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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Witness

Mr Tony Fairweather, Managing Director, SEA Electric.

The CHAIR — The committee is hearing evidence today in relation to the inquiry into electric vehicles, and the evidence is being recorded. Welcome 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 may say here today, but if you go outside and repeat the same things, those comments may not be protected by this privilege. Thank you for your time in joining us today.

Could I ask you just for the record to state your name, position, company and suburb or town or whatever that you are based in, and we will then ask you to address the committee for 5–10 minutes, and then we will open it up to questions. Over to you, thank you.

Mr FAIRWEATHER — Terrific. Thank you, Bernie, and thank you for the invite. I appreciate the opportunity to talk here today and present. Tony Fairweather is my name, managing director of a company called SEA Electric Pty Ltd. We are based out in Dandenong at the moment.

The CHAIR — Over to you.

Visual presentation.

Mr FAIRWEATHER — At SEA Electric we are a Victorian automotive technology company that has developed some patented and proprietary technology for electrifying commercial vehicles in particular, so the key focus is in the truck segment. I will take you through a bit about what we do, but before that I will just touch on why the focus on electric vehicles and a little bit about what we do and then my thoughts on what sort of incentives might drive this particular segment.

There are a few statistics there, which I am sure you are all aware of. Transport effectively influences around 16 per cent of total emissions in Australia and 85 per cent of that is from road transport in particular. Some key numbers: 600 000 trucks on the road in Australia, roughly, and approximately 18 million cars. There are about 30 000 new trucks on the road each year, and the proportion of those being Victorian across all of those three statistics is roughly 30 per cent. A key figure to come out of that is that there are 30 times more cars than trucks on the road in Australia.

Looking at the graph, which is a little bit old, but you will see the trend there, if you tally the heavy-duty trucks and the light commercial vehicles for 2013 — and you will see the trend is increasing in terms of the emissions coming from that particular segment — versus the passenger cars, which is the orange at the bottom, they are roughly 50-50. So a key outcome or take-out from that is that by taking one truck off the road you are effectively saving the same as the emissions of 30 vehicles. The emissions from 30 vehicles is equivalent to one truck in Australia at the moment.

The other reason for electric trucks in terms of our focus is that from an application perspective they are most certainly more suited to electric vehicle technology for a range of reasons but primarily because the majority of trucks that we see on the road doing pick-up and delivery services around metropolitan areas perform less than 200 kilometres a day. They are typically on a fixed route, so they know how many kilometres they are doing on a particular day — as opposed to passenger cars, where you do not know that — and from a relative perspective they are a lot more noisy than passenger cars, so you get the noise benefit.

In addition, the economics of the delivery-type vehicles and trucks is much stronger at that truck level because you are comparing against a heavier duty and a higher cost diesel-type product when you are looking at the total cost of ownership of the vehicle. From an economics perspective the reason SEA Electric has chosen this is because we can now market to operators a product that has a better total cost of ownership than a diesel proposition, and it is not just an environmental element, hence the demand in this particular space is increasing substantially.

A bit about us: I touched on us being a Victorian automotive technology company. We have developed a patented drive-line system known as SEA-Drive. The best way to think of that is that everything that functions on a diesel, or petrol truck, for that matter — engine, transmission and all the ancillaries — in terms of our technology has been replaced by electric options. When you remove the engine and transmission on a truck — and we are talking about new vehicles here; an existing diesel truck platform that could be built without an engine and transmission and also has exhaust systems removed, the air compressors, the heaters, the power

steering pump, the air-conditioning system et cetera — all are replaced with technology that we have developed and with software that integrates all of those systems into our SEA-Drive technology.

We have got an extremely impressive engineering team. We have been working on this for the last three years. We came to market only early this year, which has been a function of waiting for the economics of the electric vehicle, the batteries in particular, to get to a pricepoint at which they stack up. That threshold for us was when lithium-ion batteries dropped below US$300 per kilowatt hour. They are down to about $260–$270 at the moment. The forecast back in 2010 was for that threshold to be achieved by 2025. It is seven or eight years ahead of schedule, and they are now forecasting it to be below US$100 per kilowatt hour by 2020. That is the majority of the cost of the EVs, so by 2020 the cost of an electric truck will ultimately be the same as a diesel truck. At the moment there is a four-year payback typically on the savings in operating costs for purchasing an electric truck. So if you are holding the asset as an operator for longer than four years, it is a given that you should be looking at electric vehicles.

Our technology is being adapted to fit not only into our own platforms but also into other platforms. I will touch on that. This is where the exciting bit and the opportunity for Victoria lies in terms of jobs with two of our partners in Victoria. These are the three platforms that we are assembling exclusively out at Dandenong: we have got a van platform, which is going to be either a minibus or a delivery van; a 10-tonne, hence the EV10 platform; and the EV14 platform. To reiterate: our smarts, our technology, is in the drive system. Those platforms in terms of the glider chassis — so the cab and the chassis — are manufactured overseas. We have exclusive access to those. They come into our assembly facility as a glider — no engine, no transmission, no exhaust system. We fit and electrify our technology out there and sell them as a CBU product — 'CBU' meaning 'completely built-up' product. They are the three models at SEA Electric that we are manufacturing, assembling, in Dandenong and selling to domestic and New Zealand markets as well.

Kings Transport, a Victoria-based operator, is our first big customer. It has purchased 10-plus at the moment, so we have got a range in assembly for them across all three brands. Interestingly this morning, prior to coming out here, NRMA were in from New South Wales. They know that with the electric passenger cars coming on board they need to change their fleet dynamics. The van fits into that criteria. They also need to change the means by which they recover electric vehicles, so we have got a program for them based on discussions this morning for being able to provide up to 200 of those electric vans with the ability to be able to fast charge any passenger cars on the road that break down. They are also talking with RACV about a similar sort of thing. They are aiming for 200 of the 300 fleet.

As I mentioned, our technology — the drive system, the SEA-Drive system — all of the elements in that chassis there, between the chassis rails, is our technology. Across those three platforms we have developed three different drive-line platforms. It can be adapted to different trucks and different vans from other OEMs.

As opposed to passenger cars the OEMs, the original equipment manufacturers in trucks, are very slow on the uptake in developing electric vehicle technology — a function of them being born as engine developers many years ago; the Japanese in particular, which dominate our market, were engine manufacturers, engine suppliers, so they have been very slow in producing electric vehicle technology. Hence, we have had direct approaches from two of them; one in particular is a very exciting opportunity for Victoria.

So let us start on the right-hand side there, being Isuzu. We are calling this platform the SEA NEV; 'N' is for their N Series — N electric vehicle. Of the 30 000 trucks that are sold in Australia annually, that is broken up into effectively thirds of light, medium and heavy duty at about 10 000 units new per year. Isuzu in the light category has about 60 per cent of market share — so about 6000 units per year. At the moment if you go out here tonight, if you drive down the street and have a look at that particular platform, you will see them everywhere; six out of 10 of them on the road are effectively Isuzu. They have a Melbourne-based head office; they have just moved to a new place over at Laverton. They are fully-imported at the moment, but we have got an initial agreement with them to electrify three of their models — two of each, so six of them — with our technology out at Dandenong.

They are very interested in working with us and with the Victorian government to look at how they could be incentivised to perform that assembly for all of their electric N series, which they would be selling in Australia, and then potentially exporting, in their new facilities in Laverton. Their COO — and I am more than happy after this to provide some contact details — Mr Phil Taylor, may have made contact, because he was in Japan last week and I made mention of this particular inquiry. He may have made contact to come in, but if not, he would

be very interested in talking. He has been dealing with someone at economic development only for the last couple of weeks, but that person then left and it has been transitioned to someone else. So probably a 200–250-job potential there if they have got up to 3000–4000 of the 6000 units per year.

Similarly, at the top left is an Iveco platform; it is called an ACCO, the truck platform. It is actually assembled in full out at Dandenong only a couple of kilometres from us. It is an Australian-made platform. We have got the first orders for three of those for end customers — so not dealing directly with Iveco at this stage but end customers. For two of those the body is being fitted by an Australian body manufacturer up in Bundaberg, called Superior Pak, but the glider chassis will come out of Dandenong; it will come to us and be electrified. The longer term opportunity is a similar relationship to the one we are developing with Isuzu, where that electric drive-line could be assembled in their facility out there on a separate assembly line — again an opportunity with some government support to be able to support the sorts of equipment that might be required for that, which is minimal. It is typically lifting equipment and the like, but for some additional employees in that particular area.

At the bottom is a product we have already done for Hino. It was actually an export unit for New Zealand; it is just another example of that sort of size of product. The drive system that is in that Hino, which is now in service in Auckland in New Zealand doing garbage facility solutions, is exactly the same drive system that will go into the ACCO when it is assembled in January this year. So I am just giving you some scope and scale about the opportunity for the adaptation of the SEA-Drive technology in Victoria alone.

These are just some pictures to show you an overview of what the technology looks like when it is installed. That is the Hino before the body was put on, I believe. The two big boxes at the top with 'SEA' on them are the big battery packs — 180 kilowatt hours in that particular unit. The controller is the silver box in the middle and a big motor that just drives the existing axle, and then all the ancillaries around that — electric cooling pack, electric air compressor et cetera — all with our integrated software and a fully proprietary, patented system known as SEA-Drive. The range is about 200 kilometres, as I mentioned before — 180–200 kilometres. So application wise they suit 95 per cent of pick-up and delivery — PUD — vehicles that are on the road.

Only a couple more slides here just based on the incentives, and by all means stop and ask any questions as we go. You will note that the products on the previous slide were relatively large vehicles — typically waste collection vehicles or tipper type vehicles. In Victoria the restriction on those vehicles on the road is 22.5 tonnes. The ACCO, as an example, is manufactured for 25 tonnes, but there are some restrictions and limitations which date back a long, long time relating to that 22.5 tonnes on that particular size of vehicle. If — and this has come directly from the waste collection people, the Cleanaways et cetera, who has a large office based in Melbourne — they could get a 25-tonne dispensation to operate electric vehicles on Victorian roads, as opposed to the 22.5 tonnes, so red circle that, that would be massive for them in terms of an incentive to take up electric vehicles early. Why?

Ms HARTLAND — Can I just stop you there?

Mr FAIRWEATHER — Sure, Colleen.

Ms HARTLAND — So currently a vehicle can only be on the road if it is 22 000.

Mr FAIRWEATHER — Yes, loaded.

Ms HARTLAND — But these are 25 000, and so that then puts them into a different category?

Mr FAIRWEATHER — No, it is the same category in terms of registration and the like, but registration we can talk about separately. It is not a category issue; it is a road restriction issue. So there is a limitation on the roads — an allowable limitation on the roads set by the road authorities in Victoria — that only allows 22.5 tonnes.

Mr LEANE — Is that to do with the capacity of the actual roads?

Mr FAIRWEATHER — Yes. It is a view that if they were to run 25 tonnes with all trucks on the road, it would damage the road. That is where the history goes, but 25–26 tonnes is a typical weight restriction in Europe, for example. So there is some history there, but also if we are talking about small numbers of trucks and you red circle the electrics, a 25-tonne GVM for the initial electric uptake will not have any impact on road or

pavement wear. But it is massive for the operators themselves, because they have real problems carrying the capacity, the payload that they need, of rubbish at 22.5 tonnes. The batteries also sneak into the tare weight a bit, so that does reduce that a little, but with a 2.5-tonne increase, we might take up an extra 500 kilos with extra batteries, but they get an extra 2-tonne payload. Because of the reliability and no maintenance being required on electrics, it means that their fleet is more consistently on the road, not needing to be pulled off, and they have got more payload, so it ultimately means that they can also reduce their fleet slightly, which should compensate for the additional GVM. From an operations perspective it is a big operational and cost-related benefit to the likes of Cleanaway and ultimately costs nothing.

The second point is at the smaller end. We are now talking about the N series-type platforms. Increase of car licence — in Australia you can hire one of the little Isuzu N series trucks from a Budget or the likes to move house or whatever at 4.5-tonne GVM and be able to drive that if you have got a passenger car licence. Over that, if it is a 5 tonne or 5.5 tonne — which is ultimately the same platform, just with a different plate on it — you have got to have a light-duty licence. All of the online grocery deliveries by Coles, Woolworths et cetera are all done on passenger car licence trucks. Now with the 4.5 tonne, again it is a payload issue for them. There does not seem to be much logic around why 4.5 tonnes, where the same truck itself — be it Isuzu or Hino in that particular range — can be rated up to 6 tonnes.

New Zealand, for example, has a 6-tonne limitation for their A class licence and have had for quite a while. If we could get red circled a licence restriction lift for passenger cars to 6 tonne GVM, then that would increase payload and increase efficiencies and it would drive the uptake of electric vehicles into those grocery home deliveries substantially; it would also drive it into the hire truck markets et cetera.

Mr LEANE — I have a question — so this is all due to the weight of the batteries and associated equipment?

Mr FAIRWEATHER — Yes, absolutely, Shaun, and it is a combination of some additional weight dispensation for some extra battery capacity, but it is not all extra battery capacity. So we are then saying, 'Let's get a bit for the extra battery capacity so we are not reducing any payload', which might be 250 kilos of that 1500. 'Let's give it a bit more because we know that that product is there'. It is the same-sized product; if we get a little bit more, that is more payload for them in terms of groceries they can deliver, increasing efficiency, reducing their fleet and improving their bottom line.

Relaxed noise restrictions — there are some parts of Melbourne where there are certain noise restrictions. We are dealing with Kings, one of our customers, at the moment. One of their clients is interested in the 14-tonne product to be able to get into a particular site after hours, purely because of noise — it is not about anything else but noise. It means that they can run at different times of the day. There are particular restrictions that are put on our clients from a noise perspective. As an EV incentive, again it costs nothing — a very good incentive.

Toll reductions: there would be if we could work with any of the toll suppliers — toll reductions or toll eliminations.

The CHAIR — Contact Scott Charlton. He is a good friend of this committee.

Mr FAIRWEATHER — Well, you saw that Lindsay Fox was on the TV only a couple of months ago, screaming about —

The CHAIR — I wish you well on that. I wish you well.

Mr FAIRWEATHER — If it could be, that would be a —

Ms HARTLAND — Tony, can I just stop you at that point? I do actually live in Footscray, so the whole truck problem in Yarraville is very, you know, in my backyard. If there was a toll reduction — because I think one of the major problems with the West Gate tunnel project is that trucks are just going to rat-run anyway; they are not going to pay the toll. If you have these vehicles — in terms of the diesel et cetera, you have eliminated that — how much more efficient would they be? Are there less truckloads they will take? Have you moved at all into the shipping container type —

Mr FAIRWEATHER — We are not into the prime mover space at this stage, but we have been requested by Woolworths to look at that for their DC deliveries. We are working through that, but in reality we are

probably six to 12 months away. I suppose in terms of starting to look at it, yes, absolutely, Colleen: that is a prime mover with a trailer on the back — it can be a container or it can be a box trailer — to be able to carry groceries. Yes, I have started to look at that. In terms of the efficiencies, if your question is about the ultimate efficiencies, aside from the noise reductions and the like, to the operator, the operating costs of a medium-duty truck — so 14–15 tonnes, up to those ACCOs — the cost savings to them from an operational perspective is in the order of AUD$12 000–18 000 per annum. That is just on the reduction of fuel, maintenance costs, time off the road and brake wear as well. You hear the exhaust brakes and the like when they are running through suburban areas. On an electric vehicle you have got what is called regen braking, which means you are actually collecting that energy. There is no noise. You collect that energy and you feed it back into the batteries. So it tops up the batteries as you go. It actually brakes the vehicle without using the discs, and it saves on noise but also on the costs of having to replace brakings. Efficiency wise, without a doubt electric vehicles are a lot more operationally efficient — and again, no noise.

Access to busways: again, it is probably fairly controversial, but it is something that has worked quite well in New Zealand. They have opened up busways to a range of commercial vehicles — the waste companies and that in particular. It again improves their efficiencies, and it is something that does not cost anything, as long as it does not influence the bus timetable and there is the capacity to get through there. It is a zero-cost incentive, and it can be very attractive to operators that need to be operating efficiently.

Something that has been very successful in Norway in particular, in the northern European countries, is a CBD parking allowance. They have actually, in a couple of cities, eliminated the potential of getting a parking fine for electric vehicles. Again, looking at the types of vehicles we are looking at — the pick-up and delivery vehicles, or PUD, as we have got there — a lot of time is spent in the city with a lot of inefficiency in trying to find places to park. Having dedicated EV parking or delivery zones would be, again, very important for the likes of Toll and TNT, who spend all day running around the city delivering and picking up parcels, and also for the grocery deliverers, the Australia Posts — all of those people.

Reduction and elimination of registration costs: New Zealand have eliminated what they call the road user charge, or RUC, over there, which is their registration. They have eliminated that on all electric vehicles till 2025, so there are no registration costs, whether it is a passenger car or commercial vehicle. Coordination of preferential retail or commercial electricity is also something that has been done very well in the US, and similarly on the second point with insurances, where states have got involved with the insurance and the electricity retailers and come up with special plans that not only can be provided to the commercial vehicle operators but in some cases roll on to the owner-drivers themselves.

In the van-type space we are doing some work with Kings at the moment with one of their clients, Sigma pharmaceuticals. Their owner-drivers take their vans home at night, so they are having some discussions with retailers to see if they can get a special rate. AGL at the moment have — you have probably seen it advertised on TV — a dollar a day for charging electric vehicles, a fixed price whether it is commercial or a van. That is the sort of thing where they could get a special rate from a commercial perspective for them to operate a depot or a facility, but it can also be passed on to owner-drivers to attract owner-drivers but also to give them the ability to get almost free charging at home for their own residential use as an added benefit.

Elimination of import duties: it is only 5 per cent here. In my view there should not be any import duties on any components that are driving and promoting electric vehicles in Australia. So there is obviously a duty regime there for a reason, but there should not be for EVs, because there is no competition in that space. To be able to get that sorted federally for us to be able to import components — we are getting some from countries that we have duty-free arrangements with, but there are still plenty that we are getting in that should not have import duties.

The other element of that is, from a Victorian government perspective and a Victorian economic perspective, the opportunity to be able to drive industries in some of the areas of components that we have to import at the moment is substantial. The skills that are required to develop a motor or a controller or some of the telemetry hardware we have in Victoria — they have all come out of Ford and Holden and the like, so to be able to promote those needs, not just to suppliers, but to be able to export to this burgeoning industry globally, is substantial.

The last point I have got there is targeted rebates for first-time buyers, which have again been very successful in the US. California has got a great program. So it is a kind of grade — a reducing scale of incentives, let us

say — for a cleaner way, where they get X number of dollars per vehicle that they purchase in the first 12 months, which reduces in the second 12 months. With the costs of batteries and technology reducing at the rate that it is at the moment, it is only needed for two to three years to be able to drive that uptake, and it would not take very long to have the majority of waste vehicles in Victoria operating as 100 per cent electric with some form of incentive like that.

That is all I have got, and I am happy to take any questions.

The CHAIR — That is plenty. Thank you for that. That is more information than we have received to this point, so thank you very much indeed for that. I am just wondering: how many vehicles did you sell last year in terms of EVs?

Mr FAIRWEATHER — We only sold our first vehicle this year, as I said.

The CHAIR — This year, yes.

Mr FAIRWEATHER — We came into the market for the first time this year because of the costs. We have got a pipeline of around 30 at the moment — about 15 nearly complete and another 15 being built at the moment. In Australia we probably see in terms of our CBU range that we will be producing around 100–150 a year. Our key focus is on the partnerships with the likes of Isuzu and Iveco. I returned only this morning from New Zealand. We have got a licensed partner over there who is assembling our product and has a pipeline of more than 30 builds already.

The CHAIR — Do you detect a demand from people out there who are actually wanting these vehicles?

Mr FAIRWEATHER — Absolutely. There is more demand in the commercial vehicle space from an operator's perspective, hence NRMA contacting me last week and saying, 'Can we come and have a look at the van?'. Not one of our partners or our current customers have we actually approached about selling vehicles. At the moment it is about getting the product to market, but at the moment we have got licence agreements at various stages. We have got signed licence agreements in two countries, and we have got licence agreements at various stages in South Africa and Mexico, two in the US and one well developed in India. These are all companies that are OEMs, typically, so they are manufacturers of trucks in each of their markets — other than the school bus company in the US that I think I mentioned before. They have seen press releases on Kings and the likes and they need the technology. The demand is coming from their clients, their customers.

India, just to put some perspective around this, one of the largest vehicle manufacturing countries in the world, only three or four months ago announced that it was going to ban the sale of internal combustion engines in all vehicles by 2030. A company we are dealing with at the moment last year produced 10 000 trucks, all diesel. In 12 years time they will not have a business, and they do not have the technology at the moment. So the day after the Kings announcement I had a call from Mr Rama in India. I have been over there twice so far, and we are at the last stage of negotiating a licence agreement with them. Ultimately we will supply the technology to them if we have anything significant being manufactured here, and there are a range of local components. We have localised as much as we can in Australia. All of our brackets and mounts, wiring and harnesses are coming out of Australia et cetera. Whatever else we can get here, we are effectively opening the world to commercial vehicle drive-line supply with our licensed partners around the world. So to answer your question, Bernie, the demand is out of control.

The CHAIR — Great. That is very good news, particularly for you, I would think.

Ms HARTLAND — I was interested in Kings. Have they done an economic analysis yet, or is it too early to look at their savings?

Mr FAIRWEATHER — It is probably too early. I would have to ask them the question as to where they are at. Again they were driven by their clients. Three of these are going into Ikea, so they have got a global recognition, and Ikea have just said, 'We want electric trucks'. It was not an economic decision; it was, 'We want electrics. Where can you get them from?', and that was 12 months ago when we had the first discussion around this. Now they have got three going into there and more potentially on order soon. So it is being driven, as I said, by the clients, but we have got a range of economic information that we can supply that shows that three-to-four-year payback period. So effectively if it is a $15 000 annual saving, then we can at the moment

sell for a $45 000–$60 000 premium up-front. The operators are in front after that three-to-four-year period, and it is all cream on top after that, reducing every month.

Ms HARTLAND — How many people do you employ now on the manufacturing side?

Mr FAIRWEATHER — Around 25.

Ms HARTLAND — Could you envisage being able to take on a lot more people?

Mr FAIRWEATHER — Absolutely. If the volume from local assembly grew and the demand grew, for the likes of the Isuzu project we would need dedicated engineers in particular as part of that. As I said, we will be doing the initial assembly for six vehicles out there, but then we will be supporting these drive-line systems wherever they are in the world. So, yes, we probably see ourselves heading somewhere towards the 75 to 100, subject to what sort of volume of local assembly we are doing.

Ms HARTLAND — Will these be people who will need new skills or will people who have been in the automotive industry be able to transfer their skills to this?

Mr FAIRWEATHER — Both. A range of our required skills are general assembly skills, so perfect for straight out of local automotive manufacturing. With the engineers it is a fairly specialised-type area, but we have been working with Deakin and Monash on that. We have got some good overseas experience that we are able to bring in for those new engineers. So it is a combination, I suppose, to answer your question, Colleen.

Ms HARTLAND — From your point of view it sounds like it has real benefits for the environment. There is job creation in it and there are also reduced costs for the people buying.

Mr FAIRWEATHER — Absolutely. What was clear from the operators, which is why we held off coming to market until the beginning of this year, was that the environmental element of taking on large numbers of electric vehicles was not sufficient. There needed to be an economic proposition. We had an electric truck on trial with Toll in Brisbane for two a half years — so one of our first-generation vehicles, which we used to validate the technology, to get the word out there, but also to get feedback from the operator on some of its limitations.

In terms of that particular technology, from a technology perspective we needed some slightly increased range and increased speed. But the big factor was that the payback on that was about eight or nine years. They said, 'When you get under seven' — that was their milestone — 'come back to us'. It turns out that Toll has a few different challenges, as you have probably read in the paper, at the moment, but aside from that we are now down in the four-year space. So from an economics perspective we can seriously go to market with our own CBU product and also our partner's product and be confident in being able to offer an economic proposition that delivers for the environment as well.

Mr LEANE — Thanks for helping us today. It sounds pretty much like all good news. When did SEA Electric come to fruition? When did it start?

Mr FAIRWEATHER — It was founded in around 2012–13. We have got another business in Victoria called Patico Automotive. We have been importing and distributing commercial vehicles for about 12 years now, primarily in the bus and coach space, but it was from that that we came across this opportunity in electrics. There was a lot being discussed in the bus space for electrics, but we came across the opportunity very early on. So it was probably four or five years ago when we founded the company that we identified that the medium-duty delivery truck segment was going to be the first in the commercial vehicle space to be a truly economically viable segment because of the fact that they are fixed route, back to base and charge overnight. Everything ties in. So it was just about the economics of the technology getting to a point where the payback was reasonable.

In the case of buses, my view is that there is another 18 months to two years before the costs will to get to a point when route buses will be economically viable. There are some other challenges with route buses in that the batteries have to fit under the low floor as opposed to the technology you saw with us, where you have got big battery packs that fit nicely between chassis rails and are easy to bolt on. In buses you need more pack and more batteries because they do a greater range, they have shorter dwell times and they do more kilometres. So battery technology needs to get a bit better, and the costs and weight need to get a little less. So again, my view

is that it is about 18 months to two years before we have route buses, but absolutely route buses and city buses around town here will all be 100 per cent electric in the near term as well.

Mr LEANE — I know there was some federal and state funding for the company to get to a good point.

Mr FAIRWEATHER — SEA Electric, that is right. The New Energy Jobs Fund invested $516 000, matched with our $516 000, for some equipment early on, so we started that at the end of last year in terms of setting up our assembly facility, and that has been terrific in terms of supporting the equipment that has been required.

Mr LEANE — I am trying to get my head around what the company actually does. You have created a product that can be retrofitted into existing models of commercial vehicles, so they do not have to change anything as far as the way they are building chassis and so forth to be able to put your product in?

Mr FAIRWEATHER — Essentially if we are looking at this picture, the two chassis rails and the cab at the front are essentially the existing element of a glider chassis. The only real difference between light-duty, medium-duty and large-duty trucks is that those chassis rails are slightly heavier duty and they have narrower positions.

What that means is that in terms of adapting the three different levels of technology that we have, it is about the slightly different mounts to the chassis rails. The brackets might be slightly bigger or slightly smaller or fit to different mounting holes. The system we have created can be adapted to any cab chassis — so any front-engine cab chassis-type platform that has a conventional chassis rail-type structure. Essentially we are able to do that in everything that is produced in Australia, and the big manufacturers, being the Japanese manufacturers — Fuso, Hino and Isuzu, and Iveco here — all have that conventional platform.

But it also adapts, if I did not mention before, into the yellow school bus market in the US. We have been approached by one customer over there that operates 48 000 school buses. Those yellow school buses again are front engine; they have got a bonnet on them. They are very old traditional vehicles but perfect for electric. They do 40 miles in the morning, 40 miles in the afternoon and they sit around during the day and overnight. They buy 2500 of them. This particular operator, as opposed to an OEM, would like exclusive access to our technology for buses. They have got four different suppliers, so just as they have got an arrangement with an engine supplier at the moment, they tell their four different suppliers of buses that they want to fit SEA Electric technology in with those four manufacturers.

They then control that. They have got a point of difference over their competitors, but they also have consistency of that technology across their fleet. So they are very worried about the big transition that is occurring from diesel engines to electric; they have got tens of thousands of employees, none of whom know anything about electric technology. If they were to leave it to the manufacturers, who will all come up with their own technology over time, they will have four different levels of technology, four different types of software and four different computers and diagnostic tools. Trying to train mechanics and that to transition is going to be a nightmare for them. All operators are going to find that as this transition happens, because it is happening so much quicker and so much earlier than anyone planned.

Mr LEANE — Fantastic. Go the big V!

The CHAIR — Indeed. Ms Hartland?

Ms HARTLAND — No, no. That was really helpful.

The CHAIR — It was exceptionally helpful. That was very, very good indeed. You are a very busy man obviously. Thank you very much for your time in coming in and assisting us today. You will receive a transcript of proceedings in the next two to three weeks, I would say. If you could just give that a bit of a proofread and see if there is anything that needs correction — not that, I am sure, it will. If there is, just let us know and we will do the rest. Thank you very, very much indeed for coming in today.

Mr FAIRWEATHER — You are welcome. Again, thank you very much for the invitation. I appreciate the opportunity and enjoyed it. If you have any questions after this, please do not hesitate to make contact at any time.

Ms HARTLAND — Don't worry, we will.

The CHAIR — That is great. Thank you very much indeed.

Committee adjourned.