



Transport Committee

Oral evidence: [Zero emission vehicles and road pricing](#), HC 27

Wednesday 9 June 2021

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[Watch the meeting](#)

Members present: Huw Merriman (Chair); Mr Ben Bradshaw; Ruth Cadbury; Karl McCartney; Grahame Morris; Gavin Newlands; Greg Smith.

Questions 1–41

Witnesses

I: Tanya Sinclair, Policy Director UK and Ireland, ChargePoint; Roger Hunter, Vice President for Electric Mobility, Shell UK; and Graeme Cooper, Head of Future Markets, National Grid.

Written evidence from witnesses:

- [ChargePoint](#)
- [Shell UK](#)
- [National Grid](#)



Examination of witnesses

Witnesses: Tanya Sinclair, Roger Hunter and Graeme Cooper.

Q1 **Chair:** This is the Transport Select Committee's second evidence session in our inquiry into zero emission vehicles and road pricing. Today, we focus on the zero emission vehicles side of things. We have two panels. Our first panel is from the charging and power sector. I ask the three witnesses to introduce themselves.

Tanya Sinclair: My name is Tanya Sinclair. I am the policy director for ChargePoint.

Roger Hunter: My name is Roger Hunter. I am the head of EV charging globally for Shell.

Graeme Cooper: I am Graeme Cooper, head of future markets for the National Grid.

Q2 **Chair:** Good morning to all three of our witnesses. We have a lot that we want to rip through with you. First of all, we will start on the availability of charging, and indeed of electric cars, and how we are going to get to the place by 2030 where we will have the infrastructure to have market confidence that electric cars will be there and will work. On that note, Tanya, as a general question, how confident are you that all drivers will be able to charge their electric vehicle, no matter where they are, by 2030?

Tanya Sinclair: Perhaps I could begin by explaining where we come at this question from. ChargePoint is the world's leading manufacturer and developer of charging solutions. That is the physical hardware that you plug your vehicle into, and the software that powers it and makes the charging experience reliable and easy for drivers.

We have confidence that we will be able to manage and create the level of charging required by 2030, when all new cars and vans are electric. However, there are some barriers that need to be overcome in order for us to get there. Specifically, the experience of charging needs to improve. Then the availability of charging, especially in rural areas, also needs to improve. The kind of incentives and support that the Government offer need to become more sustainable to support the larger number of vehicles that are going to come on stream in the next nine years or so.

Q3 **Chair:** Thank you. It is very helpful of you to set the scene on where you come from, and your company as well. I will ask both of the other witnesses to do exactly the same when I come to them, with the exact same question about their confidence that we will get there by 2030. Roger, I will come to you next.

Roger Hunter: Indeed. Certainly, we are very confident from our side at Shell. To set the scene for Shell's position, we are really looking to provide EV charging services across all the touchpoints. In the UK, we are



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the leading provider in the public charging space. I am talking about having a service where we can provide installations in people's homes, so that you can charge at home, and in people's workplaces and in their businesses, as well as on the go, as you travel out in the public domain. Importantly, there must be on-street charging as well.

We need infrastructure across all those touchpoints. At Shell, we have a business up and running providing that, and it is growing. It is still at the early stages though. We need help in terms of a clear policy framework, but I fully commend the UK Government for what they have done on clarity around the phase-out of petrol and diesel. It is that kind of clarity and that kind of firmness that we need going forward. Underneath that, we now need a detailed policy framework and a real road map for how we get there.

When we put that together, we have to think about it in a systematic way. We have to think about the vehicles. We have to think about the power side, as well as the EV charging infrastructure and customer needs. The four of those have to come together and be addressed in a comprehensive policy framework. Yes, we are confident; and, yes, we have advocated and very much support the UK Government's position and movement in this space. We think it is a critical element for the UK Government to reach net zero by 2050.

Q4 Chair: Thank you, Roger. Graeme, are you equally confident? What role does National Grid have to play in delivering this?

Graeme Cooper: National Grid is obviously at the heart of the energy system. From a primary energy perspective, we do not make energy but we connect all the sources of energy—growth in renewables, growth in nuclear and reduction in coal—to the energy system. Obviously, we provide the conduit for that energy to where it is consumed. In transport terms, National Grid is the motorways and dual carriageways of the energy system, but obviously we pass energy down to the distribution system, which are the local roads, to the final point of consumption.

From a National Grid perspective, the transition—it is a transition; this is not a cliff edge—to 2030 is perfectly acceptable and doable. In 2030, it will just be the ban on new petrol and diesel vehicles. Statistically, the average car is on the road for 13.7 years. Even if you cannot buy a new one, there are going to be very many years when there will be a mixture of all sorts of vehicles. It is absolutely a transition and not a cliff edge.

Grid networks have always evolved to serve the changing market. This is a further change to the market, but I add to both Tanya's and Roger's comments that having very clear policy instruction is really important, as is certainty. Any sector can aim and plan to deliver when there is certainty. Having a very clear line in the sand is incredibly helpful.

I agree with Roger that we are bringing three sectors together: energy, transport and digital. You need the three of those to go harmoniously.



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Traditionally, grid networks have responded to very mature markets. What we see here is a brand new market, and therefore grid networks to some extent need to play a slightly different role, which is market helping or market enablement. It is not traditionally a role that we have played because we have always been reacting to a mature and established market, so there are some actions to take.

The other thing to point out is that I represent the infrastructure part of National Grid. We own the electricity system in England and Wales, the transmission system. We also own the gas transmission system in England, Wales and Scotland. From that perspective, I am technology agnostic. I do not represent the bit of the business that is the control room, which manages the real-time supply and demand. That is called the electricity system operator, and they are legally separate. They manage real-time supply and demand and forecasting. We are there to ensure that the energy can get from where it is generated to where it is consumed, in the right place and at the right time.

Q5 Chair: Thank you, Graeme. The three of you are relatively confident, but if we were to find that we were in the situation by 2030 that coverage was patchy, where would it be most likely to be patchy geographically?

Tanya Sinclair: It is very difficult to predict nine years from now, especially looking at the past nine years and the huge increase and expansion that the market has seen. That said, what we see today is under-coverage in rural areas. It stands to reason from a commercial point of view, certainly; the companies that we work with that operate charging networks have less of a commercial business case for operating a charging station in a rural area that does not have the number of vehicles coming through as compared to an urban area.

That could be a challenge, but already companies like us, trade associations and governments—regional, local and national—are all looking at how to address the issue. There are several ways to do it, first by addressing the grid connection and capacity issue challenge, which can be very costly in rural areas. Already the Government have proposals to deploy £950 million to address increasing the provision of rapid charging in rural areas, or areas where power is not readily available. Our view is that that money now needs to be deployed to address future not-spots in rural areas.

Q6 Chair: Thank you, Tanya. Roger, you had your hand up. Perhaps you can throw what you were going to say in with this: how likely is it that some areas, such as towns and cities, will struggle to keep up with the demand for charge points in public locations?

Roger Hunter: There are a number of things that we have to get right in order for us to keep up with the towns and cities. It is not a slam dunk that we are going to have enough public charging infrastructure in those places. As mentioned by Graeme and Tanya, it is a complex system. We have to get over the cost hurdle of the grid upgrades. There is a very



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serious cost hurdle. Of course, we welcome the rapid charging fund to help with that, but it cannot stop there. We need more of that to make sure that we get over that particular cost hurdle.

The other thing is planning in towns and cities. If we are to build a charging plaza in a busy area in a city for the public to access, we have to get slick at doing planning. It is about having the right brainpower in local authorities to think about these things, handle these things and move these things. That is definitely an action point that I would put to this Committee.

Let's invest in people in the local authorities that can get some of this stuff done. Let's put steroids into the rapid charging fund to get over some of the real cost hurdles. Putting the infrastructure in place for power and the very rapid charging that we will need on our busy roads, not just for light-duty vehicles and vans but for heavier duty as we go forward, is a major capital outlay. Getting the policy right for that is really important.

Q7 Chair: I will put my last question to all three of you. How many charge points are we going to need by 2030? At the moment, the figures are relatively low. London and Scotland lead the way. Do you have views on how many will be needed by 2030?

Graeme Cooper: That is a really good question. It is one of those chicken and eggs. I am not trying to not answer your question, but I will give you some clarity around why it is a difficult one to answer.

First, if you have a private driveway, the obvious place is to charge your car on a 7 kW charger overnight, but not everybody has a driveway. If you are without a driveway, charging your car where it is normally parked is the next step. Roger's business has an answer to that. If you are charging your car when you are at a station or a workplace, Tanya's business has an answer for that, and also charging your car when you doing an out-of-pattern journey.

There is no magic bullet for the right answer to charging. What you need is the right speed of charger at the right location for the time you are going to be there. If that is two hours while you are at a cinema, you probably need a 50 kW charger. If your car sits on your driveway overnight or at a station car park all day, a 7 kW charger is absolutely fine. If you are going a long distance outside the normal range of the car, you are going to need something rapid. Each of those chargers will have different demands on the energy system.

You could have a lot of low-rated chargers. That will have the same grid requirement as a single really rapid charger. What you actually need is the right charger in the right space for the right duration that people are parking. It is not as clear as just saying, "What is the number of chargers?" If you were to look on an app like Zap-Map, which maps all the chargers in the country, you could be lulled into the false sense of



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security that there are millions. Well, there are. There are more chargers in the UK than there are petrol filling stations, but having the right charger in the right location is important.

You rightly pointed out that there will be areas where there is market failure and some intervention is required. We have already very helpfully seen OZEV acknowledge the market failure at motorway service areas and on the strategic road network, so there is Project Rapid and the £950 million. Of course, that is great at answering the challenge for England, but the policy does not extend into Scotland and Wales. Some consistency would be helpful.

What we really need—to get around to answering your question—is not necessarily about numbers of chargers. It is about confidence. Consumers need confidence that their first and only vehicle can be electric; that they can go where they need; and that charging is not a barrier to that.

I am an EV driver of three and a half or nearly four years. Three or four years ago, it was very patchy. It is improving. What we also need to do is consider that this is not just about car drivers. It is about how we electrify vans, buses, trucks and HGVs. It does not matter what the vehicle at the end of the wire is. You need appropriate wires and appropriate charging to make sure that you future-proof for that.

OZEV have done a very helpful thing. They have acknowledged the market failure and made the intervention on motorway service areas. To my mind, the next iteration is, where are the next market failures? The charge point market is incredibly liquid and competitive. Tanya's business, to some extent, is competing with Roger's business, which is fantastic because it drives customer solutions, but what all those technologies need is the right capacity in the right place at the—
[*Interruption.*]

Q8 Chair: I was going to interrupt because we should move on, but we have lost Graeme anyway so he has done it for me. Roger and Tanya, can I ask you to keep the answers brief? I do not want to take too much time, because we have so much to crack through by 10.30.

Tanya, how many do you believe we need, or is it that we do not even know what the culture change is going to be yet in terms of people's habits to give that view?

Tanya Sinclair: Sorry to disappoint you, but like Graeme I am not going to give you a number. We do not believe at ChargePoint that there is an appropriate number for the chargers that there need to be. Exactly as Graeme said, it is about having the right speed in the right location.

We are a California-headquartered company, and we operate in North America and Europe. Our experience from around the world is that when targets are set, they work against that need. They lead to knee-jerk deployments of chargers that are either in the wrong place or at the



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wrong speed for the type of location. We caution against targets for that reason. The other thing—but I will leave it there.

Q9 **Chair:** Whatever you were about to say, I bet you will have an opportunity to come back to it with one of my other colleagues. Roger, is it the same answer for you?

Roger Hunter: From experience, we are selling and installing the most today in homes and workplaces. That is where we see the most volume. My view is that, by 2030, it is going to be in the millions in homes and workplaces. These are folks who are charging their car when they are parking at work and overnight in their home.

By 2030, on the street, you have to be getting close to that number. It has to be above half a million. There will be a lot of on-street chargers available for people who do not have a driveway. We have to see an increase in destinations. Specifically on the rapids, the number that you put in the recent report—something like 280,000—is probably a good ballpark, but like the others, I am not going to be pinned down to a number on this one.

Chair: Thank you very much. We seem to have had a grid blackout with Graeme, but hopefully we will get him back. We will stay on availability, and I will go to Ruth Cadbury.

Q10 **Ruth Cadbury:** Thank you, Chair. Thank you to the witnesses for your evidence in advance, and for coming today.

Tanya, why have you called for charging locations to be classified as critical national infrastructure?

Tanya Sinclair: This is a really interesting question. It is not just ChargePoint that has called for fuelling infrastructure, which is what we are talking about, to be considered critical national infrastructure, but our trade association, the Renewable Energy Association. I chair the EV forum of that group.

What we saw in the first lockdown across the industry was that where a charger was co-located in, say, a retail car park, when that non-essential location had to close, the charger became inaccessible. Essential workers who were driving electric vehicles were not able to use that fuelling infrastructure. Going forward, we need to think about the proliferation of electric vehicles when they become the majority of cars and vans on the street, and ensure that drivers can trust that the fuelling infrastructure is always accessible to them.

Q11 **Ruth Cadbury:** What would be your top three priorities for an EV charging infrastructure strategy? I will ask all of the witnesses, but start with Tanya.

Tanya Sinclair: There are already lots in development. I will draw on what has already been proposed by the Government because we are



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supportive of that direction of travel. The recommendation we would make is that we move into delivery and deployment of that piece of work.

First is making charging networks interoperable with one another. In practice, that means that I, as a driver, can tap any card or app on any charger and be able to use it and see my receipts for that charge. That is No. 1 for us. No. 2 is that the grid connection and supply issue needs to be managed and improved across rural areas in particular, but also in places like motorway service stations.

Finally, looking more towards the vehicles, to keep us on track towards 2030, we support the idea of road zero emission vehicle mandates, a ZEV mandate like the ones you see in places such as California and British Columbia. The Governments there set a floor for the import or the sale of electric vehicles. That is progressively steep, and then of course it would reach 100% in 2030.

Q12 Ruth Cadbury: Roger, do you have any other priorities for EV charging as national infrastructure?

Roger Hunter: I certainly agree with most of what Tanya said: interoperable grid connection and that it is well covered. I think that education is important. It is getting out there and letting consumers and businesses know how to do it, and taking away some of the uncertainty.

The other thing is planning. I touched on it earlier. Are we able to join the dots with local authorities such that we can put the infrastructure in place? How do we join the dots with the power supply, with Graeme's wider team, such that we sync up? We have 40 rapid chargers at Shell that we have built. At the moment, they have the covers on because we have not synced up yet with the power team to actually make the connection. That is just one small example of having to make sure that one arm knows what the other arm is doing.

It is important to have a level playing field. When you put the power infrastructure in place, and you go to the strategic road network and improve the grid and distribution connection, it must be open for everybody. If you want to put in charging infrastructure, great; let's compete on the end of that wire. What we do not want is for it just to go straight to one particular facility and one particular player. We are looking for a level playing field there as well.

Q13 Ruth Cadbury: Graeme, do you have anything to add that the other two have not already covered?

Graeme Cooper: Only to apologise for dropping out—the man from the National Grid had a power cut. There was a switching outage, so my router went down. I am back now.

It plays to Tanya's point. Grid infrastructure is already strategic national infrastructure, but making sure that it is in the right place at the right time is important. We have a lot of data around where transport is, where



transport goes and where vehicles are stationary. It occurs to me that we have already seen that match-up of the transport data and energy networks to perform Project Rapid, which shows you that it can be done.

If we can take that further into fleet hubs and big logistics areas, and rural areas, you can work with the energy sector for anticipatory investment and getting the wires in for the right capacity to be future-proof at the right time. Another point is that the infrastructure that we lay today has a design life of roughly 40 years. Therefore, it will be there in a world of net zero. Doing it right and doing it once makes much more sense. That is why my call is that while we are all very focused on cars, particularly today, because the products are here and ready, electric vans are coming at pace. That market is growing. Trucks and buses are growing at pace as well. Anything can plug into the end of the wire, so let's think a little more holistically about all transport users.

Q14 Ruth Cadbury: Thank you, Graeme. I have one more question. Other equivalent nations appear to have rolled out EV infrastructure somewhat faster than the UK. It seems a bit more joined up. Do any of the witnesses have a particular observation as to what those Governments have done that could be an example for the UK? I will go backwards through the witnesses and start with Graeme.

Chair: Can I ask you to be brief? You could do a massive canter around the world, but time is not on our side.

Graeme Cooper: I will be very specific because my responsibility is the UK. We look to other markets for their examples. The energy systems in each country are not the same in the way they are regulated or structured. It is very difficult, and you cannot compare apples with apples in this situation.

However, what I would say is that having the bits that are monopolies—the networks—and investor-headed needs is important. Once you have the right grid capacity, you actually stimulate lots of innovation for the likes of Tanya's and Roger's businesses. I think you can be very prescriptive, and you dial out a lot of innovation. Where there is natural competition, stimulate it. Where there is not, get the wires in place to be able to facilitate that competition.

Roger Hunter: There are a number of places where they have mandated smart charging. I think smart charging is very important. The UK is now in that space as well. What the UK did, and what others have done, around the phase-out, and clarity on the phase-out of petrol and diesel, is very important and very good. Those are a couple of things.

There are pockets where nations have really got things going by enabling the utility to have the mandate to put charging in place. In the US, they have pivoted to make-ready schemes, which can have real similarities with the Rapid programme. I think we are on the right track with that, but the US is definitely one to watch.



Tanya Sinclair: The Netherlands is a good comparison. Irrespective of the number of chargers that have been installed, there is full interoperability over there between all the charging networks. I have already explained how that benefits the driver. Interestingly, the Government were not really involved in that process. The industry agreed it themselves. In the UK, it is right that the Government intervene to speed that up in the interests of drivers' experience.

Ruth Cadbury: Thank you very much.

Q15 **Chair:** We have taken quite a long time on availability, so I ask you to keep your answers brief as we go through. I will try to make sure that the questions are brief too. We are going to touch on grid capacity, so save yourselves for that.

The next section is on managing energy demand. I will ask one question on this section. What needs to happen to get people to adopt a smart charging mentality, so that energy demand can be maintained, and we do not have the black-out experience that Graeme has just demonstrated? Perhaps I should come to you first, Graeme, being National Grid.

Graeme Cooper: First, that outage was a switching outage because they are doing work on the line. It was not a failure; it was planned. They just did not let me know.

What would be helpful is for all devices that grow energy demand to be smart by their nature. I do not think we should be prescriptive about who controls the smart, because that is where innovation will happen. There is an argument that some of that smart should be controlled by the grid. Some say it should be controlled by the energy provider. It could be provided by an outsourced third party.

What is important is that the grid will get better, and EVs help the grid and are less of a problem if they are able to either start charging when energy is plentiful or pause charging if there is a shortage or risk of a shortage. What that means is that the cleanest, greenest and cheapest energy will go into cars. What will also happen is that the learning from smart charging vehicles will then fall into decarbonising heat, which is outwith this interest, but the learning from that will help us towards clean heat too. It creates a symbiotic relationship.

As a country, we have committed to far more renewables. Those renewables are made better when they are plentiful and you are able to signal that and put them into cars, and ultimately water tanks for heating. It is important that it happens soon. At the moment, for the OZEV car-charging grant, you have to have a smart charger, but you can put your own charger in without having the grant funding. I think all chargers should be smart, visible and controllable. That should be mandated. What I am not saying is who controls the smart. I think there is a lot of opportunity for market innovation and business model innovation to make that really competitive and give a better solution for consumers.



Q16 **Chair:** Tanya, does some of this link to price?

Tanya Sinclair: Yes, it does. Very briefly, to build on Graeme's last point, charge points and home chargers have always been smart. It is how they are designed. There are chargers on the market that are low spec and do not have smart capability. If you do not apply for the home charge grant that the Government provide, you can just buy one of those chargers and install it. To add to that, there are already thousands of chargers in the field, so to speak, which predate smartness. They are non-connected chargers. I think it is those that are potentially of concern because they are not able to participate in the smartness and the ability to control and flex to price and other signals.

Q17 **Chair:** Roger, do you have anything to add?

Roger Hunter: The bit I want to add is the consumer's angle. Our home chargers are also smart. We have actually run a test recently, where we used a My Smartcharge app with consumers. I am talking hundreds, not thousands; it was a trial. We introduced them to the fact that we would be at their home, interfering with their charge, and it would be helping the grid. We wanted to know what they thought about that. We showed them some visuals. We said, "This is the power consumption. This is where we interrupted the power, and it helped the grid in a certain way." We got tremendously positive feedback from consumers about opting in to do that. I think that is a really positive sign from the consumer standpoint of the acceptance of something like this, albeit that it was a trial with hundreds of people and not thousands.

Chair: Thank you. We have covered that section in the time that I was hoping we would. We move now to the third section, which is customer experience. I hand over to Ben Bradshaw to do that.

Q18 **Mr Bradshaw:** Thank you, Huw. Tanya, when you were asked to list your priorities, you said that interoperability was No. 1. You mentioned the Netherlands, which you indicated had achieved this without regulation or the Government mandating, but you think they should here. Could you explain why?

Tanya Sinclair: Absolutely. In the UK and all over Europe and the world, ChargePoint is a leading advocate of interoperability between charging networks, meaning that drivers can use any app to access any station and get the information from that charge to their preferred app or website account. That is happening in the UK, but our view is that it is not happening quickly enough to give drivers confidence about interoperability being a reality for them.

To draw on my personal experience, in my EV I still have six physical cards for the different networks I need to use, and a further couple of apps on my phone as well. That is something that we, as an industry, are working to change. To keep us on track and to give drivers the confidence to get into an EV before 2030, the Government need to intervene to mandate that.



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Q19 **Mr Bradshaw:** Roger, I see you nodding. I thought Shell was against regulation or mandatory compulsion by the Government?

Roger Hunter: We support interoperability because we support what is best for the consumer. As Tanya says, we do not want a situation where it is complex for the consumer to use our infrastructure. For instance, on all our new fast chargers you just tap with your credit card. It is nice and easy. As Tanya said, they are publicly accessible.

There has to be a commercial arrangement between the different networks. Yes, one network can allow another network's people to use the network. Yes, we can have roaming deals, but it has to be done on a business-to-business basis, on a commercial basis. Remember, if Shell builds an incredibly large network, as we hope we are going to do—we are already the biggest in the UK—that is a big strength, and it has commercial value. We are a commercial business and we do not want to give that away.

Q20 **Mr Bradshaw:** Roger, I hear what you say, but I am still not clear whether you think that can or cannot be achieved without mandating by Government.

Roger Hunter: We think that you can mandate interoperability, but leave it to business to make it happen on commercial terms.

Q21 **Mr Bradshaw:** So we need some more regulation in this area.

Roger Hunter: In order to make the best experience for the consumer, interoperability is very important.

Q22 **Mr Bradshaw:** Great. Can I ask about price? Is there a danger that we could be facing a situation where people who are lucky enough to have a driveway, where they can charge cheaply overnight, are going to be able to run their cars much more cheaply than those who rely on on-street and more expensive recharging points?

Tanya Sinclair: The situation you describe is my current situation. I do not have a driveway at my house for my EV. I park it on the street where I can find a space. Certainly, before the times when I was able to come back to the office and use workplace charging, I was reliant on the public on-street network. I would say that roughly I paid four to five times as much as it would cost if I had a driveway and could charge at home with a good tariff. On top of that, because it is a public charging network, I paid 20% VAT on every charging event, whereas had I charged at home I would pay 5% VAT, as is the case with home electricity.

There is a disparity. In our view, it needs to be addressed. The kind of software ChargePoint develops allows things called user groups and access control. For example, in a workplace situation that means that you can discriminate between employees and tradesmen or visitors. In an on-street residential setting, you could identify residents of the parking zone you are in. It would subsidise the cost of your charge, and visitors would



pay a higher rate, for example. The technology exists to resolve it. It now needs to be delivered.

Q23 **Mr Bradshaw:** Does that need regulation too?

Tanya Sinclair: I think it is outside our view as to whether regulation is needed. There is a commercial opportunity to explore first, but of course in the on-street residential setting the local authority is necessarily involved. Maybe there needs to be some overall strategic direction from Government, or at least from local authorities.

Q24 **Mr Bradshaw:** What is your view, Roger? Obviously, you have an interest in on-street, but it would not be an acceptable situation, would it, where some people are paying four or five times more, as Tanya has been doing? It would be the equivalent of going to the garage and paying five times more for your petrol. It is not an acceptable situation in a fair society.

Roger Hunter: I agree. The decision on VAT surprised me a bit. As Tanya says, why would you have 20% VAT for the on-street charger, but only 5% VAT for your home? I definitely think that is a good place to start.

Of course, at Shell we are very much in favour of price transparency. That is our position. We also support flexible pricing formats. You basically want market participants to be able to comply competitively with addressing customer needs. We think communicating a clear kilowatt hour rate is de facto as standard in most pricing structures. There is a whole bunch of stuff, but price transparency is at the heart of it. Indeed, VAT is probably the one thing to have a look at.

Q25 **Mr Bradshaw:** Finally, you mentioned America and the Netherlands. Norway is another country that is ahead of us. Is there a model that you, Tanya or Roger, think delivers best on access and equity? Both of these things are going to be so important for this to be politically sellable to the public.

Tanya Sinclair: I caution against direct comparisons with other countries, and assuming that you can transpose what works in another country into the UK. That said, I refer back to the technology that is already available, not just from ChargePoint, but from other companies that are developing solutions that can overcome the challenges. The next step is to get them deployed on the streets.

Q26 **Mr Bradshaw:** Roger?

Roger Hunter: I have nothing further to add on that.

Mr Bradshaw: Thanks very much, guys.

Chair: Next, we move to grid capacity, which could indeed be a barrier to getting the delivery of electric vehicle roll-out by 2030. Over to Gavin Newlands.



Q27 **Gavin Newlands:** Thank you, Chair. I have about four questions to try to do in the next 10 minutes or so. I will start with Graeme. What would you say are the main obstacles you face in providing extra grid capacity to facilitate all the new rapid charge points that will be necessary?

Graeme Cooper: There are a number of actors. There is National Grid as the transmission owner, and the regional distribution companies who are delivering the last mile. Obviously, I am representing transmission, but I appreciate that to some extent I am representing the networks industry for delivery.

The challenge is that as an industry we have always been responding to mature markets in a reactive way. What we are seeing is a new, nascent market attempting to grow. Therefore, that is why we are seeing some of the challenges around timeliness of delivery.

The challenge from our perspective is that, for this to be delivered seamlessly, having a plan to have the right grid capacity in the right place at the right time would be helpful for the market, but it is not the way the energy market has historically been structured. I am not saying that we should have wholesale change. I think there are opportunities to bring the knowledge of the transport sector and the knowledge of the energy sector together to come up with some plans that we could collectively agree as the least-regrets option for deployment of infrastructure. Don't forget that grid infrastructure is a socialised cost.

All of us as individual bill payers, through our electricity bill, are paying for the grid network. We do not want a situation where there is a free-for-all and we just build grid willy-nilly. It needs to be responsible. If we need to achieve transport decarbonisation both for climate change challenges and for air quality challenges—those two opportunities—there is a wider benefit to the UK consumer, and they need to be part of that transition. There is a little bit more exploration needed between transport and energy to find the right and least-worst answer.

Gavin Newlands: In terms of the DNO end of all this, and being proactive—as you have just said, it is reactive at the moment—I am not sure if you are aware of Project PACE, which was a strategic partnership between Transport Scotland, the Scottish Government and two Lanarkshire local authorities. It explored the benefits of having the DNO involved at all stages of the planning and delivery of charger infrastructure. It increased charging capacity by 360% in Lanarkshire and achieved savings of up to £60,000 per site, which was up to £3.5 million across Lanarkshire. Is that the more proactive strategic approach, with all parties concerned working together, that may be necessary?

Graeme Cooper: I agree that it is an incredibly helpful move forward. Nobody has decarbonised transport before, so there isn't a rulebook. Wherever anybody has done something like that, I think it is really good that we look for the best and worst of those situations and look for the



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learning points. I guess that it was not seamless. I would certainly promote that.

We have already seen, though, that Ofgem recently allocated £300 million unspent budgetary allocation in other areas to the DNOs on anticipatory investment in the DNO network. That will benefit 39 motorway service areas, but it is not a comprehensive overall view for the whole country. They are very helpful steps, but I would appreciate the learning points from that action.

Q28 Gavin Newlands: Thanks. I will open this out, and perhaps come to you first, Tanya. What is the one thing that Government could do to make the power upgrade connection process easier for all concerned?

Tanya Sinclair: At ChargePoint, as the manufacturer and developer of the infrastructure, we do not install it ourselves. We tend to deliver it in a partnership to a charging network operator, who will then install and operate it. We come at this from a slight distance.

There are two aspects to the issue. One is standardisation of the process and time taken. As an overall project cost, time taken is of course a cost in itself. Across the country, there is huge variation in the process for getting grid connections and upgrades, dependent on the DNO. There are various levels of advancement in streamlining that process. Some uniformity across the piece would be welcomed by the charging industry.

Q29 Gavin Newlands: Roger?

Roger Hunter: You heard my example of not being synced up. We have four nice, shiny new rapid chargers that still have the covers on because we do not have the link to the high-power line. I totally agree with what is being said about being proactive rather than reactive.

Look outside the strategic road network. We have a number of sites where we are looking to put fast chargers in. It is costing millions to do a grid upgrade in order to make that happen. Please look outside the rapid fund for the strategic road network and to some of the A roads and key trunk roads in our country. Expand that funding there as well. It is really important to get that sorted.

Q30 Gavin Newlands: Tanya, you said that your company rarely gets involved in installing the chargers. Roger, if I stay with you, we have spoken about the power upgrade connection process, but are there any specific challenges you face when installing on-street charge points? One of the big issues is obviously on-street charging facilities for those who do not have driveways, which we have already touched on. What specific challenges do you face?

Roger Hunter: It is great that you asked me that. We now have nearly 5,000 on-street chargers, and we are growing at a rapid pace. The key thing is working with the local authorities and having the brainpower and bandwidth within the local authorities to be able to go and install in a



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lamp post. Our charge posts on-street are actually integrated into a lamp post. It is quite neat. We need to get out there and get that done with the local authorities. We need brainpower and to invest in people and jobs in local government in this area. That would help.

Graeme Cooper: Could I add a small point from a user perspective? Having used an on-street charger, it is great to have it, but if the local authority does not paint a white box for EV charging and police that, you could end up finding that you can see the charger but you cannot park near it. There is a joining-up between the charging industry and the local road legislative piece, so that you can have somewhere to charge when there is a place to charge. I am sorry to add to that.

Q31 **Gavin Newlands:** That is an entirely fair point. Roger, on the local authority issue, do you find that some local authorities are—how do I put this—a bit more backward than others?

Roger Hunter: A lot of it is about education. It is about the amount of capability that they have to look at it and to progress it forward for pavements in their respective boroughs. It is not a criticism. It is more just to say, "Hey, look, if you put a bit of an injection of new people, we are happy to help educate from a business perspective. We will be very collaborative here and very much on the front foot in letting you know what we need." For me, it is almost saying, "Let's get a taskforce going," with the local authorities, something to put in more on-street chargers, and to be quicker, better and more effective at doing that. It has to be a collaboration between local authority, Government and business.

Q32 **Gavin Newlands:** To finish off this section, I did not ask you, Graeme, if there was one thing the Government could do to make the power upgrade connection process easier. Do you have any comments on that? An issue that was brought to my attention in a recent meeting was looped services, where one electricity supply feeds two houses. Obviously, with electric car charging, heat pumps and what have you, that is potentially going to be an issue moving forward. How much of an issue do you think it actually will be? Will it be easily rectified?

Graeme Cooper: Let's pick that one up first. I am not in the distribution system, but I am fully aware of the challenge with looped supplies. The Electricity Networks Association is working across all the energy/electricity utilities to look at the best way to manage unlooped supplies. It is observed, and there is a working group looking at the best way to resolve that. The distribution companies are going through their price control, which is how Ofgem measures and allocates funding. I think there will be more clarity as they run through their price control later in the year, from that perspective.

Overall for the country, from a grid networks and ageing networks perspective, we have big central Government plans. We have the end of the sale of combustion engine vehicles by 2030. What would be really helpful is how we take that big national objective and interpret it



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regionally and locally. What we want is consistency across the country, but not every part of the country is the same.

From my perspective, it is having a high-level plan that covers all of the transport vectors. I think we are due imminently to have a decarbonisation of transport plan from DFT. It would be very useful to take that plan and say, "What does that mean from an energy perspective?", and look for the areas of least regret, where we can get on with building plans to get the right capacity in the right place at the right time. It needs local interpretation. National plans interpreted locally are critical.

Gavin Newlands: Thank you very much. That transport decarbonisation plan has been imminent for a hell of a long time. Back to you, Chair.

Chair: I note that Roger had his hand up, but if he is skilful he might be able to throw in his answer when Grahame covers the Government intervention—the £950 million fund that has been set up to help provide more charge points.

Q33 **Grahame Morris:** Thanks, Chair. I will move rapidly along to Project Rapid. Graeme, could you give us a rundown on what the key priorities should be for the rapid charge fund?

Graeme Cooper: I was involved with Project Rapid even before it had a name. I have been involved for three and a half years. Don't forget that the high level is that we need confidence. Consumers need confidence that they can go outside the range of the battery of their car and that charging is not a barrier. That means consistency and continuity across the country. That is really the observation.

Motorway services and high-power en route charging will be relatively small in energy delivered, but they are critical to the confidence piece. Motorway service areas are actually natural places where people would stop. People have to stop because of biology; rest stops are quite important. Obviously, traditionally motorway service areas are halfway between somewhere and somewhere else. Therefore, they are often not very well served by the grid network. They are on the end of the wire.

Project Rapid observes that market failure. To deliver grid capacity is expensive and incredibly strategic. It is great that that market failure is observed and acknowledged, and that there is funding allocated. From my perspective, it should be delivering adequate, future-proof capacity, not just for cars but for vans, buses, trucks and coaches. Although there are not many electric buses, trucks and coaches, by the time it has taken us two or three years to deliver future-proof infrastructure, that market will be growing.

Grid networks are also able to serve hydrogen. You can put an electrolyser on the end of the grid network. This is not about picking winners in the technology vector. The least-regrets thing is delivering the capacity. From my perspective, it needs to be delivered harmoniously and



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consistently across the motorway network. I am a little nervous that, if it is just dropped out for regional tenders, you could end up with inconsistency across the country. That would probably not serve consumers well. I also think that the fund should stop at the point where it delivers the grid capacity. I think the charge point market, as we have heard from both Tanya and Roger, is a very liquid and competitive market. Being able to share grid capacity across multiple offerings would certainly benefit the consumer. With that level playing field, there would be a race by those providing the services to deliver for the consumer. That can only be a good thing.

As an additional thing, don't forget that that grid capacity can be used for other things. If there is an opportunity for local renewable generation to plug into it, to put green energy into the system, or for battery storage to be plugged into it to help with more flexibility in the system, let's not lock out those other technologies from those grid connections.

Q34 Grahame Morris: Thank you, Graeme. Don't worry. It is a point well made, and we have not forgotten about vans, lorries and buses. I saw Roger nodding while you were speaking.

Roger Hunter: Graeme summed it up really well. It is all about thinking two steps ahead. Project Rapid is a good start point, but you have to think two steps ahead—the whole thing around heavy duty. Think about the depots and depot-based fleets. Those are medium-duty and even larger vans, with fixed routes and medium mileage. Those things are going to be electrified, so it is thinking a couple of steps ahead and how the grid needs to serve them. When you dig up the road and put a cable in, think a few steps ahead and then you will not have to re-dig it and put another one down later. That is all I wanted to add.

Q35 Grahame Morris: Graeme mentioned motorway service areas. Is there anywhere else, apart from the strategic road network, where we should be putting rapid charge points? Do you have any thoughts on that?

Graeme Cooper: For me, this was about the A roads and the key trunk roads. I mentioned that it cost millions for us to put an upgrade in one of the Shell sites so that we could put rapid chargers there. Look outside the strategic road network, but also think about the depots. Think about where the logistics hubs of the UK are and how they are going to build out. Think about the power network to those as well.

Q36 Grahame Morris: Thank you. The same question to you, Tanya.

Tanya Sinclair: Where the rapid chargers need to go is wherever drivers of commercial or private vehicles have the opportunity to stop their vehicle for five to 30 minutes, maybe up to an hour. That is where that kind of power charging is going to be convenient. It plays into what we need to be able to provide nationally, which is that drivers, wherever they stop, if they need it, have the opportunity to charge. That might be a slower charger in other locations. It is absolutely not limited to the strategic road network.



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The other point is that I want to draw on what Graeme said about the business of charging the commercials. So many of those companies are investing heavily in the UK. A lot of them are UK start-ups and scale-ups backed by UK investment, or they are companies like mine, ChargePoint, which is investing heavily in the UK, but is a global company. If we can do more to ensure and foster competition and growth in that sector it will be really welcome.

Grahame Morris: Thanks very much indeed.

Q37 **Chair:** In the five minutes we have left I will ask some concluding questions. I will pick as the scenario a location I know because it is one that I live in. If you have a village with no streetlights and the housing stock is old and terraced, so there are no drives, what is that village going to look like by 2030? How will be people be able to power up their electric cars?

Tanya Sinclair: I don't pretend that we have the answers to everything at this point. This is a challenge. It is really important to set that out from the start. ChargePoint cannot look at the holistic charging needs of every driver and say today that we can solve those. What we can do is look at what solutions we have available today. The one we have not touched on much in this discussion is workplace charging. In normal times, the vast majority of people go to the same workplace by car every day. That car will be parked there for eight or nine hours. One or two of those hours, maybe three, could be given over to charging, meaning that they do not need the ability to charge at home.

These days, electric cars go 300 miles, maybe more, pretty much as standard. Charging three or four times a week for the majority of people will serve them absolutely fine without the need to look at charging provision in villages like the one you refer to. It does not solve the problem for everybody, but it will certainly address the needs of quite a lot of drivers.

Q38 **Chair:** Staying with you, Tanya, and building on that, are you saying that we are going to have to have a complete culture shift in attitudes? At the moment, people tend to wait for their tank to run towards empty and then fill up. Are you going to have to use price as a way to incentivise the little but often approach? When you go to the supermarket, will you charge up there, rather than feeling that you always have to have a full load?

Tanya Sinclair: I do not think that is a culture shift or a behaviour change that needs to be imposed with levers like price. I think it is something that happens naturally. Certainly, as I have driven my electric car over the last 18 months or two years that I have had it, I have naturally seen a charger and plugged into it. Where I live in London, if it is available, you want to grab it because they are becoming in-demand. It is something that happens when driving an electric vehicle versus a



petrol one. Some people run down nearly to empty and then fill all the way back up again.

- Q39 **Chair:** Graeme, an organisation I spoke to said they had done a bit of sampling around an estate and found that, if three out of 10 drivers charged up between the hours of six and seven, it would black out the entire estate. Is this again a question of the grid and that we will have to have mass investment to be able to deliver that, or are you relying on culture shift and people not doing what I just described?

Graeme Cooper: That is a really great question. I will try to answer it in two ways. If we go high level, on the journey to net zero the Committee on Climate Change, in the sixth carbon budget, says that we are going to need twice as much electricity as we have now, which means we will need four times the amount of renewables we have now, which means we will need twice the grid we have now. The energy system is changing by its very nature on the journey to net zero.

The transport piece of that is part of a journey. As I said before, it is not a cliff edge. Grid networks evolve over time. The way we can avoid any challenges is by working on the basis of diversity. Not everybody does everything at the same time. That is where smart charging becomes really important. Ofgem has already indicated that we will have half-hourly settlements. Energy will be measured every half hour of the day at home. That will then stimulate smart tariffs. If we have smart chargers, you will be able to charge your car smartly when the grid is at least pressure and is the cleanest, greenest and cheapest.

If everybody in the country switches everything on at the same time, I think we could have an interesting challenge, irrespective of whether that is cars or kettles. The clarity here is the fact that nobody does everything all at the same time. There is diversity. To help manage that diversity, smart charging with smart tariffs is a way that makes the energy system better by adding vehicles to it.

There will be grid upgrades needed, but upgrades will be needed across the country as we move towards net zero. EVs are a very small proportion of that direction of travel. I hope that helps in answering your question.

- Q40 **Chair:** Yes, it does. Very briefly, so that I can come to Roger with my last question—this is a bit of a yes or no—in order for the grid to be able to cope, do you actually need people to drive less rather than just switching?

Graeme Cooper: No. Naturally, people should be travelling less. Using less energy is always a good place to start on the journey to net zero. If we all just switch from petrol to electric, that transition is perfectly manageable in the grid system.

- Q41 **Chair:** Roger, I am conscious of the time so I will ask you to be brief. We have focused on electric vehicles, but there will still be diesel and petrol.



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You work for Shell. How will people be able to fill up their tank? Is it still going to be commercially viable to have petrol stations in the places we have right now?

Roger Hunter: Before I answer that, I have a quick reply to the last question. It is really important to think more holistically about clean electricity and the fact that we will have solar panels on houses and businesses, and batteries behind the meter. Even at our rapid charging sites, we have batteries behind the meter that help regulate what the electricity load is. It is not all just on Graeme. It is not all just on the distribution networks. There are also very smart things you can do behind the meter in homes and in businesses as well. It is important to focus on that. We are selling solar panels and installing batteries in people's homes today in the UK, with electric charge points as well. We need to think about that together as a system.

Shell has 1,000 petrol forecourts across the UK. Our convenience retail business is thriving. We see those locations and destinations having a bright future. We will be transitioning to different fuels. We are already putting rapid chargers there. As a business, we will make a natural transition in line with society and customers' needs. We are already putting a lot of effort and energy into making that transition.

Chair: Thank you very much indeed. Roger, Tanya and Graeme, thank you for giving us so much interesting evidence. It is a fascinating space, and you are going to be leading it. We wish you every success in that regard. Thank you again for giving us your time and your expertise this morning.