hand market for them. Steve Gooding made the point that, at the moment, you are buying an electric vehicle as a virtue signal.

No one has said anything about the way government subsidies work. The Government are plugging a lot of money into this. The reason for doing that, I guess, is because we want to meet our zero-carbon emissions, but it is a huge amount of money that, in a way, is going to subsidise people who are probably already in the very highest income bracket.

Is there anything that Government could do to make this a bit more equitable, to ensure that the benefits go to the ordinary motorist? As somebody said, 80% of people drive to work, but it will be the better off people driving the more expensive and newer cars who are benefiting from this, rather than the average commuter or driver.

Steve Gooding: We would like to see Government doing things that help the average driver, as you say. At this particular point in the growth of the market, we are not going to see that much trickle down into the second-hand market, because there simply is not the volume of vehicles coming through.

When we talk about the national approach to charging infrastructure, for example, Government centrally have to think about the lifestyles of the people they are trying to help and where the charging infrastructure needs to be. Many of the people we are talking about here, if they do not have off-street parking, would need to have access to charging somewhere else, so putting more emphasis on workplace charging is something that Government could do, particularly for people who are in low-income households but are still car commuting to get to a place of work.



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Mark Squires: It is worth understanding that the grant that subsidises the price of a new car trickles down into the price of the second-hand car. It makes for a cheaper second-hand car as well as a brand new car; that is the way the economics of the marketplace work. In providing a grant up front, it will also ultimately flow through, as used cars become available, to benefit the person who can only afford a cheaper car.

Andrew Benfield: There is huge potential for electric vehicles to ensure that more people, particularly poorer people, can access the benefits of these vehicles. In cities, there is an option to help to promote the use of car clubs, which tend to operate the cleanest vehicles, in many cases electric or ultra-low-emission vehicles, to ensure that, instead of people keeping a very old diesel car and only driving it very occasionally, they get rid of that vehicle and we support them with things like the mobility credits proposal that is being kicked around by a couple of different organisations.

This would mean that they get access to very clean vehicles when they need them, but do not have to own them. There are all the costs of ownership, albeit they are much improved with electric vehicles because you do not have all the maintenance costs, which we have not talked about. In cities, we should be encouraging people to get rid of their cars.

Chair: Thank you, all of you, for coming to give evidence today. It has been incredibly informative. We will follow up with a bit of extra information, but it was a very good start to our inquiry, so thank you all.