

Business, Energy and Industrial Strategy Committee

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

Wednesday 13 June 2018

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[Watch the meeting](#)

Members present: Rachel Reeves (Chair); Vernon Coaker; Drew Hendry; Stephen Kerr; Peter Kyle; Mr Ian Liddell-Grainger; Albert Owen; Mark Pawsey; Antoinette Sandbach; Anna Turley.

Questions 366 - 475

Witnesses

I: Richard Harrington MP, Parliamentary Under Secretary of State, Minister for Business and Industry, Department for Business, Energy and Industrial Strategy; Richard Bruce, Director of Energy, Technology and Innovation, Department for Transport.

Written evidence from witnesses:

– [Department for Business, Energy and Industrial Strategy - written evidence](#) | [PDF version](#)

– [Office for Low Emission Vehicles \(DBEIS, DfT\) - written evidence](#) | [PDF version](#)

Examination of Witnesses

Witnesses: Richard Harrington MP and Richard Bruce.

Chair: Thank you very much, Richard Harrington and Richard Bruce, for coming to give evidence to our Select Committee this morning. This is the final evidence session on electric vehicles. We have been pursuing this inquiry for a number of months now. We have all found it fascinating and we are very keen to take evidence from you this morning, Minister, and also you, Richard Bruce, on the target for the phasing out of the internal combustion engine and plans that the Government are putting in place to make it easier for people to purchase electric vehicles.

We have a lot of questions to get through and there is obviously a busy day ahead in Parliament, so we will try to keep the questions short. If you could please try to be precise and speedy with your answers, we would appreciate it, Minister.

Q366 **Peter Kyle:** Welcome. It is good to see you both. Minister, the industrial strategy sets out the target that we are a world leader in production of electric cars, yet we as a country are laggards when it comes to setting a target for production and use on our own roads of electric cars. How are the two compatible? How are we going to convince the industry to produce if we as a country are not incentivising our consumers to buy?

Richard Harrington: I do not accept the premise that you make: that we are laggards and everything. We are doing pretty well. I am not at all complacent about it, as you would expect me not to be. As a person who is particularly passionate about this for a number of reasons, one of which is because of the Road to Zero and the clean element about it but also because I think it is something that as an industry, through the industrial strategy, we can excel completely on. We are not behind.

Q367 **Peter Kyle:** Why is Germany able to transition 10 years quicker than Britain is, then?

Richard Harrington: I do not accept that it is. Peripherally it may be but not fundamentally. We have got our very clear 2040 strategy that I know the Committee is aware of. One in eight electric cars in the whole of Europe are built in the UK; that is last year's number, so it might be even better this year. Since 2011 we have more than 150,000 battery electric, plug-in hybrid and fuel-cell electric vehicles being registered in the UK.

I know the Chair asked me to be brief and I promise I will just add this last bit. The Government are investing nearly £1.5 billion between April 2015 and March 2021 in one of the most comprehensive global programmes that there is. There is our Faraday battery challenge, which



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is just short of £250 million. There are other funding competitions. We really are going for it.

Q368 **Peter Kyle:** The premise of your answer is that consumers will transition before the target in 2040. You are asking consumers to carry the load. You are saying that you do not believe that Britain will transition after Germany, but yet Germany has a target of 2030 and we have a target of 2040. You seem to think that will not impact the speed with which our market transitions.

Richard Harrington: It will be consumer-driven, and it is becoming more and more popular with consumers. We have vehicles like the Nissan Leaf in Sunderland, which is produced in Sunderland, admittedly by a Japanese company. The batteries are produced here next door to it. The government support package is pretty good.

We have to accept the fact that the British car industry is invested in existing technologies and what some people call transition technologies, which are a form of more efficient—from a green point of view—technologies, such as hybrids, et cetera. We do not want a revolution. We want strong evolution and we want the Government to help behind it. However, it is consumer-driven, and consumer habits are certainly changing.

Q369 **Peter Kyle:** We certainly agree on that. For those of us who have experienced driving an electric car we can see why, because it is a fantastic experience. It is just a shame that the ambition of the Government does not seem to match the ambition of consumers themselves. In terms of the strategy going forward, is it the intention of Government to support existing manufacturers of conventional engines to transition, or is it to support new entrants into the market who are purely EV-driven from the outset.

Richard Harrington: It is a mixture of the two, because obviously we need the existing manufacturers to transform. This is an evolution of automotive technology. It is not a complete change. It is not like changing an internal combustion engine. Actually, when cars started having internal combustion engines existing suppliers of horse-drawn carriages did not start making cars. This is not like that. This is an evolution of what is an older technology, but I have every reason to believe the main players will be the main players now. There are new entrants and Government have to support the research and development side of it. Obviously, the Government are not taking stakes in companies or anything like that. Government gave that up many years ago for very good reasons.

Richard Bruce: I would just like to make a point about Germany. I am not aware of any commitment in German to go faster than the UK in terms of 2030, and the UK has more plug-in vehicles on its roads than the Germans have. It is a bigger market. They sell more cars in Germany because they are playing catch-up. We are basically ahead of



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Germany at the moment and the Germans were late coming into the market with consumer incentives. They were late coming to the market with support for infrastructure. It is probably therefore not fair to say that we are behind Germany or that our ambitions are less than Germany's.

Q370 Peter Kyle: Austria also has a 2030 target. For Norway, 26% of sales are already EVs. It is notable that Norway does not have an existing conventional manufacturing market themselves within the country, so the question is whether our conventional car manufacturing industry is actually what is holding us back as a country because we do not want to waste that investment.

We do need to move on; I know that there are many others that need to get in. Three weeks ago you made another announcement involving several other incentives and targets. Could you just explain what "effectively zero" emissions means in the context of your new announcement?

Richard Bruce: The approach to 2040 is not to pick technologies. It is to talk about the outcomes you want. In order to be consistent with the Government's legally binding carbon ambitions, we basically need every vehicle to be effectively zero-emission by 2040. What that means practically is with a significant zero-emission capability, but it is 22 years away so it would be a bit premature to pick individual technologies now, because we are talking about three product cycles for the car industry and maybe two engine cycles. What we are trying to do is give clarity to the industry about the expectations in terms of the outputs or the outcomes. We are not saying, "This technology but not that technology".

Q371 Peter Kyle: In your announcement you said "conventional petrol and diesel". What do you mean by that? Are you expecting petrol and diesel to evolve in a way that means that it is acceptable under the present targets?

Richard Harrington: No. When it says "conventional", it means precisely that. Current petrol and diesel engines are old technology and we are moving towards new technology, which is not petrol or diesel.

Q372 Peter Kyle: Are you expecting to have interim milestones along the target? Do you think the 2040 target is it?

Richard Harrington: My view is that the 2040 target is it. It is a target for 2040 and we expect the industry to move incrementally towards that. Obviously it is our job to monitor that progress, but very stringent targets along the way do not reflect how the industry has changed. For example, even now, for new models with even existing types of cars, companies take the basic decisions five or 10 years out. We are helping to make sure they are planning properly for it.

Q373 Peter Kyle: What about larger vehicles and commercial vehicles? At the moment it is one target for everything. Are you anticipating it to become



a more granular process going forward, or is it going to be one size fits all?

Richard Harrington: It is not one size fits all but having lots of short-term targets does not reflect what the manufacturing industry is like, which involves the investment of hundreds of millions, if not billions, of pounds and, providing the trajectory and the path is the right way, it is not right to say, "We expect this year to be that and the year after to be that". It is just not practical. We want that target by 2040 and it is the Government's job to make sure it happens.

Q374 **Peter Kyle:** A consumer-driven approach to the switchover must be music to the ears of manufacturers because, bearing in mind they are the ones that are investing in marketing, they are shaping consumer demand themselves, so they will be in control of how this switchover happens, and therefore you can see why Norway, which does not have a manufacturing industry that is investing in shaping the market, is switching over so much faster than ours. You, by your own words this morning, are saying you want the consumers to be in control of the switchover. Therefore, we are always going to be lagging behind because you are not going to be shaping the market as a Government.

Richard Harrington: I understand the Committee has visited Norway. I was just chatting to various members yesterday, and it was a really interesting trip from what I have heard. Norway has done it, to the best of my knowledge, through the tax system, basically. The traditional vehicle is double the price, for a start. It is an extremely wealthy country. They have tonnes of hydroelectric power and other power that is very much cheaper, and very different things.

It is consumer-driven but up until now the demand has been consumer-driven but helped a lot by Government. For example, there are the plug-in car grants, all the different tax breaks and it being much cheaper to get a company car. In London and in other places it is done with local authorities helping with parking charges and residents' permits and this kind of thing.

Government do help consumer demand quite clearly, because the obvious economics are that at the beginning there are much smaller volumes of production, and therefore, just in the normal laws of economics, it is going to be significantly more expensive until you get economies of scale. Government are really helping to mould consumer demand by those breaks.

In terms of what you have said about Norway, it is an extreme force, because it is hugely disincentivising people to buy imported petrol and diesel vehicles because they are so much more expensive. That would be completely the wrong way for Government to get involved but the positive things we have done to encourage people to buy more modern vehicles is very good, and in different forms that will continue.



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Richard Bruce: It is not right to say it is entirely consumer-driven, because this is an inevitable change affecting the industry. It is largely driven by international regulation. Regulation applying to cars globally is heading in one direction and it is towards zero. That is in Japan, Asia, China and the US. It is everywhere. It is in Europe as well. This is a change that has largely been forced on the industry. Some manufacturers are more keen on it than others but they are all going to have to make the change, and they recognise that. The question is how we make that transition happen in the UK fast—as fast as anywhere else, and ideally in the lead—but not so quickly that you kill your domestic industry, because that is not a good idea.

Q375 **Chair:** I would just like to follow up on a couple of things that Peter has asked about. In Norway in the first three months of this year, 38% of cars that were sold were electric vehicles, and that compares to just 2% in this country. Norway is substantially ahead of us but so are other countries as well, including China, which has a more ambitious target for phasing out the internal combustion engine as well.

One of the things we have heard in evidence—and this will come up later as well—is that there is a risk in the future, where other countries are leading and we are following, that we miss out on opportunities because they have developed the technologies and also the infrastructure, as well as the manufacturing capability, so that in the future we are all going to be driving Chinese cars because they got there first and we have lagged behind. If we want to ensure that we have a thriving automotive sector in the future, we need to get a bit ahead of the curve.

Also on Norway, you said it is all about the tax system. It is true to say that they have got rid of sales tax and the car tax for electric vehicles, so they are the same price now as an internal combustion engine, whereas of course in the UK you are still paying more for an electric vehicle. One of the reasons why people do not buy them here is because they are so much more expensive. That is just not the case in Norway.

Richard Harrington: I do not accept what you said in this respect, Rachel. I have looked quite a lot at this, apart from anything else when deciding to buy my car myself and everything; sometimes as a consumer is a good way to look at it. It is true to say that, on the face of it, on the ticket value on a forecourt, the electric vehicles are more expensive. However, if you take into consideration monthly payments, running costs—the cost of fuel and everything else—and the tax breaks, there is not very much difference now.

Q376 **Chair:** What I am saying is that the ticket price on an electric vehicle and conventional car in Norway is the same because of what they have done with the tax. That is not the same here. That is one of the ways by which, in Norway, they have got to 38%.

Richard Harrington: I accept that. It is moving closer here and now there is not such a big difference, when just looking at buying a new car. Some of it is because there is not the fear now in the car trade. At one



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time it was felt that they would depreciate to almost nothing because the batteries would stop working. We are moving on from that. That will not be the case for long, but I accept the point. I am not making a political point but it is not acceptable in this country to say one day, "We are going to double the price of non-electric vehicles".

Q377 Chair: That is not what they have done in Norway, Minister. It is worth you having a look to see what they have done there. They do have higher taxes on conventional cars but what they have done is just taken those taxes off electric vehicles. They have not put up the price for internal combustion engine cars. They have just taken those taxes off electric vehicles and that is what has equalised the price. It is definitely worth you looking at, Minister.

Richard Harrington: I would thank you for that. Just chatting to people that have been about it, I would quite accept that. Even if it was not for this inquiry, I had intended to ask if I could go and visit there. However, the principle, which is that we are helping by different parts of the tax system and using, for example, government grants and tax breaks, does bring the difference to quite a low level for a lot of purchases, but I accept your basic point.

Q378 Chair: What they have done there, Minister, is turbo-charged what you are doing here, and that is why they are at 38% and we are at 2%. We recognise that there is a cost of doing those things but those are choices that the Government have made.

Richard Harrington: They do not have an existing car industry that employs more than 500,000 people, et cetera.

Q379 Chair: They are choices. What we are trying to get at is why you are making those specific choices. There may be good reasons for it. I would just like to follow up on something before we move on. I do want a bit of clarity on what "effectively zero" means. For example, a lot of the cars sold here are hybrid—plug-in hybrids but also other types of hybrid cars. Will they be allowed under the 2040 target, or are we going to have just zero-emissions vehicles by 2040? I am still not very clear on that.

Richard Bruce: I think you have taken evidence from the industry itself and they acknowledge that they expect the majority of vehicles by 2040 to be 100% zero emissions.

Q380 Chair: What they have said, Richard Bruce, was that they do not know what it means. They do not know what will be allowed in 2040. I am asking you to give some clarity on that. Would you be able to buy, in 2040, either a non-plug-in or a plug-in hybrid? Would that count as part of your target? Would you be allowed to buy one of those cars in 2040?

Richard Bruce: Again, you are talking in terms of technologies rather than in terms of the outcomes. The outcomes are about the emissions. Some technologies are better than others. Are we going to say we are



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going to entirely ban all internal combustion engines in 2040? There may be scope in certain niche areas for internal combustion engines to persist if they are much more efficient. Can internal combustion engines today get to effectively zero emissions? No. Could they get better in the future? Potentially. Do we expect most vehicles to be 100% zero at the tailpipe in 2040? Yes, I think we do. The industry expects that as well, because that is what is happening globally. That is what will be delivered.

Richard Harrington: We talk a lot to industry about this. We do not just want to impose something on it. I see most of the people that gave evidence to you and they are fully aware and fully involved in the way this policy is evolving. If you ask me the question, which you have, "By 2040, will existing regular hybrid and plug-in hybrid vehicles be acceptable?", they would not be, because the emissions test is clearly not made.

Q381 **Chair:** They would not be acceptable. In 2040, the plug-in hybrid and the normal hybrid would not count.

Richard Harrington: The technology may change completely. I do not know, and that is the point that Richard Bruce is making.

Q382 **Chair:** What you said earlier, Minister, is that the investment decisions are long-term decisions and all the rest of it. I do not see that the industry really has clarity on what it is going to be allowed to sell in 2040, and I am still none the wiser.

Richard Harrington: Perhaps I could put it like this: 22 years ago, it would have been very hard to have imagined that today's selection of vehicles, which are electric, plug-in hybrid, regular hybrid as well as more environmentally friendly versions of the original technology, would be there. It could be that internal combustion technology expands in such a way that a form of plug-in hybrid complies. I think you put the expression about the emissions at the tailpipe. We do not know. We are not making judgments on technology.

Chair: You are making judgments on technology, because you are saying that by 2040 we will not be able to sell internal combustion engines. That is a judgement on the technology.

Richard Harrington: I did not say that. I said we are technologically neutral. It could be that some real brainbox at one of the companies develops a kind of internal combustion engine that has zero emissions at the tailpipe. I am not a scientist. We know our political objective, for environmental reasons. Actually, I hope it is for very good business reasons as well, because I think it will revitalise an industry that we are very good at, but I am just talking particularly now from the environmental point of view. It could be that existing technology can be adapted. I do not know. In the same way, the first time I saw a hybrid—a Toyota Prius—I was absolutely fascinated by it, but now it is just bog-standard technology. It is impossible to say without us viewing on



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which technology is better, but at the moment, the way that emissions are on internal combustion engines, I do not see it.

Q383 **Chair:** Let me ask you a question that is not about technology but is just about emissions. In 2040, will you be able to buy a car that does not have zero emissions?

Richard Bruce: Potentially.

Q384 **Chair:** Potentially yes. Your target for 2040 is not for zero-emissions vehicles.

Richard Bruce: It is talking about the fleet as a whole.

Q385 **Chair:** No, it is not about the fleet as a whole. 2040 is about new sales, Richard Bruce. What I am asking is whether, in 2040, you would be able to buy a new car that was not a zero-emissions vehicle.

Richard Bruce: Potentially, yes.

Q386 **Chair:** Okay. Your target for 2040 is not to phase out cars that have emissions.

Richard Bruce: Probably the best way of illustrating this is at the moment, we offer the plug-in car grant for ultra-low-emission vehicles. There is no internal combustion engine vehicle that qualifies for that, but that is not because internal combustion engines are ruled out. It is because no car can meet those standards because it is about very low CO₂ and zero-emission mileage. They cannot do it at the moment. We are not saying that those technologies are out, because the industry does not like that and manufacturers take different approaches.

Q387 **Chair:** I am not asking about technology. I am asking about what your target is. Just to be clear, your target for 2040 is to phase out cars that have high emissions but not to go to zero emissions.

Richard Bruce: The fleet as a whole will be effectively zero; it will be as close to zero as you can get. That might mean that out of the 2.5 million cars that are sold a year, a small number have internal combustion engines. The expectation is that the majority—probably the vast majority—will be 100% zero because, in regulatory terms, that is what manufacturers are going to have to make to sell cars in China, in the US and in Europe.

Richard Harrington: It may be that some manufacturer designs an internal combustion engine—I doubt it, again, not being a scientist—that complies. I doubt it, but it is the end game that we want.

Q388 **Chair:** But the endgame is not zero emissions.

Richard Harrington: Potentially.

Q389 **Chair:** There is now confusion amongst members of the Committee. In 2040, are you saying that you will be able to buy a car that does not



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have zero emissions.

Richard Bruce: Potentially, yes.

Peter Kyle: It is not zero emissions.

Q390 **Antoinette Sandbach:** Can I clarify whether that is a new car?

Richard Bruce: Yes.

Q391 **Antoinette Sandbach:** So what is your target?

Peter Kyle: There is no target.

Richard Bruce: There is a target.

Antoinette Sandbach: What is the target?

Richard Harrington: Road to Zero.

Richard Bruce: By 2040, all new cars will be effectively zero.

Peter Kyle: Effectively zero. That is not a target.

Q392 **Chair:** What does "effectively" mean, Richard Bruce?

Richard Bruce: It means as close to zero as we can get.

Q393 **Peter Kyle:** Which is what?

Richard Harrington: Pretty much zero.

Q394 **Peter Kyle:** I am sorry, Chair, but if you are investing in technology now, you do not know what you are investing in. You do not know where the cut-off point or the red line is. If you are investing tens and tens of millions in the future production of vehicles, you will not know where the red line is. There is no clarity, unlike in other countries. There is no clarity.

Richard Bruce: There is clarity because we are saying we want as many zero-emission miles as fast as possible. If you are investing in technology, that is what you are investing in.

Q395 **Chair:** We know, Richard Bruce, that you can buy cars now that have zero emissions. However, you are saying that you will not need to be zero emissions to be able to sell a car in this country, even though that is possible.

Richard Bruce: We should remember that there are three different levels of regulation that is going to affect this: there is international regulation, there is national regulation and there is also local regulation. The manufacturers have to make vehicles that meet all three of those demands.

Chair: I am asking what your target is.

Richard Bruce: I would be incredibly surprised if any manufacturer is still selling purely internal combustion engine vehicles by 2040.



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Q396 **Chair:** I am not asking you about what manufacturers are selling. I am asking you about what the Government's standard is and what you are saying is "effectively", or "as close as possible to zero". We know zero is possible so why not set that as the target?

Richard Bruce: If you make every single vehicle zero you might be putting a disbenefit on certain individuals. For example, at the lower end of the market, it might be more cost-effective for people who cannot afford expensive cars to have a substantial zero-emissions range and a very small, efficient, range extender to hit a lower price point.

Q397 **Chair:** You will be able to have a range extender.

Richard Bruce: Potentially, but that is in 22 years' time. That is the whole point. Forecasting technology today for 2040 is the wrong thing to do. Raising expectations about the outcomes that we want, which is what everyone does internationally, probably is the right thing to do.

Q398 **Chair:** You do not think it is right that other countries, such as Norway, have a target in 2025 for zero.

Richard Bruce: The smaller nations are not the best comparison. Look at the French; look at the Germans; look at the US; look at other countries that have big markets. Not many of them are saying, "100% zero definitely", because they recognise there might be scope. Who knows? The technology will change an awful lot.

Chair: The Government certainly do not know.

Q399 **Mark Pawsey:** I wanted to follow on from the point about hybrid that the Chair started off on, to ask you about the consumer confusion, because there seems to be confusions within the Committee. The market seems to me to be segmented. There is all electric, and we all understand entirely what that is. There is the plug-in hybrid and then the self-charging hybrid, which is a term that the representative of Toyota introduced us to. As far as the consumers are concerned, those are all electric. What you are saying to us now is that they are all going to be treated equally. I was going to ask you whether you thought that the hybrid was a temporary measure. Is the battery technology likely to improve such that in 2040 there will not be hybrids still on the market? You seem to be indicating that there will continue to be a role for hybrid in 2040.

Richard Harrington: I will answer that if I may. I know it is a cliché that we have said it before, and the Chair does not like it, but we are technologically neutral. At the moment, the current hybrid technology would certainly not apply. It would not be appropriate because it has comparatively short ranges before the engine kicks in, and, in the reality of life, most of the driving of it is using the internal combustion engine, so if we were to take a snapshot today and nothing changed but we move on to 2040, then of the ones that you mentioned only the all-electric one, like, for example, the Nissan Leaf, the Tesla and others that will be coming onto the market, would comply.



Where we are technologically neutral is that we do not really care as long as the end objectives are met. It may be that the very clever people that developed the current hybrid technology have a way of extending that in a way that means the ranges are completely zero.

Q400 Mark Pawsey: Should the effort, Minister, not go into developing battery technology? If we look at how battery technology has advanced in the last 10 years and the range that is now available on an electric vehicle, do you not believe that the hybrid is an intermediate technology? The question I would put to you is about what sense it makes for people to be driving around in vehicles with two methods of propulsion—the internal combustion engine and the electric motor? We know that it is necessary now because the range is not sufficient. Is it your assessment that, by the time we get to the 2040 target, the battery technology will have advanced sufficiently for the hybrid to be no longer necessary?

Richard Harrington: We hope the battery technology will advance very significantly. That is why we have got our Faraday battery challenge, which is over four years—we are not talking about 10, 20 or 30 years' time—to produce much better battery technology, and it has improved exponentially. At the moment, people that are buying hybrid vehicles actually are doing something to hopefully save them motoring cost but they are also doing something that does help the environment because they are much more refined than they were and much cleaner than they were compared to the old internal combustion alternative.

It evolves. They are getting better and better. They are cleaner and cleaner but we have certainly got no intention of banning any technology today. It would not be appropriate, but things are evolving. I understand from articles that I have read that the Japanese, for example, think that the hydrogen technology will be the dominant technology and that batteries are interim technology. We do not know. I think batteries have a long way to go and I hope this country can be at the forefront of it.

Q401 Mark Pawsey: We have some separate questions on hydrogen. Can I just push you a little bit on the amount of miles that a vehicle can do on a battery before the range extender kicks in? At the moment, cars are able to do about 20 miles on electric. There is some thought that for them to really be effective that needs to extend up to 50 miles. We had this confusion that the Chair has alluded to, which is that we might have broadly electric technology by 2040, and you identified some users for whom that might not be acceptable. Would you attach a mileage limit to what is acceptable to meet the definition of "zero emissions"?

Richard Bruce: Different manufacturers will take different approaches to hitting regulatory targets, and you see that now. The reason we have hybrid technology is because some manufacturers, rather than pursuing a diesel route to lower carbon, chose to hybridise their engines. There is a complexity associated with that. It may be that if battery prices keep dropping, the complexity of having effectively two power trains and two



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energy storage systems on the same vehicle becomes too costly and it is easier to put more batteries on the vehicle.

We fully expect the vast majority of vehicles to be 100% zero emissions, and it may well be that batteries are the dominant technology. That does not mean that there might not be a minority that still need internal combustion engine support. Who are we to say that now? If you look at the policy approach, a very good example is what is happening on company car tax where, if you look at the bandings that are coming into play, they are all about zero-emission mileage; you basically get the lower tax rates the more zero-emission miles you get. We want as many zero-emission miles as fast as possible.

Q402 Mark Pawsey: That has produced the wrong behaviour, has it not? Lots of people are buying plug-in hybrids on the basis that they might use them as electrics but they are generally using them using the internal combustion engine because the tax system has driven them towards that purchase. We need to be very careful of that, do we not?

Richard Bruce: I have not seen any evidence that says that most people who own plug-in hybrids—

Mark Pawsey: A large proportion.

Richard Bruce: I have not seen any evidence that says a large proportion of them are doing it. I agree it is a risk because they can be used without being plugged in.

Q403 Mark Pawsey: Absolutely. If we want to get to the objective of zero emissions, do we not need to get to all-electric faster?

Richard Harrington: In practical terms, Mr Pawsey, at the moment there is not much of a selection of all-electric vehicles, given that people making purchase decisions look at everything they can within their affordability range. At the moment there are one or two models that are pure electric. Of course it is getting more and more, and I would expect it to naturally evolve.

The current hybrid technology, both non-plug-in and plug-in, is significantly better than the previous generation of vehicles, and I expect this trend to continue. Probably if we were to have this inquiry in maybe three or four years' time, most of the big brands will have pure electrical alternatives and the conversation would be completely different. At the moment, hybrid technology has served a good purpose and continues to do so. Plug-in is one step up from that, but I do accept the fact that people might think when they are purchasing a vehicle that the plug-in bit is a novelty and still just continue with business as usual.

I have a regular hybrid, not a plug-in one. When you are driving, it is a game to keep the internal combustion bit off because you think it is the right thing to do, you get better mileage and all this sort of stuff, and this



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stuff does change patterns. They are all going to get much more sophisticated, be it all electric or plug-in hybrid or whatever.

Q404 **Mark Pawsey:** It was expected that clarity would be provided through the Road to Zero strategy, which was expected in March. It has not been published yet. When can we expect it?

Richard Harrington: Perhaps I could answer: soon. The Chair's cynicism always comes through from her long experience in such matters.

Chair: Indeed, and your own, Minister.

Q405 **Antoinette Sandbach:** I might pick you up on that. Will it be published before the summer recess? Are you hoping it will be published before the summer recess?

Richard Harrington: I am hoping, yes. It really is well on the way. This is very complex and very sophisticated. You did not say which summer. I am not trivialising the point. It will be published very soon. It is well within the process of doing so. We have consulted with a lot of people.

Q406 **Antoinette Sandbach:** I will move on because I want to look at the automotive sector deal offer. You spoke about articles you have read in relation to Japan and the Japanese thinking that hydrogen is the future technology but it looks very much like, from the automotive sector deal, that you are providing much more support for electric vehicles than for hydrogen. Have you switched away from your technology-neutral approach?

Richard Harrington: No. The technology-neutral approach is clearly policy. My colleague, Richard Bruce, has stated that, as have I. There is no question about it that hydrogen will have a place, but is not something that the ranch can be bet on. At the moment, the Government have got, I think, a fund of £23 million to 2020 to support businesses with the cost of hydrogen vehicles.

I should not give commercial plugs to companies but I was so impressed with Green Tomato Cars. I went in a hydrogen vehicle and I was asking the driver loads of questions about what it was like. He did not know I was involved in Government or anything, but as a passenger it was a new experience. He was saying the different points in London where you could go to charge them up and the costing and everything. Those containers of hydrogen are there because of assistance the Department has given. We are investing in it in practical terms, but remember the hydrogen technology is at a much earlier stage of development throughout the world than battery-electric power trains. It may be that hydrogen develops for freight and for large-scale tracks.

Q407 **Antoinette Sandbach:** I appreciate that and I know that clearly there are different considerations for freight than there are for smaller vehicles,



but I think your 2040 target relates to smaller vehicles and vans.

Richard Harrington: It does.

Q408 **Antoinette Sandbach:** In the small-vehicle market, electric vehicles outnumber hydrogen vehicles by about 500 to 1 at the moment. Is it not clear to Government that perhaps the market has picked a winner?

Richard Bruce: My first point is that hydrogen vehicles are electric vehicles. They have batteries on them as well. It is just a different way of storing energy. Hydrogen has had a couple of comparative advantages over battery vehicles in terms of refuelling time and range. Both of those advantages are being eroded by improvements in batteries, so there is a race for those manufacturers that are very keen on hydrogen to commercialise that technology and make it a better price point for consumers. It is just partly the problem of hydrogen infrastructure. We expect there might be some fleet requirements for hydrogen where you want fast refuelling with very long range vehicles, and certainly it has potential for heavy goods vehicles, for trucks that are harder to electrify.

Q409 **Antoinette Sandbach:** I was particularly asking the Minister, actually, around small vehicles. Minister, I would like to suggest to you that it may be that by submitting the support that the Government are giving, it is actually going to lead to failure in both. If you concentrated, perhaps, on good infrastructure for electric vehicles, which seem to be, certainly in the UK, leading the market in terms of low-emission vehicles, are you risking taxpayers' money on a technology that may not turn out to be healthy in the future in relation to hydrogen?

Richard Harrington: It would be irresponsible to bet the ranch on a technology that is at a very premature stage when we have got a zero-emission technology that is already well developed and that is in production already. It would be very irresponsible for us to decide to ditch that for something that may well be good. We are helping, admittedly in comparatively small ways, financially; I would accept that point. Government is all about rationing. I know you would not believe that from some political party manifestos at election times, but effectively everyone has to ration where the funds go. It would be irresponsible to choose a technology like hydrogen, however good it might be, and say, "That is what we are going to put government money into".

Q410 **Antoinette Sandbach:** I was suggesting the opposite to you: that actually you already, through the way that you are financing and giving out support, have picked battery technology as the winner, as it were.

Richard Harrington: I accept that—not as the winner in black and white, but taking a significantly larger proportion of the government funds available for what is effectively research and development. That would be a fair comment by you.

Q411 **Antoinette Sandbach:** I am going to move on to research and development. You have set up the Faraday challenge in order to try to



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overtake current world leaders in battery technology. Do you think that in four years you can secure that and get sufficient inward investment to achieve it?

Richard Harrington: I hope so. There was a government press release about the first batch of £22 million yesterday, although we all had other things on our mind yesterday. To take my mind off what was happening yesterday, I did read it in some detail, because it is the first £22 million. It is only over four years. It is not a long time into the future. It really can kick-start a lot of things. I do not know if you would like to comment further on that, Richard.

Richard Bruce: The existing vehicles are relying on a certain battery chemistry, which is lithium-ion, and that is very well established and is dominated by Asian manufacturers. That is a very fair point. There is scope for new battery chemistries to revolutionise that market with better energy density and better power density, so more range and less space. That market is wide open. There is a big opportunity there and the lithium-ion was actually invented in the UK but was not commercialised here. It is entirely right that the UK plays in this space and tries to capitalise on that opportunity.

Q412 **Antoinette Sandbach:** It may be an interesting point about the fact that the technology was not commercialised here. With the support that the Government are giving, if this technology is successfully found, will you have some kind of percentage of intellectual property payback for the Government from the investment that the taxpayer has made?

Richard Harrington: I am going to say I cannot answer that point but I will look into it. It is a serious point. You might think it is a change of policy but I do not want to give a waffling answer because I do not know the answer. I am very happy to write to the Committee generally or, if possible, as well have a meeting on that because it is an interesting point, but I do not know the answer.

Q413 **Stephen Kerr:** We talked about the role of Government in relation to EVs. What about the role of Government in relation to stimulating demand for new products? Does the Government have a role in that respect? Should the Government be incentivising manufacturers to broaden their EV offering?

Richard Bruce: In order to get a dominant EV market, you need basically three things: you need supply of the vehicles; you need demand for the vehicles, which is about having the right price; and you need the right infrastructure in place. The supply of the vehicles is largely driven by regulation, so manufacturers are selling the vehicles now because they have to hit targets in Europe on CO₂. Those regulations are going to get tougher and tougher over time. They will be bringing more and more to market.

It is fair to say they do not make as much money on those vehicles as they do on their more conventional ones; therefore, they are probably



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going to be reluctant to bring as many to market as they might otherwise. It is going to therefore be a regulatory thing that is going to make that happen, internationally, nationally and locally. You saw it with London; they are going to start having tougher and tougher regulation about which vehicles enter which zones. That is what is going to create the need to basically increase your supply of the vehicles and more model choice for consumers, because it is an issue.

Q414 Stephen Kerr: What about the breadth of products on offer, though? Can the Government do anything about that specifically?

Richard Harrington: Do you mean breadth over different technologies?

Stephen Kerr: No. Models.

Richard Bruce: Are you referring to anything where you can buy an internal combustion engine version, a plug-in hybrid or a battery vehicle?

Stephen Kerr: Yes.

Richard Bruce: That is all about the manufacturers having to sell—

Q415 Stephen Kerr: Is that all about market forces?

Richard Bruce: It is all about regulation, to be honest, with market forces.

Q416 Stephen Kerr: Regulation driving—

Richard Bruce: Regulation driving supply. The way that regulation works in Europe is based on the fleet of vehicles they sell, so if they have to sell more, they have to put more lower-emission vehicles in their more mass market segments.

Q417 Stephen Kerr: Taking this a stage further, should the Government be introducing targets for manufacturers in relation to percentage of models with electrical options, et cetera?

Richard Harrington: I do not think it is possible to do that. Market forces take care of that. What I have seen, as I have looked into the car market by visiting car manufacturers, et cetera, and find out more about the industry, is that production economies come down to basically only four types of vehicle; they call them A, B, C and D, or 1, 2, 3 and 4. It is an industry term and everything is on variations of a theme within that, usually by size or not the actual shape that people see but where the power chain is and that sort of thing.

The Government cannot start stipulating on this, but such are the pressures of economies of scale, it will flip to a point where they will say, "It is actually not worth us producing that type of vehicle"—which may well be a diesel or petrol vehicle—"because with the volumes going through that we get the component prices down so significantly". It is not something the Government can start doing.

Q418 Stephen Kerr: So it is market forces.



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Richard Harrington: Yes.

Q419 **Stephen Kerr:** We have already touched on my next series of questions, so they will be very brief questions and very brief answers, really. My questions are about policy mechanisms around the financial cost of EVs. Let us go back to the Norway model for a minute. We talked about government incentives to encourage consumers to buy EVs. What about increasing the cost of purchase on internal combustion engine vehicles. Is that a viable government policy in this country?

Richard Harrington: Do you mean through the tax system?

Stephen Kerr: Through the tax system.

Richard Harrington: Yes. It is something that has happened before under different Governments. For example, there was road fund licence and that kind of thing.

Stephen Kerr: I know that. I own a diesel vehicle so I know exactly what you are talking about.

Richard Harrington: It is not that revolutionary.

Q420 **Stephen Kerr:** It all depends how the costs have escalated. How far are you prepared to aggravate the people who drive petrol and diesel cars in order to get to the point where this issue of purchase price gets to the point that the Chair was talking about?

Richard Harrington: It has to be at a reasonable level to provide incentives and disincentives but not draconian ones at all.

Stephen Kerr: Not draconian one.

Richard Harrington: No. If, for example, what used to be called a road fund licence was the difference between £100 and £150—by the way, this is not asking me a question like the price of bread; I am just mentioning it as an example—I would say that is reasonable. It is right for the Government to price because they want to incentivise people. If someone bought a diesel vehicle in good faith and they were suddenly told it would cost five times as much or 10 times as much, that would be unfair.

Stephen Kerr: No shock tactics.

Richard Harrington: I would agree with you, Mr Kerr, on that. The weapon that Government have with taxpayers' money proactively, raising some more tax on the other hand, has always been an acceptable tool. The main thing of course is the plug-in grants.

Stephen Kerr: Those are the incentives. I am talking about the—

Richard Harrington: You are talking about the stick and the carrot. You are talking about the stick bit.

Stephen Kerr: Correct. I am talking about that.



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Richard Harrington: Not too much sticking. There will be some and there has been some in the past.

Q421 **Stephen Kerr:** Take Norway as an example. Norway has introduced this 50% rule where they say that their objective is that drivers of electric vehicles will never pay more than half what conventional vehicle drivers would pay for parking or fare rates or tolls. Would you consider that kind of a policy in this country?

Richard Harrington: Where we do have tolls and charging, such as the Severn and the Dartford Crossing and things like that—this is more a Department for Transport thing—they are matched to the cost of construction and trying to get some money back rather than used as a proactive policy. I do not see a change.

Q422 **Stephen Kerr:** You do not see us going down that road.

Richard Harrington: Charging at the moment for things is comparatively small, with the bridges and crossings.

Richard Bruce: Parking is a big thing. That is in the gift of local government. With local regulation they can do that now. Some of them have got draconian residents' parking permit charges for dirtier vehicles and free runs for EVs. That can happen today. We do not control parking charges in local government but the tools are available and can be used.

Q423 **Anna Turley:** We have heard a lot about the impact of incentives, and obviously cost is one of the biggest barriers to people taking up electric vehicles. The Government have got their plug-in grants, which are 35%, which is pretty decent. At the moment we only have clarity that this is going to take place until 2020. We have had a lot of industry experts, trade unions and those involved in potentially having to shift the entirety of our manufacturing into EVs say that clarity and long-term strategy is really, really important. If we cannot see beyond 2020 in terms of the incentives for people to buy vehicles, can we give any confidence or reassurance to the sector that we are committed to electric vehicles. When will you give us that clarity on the continuation of the plug-in grants?

Richard Harrington: The sector is unreasonable on that point, Anna, because they know full well that costs of production will come down with volume and the difference of their costing. After all, the plug-in grants are meant to subsidise something that is inherently expensive because of small volume, etc. We have pledged that the plug-in grant will continue in some form until at least 2020 and we will review it, and this is something that is ongoing. In the end, they will just become cheaper and cheaper. The current situation now is where people are getting, I think, £4,500 for a pure electric one, or £2,500 for a plug-in hybrid. We are keeping that system. It will be going on at least for the rest of the year. Things are moving but at the moment we are pledged until 2020. It is not fair to give longer-term targets than that because it does not make a



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difference because if they sell 100,000 or 200,000 or whatever it is, then they know their costs are going to come down.

Q424 **Anna Turley:** You are saying essentially that it is down to technology and industry to bring the price down, and there is not a role for Government to continue to facilitate that.

Richard Harrington: Government do it in the short term to achieve an objective, in so many things.

Q425 **Anna Turley:** Do you think we will achieve that by 2020?

Richard Harrington: I will not say which technology but when there are millions of electric vehicles, in whatever technology it settles down to, it will become much cheaper than internal combustion engines because there are so fewer parts involved in it, but that is just from a manufacturing point of view when the volumes really crank up. There is the Henry Ford example, and people of his era, between the First World War and the Second World War; that is precisely what happened with the internal combustion engines and it happens with all manufacturing processes, be it Apple computers or indeed any other product. At the beginning it is very expensive, so we are helping with that.

Q426 **Anna Turley:** It is the impact on consumers. The Netherlands supported plug-in hybrids until January last year. A large proportion of Dutch sales were in plug-in hybrids. They ceased that in January last year and the market totally collapsed. It is clear that incentives work. Are you not concerned that if we drop off a cliff in 2020 and we stop these incentives the market will plummet?

Richard Harrington: I accept the cliff point very well. I had a meeting with Steven Altmann, who worked for Tesla, and some others, and they explained, giving the examples that you did, how even very affluent countries jump away for a few thousand pounds. On the face of it you think if you are spending £30,000 or £40,000, it might not make much difference. They have absolutely compelling evidence, as you would expect from people of that sophistication and everything; they know their numbers.

That does not mean it always will be the case. That is because for most people electric technology in a car is very strange, because they have not experienced it. There are a lot of fears involved with it. One is that the battery would stop working so the car would become worth nothing. A second is that it would run out when they are picking their kids up from school or they are driving up the motorway to Leeds or whatever. It is not just pricey but it is very clear now that the subsidy does make a purchase decision, particularly now because people look, as I was saying before, at the cost per month of the vehicle for at least three years if they are buying a brand new vehicle, but that does not mean it always will be the case.

Q427 **Anna Turley:** Can we expect any clarity soon on those plug-in grants,



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because obviously 2020 is not too far away?

Richard Harrington: We are reviewing it on a regular basis.

Q428 **Mr Liddell-Grainger:** I would like to talk about affluence and electric vehicles. Do you know my constituency, Richard?

Richard Harrington: Affluence and your constituency did go together when you said it.

Mr Liddell-Grainger: That is nasty.

Richard Harrington: It was meant as a compliment. It is a jolly nice constituency.

Q429 **Mr Liddell-Grainger:** Thank you, dear boy. There are only seven charging points in the whole of my constituency. You know how big it is. One of the points I would like to make is that electric vehicle ownership at the moment is an affluence thing. If you want a grant for it you have to have a certain income to buy an electric vehicle on the grants system. The second point is that you probably need a driveway as well. You cannot really run a cable out of a flat. You can technically. Therefore, are we stigmatising people who have not got a great income? With the grants system that we have currently, they probably cannot afford an electric vehicle and probably need to park off the main road, safely, to be able to charge it? Is there a dichotomy at the moment?

Richard Bruce: There are two aspects to that. There are the vehicles and there is the infrastructure. In terms of the vehicles, when they first came to market they were very expensive but there is a supply of vehicles in the second-hand market now and there are new cars coming to market because battery prices have gone down. They are quite reasonable price points. The Renault Zoe is a 100% battery vehicle and it is not that expensive. Prices are coming down and, as manufacturers want to sell more to hit their regulatory targets, they will market them accordingly.

The charging infrastructure point is, in a way, more challenging. It is probably the biggest challenge for this rollout. Although around 60% of homes have got off-street parking, it is the 40% that have not that have got a challenge. However, in terms of public infrastructure, we have got one of the best in Europe and it is growing really, really rapidly, maybe not in your constituency but nationally there are 12,000 or so charge points and they are being added at quite a rate. Over 400 were added in the last 30 days, 100 of which were rapid charge points and there is lots of private-sector investment coming there.

In terms of making this the preserve of the rich, you can buy a second-hand EV now for under £10,000 quite easily. There are quite a few coming to market. Just as with any new car and any new technology, it starts at the top and then it trickles down through the rest of the marketplace. Within five, 10 or 15 years, we will see probably all



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price points in the marketplace having EVs on sale, and that is reflected in the used car market as well.

Richard Harrington: I would like to, if I may, point out that when cars and the internal combustion engine started, it was a play thing for extremely rich people. It was only in mass production that it became available to not quite everyone before the war, but in the 1960s and 1970s, the parents of most people in my generation got a car when they were quite old because they had never had one as a child, et cetera. Again, volume will take care of that point.

However, you have made a very significant point about rural areas. I have seen the size of your constituency; my constituency, like those of many people in this Committee, is quite compact. It is a problem for rural areas for other matters, such as regular filling stations for example or many other things. It is the price of living in a rural area, which has huge advantages, of course, but more and more are coming. As my colleague says, the run-rate is now more than 400 a month, and it will get more.

There is also another problem. I was going to say I am myself a victim, but I am not really a victim. It is more difficult for me because my house is on a street, and you have to worry about it. As a person who wants a plug-in one a lot, all I can think about in my mind—until I start to think about this job, and of course thinking about it in more detail—is that it is a bit like a phone. You have to plug it in at night. Obviously we all plug our phones in. If you do not have one in your garden or street area, you cannot do it. However, that is not the case. We only fill our fuel cars every week or two weeks, etc., and it is the same. I am sure the same thing will be true in rural areas; people will think, “I must remember to fill it up”, just as now, even in your constituency, there is a petrol station that might be 10 or 15 miles away, and the same thing would apply to this. I do not think it is quite as desperate as that, but that is certainly the perception of people when making a consumer decision, which is what we are really all around. There is this fear of running out, which I think is a really big one.

Q430 Mr Liddell-Grainger: I would like to make just one point. For the publicly funded charge points at the moment, the North-East is the best at 664, which equates to 3,900, down to Wales that has 31, which is 98,000 people. Now, these are the publicly funded charge points. I accept there are plenty of others.

The point I am trying to make is that maybe we should be giving grants to people to have charging point in their homes, especially in rural areas; give the money to people who would like to do it in a rural area to charge. In West Somerset, Richard, there are four charging points in an area—and Stephen’s is even bigger than mine—which is huge. However, the other point is that we are trying to force this forward, quite rightly so. That is absolutely right. There was no target for the internal combustion engine. It just evolved. We are now trying to force this. As you said, it



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is coming down and it is taking time, but it is the charging them that is the problem. Your analogy of the phone is absolutely right, Richard. People want to trickle-charge. Surely that is where the funding should go.

Richard Harrington: Funds are available to people to subsidise the cost of putting charging points in their home. I was speaking to someone just before we came to this Committee who has just had it done, and my understanding is that the cost is about £1,000, but half of that is paid for by the Government, so it is subsidised now. That is quite an incentive, and of course the £1,000 will come down dramatically because presumably a lot of general electricians are seeing there is a good market in this kind of thing, to install this. I see that happening a lot more. I do not know if you would like to comment on that, Richard.

Richard Bruce: I think it is true. All the evidence shows that most people who own an EV will charge at home or at work. In order to get over the barrier of buying the vehicles, they need to have a very visible infrastructure to make them feel confident that they can use it. They probably will not use it but they think they will because most journeys are shorter than people think. I have an EV; I have charged at a public charge point once in three years because I charge it at home. You go to bed, it is a bit low, you plug it in, you wake up and it is 100% again. That is how you use the vehicles. However, it is clearly still an issue in the minds of consumer who are used to going somewhere to put energy into their vehicle. They need to have a visible infrastructure to feel confident to buy the vehicles, and we recognise that.

Q431 **Drew Hendry:** Minister, do you have plans to address the stark regional disparities in charging infrastructure, or are you leaving it to local authorities to determine local charging provision?

Richard Harrington: We are leaving it to local authorities but we are pump-priming it and kick-starting it. We have our funds to fund local authorities to do it. Very few took it up at the beginning; now more and more of them are. The Department is putting resources into marketing the schemes that are available, and take-ups recently have been quite significant. The core responsibility is for local authorities but they are being nudged—I think that is the expression—quite heavily.

Richard Bruce: There are different sorts of charge points as well. In terms of rapid charge points, which you can use to get lots of energy into a car quickly, there is a huge amount of private investment coming into that. That industry has said to us that they do not want Government to intervene in that market because that stops them getting the investment they need, whereas residential charging on the streets is more of a challenge, and that is why grants are available. We are encouraging certain cities to basically become exemplars through our Go Ultra Low Cities funds, which is about £40 million, to demonstrate the benefits of how you can get mass market uptake. Places like Nottingham, Milton Keynes and Oxford are getting lots of money for charging infrastructure



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so that they can get ahead and demonstrate how easy it is to other local authorities.

Chair: We did visit Milton Keynes to see that. It is very interesting. They seemed to be spending the money very wisely in putting in good infrastructure. We were impressed.

Richard Harrington: As a Department—this is true in so many aspects of Government, and I suppose it is true with commercial companies as well—when something that you really believe in happens, you have a dilemma between saying, “We are going to find a few areas and we are really going to concentrate efforts on those who have already converted to the idea, to show everybody else how great it is”, and saying, “I have the same pot of money and we would like everybody to have a share of it”. It is a dilemma. In the first phase there was less of that because a few volunteered for it and we were able to concentrate on them, but the word is now getting out.

Richard Bruce: I just have two other points on this. One is that Highways England have £50 million to make sure that you are never more than 20 miles from a rapid charge point anywhere on the strategic road network in the UK. That is about having a minimum standard of coverage that anyone can use. We are also taking powers in the AEV Bill, which has its third reading in the Lords this afternoon, to enable us, if we wanted to, to mandate large retailers to have to have charge points. We are watching the marketplace. If there is a need to encourage provision to get a better network of coverage, then we potentially have the power to do that once we get royal assent.

Q432 **Drew Hendry:** Coming back to local authorities, which you said you wanted to encourage by exemplars, et cetera, but with it being their responsibility, why do you believe that local authorities should priorities EVs over other issues, particularly in times when resources are so stretched?

Richard Harrington: Unfortunately, all political decisions locally or nationally are about what you prioritise. I know that is absolutely true. At the moment, all I can say is that our system has been providing money for them that they bid for by competition. Competition does not necessarily mean there are winners and losers, but they have to basically apply for it and we brand them as competitions. There has not been a problem up to now. We are not having to force local authorities to do it with money that is coming from other budgets that they have. It has not really been a problem up to now.

Drew Hendry: Unless you are in Wales or Yorkshire.

Richard Harrington: There are no examples in Wales and Yorkshire where they have asked for funding from this fund and been turned down.

Q433 **Albert Owen:** Does the fund apply in Wales? Can Welsh authorities directly come to bid?



Richard Bruce: I will check that but I am pretty sure they can.

Richard Harrington: I will write back on that one. I am not quite sure. Otherwise, it would be via the Welsh Government but the same principle would apply.

Q434 **Drew Hendry:** Moving on, what are your views on the central planning to ensure that electric vehicle infrastructure is consistent with things like installations and grid reinforcements? Do you believe that that will be a way to deliver this cost-effectively with consistency across the piece?

Richard Harrington: Do you mean the Government basically taking the decision?

Drew Hendry: Having a target and applying it, yes.

Richard Harrington: Again, we are not talking about the actual supply of electric power throughout the country. It is not a grid issue; it is the actual chargers.

Q435 **Drew Hendry:** There are lots of issues that are obviously ongoing—we debate them on a daily basis—about the impact on the grid of certain areas. Obviously, there will be concentrations in electric vehicles, for example. Primarily, this is about consistency and also about the ability to get something that is fair in terms of cost-effectiveness across the spread. Have you had any thoughts about planning that on a central basis?

Richard Harrington: I am sorry; I am a bit confused. I am never usually confused by you, it is fair to say. Is the question whether we have thought about planning, for example, to do with the costs of the actual power itself?

Drew Hendry: No, it is about the distribution and the availability.

Richard Bruce: Do you mean a planned rollout?

Drew Hendry: A planned rollout, yes.

Richard Harrington: On charge points.

Drew Hendry: Yes, that is what we are talking about.

Richard Harrington: I am sorry; I misunderstood.

Richard Bruce: Not beyond the Highways England 20 mile minimum, because that is the transport spine of the country. There may have been opportunity to do that five, seven or eight years ago but there is now so much private investment coming in that, if we did do that, we would ruin their business models and the case for investment. What the Government did announce in the Budget last year was £200 million of public funding going into a fund to commercially invest in charging infrastructure. Combined with £200 million from the private sector, that is £400 million to go on this. There is lots of interest and lots of entities.



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Q436 **Drew Hendry:** You are relying on the market.

Richard Harrington: We are relying on the market and we are relying on the government side of it being that the funds are available. For example, the Ministers wrote to every local authority telling them what is available and how they should apply for it. We have tried to get them to subscribe to it. If, in a few years' time, we find huge discrepancies of areas like Ian Liddell-Grainger mentioned, which may be rural areas or where the system is not working properly in Wales or parts of Scotland—I am picking out the devolved authorities because they have been mentioned by Albert Owen and yourself, Mr Hendry—where there are no charging points, we will have to do something about it.

At the moment, we have seen a big uptake. We have found a four-fold increase in the number of applications to this scheme even this year. 20 authorities have applied for funding installations. As I say, there is a healthy pipeline of these projects. If it got to a stage where it just became totally obvious that there were areas that just did not have anything, then, yes, we would have to do something about it.

Q437 **Drew Hendry:** It is not just about distribution though, is it? It is also about cost to the public and also the duplication that is possible with the market. Have you thought about any safeguards against those eventualities?

Richard Bruce: In the Bill we are taking powers to make sure that we have transparency on the information about the pricing of charge points and also that we have accessibility to the charge points. What we do not want to see is charge point networks locking you into subscription-only services so that you cannot rock up with your vehicle and charge it. We do not think that that is a good offer to the consumer. All the charge points will have to be such that you are able to turn up and use it there and then either by bank card or by an app. It is very important that the consumer has the best offer. We are mindful of this fact. It is fair to say that, as this burgeoning market has grown, we have had a variety of networks that have confused consumers, and we need to address that.

Q438 **Drew Hendry:** Have you chosen a particular type of plug technology as a preference?

Richard Bruce: On rapid charge points, that is happening by default. There are regulations from Europe that basically specify that there is a minimum standard plug that every charge point has to have, and they all have that one. At the moment, we have double or triple-headers for many of our rapid chargers but that will happen by industry anyway.

Q439 **Drew Hendry:** We talked about the impact on the grid a few months ago. What measures are you taking to make sure that there are no unusual or heavy impacts on the grid in certain areas? Have you had any thoughts about the future of electric vehicles and the impact that they will have on those?



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Richard Harrington: Yes, we have had a lot of thought as you might imagine.

Q440 **Drew Hendry:** What are your conclusions?

Richard Harrington: On Monday of this week, at our first meeting of the week, we had a taskforce of all of the players involved in this field, obviously including the National Grid. From a departmental point of view, we have both myself and Jesse Norman, who is the Parliamentary Under Secretary of State for the Department of Transport. The Ofgem Chief Executive was there, as was anyone that would be responsible—the users of the power. This will meet very regularly to really consider these issues of how much power will be needed and where it will be needed.

National Grid are very positive about the grid's ability to cope with this. I was quite surprised that, with smart charging—I know the word "smart", Mr Hendry, brings up various questions from you that I have dealt with in different capacities to do with meters, and I am happy to talk about that if you would like—they believe that, by 2050, if everything goes well, and if, as we believe, the sales of electric vehicles will be so dominant, it would require only 10% more electric power demand in the country as a whole. I must say that, before I heard from experts, I thought instinctively that it was probably going to be significantly more than that. It was pointed out at this meeting that the demand for energy has been at that level before. That does not mean that we are complacent about it but we are doing it properly. We have this EV energy taskforce.

I know there are a lot of challenges with it. For example—this is probably going to provoke you into a supplementary question, Drew—are the chargers going to be smart chargers? Will they talk to smart meters? Obviously, for most people, we hope that there will be some kind of tariff differential between saying, "I will start charging it at 12.00 at night and finish it at 6.00 in the morning", which you can do from the car itself and which, obviously, is an intelligent way to use it versus charging your car at 6.00 at night when everybody else is doing their cooking or using their washing machine and everything else. 10% is the maximum amount of the grid and they have been very conscious of this. What we are not going to do is suddenly find that the sale of electric vehicles is hugely growing. Well, we will find that but what we are not going to do is suddenly find out that there are big power shortages and that the grid cannot cope.

Drew Hendry: That does bring up a supplementary question. You were right.

Richard Harrington: I thought it might.

Q441 **Drew Hendry:** It is perhaps not the one that you would want us to ask. In terms of the majority of funding for local authorities to promote EVs so far, which you said earlier has been awarded competitively with about 20 councils taking up the offer on that, you talked about smart charging technology. Are there any plans in place to allow that to be taken up by



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local authorities? Are you going to take the same approach? Do you think that approach will alleviate or even exacerbate the regional disparities that we have seen?

Richard Bruce: I do not think there is a local authority angle on the energy side, to be honest.

Drew Hendry: There is already.

Richard Bruce: In terms of energy provision, there are two big issues. One is around making sure the low-voltage distribution network is fit for purpose and can carry enough energy, and the second is around generation and whether we are making enough nationally to support the increase in demand. I do not think there is a local government angle on either of those.

Q442 **Drew Hendry:** I am talking specifically about if you are going to use smart charging technology. This would need an installation and it would need points that are actually capable of accessing the smart charging technology. This is about electric vehicle charging points. That is the question.

Richard Bruce: One of the areas that we are looking at in the AEV Bill is requiring all charge points to be smart, so that they will have to talk to third parties and be able to turn on and off and that sort of stuff. Absolutely.

Q443 **Drew Hendry:** On that basis, there are obviously models that are working elsewhere. For example, would a more systematic allocation of funds lead to more consistent provision? For example, would you be willing to learn from the experience in Scotland where the funding is actually applied annually by population?

Richard Harrington: At the moment, it has not proven necessary but, if there was a big problem that came up, we would have to look at an alternative way of doing it and that might be one of them. I know you say only 20 local authorities are involved at the moment but this is growing exponentially, and local authorities tend to follow local authorities. I do not want to make a problem where there is not one.

Drew Hendry: Can I make one final comment? It is just a comment. I have heard a lot of words this morning like "soon", "nearly", "mostly" and "some form". I just have to wonder what the space race would have been like if Kennedy had said, "By the end of this decade or somewhere near there, we will probably try to put a man somewhere near the moon if the technology is available".

Chair: Was that a question?

Drew Hendry: I did say it was a statement.

Richard Harrington: I am rarely speechless but I am on this occasion.

Q444 **Albert Owen:** I just want to continue the theme about the rural



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connection, and grid connection in particular. I heard what you said, Minister, that there would possibly be a 10% increase in demand but that will not be spread evenly over the country. There will be some areas, particularly rural areas, where you will need to increase the capacity considerably for this to happen. I hear your point, Mr Bruce, about short journeys but my area is a periphery area where many people travel on a daily basis and commute to Chester and across that period. Yes, some of them can charge at home. My question is really: who is going to pay for that reinforcement of the grid? Will it be socialised across the bills for the distribution companies, or will it be on the charge points themselves?

Richard Harrington: Luckily, a new nuclear power station in a constituency like yours would help.

Q445 **Albert Owen:** It will but people in my area pay more for their energy than they do in the city that we provide the energy for from the nuclear power station.

Richard Bruce: There are two issues. There is a spectrum of different installations, which could be required to reinforce a low-voltage network. On the one hand, you have a consumer in a house where, because they want to have an EV, you basically need to upgrade the street. The approach at the moment is generally that that cost will not be borne by that individual. That cost will be socialised because what that is doing is increasing the size of the pipe for other purposes as well, so you are basically modernising the low-voltage network in that area to help things like heat pumps and solar and all that sort of stuff. That is not just about electrification.

The other extreme is to invest and put in place a bank of 20 rapid charge points in a remote location. That will require a big grid upgrade. It is probably quite right that you should bear the cost of that. In between, there is a spectrum of other things where there will be costs. It will not be a one-size-fits-all socialisation approach.

Q446 **Albert Owen:** Sorry, I was not clear on that. What you said is that there will be a big increase and that it is quite right that they should pay for it. Who should pay for it?

Richard Bruce: The company that is making the investment. They have to bear the cost. This has happened already. People have wanted to electrify van fleets. They have basically had to increase electricity supply and they have had to pay the cost of upgrading that connection. That is what happens today.

Richard Harrington: Excuse me for interrupting but they would have to do that if they required electricity for other purposes within their business.

Q447 **Albert Owen:** I am not really concerned about the private companies; I am concerned about the residents of the area. In rural areas, there are more diesel vehicles now because they travel more miles and they were



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encouraged to do that. Now we are going to electrification. What I am saying is that I do not think that they should be penalised and pay more for their energy because they happen to live in a rural area. I was not very confident with your response earlier when you said, "We will look at that in the future and we might do something about it". I think you should be planning it now.

Richard Harrington: Just to clarify what I said before, that was in answer to a question about the spread of local authorities taking it up.

Albert Owen: It is the same thing.

Richard Harrington: Not quite.

Q448 **Albert Owen:** They do not provide their own electricity; they rely on distribution companies.

Richard Harrington: In terms of the cost of installation of a charger at home or whatever, there is no reason why that should not be the same all over the country. In most things to do with this, it is regulatory pricing anyway. There is a general principle that, for non-commercial consumers, the price of power is the same everywhere in the country irrespective of the marginal cost for doing it.

Q449 **Albert Owen:** It is not. There is a huge differential because of transmission and distribution. I am worried that that will happen with this increased demand.

Richard Harrington: It is regulated. It is a regulatory matter.

Q450 **Mark Pawsey:** Drew Hendry asked you about public charging provision. I want to talk about charging provision at people's homes. If we provide support to the cost of having an installation at home and at work, that will encourage electric vehicle take-up. Just as Anna Turley asked questions about the plug-in grant finishing in 2020, the existing home charging and workplace charging grants are only in existence until 2019, and that is where, at home, people get 75% of the cost of a charger up to £500 and, in the workplace, £300 per socket to a maximum of 20 sockets. What is the future for those grants?

Richard Bruce: We recognise that a key part of the consumer offer is certainly home charging. The commitment is the current level for 2019 and to have support for 2020, so it is the same timeframe as the plug-in car grant. We will obviously keep it under review all the time. We have not had the uptake we wanted on the workplace charger, so we are reviewing that at the moment.

Q451 **Mark Pawsey:** We have taken evidence that suggests that it is such a modest sum that businesses do not feel it is worth their while doing the paperwork in order to apply for the grant. Will you make it bigger?

Richard Bruce: We are reviewing that at the moment. We hope to make another announcement on it shortly.



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Q452 **Mark Pawsey:** Given that these are important incentives to getting people to switch, when can we expect the announcements?

Richard Bruce: On EVHS, the home charger one, I think there are no new announcements on that. The current grant level stays until 2019. The grant itself stays until 2020. On the workplace charge grant, it is the same timescale as the Road to Zero, which is shortly.

Q453 **Mark Pawsey:** There is also a fund that the Government are putting £200 million in, intending to be matched by the private sector, to support charging infrastructure loans, recognising that the infrastructure is important. That fund has been announced but nobody has recruited anybody to manage it yet. I am not sure whether it is a BEIS project or a Department for Transport project but when will that scheme get going?

Richard Bruce: It is actually neither; it is a Treasury project. The timetable they are working to is probably the right timetable. They are engaging with the market. This is a commercial thing. This is not about grants. This is about investing in companies. They are looking to make an announcement this summer around the next steps on that.

Q454 **Mark Pawsey:** There is some urgency attached to this. We are wanting to speed up the process of people taking up electric vehicles. We have these different incentives some of which come to an end in 2019 and 2020. We have this project here that seems to be taking time to get off the ground. How do we demonstrate to the vehicle-buying public that the Government are serious about driving the move towards electric vehicles?

Richard Harrington: This is a commercial investment, Mr Pawsey. That is why the Treasury are involved in it. Therefore it does take a bit longer. A lot of things are happening. I have spoken to companies that are putting in quite a lot of chargers because it suits their business and are not looking to Government. Perhaps, as you say, the amount might be too small. For example, Holiday Inn are putting them in their hotels because it incentivises people. It is a bit like free broadband and free wifi and that kind of thing, which is an incentive to come. There is a lot of that. It is not that everybody is waiting for the Government to write a cheque for them.

Q455 **Chair:** Building on that and going to the issue about on-street charging grants, which you have mentioned before, Minister, in January of this year the scheme was announced and £4.5 million has remained unspent. I think only £150,000 has been allocated so far. Are local authorities not applying for the grant? What is the issue there? Maybe I am wrong but that is my understanding.

Richard Bruce: It is taking off now. I am not sure about those numbers. We can write to you with the definitive numbers on spend but there is much more interest than there was. We have approved a couple this week already so there are lots of applications coming in now.



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Richard Harrington: The Chairman is right in that the original uptake was much slower than we thought, and that is why we have written to them all and called them and nudged them, as I said before.

Q456 **Chair:** It would be very good to have some more information about how much has been spent and how much has been left unspent and which local authorities have applied and which have got the money.

Richard Harrington: If we could get that to you straight away, perhaps it could be attached to the findings of this inquiry. It does change by the month.

Chair: Thank you very much; that would be helpful.

Q457 **Vernon Coaker:** We touched earlier on about the increased demand that there will be for electricity in terms of the take-up of the electric vehicles. The estimate is five gigawatts, from the information that we had. Clearly, if that is dirty electricity in terms of the way it is produced, that undermines the target of reducing the overall emissions. How is the Department talking to other Departments, or talking to anyone, about how it will drive the production of low carbon electricity?

Richard Harrington: It is a very valid point. From a clean energy point of view, there would be no point in having the whole exercise. Part of the Government's policy, as you know, is that this was actually published in our Clean Growth Strategy, which I am sure, had I appeared a year ago before this Committee, would have been shortly imminent. I think it was in September or October of last year that it came out.

Q458 **Vernon Coaker:** What is the policy driver to achieve that? That is at the heart of the question.

Richard Harrington: Originally, it started from the Climate Change Act 2008, which is requiring that emissions of greenhouse gases is reduced.

Q459 **Vernon Coaker:** What drives that, Minister? The Government must have a set of policies or one policy driver that is pushing towards low carbon.

Richard Harrington: Yes, we have—for example, the eradication of coal power stations and all these things to do with the overall energy mix in the country, with nuclear being a very low form of emission and changing the mix all the time. Countries such as Germany have failed to do this but we have done it. Emissions from UK electricity generation have fallen 50% since the early 1990s. By 2020, we expect to be generating over 30% of electricity from renewable sources. The Government have done it by different methods. Some of it is a mixture of stick and carrot, the main carrot being through the CFD system, et cetera, which I am sure you are very familiar with as the BEIS Select Committee. This is part of it. This will not change because of what will be, according to National Grid, a maximum 10% increase in the amount of power needed. We do not need a separate policy for electric vehicles but it is part of the process, which it is fair to say we have been quite successful at.



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Q460 Vernon Coaker: Some of the evidence that we have had talked about Contracts for Difference being the main policy driver that the Government were using to try to push the production of low-carbon electricity. Have you spoken to the Treasury—we will come on to other questions about cross-departmental co-operation—about the fact that they fixed the budget for Contracts for Difference at approximately £550 million until 2025?

Richard Harrington: Yes.

Q461 Vernon Coaker: Are you happy with that?

Richard Harrington: The CFD system has worked pretty well but the whole purpose of it is to wean types of energy off it. For example, the cost of the off-shore wind has halved in the time from when the CFD started. The whole idea is to wean them off Contracts for Difference rather than having it as a regular permanent subsidy because the money, hopefully, will be used for newer types of technology. It is a bit like with batteries and everything; when it is lower production it needs more. The reason that the CFDs have helped is because they have kick-started volume, and volume has led to better technology and lower costs.

Q462 Vernon Coaker: Are you confident that the additional five gigawatts will actually be produced? For example, Hinkley Point C is under five. That is one of the biggest. Drax is the next biggest. How are you confident that you will be able to produce this amount of low-carbon electricity?

Richard Harrington: Because we know that it fits within our existing policies. Whilst you say that the Treasury has capped CFDs, the Treasury caps everything. Of course it does.

Q463 Vernon Coaker: I asked whether you were happy that they capped it.

Richard Harrington: I am happy with it because I am happy that renewable prices will continue to go down and that other types of electricity will come on-stream. He is gone but I have visited Mr Liddell-Grainger's constituency and I have seen Hinkley Point C under construction. That will produce 5% or 6% of our entire energy requirement. The days of starting up coal have finished, whatever Mr Trump might say.

Q464 Vernon Coaker: Who is holding the ring across Government for all of this? Who is the go-to person?

Richard Harrington: Perhaps you could explain about OLEV, Richard, because it is a really good example.

Q465 Vernon Coaker: That is a combination of Departments as well, is it not?

Richard Harrington: Yes, but that is why it is really interesting.

Richard Bruce: This has been a policy that touches on lots of different areas. In its inception, it was a joint team from three Government Departments: DECC, BEIS and DfT. Obviously, the merger of DECC and



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BEIS means it is now two. We have joint ministerial agreement on policy. We have a single lead Cabinet Minister in Chris Grayling. It is quite a good example of joint working across Government. I now have two other such units in my little empire in DfT, on air quality and on autonomous vehicles as well. We recognise that some of these policies are not just in a single departmental silo.

Q466 Vernon Coaker: If it generates policy agreement across Government, were you satisfied with the way in which the Treasury changed the vehicle excise duty, to a way that provides less of an incentive to buy low-emission vehicles? There used to be a sliding scale for vehicle excise duty but that has changed. The Treasury changed that. Is that a good thing?

Richard Bruce: I would always say, as a good official, that tax is a matter for the Treasury.

Q467 Vernon Coaker: We are talking about co-ordination of policy, and OLEV is set up to co-ordinate the policy. In answer to me earlier, you said that OLEV agreed policy across Government. The Treasury changed the vehicle excise duty to operate in a way that moved away from the sliding scale to the one we have now, and I was asking whether that is a good thing and whether you agreed with it.

Richard Bruce: Did the vehicle excise duty not have a zero rating for battery vehicles? That was partly because of OLEV suggesting that was a good idea. Also, look at the changes made by the Treasury on company car tax. They are entirely consistent with the policy of moving to effectively zero as fast as possible, where you have bands based on emission capabilities.

Richard Harrington: Perhaps I could answer. Overall, I am very satisfied with the Treasury's attitude to helping us achieve this Road to Zero but, of course, it is a mix of things. I could say that I might disagree with one thing but the other things are really good. Everything is a trade-off; it is in every kind of budget negotiation.

Q468 Vernon Coaker: The benefit in kind does not really reduce until 2020-21, so it goes up in the years between that. The vehicle excise duty reform, I would suggest, does not help. There are two separate things. I was just asking whether that was agreed with the Treasury or whether there was a row about it.

Richard Harrington: Everything is agreed with the Treasury.

Q469 Vernon Coaker: When the Treasury said that, did you say, "Fine"?

Richard Harrington: I was not involved at the time and I did not say, "Fine".

Q470 Vernon Coaker: Did OLEV say, "Fine"?

Richard Bruce: That is not a question I can answer.



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Q471 **Vernon Coaker:** I was a Minister and I had rows with the Treasury and lost sometimes. That is all I am asking.

Richard Harrington: I have read books of the time and I know you did. You had exactly the same issues as we have, which is that, as an entity, you put forward your best case and you get some of it and you do not get other parts, but in the round you think, "Overall it is very good and I am very satisfied with that". Of course we would like a lot more. We would like all the things that you are alluding to. That is true of every Government Department in every area that they are involved in.

Q472 **Vernon Coaker:** I would suggest that those two things have not helped and are worthy of further consideration. A co-ordination across Departments is OLEV. That co-ordinates.

Richard Harrington: Yes.

Q473 **Vernon Coaker:** So when it comes to the evidence we have had that part of the problem with this is that you have these three sectors—energy, transport and digital—OLEV overcomes all of that, so that, if you needed regulation to ensure that the Government's objective was delivered across all of those, OLEV would be the one.

Richard Harrington: It would but there is no perfect system. So many things are involved; for example, DCMS might be involved in creative industries; we are involved in digital technologies but they lead on it. I am afraid that this is just a function of Government, and you have been very experienced, as have other people around this table, in it. Overall, this OLEV thing is a good model and it is a serious cross-departmental institution; it is not just an ad hoc committee or anything like that. It is a model for many things to come.

Richard Bruce: The reason there are measures in the AEV Bill about smart is because we had people from the BEIS energy teams sitting in OLEV saying, "This is very useful for us. We need it in the Bill"; it is now in the Bill. The working is really good across these policy areas.

Q474 **Vernon Coaker:** Just to go back to where we started where the Committee was genuinely surprised right at the beginning about what "effective" means in terms of zero emissions and the 2040 target, what is OLEV saying is the target for Government in 2040?

Richard Bruce: OLEV is a tool of Government.

Q475 **Vernon Coaker:** Okay, but what is the target?

Richard Bruce: Effectively zero emission, which is what has been in a bunch of Conservative manifestos. Just to be clear on that, the internal combustion engine on its own will not be existing then. It will be a minority role, probably supporting. A good example is the BMW i3. That is a vehicle that does 100 miles emitting nothing at the tailpipe but has an internal combustion engine in it to go further. That is effectively zero emissions because it might do a tiny portion of its miles using the internal



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combustion engine but, for the vast majority of its mileage, it is doing nothing at all.

Vernon Coaker: That is at the heart of it. I do not know about the Chair but I find that really confusing, to be frank with you. Co-ordinating that across Government with that lack of clarity around it makes it very difficult.

Chair: Thank you very much for giving evidence to us today. We will be producing our Select Committee report on electric vehicles soon, before the summer recess, and I hope that that makes good reading for you and helps guide us to a place where we all want to be, where we have zero emission vehicles on our streets. Thank you very much, Minister and Richard Bruce.

Richard Harrington: Thank you to the Committee. I will do my best to make sure you get that information really quickly because I know you are at the end and you will want it quickly and look forward to a speedy response.

Chair: Thank you.