

Transport Committee

Oral evidence: [Fuelling the future: motive power and connectivity](#), HC 973

Wednesday 2 March 2022

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[Watch the meeting](#)

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

Questions 168–183

Witnesses

III: Guy Lachlan, Director, Historic & Classic Vehicles Alliance; and Greg Archer, Director, Electromobility UK.

Written evidence from witnesses:

- [Electromobility UK](#)
- [Historic and Classic Vehicles Alliance](#)

Examination of witnesses

Witnesses: Guy Lachlan and Greg Archer.

Q168 **Chair:** Good morning. May I ask the witnesses to introduce themselves and say where they are from?

Guy Lachlan: Good morning, Chair. I am here representing the Historic & Classic Vehicles Alliance, the trade body that represents the business behind the historic vehicle industry in the UK, employing about 130,000 people.

Greg Archer: Good morning. I am here representing a grouping of companies known as Electromobility UK. That includes organisations such as Tesla, Nissan, Octopus Energy, ChargePoint, the National Grid and Transport & Environment. My day job is as UK director of the environmental group Transport & Environment.

Chair: Thank you very much, Guy and Greg, for being with us. This section is going to be covered by Ruth Cadbury and Greg Smith.

Q169 **Ruth Cadbury:** Greg, are the Government's plans to decarbonise the UK's roads too reliant on battery-powered vehicles?

Greg Archer: No, I do not believe they are. The reality is that the car industry itself has now decided that battery electric vehicles are best. They are the people who are making that decision and investing massively in the technology.

They are doing so because the price of batteries has fallen by nearly 90% over the last decade, and will fall further. The price of renewable energy has fallen by nearly 90%. The amount of energy you can store in a battery has increased by nearly three times. We know that those trends will continue in future with new generations of batteries.

The reality is that battery electric vehicles will become not just cheaper to operate but actually cheaper to buy. We expect price parity to be reached by around 2026-27, based on evidence from Bloomberg. At that point an electric vehicle and a conventional vehicle will be the same price to buy, but the electric vehicle will be much cheaper to run.

I would say that the evidence is really stacking up in this area. Only yesterday, Stellantis, which includes Peugeot, Citroen and Fiat, announced that it plans to end the sale of all conventional vehicles in Europe by 2030. This goes alongside commitments that Jaguar Land Rover have made for 2025, Volvo have made for 2030 and General Motors have made for 2035. The evidence is really now pointing very clearly to the fact that electric vehicles offer the most cost-effective solution, and a viable way fully to decarbonise the sector.

I think it is also clear that, while that shift is happening very rapidly in passenger cars at the moment, it will also come in for trucks in the future. Battery electric trucks will also become a viable alternative as the price of those cells falls and they become easier to package into new

generations of trucks. Vehicles will be battery electric almost exclusively in the future.

I will give you one more stat. Data from IHS Markit suggests that by 2030 more than half of the cars made in Europe, including the UK, will be battery electric cars. In comparison, it suggests that 0.3% will be hydrogen fuel cell vehicles. The future is battery electric.

Q170 **Ruth Cadbury:** There are biofuel vehicles as well. We have just done an inquiry on the charging infrastructure, and the limitations in that, and the Government's role. At the moment, the system seems to be quite reliant on the private sector, with relatively little Government intervention. How costly do you think it would be for the Government to provide a full, extensive, nationwide and affordable charge point system compared with, say, investing in biofuel production?

Greg Archer: I do not have a figure for the total cost of the charging infrastructure, but what I would say is that the Government do not need to invest all that money to create a nationwide charging infrastructure. The business sector will step up and be willing to do that, and it is already starting to do so. We already have nearly 30,000 charge points in the UK. It is simply not possible to convert the entire vehicle fleet to run on biofuels. There is not enough sustainable biofuel in the UK, or globally, to be able to meet that challenge. It would also be much more expensive to do it through biofuels. Biofuels are more expensive than oil.

My estimates are that over three years, if you were to run a vehicle on 100% biofuels, it would cost around £2,000 more overall. In comparison, the total costs of ownership of a battery electric vehicle are already lower than those of a conventional vehicle over three years, and they will become substantially less.

We need to appreciate that biofuels have an important role, but that important role is not in vehicles. That important role will be in aviation alongside and as part of sustainable aviation fuels and the other solutions that were talked about in the previous session. We need to reserve those biofuels for use in other parts of the transport system. We do not need to use them in vehicles.

One anomaly at the moment is that the renewable transport fuels obligation only supports biofuels, and more recently hydrogen, but renewable electricity that goes into cars through charge points is not supported through the renewable transport fuel obligation, and you cannot earn credits. We believe that we should be converting the renewable transport fuel obligation into a renewable transport energy obligation, and that people supplying renewable electricity to electric cars through charge points should be able to earn credits through the RTFO system and to sell those into the market. That will provide an additional revenue stream for charge point operators, and that would be very helpful in helping them to invest ahead of need in putting that charging infrastructure in, and encouraging people to shift to EVs.

That is a gap in Government policy at the moment because the renewable energy used to make hydrogen counts towards the RTFO, but if you put it into a vehicle it does not. That is entirely anomalous.

Ruth Cadbury: I will go to Greg with a question and come back to Guy on classic cars.

Q171 **Greg Smith:** Good morning. I will stick with you, Greg, for the moment, and I promise we have not forgotten you, Guy.

From the evidence you just gave, clearly you represent an organisation that wants battery electric to be the future rather than necessarily believing it categorically is the future. This inquiry is about alternative fuels, and I accept battery electric is one of the alternative ways to power road transport—passenger cars, heavy good vehicles, road freight, etc. You assert that electric vehicles are cheaper to run today, which is correct, although we all see what is happening to the cost of electricity right now. Given the whole life cycle of an electric vehicle—the mining; lithium is not a renewable—given that battery electric vehicles with current technology do not last as long as petrol and diesel vehicles and they have to be scrapped or recycled sooner than a petrol and diesel vehicle; and given we have 100 years-plus development on the internal combustion engine, would it not be better, and I put this to you as a genuine question, to put the level of money, whether it is taxpayer subsidy or commercial investment, into the development and scaling up of synthetic petroleum and the better development of biofuel so that we can reap the benefits of the technology we have rather than quite literally having to reinvent the wheel?

Greg Archer: Some of the points you make in your question are, unfortunately, factually incorrect. For example, there is of course embedded energy in making an electric car and that is higher than making a conventional car, but good, robust studies show that it is paid off within about 16,000 miles of using the car. Over the rest of the lifetime of that vehicle—of around 150,000 miles—that vehicle will be saving energy. The greener the electricity grid gets, the more energy it will save.

The second point is that batteries will last a very long time in vehicles, but after they have been used in that vehicle they will then go on and provide static energy storage in the electricity grid. After that battery has been used for another 20 years for static storage in the electricity grid, that lithium can then be recycled and reused, as can the other precious metals. I would argue that lithium is a renewable source because it can be used and re-used in multiple applications and recycled as necessary. It is really important to understand those points.

If we were to try to create synthetic fuels, and use them all in vehicles, the energy demands would be astronomical. The reason for that is that it is at least three times more efficient to use renewable electricity directly and put it into a battery than it is to turn it into hydrogen and combine that hydrogen with a source of carbon to create a synthetic fuel. Our

estimates are that if you want to fully decarbonise the UK transport system—and “our” in that context is a T&E study—we need over 350 GWh of energy to fully decarbonise the UK transport system in 2050.

That is an enormous amount of energy. But that is assuming that we use the energy efficiently—for example, in batteries in vehicles. If you wanted to create synthetic fuels, you would need at least 50% more than that. To put that sum of energy into context, it would need 13,000 offshore wind turbines, just if we are doing it efficiently. If we are doing it inefficiently, we would be looking at over 20,000 offshore wind turbines to make all that additional renewable energy. We cannot create enough renewable energy by 2050 to be able to convert everything into a synthetic fuel.

There is a place for synthetic fuels and that is in aviation. In that sector, where there are far fewer alternatives, particularly for long-haul flights, there will be a need to create synthetic fuels, and that additional energy requirement will be needed. But in vehicles we do not need to, and we should not, because it is a terrible waste of renewables.

Q172 **Greg Smith:** There are some points I want to come back to on that, but perhaps, Guy, you could offer a view both from the historic and classic vehicles you represent and from existing cars on the road. The vast majority of my constituents do not drive brand new cars. They will probably continue to drive the car they have, and perhaps have had for five or six years, well into the future.

Guy Lachlan: Yes, indeed, and we are expecting every internal combustion engine vehicle that survives eventually to be considered as historic or classic in some way. From our point of view, we are technology-agnostic. We are open to electrification. We have members engaged in the battery electric conversions of classic cars.

From our perspective, it is not a solution that is for everybody, because clearly there are some vehicles—and I use the term “vehicle” in a historic context. The word “vehicle” is a bit misleading really because these are items of historic importance more than they are items of transport from A to B. Some of them are historically important enough to warrant never being modified, in the same way as you would never modify Hampton Court Palace to make it more thermally efficient. At the other end of the spectrum, some are ripe candidates for such modifications.

The difficulty from the point of view of the historic vehicle sector is that the vehicles simply do not get used enough to make that environmental argument stack up. One of my own cars, for example, gets used for a few hundred miles a year; it is extremely slow and extremely old. It still performs, to your point, Mr Smith, as well as it did 100 years ago when it was new. To embody battery electric conversion when I am emitting in the tens of kilos of CO₂ per year would take, by my calculations, with the new batteries, some 60 years to offset. It would clearly never get there because long before that 60 years is due, to Greg’s point, the batteries

will have been repurposed into some other non-mobile use, and it will never get to the point where it catches up.

From a historic vehicles point of view, we are rather focused on the future availability of liquid fuels in some form. We are not dictating what technologies they should be derived from but simply looking for a liquid fuel that means that we can embody such modifications as might be required that our vehicles can run on them without wasting more emissions in that process of conversion than we are ever going to save through their continued very limited use.

Q173 **Greg Smith:** I will come back to you, Greg, but I just wanted to follow that up with Guy. Last year, we saw E10 fuel become a thing on the vast majority of forecourts. That has problems with a lot of classic vehicles. I will frame the question to you in terms of the liquid fuel of the future for classic historic, let us just call them existing IC-powered cars, vans, buses, lorries, etc. Does the development need to be a pure drop-in fuel that does not have side effects, or are the Government right to be going down the route of these blends that have side effects?

Guy Lachlan: I think the Government are right to go down the route of blends. The biofuels, as you rightly, say—the bio blends that exist today—have caused some limited problems, but they are in the main overcomeable. The industry I represent will be front and centre in overcoming whatever difficulties are presented. Those difficulties range from the trivial to the serious; I agree with that.

From our sector, and bearing in mind the way our sector looks at things, we believe the ratio of the total emissions of the historic vehicles sector compared to its economic value to the UK economy is the right way round, if you see what I mean. We have a lot of economic value per unit of emissions overall. We see a road map as being bio blends as of today offsetting perhaps via alkylate fuel—a hydrocarbon fossils-based derivative but much cleaner burning—to synthetic fuels, in some way. That is the road map that we see in the future. Any diversion, from the historic vehicles sector's point of view, from that road map rapidly gets you into the area where you are expending more emissions than you are ever going to save.

Q174 **Greg Smith:** That is very helpful. Greg, you were indicating you want to come in.

Greg Archer: For the tiny amount of fuels which classic vehicles use, there is no difficulty supplying those through a synthetic pathway. The issue is when you try to scale this up and supply it to the 30 million vehicles on the UK's roads. We will be producing synthetic fuels for aviation—sustainable aviation fuels—and as a by-product of that process you can produce small amounts of fuel for classic vehicles, and it will be a perfectly adequate drop-in fuel. The problem is that, if you try to do that for the entire UK fleet when you require such vast amounts of electricity, it becomes unfeasible to do so.

Q175 **Greg Smith:** Before I bring Ruth back in, and I am mindful of time, could

we explore this point about the wider impact of the battery electric route rather than hydrogen, rather than synthetic fuels, biofuels, etc.? We have a vast array of petrol filling stations in this country. We have already gone through many decades of the country being constantly dug up to install infrastructure. We have seen it with broadband. We have seen it with new railways being built, etc. The infrastructure that is required to get the charging network across the country, particularly into rural communities, is quite extreme, no matter which way you look at it.

Equally, other modes of transport will be converting to hydrogen. I met Alstom last week to talk about its hydrogen trains, which it is clearly commercially keen to run not just in Germany but in this and other countries, and other manufacturers will do that. It is going to need storage for hydrogen. Its model, as we talked about it, was existing filling stations. Given that this network is still going to have to exist for fuels that are either liquid or gas based—that are going to be stored in tanks and put into vehicles, be they trains, lorries, buses, coaches, or, potentially cars, via a filling nozzle rather than a plug—is the whole picture worth it, or are we going to end up with twin-tracked solutions with different transport modes just not talking to each other, from a whole infrastructure perspective?

Greg Archer: I would argue that the vast majority of vehicles will be electrified through battery electric solutions. There will be some niche applications for hydrogen in the transport sector, but the vast majority of applications for hydrogen will be, as I believe, in aviation, as you have just heard, where they will be converted into synthetic fuels and will be used directly. Piping hydrogen around the UK and distributing it to multiple filling stations is not a straightforward thing to do. We are already seeing petrol stations converting to add rapid chargers to be able to charge cars in half an hour or less.

We are going to need to invest in our electricity grids for a whole variety of reasons, including the need for more domestic electricity for heating, for example. We will have to be digging up our roads to put in additional conduits and wires in order to meet those needs as well.

Fundamentally, hydrogen is three times less efficient than using those electrons directly in a battery electric vehicle. You need three times as much renewable electricity. Hydrogen is always going to be much more expensive than a battery electric solution because it still requires a lot of precious metals, it still requires a battery and the hydrogen itself will always be much more expensive. The cost-effective solution is the route that the car industry has identified and is going down en masse now, and that is the battery electric route.

Greg Smith: I am very mindful of time and I know Ruth wants to come back in so I will hand back over.

Q176 **Ruth Cadbury:** I want to pick up on the Government role and the charging infrastructure. I think you were saying it was up to the private sector. First, do you feel that there is sufficient power even to the

existing places, because we are picking up that there are challenges providing sufficient levels of power even to the motorway service station network? Whose role is it to ensure adequate charging infrastructure in low-volume areas—rural areas?

Greg Archer: I will come to the rural point first. The role of Government is to enable the private sector to invest, and to facilitate that. I think we are moving away from a situation where the Government need to put large sums of public money into supporting the purchase of electric vehicles, or into supporting charge points, towards a situation where they need to be encouraging the market to shift.

For example, it would have been very helpful if the Government had gone forward with their proposals to require every non-residential car park to fit 5% of its spaces with charge points. The Government decided recently not to go ahead with that, even though they had proposed to do so previously. That would have created an additional market for charge points in car parks where people could readily charge. We should remember that the average person in the UK only needs a top-up charge once a week. A 50% charge once a week will keep them on the road.

With rural areas, we need to be bundling the more attractive, commercially viable places to install charge points with the less commercially viable ones in rural areas, letting contracts to the private sector that include some rural sites where they will not make any money and some urban sites where they will cover their costs for those additional sites.

On the point of additional power, the Government have been very good in investing large sums of money in Project Rapid to enable the additional infrastructure costs to be met from the public purse.

We also have proposals from Ofgem that will reduce the cost to project developers of having to develop the local grid network when they try to install a rapid charging point. Things are moving in the right direction to enable installers of rapid charge points to reduce their very significant costs in having to improve the local grids as well as installing the charging that is needed. The Government have made a lot of progress in this area.

The last thing I would say is that we now need to require local authorities to develop local charging plans, and for those local authorities then to go out to tender with charge point operators and work with charge point operators to develop their local networks. We have a lot of blackspots in the UK and a postcode lottery in terms of charging. The objective over the next four or five years should be to level up the level of charging around the UK so we have the same good standard of charging in every location.

Q177 **Ruth Cadbury:** Finally, to Guy, in Brentford we have a really good base for historic and classic cars, and I have seen a car converted to electric. Of the current classic and historic cars, what proportion could be

converted to electric?

Guy Lachlan: They can all be, but the thing is whether they should be. Hampton Court Palace could be knocked down and replaced but—

Q178 **Ruth Cadbury:** It is more whether it is upsetting the historic nature of the car.

Guy Lachlan: It is not really about upsetting the historic nature. It is whether we are interested in preserving our heritage. That is the issue. If we are, I would argue that many of these vehicles are as worthy of preservation as something like Hampton Court Palace is worthy of preservation, which I am sure we all agree is. That is the perspective we come at it from.

Q179 **Ruth Cadbury:** Or this place.

Guy Lachlan: Exactly. I am sure you could make a more effective Parliament building—perhaps.

Q180 **Chair:** Guy, I will finish with you, and you are obviously representing your members. What exceptions are you calling for from the Government? Are you concerned you will get tied up with a general commitment and that that would mean your members could not drive their cars?

Guy Lachlan: We accept that we are tiny users of fuel so we are never going to be able to drive policy. We are always going to be on the coat tails of everybody else. What I would encourage the Government to do is maintain a diversity of options. I totally understand that free market options should rule the day, but you asked the question to earlier witnesses about picking winners. What I would say in answer to that question, which you did not ask me, is that, rather than picking winning technologies, picking the winning research establishments and doing the donkey work behind whatever is going to come in the future—and none of us know what that is—would be a very appropriate way of picking winners. Rather than picking the winning technology, pick the winning teams that are capable of developing that technology in the future. That is what we would like to see investment going into.

Q181 **Chair:** You both agree, or disagree, that the 2035 target for all new cars and vans being zero emission at the tailpipe is deliverable, with people still being able to drive around as they do now, or do you find that too stretched?

Guy Lachlan: We do not like it at all because zero emissions at the tailpipe is not something that fits with our liquid fuel future of historic cars.

Q182 **Chair:** That is just for all new cars.

Guy Lachlan: We do not have a position on that. I have noticed in general conversation around the Committee the terms “decarbonisation”, “zero emissions” and “net zero” have all been used interchangeably, and they are three different things.

Q183 **Chair:** You are right, and we often get picked up when we talk about zero emissions because not all electricity comes from renewables. It comes up quite often. Greg, do you believe it is achievable?

Greg Archer: Yes, we believe it is an entirely achievable goal. We believe that the goals that have been set for trucks are equally achievable. I would draw your attention to the fact that Stellantis, which is Peugeot/Citroen, only yesterday said it is going to stop selling internal combustion engine cars in Europe in 2030, five years before the Government's target.

Chair: Guy and Greg, thank you so much for giving us so much evidence. We wish you well for the rest of your day. We will now switch from road to rail.