T R A N S C R I P T

STANDING COMMITTEE ON THE ECONOMY AND INFRASTRUCTURE

Inquiry into electric vehicles

Melbourne — 8 November 2017

Members

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Ms Samantha Dunn
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Witness

Mr Behyad Jafari, Chief Executive Officer, Electric Vehicle Council.

The CHAIR — I declare this hearing open. The committee is hearing evidence today in relation to the inquiry into electric vehicles, and the evidence is being recorded. I welcome you to the public hearings of the Economy and Infrastructure Committee. All evidence taken at this hearing is protected by parliamentary privilege. Therefore you are protected against any action for what you say here today, but if you go outside and repeat the same things, those comments may not be protected by this privilege; in fact, I would put money on it. If you would like to give a bit of a — 5, 10-minute — outline of the direction you would like to take, then I will open it up for questions.

Mr JAFARI — Yes.

The CHAIR — Thank you very much indeed. If you could start by, for the record, giving your name, position and city or suburb, that would be wonderful.

Mr JAFARI — Yes. My name is Behyad Jafari. I am the chief executive officer of the Electric Vehicle Council of Australia. I am usually from Sydney but I am very grateful to be here today. Thank you for the invitation and thank you for holding this inquiry. It is great to be able to present our information to you.

What I would like to discuss first of all is a bit of an introduction about where the global market and the Australian market for electric vehicles are up to and what the opportunities are for Australia to take some action to catch up with at least the global average. What we are seeing around the world is governments of major economies taking action to support transition in their markets from internal combustion engines towards electric vehicles. They are doing that for a myriad of reasons — from increasing public health to reducing their carbon emissions but, very importantly, to also grow their domestic industry to support what is now a global transition towards electric-powered vehicles.

The support that has been provided early by these governments to start initially transitioning their market over from an old technology to a new one has taken the shape of providing cost incentives, because at the moment there is a premium attached to the new technology. It is developing a whole-of-government, coordinated approach, recognising that this new technology is not just about the vehicle alone, but your energy sector, your electricity generation grid, infrastructure, transport and new industry development. As a result of the action that they have taken, so far — by the close of 2016 — what we have seen is already 2 million electric vehicles on the roads globally, and in 2017 we are due for another 1 million sales. So it is a market that is growing globally by 50 per cent inside of just one year. As a result of that early action we are seeing some of the world's largest automotive markets — such as China, India, the UK, France, the Netherlands and Norway — announcing the complete ban of internal combustion engines by certain dates, ranging from 2030 to 2040 and beyond.

So what is clear from that is — for instance, one market alone, China, is already 30 per cent of the global vehicle market share — the future for electric vehicles is certain. The only portion that is uncertain is what role Australia would like to play in that. Very importantly, projections show that because of the falling costs of the battery technology inside electric vehicles, the economic costs of producing an electric vehicle will become cheaper than producing and manufacturing an internal combustion engine by 2025.

What the race looks like today is countries and markets looking to accelerate their share of electric vehicles and accelerate their domestic market for electric vehicles before that date so that they can also support the growth of an industry to support what is now a global market. In Australia that is very attractive for us because we already have — and it is something that we will continue to have — the world's largest reserves of the mineral resources that are required for batteries that go inside the vehicles, as well as people with the skills and expertise to process, manufacture, repurpose and recycle those batteries, as well as the componentry and technology that goes within vehicles — and ultimately, again, potentially even restarting our automotive manufacturing industry.

Importantly, though, the discussion around what the future of automotive manufacturing looks like is increasingly about what goes inside the vehicle than what the outside of the vehicle looks like. What we are seeing is that research — R and D — work and new technologies are being developed in Australia and going overseas to be commercialised, but increasingly Australia is looked at as a very attractive area for both economic investment and job creation for the future of the automotive industry.

Secondly, I will touch on quickly before getting into questions, what we do see at the moment is there is a lack of any coordinated support to drive that market towards electric vehicles. While we are seeing a global market

share for electric vehicles of around 1.35 per cent, in Australia that share looks like 0.1 per cent. Last year we sold 1378 electric vehicles, and if we were just up to par with the average — so not even a leader, just up to par with the average — we would have sold around 16 000 electric vehicles in Australia. At the same time we see that road emissions in Australia are in fact the worst of any OECD nation, and we are one of two nations in the world where emissions from our road fleet is getting worse — us and Turkey.

In 2005 the OECD recorded the economic impact of public health from road emissions to be about $5.5 billion as people are getting sick and dying from pollution caused on our roads. That particularly happens in the urban basins of Sydney and Melbourne, so a lot of that impact is concentrated inside of the Melbourne CBD and in the greater Melbourne city. Similarly as well, as our road emissions continue to rise; emissions from road vehicles today already account for about 10 per cent of our national emissions output. So to meet our global carbon reduction commitments, addressing road emissions is now a necessity and no longer a nice to-have for Australia. Road vehicles and transport more broadly is the third-largest emitting sector, falling just behind the electricity industry and stationary energy. At a time when all other sectors are decarbonising and getting better, road emissions alone stand as the one that is getting worse. Particularly at a time when the world is transitioning towards zero emissions technology, there is really no excuse for us not to be leaders in this space.

The CHAIR — Great, thank you very much. What is your aim for Australia? Say, over the next 20 years, what would you like to see Australia do in this area?

Mr JAFARI — As I mentioned before, really the two steps towards receiving all the benefits from the transition to electric and zero emissions vehicles are that you need to, first of all, grow your domestic market for electric vehicles so that you can grow the industry to support what is the global market. In Australia because we have the capture of those resources, they cannot go anywhere else — nobody else can beat us to do something about the battery value chain. Because we also have people with the skills and expertise in the automotive industry, a lot of whom are, unfortunately, out of work at the moment but do have very critical skills, we should be leaders in areas particularly around the value chain of batteries — and that is everything from extracting to eventually recycling the battery, a very long-term life cycle — to developing components and developing new technologies to help support the global industry. In fact what we would like to see is a very strong, robust and growing industry to support vehicles moving forward in Australia.

The CHAIR — You mentioned there about a number of people that are unemployed as a result of closures. Do you see a role for local production of electric vehicles in Australia if this really takes off?

Mr JAFARI — Certainly. What we know is that what the past of our automotive manufacturing has looked like in Australia has unfortunately been manufacturing of some of the least efficient vehicles available in the world, and that is at a time when global regulations are requiring vehicles to become more and more efficient with ultimately zero emissions. So if we manage to pick up on that trend and actually move our economy in that direction as well, we could certainly be at the very least playing a role in the manufacture of the components and the batteries and the technology inside the vehicles. But ultimately as well, particularly looking at right-hand-drive vehicles, we could certainly play a role in that as well.

The CHAIR — What do you envisage the cost of a vehicle would be compared to your average car that is on sale now?

Mr JAFARI — So at the moment the premium for the electric technology inside of the vehicle looks like around $10 000 to $12 000 on an up-front basis. Importantly you are then saving about $2000 a year just from fuel savings alone because electricity is so much cheaper than petrol. Where that premium, even in a total cost of ownership, continues to be a burden, however, is that the average ownership of one person owning the vehicle is about three years. Over the entire life of the vehicle it pays its premium back, but for each owner — if you are buying a vehicle for a government fleet for instance and you are holding onto it for three years — there is still a premium attached to it, and that is where incentives can be most effective.

So it is not an incentive that is required to be the entire $10 000, $12 000 or $15 000 premium, but enough of that when you are more appropriately modelling out how much that vehicle will cost you over three years, you can provide slight exceptions to things like stamp duty and registration costs to help lower that gap and help people choose electric vehicles starting today.

The CHAIR — You would be aware undoubtedly that Australia — certainly parts of Australia, particularly South Australia and Victoria — is facing an energy crisis. How would these vehicles actually be powered given that we probably have not actually got enough electricity to keep the lights on this summer? How would a great influx of electric vehicles impact on that?

Mr JAFARI — So there is the critical portion of moving away from incentives and speaking about the role for a nationally coordinated plan, because one way or another these vehicles are coming; the global market has determined this for us. The positives of electric vehicles are they can do what is called flattening out demand, so essentially meaning that with smarter technology — technology that is already available to us — we can ensure that vehicles are charging at the right times, when we actually have an excess of supply. That can also reduce things like the unit price of electricity, stabilise our grid, improve the reliability of our grid and, if we so choose, go into newer technologies like vehicle-to-grid, so vehicles are able to discharge back in at times when we have very little supply of electricity as well.

Not having that coordinated approach looks like reaching that 2025 period when the vehicles start to look cheaper than an internal combustion engine — they will eventually land on our shores — and we have to start retrofitting buildings and infrastructure, suddenly needing large increases in electricity generation and a large investment in grid infrastructure as well. So the two approaches are of quite significant economic benefit and quite significant stability to our grid versus an uncoordinated approach of having to pay the high costs of retrofit.

The CHAIR — Thank you.

Ms HARTLAND — You started talk about the recycling of batteries. Can you elaborate on that because always in these people say, 'This is going to be really energy efficient but what about the batteries?', so can you give us a bit of detail around that?

Mr JAFARI — Yes, absolutely. What we increasingly see particularly internationally but even here in Victoria — there is a company that I think may be addressing you later called Relectrify — is that the minerals that go into creating a battery are so valuable that the expectation is they will never go back into the ground. So the battery that goes into an electric vehicle today, we are working out how long in the life of that battery it exists as what we call a dynamic battery, one that moves around and powers a vehicle. From there it can be repurposed into stationary energy, so providing battery storage for a building — a commercial building or a home — and then from there as well the minerals can be extracted back out from the battery and repurposed. By this time we are talking 70 years away, 75 years after the battery has been created, possibly even longer as the proficiency and the technology continue to get better. But that is that important portion where industry is continually looking back; the minerals are so valuable they are like gold. The idea of them becoming landfill looks less and less attractive because people can find new things to do with them.

Ms HARTLAND — A little while ago I had the opportunity to be driven in an electric bus, which was very impressive. Can you see those as something that can take over, especially council community buses or on ordinary bus routes?

Mr JAFARI — In our conversations with particularly people who provide the Victorian fleet of buses as well as what we know from international evidence, the economics for electric buses already stack up — you can use the bus fleet in a correct way so that it is already more efficient to drive an electric bus. Big heavy drivers generally like it better as well because there is less strain needed on them in pushing the accelerator for torque and changing gears. Consumers like it better because they are less noisy — there is no rumbling in the back because there is a diesel engine burning away.

Quite particularly as well there are the maintenance costs and what we call the particulate emissions. This is not CO_2, but other noxious emissions that come out of these vehicles are quite detrimental. Very importantly when you recognise buses are going to the very front of schools and going to athletic fields and going to very heavily populated areas, those noxious emissions become a much more important factor.

So yes, we are seeing quite a lot of pilot projects and trials of electric buses in Australia. This is an area where, because international evidence has moved this along a bit further, industry is further along, and they would like to invest further if they started to see that reflected inside of tenders being provided by governments and councils.

Ms HARTLAND — There was a program on *Lateline* a few nights ago about Oxford and how they had given themselves a 10-year period to change over to electric vehicles, not just in terms of what the council runs but also there would be a ban on diesel or petrol vehicles within Oxford. Do you think 10 years is a reasonable time frame to be able to plan that?

Mr JAFARI — So recognising as well for Oxford that they are working inside of a national framework, there is already that market certainty in place to increase the number of vehicles available in their marketplace and increase investment by the private sector. The national target there is 2040 and then, yes, discrete areas inside of that nation can choose to act earlier. That does not necessarily mean that nobody can own a petrol vehicle anymore by that date; it just means they cannot drive it within the CBD in that area.

Again having that top-down leadership does provide, does facilitate, more opportunities for people to take even earlier action. Yes, 10 years is quite a lot of time, and action can be taken. With the life of a vehicle being around 12 years, that means that people can start planning accordingly today, but very importantly it is that signal back from government that this is an area that they would like to move towards, certainty really being the biggest issue here.

What we see with our electric vehicle market are more stagnant sales and the fact that most of the vehicles that we have available in Australia are much more costly; they are prestige vehicles. That really is a certainty issue for us. Globally, of the top 10 selling models of vehicles, seven of them are not available in Australia, and those seven are all priced under $50 000. That is because cars priced under $50 000 require certainty of scale. You are required to be able to sell 5000 or 10 000 of that vehicle to make your return. When there is no support and no indication of support from governments, those companies are very reluctant to bring their products to our markets.

Ms HARTLAND — What do you think are the other barriers to electric vehicles?

Mr JAFARI — Aside from the costing and availability, there are concerns around being able to recharge the vehicle. What we do see internationally is that most recharging occurs between homes and workplaces. Then particularly looking at the relationship to refuelling your vehicle — recharging your vehicle — it increasingly starts to change from going to a location to refuel to recharging being available where you are. So this is parking lots, hotels, restaurants and cafes providing charging infrastructure.

Just some of the things we look at that can be helpful that provide, again, that certainty and which can help to kickstart the market are where people are providing parking with electric vehicle charging attached to it as well, being able to provide things like exemptions to parking levies. Again, this will not be a total exemption to all parking levies and revenue forgone, but if you have 20 spaces, two or three of those spaces can have an exemption if you spend that money to provide charging. It is just reallocating that funding. What we have seen internationally is governments actually pouring money into providing charging, but the market is now mature enough globally for private investment to take over. They are just looking for a little bit of that burden to be relieved.

Mr LEANE — Thanks for helping our committee today. On your submission around the decline of the auto industry so far as combustion engine vehicles is concerned, what is the appetite in that area for those traditional-type companies as well to start producing electric cars in Australia?

Mr JAFARI — Internationally electric is seen as the gateway to all other future mobility options as well, so this is the connected autonomous shared electric vehicles, because these are multipliers. You do not want an autonomous vehicle that you have to pump petrol into; you want an electric one that can charge itself as it drives along in the future. Because we have a very attractive set of consumers — people who are better educated, a reasonably stable democracy and people with regular higher incomes when compared internationally as well — we have a very attractive market for investment.

Because of our strong educational resources, anything that is pointing towards newer technologies — so first of all electrification and driving efficiencies in that area but then also continuing to do research and development in things like autonomy as well — we do see quite a lot of interest, particularly by foreign investors, in wanting to bring that investment to Australia. They recognise that they are getting a lot of it from Australia at the moment, where they are competing to poach the best of our talent. It makes a lot more sense to be established where that talent is already based so you can get them first before someone else takes them away, essentially.

So we do see a lot of interest. The concern at the moment is that the state of our electric vehicle market looks like the state of the global electric vehicle market about six or seven years ago. No action has been taken to date, so when these countries are making their future plans it is unquestionably difficult to take Australia seriously in this regard, because they are waiting for us to catch up.

Mr LEANE — Just for the transcript I want to pare it right back to some basic questions. It is not so much to dumb it down, but it is important that we have some things on our transcript. An electric vehicle emits no emissions — zero?

Mr JAFARI — Correct.

Mr LEANE — And obviously the engine does not need oil — zero?

Mr JAFARI — That is correct.

Mr LEANE — When you spoke before about the minerals required to make batteries in Australia, what minerals are we talking about?

Mr JAFARI — Lithium is the largest requirement, but then also copper, cobalt, nickel and graphite.

Mr LEANE — And all of those are available in this country?

Mr JAFARI — All of those are available in Australia. We have among the strongest reserves, and we are also one of the few stable democracies that has strong reserves of those minerals, which multiplies how attractive we are.

Mr LEANE — How long can an electric vehicle that is currently being produced run before it needs to be charged?

Mr JAFARI — We are moving from technologies that are today around 200 kilometres to 500 kilometres at the higher end of the range, towards increasingly the next generation coming out in the next 12 months — the cheaper vehicles — having around 400 kilometres in range towards around 700 or 800. So it is a technology that is both becoming more efficient and cheaper year by year.

Mr LEANE — Getting back to Colleen's question, what is the current availability of charge stations? You may have one in your garage because you have an electric vehicle, but what is the availability of charge stations for an individual owner?

Mr JAFARI — Are you asking about having one inside your garage or having one available publicly?

Mr LEANE — If you have one in your garage, you are safe for what you have prescribed. If you want to drive interstate —

Mr JAFARI — You mean publicly available charging infrastructure?

Mr LEANE — Yes, say you want to travel from Melbourne to the Sunshine Coast.

Mr JAFARI — Sure. In terms of publicly available infrastructure, it has been very low both in terms of those available on interregional routes and those available inside of city areas — things like supermarkets and shopping centres and the rest. We have about 340 locations across Australia. What we should have is about one per every five to seven drivers. But again this is an area where we have what the early movers look like versus where governments step in to provide that infrastructure. Increasingly now we are seeing quite a lot of interest from the private sector to provide that infrastructure. More than anything else they are looking for certainty — when will there be support for the broader market uptake?

Then there are the other important components around providing people with charging inside their homes, recognising Australians on average drive about 30 kilometres a day. Yes, on weekends and holidays they may drive further, but for the average daily commute — 99 per cent of trips that are occurring — that is ensuring that things like all new buildings are at least future-ready for charging infrastructure. So the difference between futureproofing a development for charging infrastructure is the difference of around $200 to put a wire in the right place, for instance, compared potentially to up to $10 000 to knock down concrete, re-dig trenches or

rewire entire portions of apartment buildings. So the disparity in cost is quite large, and this is an area that we can start looking at providing appropriate standards for today.

Mr LEANE — For those 300-odd public charging stations that you just mentioned, if someone has an electric car, do they have access to a website that they can look at? As I said, they are planning a quite decent long trip. Have they got access to a website to look up potentially where they can charge?

Mr JAFARI — There are a number of websites and apps available with different services that all nominate where they are, but certainly what they are seeing on those apps is that there are not enough and they would like there to be more.

Mr LEANE — How long does it take to charge a car?

Mr JAFARI — Again, this is another area where the technology is getting faster. What is important is that we are talking about three different types of charging: being able to plug into an existing wall socket; what we call level 2 or normal charging, which is a purpose-built bit of infrastructure inside your house that would cost you about $500 to install; and then what we call DC fast charging — this is a type that would exist on an interregional route going from Sydney to Melbourne, for instance. Those look like being able to charge your car from empty to full in about 30 to 40 minutes, with the newer technology being able to do that inside of about 10 to 15 minutes.

Mr LEANE — Who is actually selling electric cars in Melbourne?

Mr JAFARI — There are a number of car companies: Tesla being one of the obvious ones, BMW, and Nissan has been and will be again. Nissan had the Nissan LEAF, the old generation, and they have sold out of those. In 2018 they are going to sell them again. It would take me a long time to list all the different car companies doing it, but in terms of the full battery electric vehicles that are available in Australia, there is the BMW i3 and the two Tesla models. But then there is also a range of plug-in hybrid options as well; these are cars that are electric but also have a backup petrol tank for those longer trips.

The CHAIR — There is just one question from me before going back to Ms Hartland, I am assuming. The noise levels of the car — I understand there is actually no noise at all. Is that right?

Mr JAFARI — That is correct. There is the noise from the tyres moving on the ground, but there are no engine sounds.

The CHAIR — Okay, great.

Ms HARTLAND — With the issue about the charge points, this seems to me to be a real blockage. I know that in other countries the charge points are just a very common feature now. What is stopping us having those charge points?

Mr JAFARI — Again, this is an area where possibly outside of the direct vehicle sector where we have the most amount of interest. This is everyone from shopping centres, restaurants and charging providers being very interested in making investments. Again though there is some leadership in this of building up the charging first to encourage people to buy the vehicles in the first place. But it is slightly chicken and egg in not wanting to build so early that your technology becomes defunct and the cars never arrive, so looking for that certainty of how far away we are from supporting our electric vehicle market in Australia to start to grow.

Again it is an industry that is looking for those signals of support. A lot of this, as we have seen internationally, is government support that is required to start the transition. This is much the same conversation that we had around rooftop solar panels of it is a new technology that provides broader economic, societal and environmental benefits. It is governments that need to intervene to help transition us in this direction, and by being able to see the beginnings of that support, industry is comfortable enough that there will be change starting to occur in our marketplace and that investment will be made in more charging infrastructure.

Ms HARTLAND — So with new apartment blocks or new estates and the way we have gone with water tanks and solar panels, this could become a planning feature or a selling point that could actually be quite valuable for body corporates that have three spaces that have got charge points?

Mr JAFARI — It increasingly needs to become a planning standard as well, because what we do see in more mature markets is them starting to move from providing one or two charging stations inside a parking lot to the majority if not all stations having charging available in them. This is where we look back at the idea of Victoria already having done a great job around providing smart meters, which is one of the important technologies, but then also software as well to ensure that if on the off-chance inside an apartment building everybody decides to charge their vehicle at the same time, software can kick in to slow down the amount of energy capacity required so you slow down everyone's charge to 75 per cent as opposed to very seldom needing a huge surge of electricity into that area, which would have a lot of grid impacts and would require a lot more investment. So again being able to provide that as a standard, particularly inside a new greenfield development, of either providing charging infrastructure in their parking lots or, at the very least, being future-ready, and that really just means essentially having wires in the right places so that somebody can very simply come and attach a charger there in the future.

Mr LEANE — Back on the public charging stations, is there a cost? If you go to a petrol station, you pay for your petrol. Is there a cost at the charging station?

Mr JAFARI — What we say is without any electricity discounts being in place, and there are quite a lot of electricity discounts available for electric vehicles at the moment, if you were paying a cents-per-kilowatt-hour charge, which is like cents per litre, the equivalent for what we call a E-liter, an electric litre of about 30 cents compared to about $1.20 worth of petrol. It is an order of magnitude of about a quarter cheaper, but then again being able to encourage people to do things like charge their vehicles overnight or in the middle of the day if they have solar panels and the sun is shining and no-one is using electricity, that starts to come down to about 2 cents or is entirely free if you already have the solar panels installed as well. What we are seeing in public charging infrastructure is a mix of solutions — anything from, at the moment, people charging for free in order to attract customers essentially, because it is such a cheap offering, to increasingly people providing subscription services and you pay your monthly cost and charge all you like or pay $1 a day and charge all you like.

Ms HARTLAND — On that issue, if it is in a major car park, would the car park add it onto the ticket cost? There would be other ways that large businesses could recover that fairly easily I would have thought?

Mr JAFARI — Absolutely fairly easily. What we are increasingly seeing is, as I mentioned, people providing it for free at the moment because we are talking about quite low numbers and it is an attraction game, but then also putting in place plans to have more public consultation in about three years time or in a certain amount of time of, 'This is the pricing plan we would like to move to. What is your feedback around that?'. We are seeing city councils, parking stations and others starting to develop these ideas. But certainly at this lower growth end of the market, it is just easy enough to swallow the costs.

The CHAIR — I think that is it. Thank you so much for your evidence. It has been very much appreciated. You will receive a copy of the transcript in a week or two, or perhaps three at a push. If you could just check that for any minor mistakes, and they would be very minor if, indeed, any mistakes appeared at all, we would appreciate that. Thank you very much indeed for attending this morning.

Mr JAFARI — Thank you very much.

Witness withdrew.