REPORT ON PROCEEDINGS BEFORE

LEGISLATIVE ASSEMBLY COMMITTEE ON TRANSPORT AND INFRASTRUCTURE

INFRASTRUCTURE FOR ELECTRIC AND ALTERNATIVE ENERGY SOURCE VEHICLES IN NSW

At Macquarie Room, Parliament House, Sydney, on Monday 30 June 2025

The Committee met at 9:30.

PRESENT

Ms Lynda Voltz (Chair)

Mr Nathan Hagarty (Deputy Chair)
Mr Warren Kirby
Mr Ray Williams

PRESENT VIA VIDEOCONFERENCE

Mrs Judy Hannan

The CHAIR: Welcome to the New South Wales Parliament. Before we start, I would like to acknowledge the traditional custodians of the land on which we meet. I also pay my respects to Elders past and present, and extend that respect to other Aboriginal and Torres Strait Islander people who are either present or viewing proceedings online. Good morning and welcome to the first public hearing of the inquiry of the Legislative Assembly Committee on Transport and Infrastructure into infrastructure for electric and alternative energy source vehicles in New South Wales. I'm Lynda Voltz, the Committee Chair. I'm joined by my colleagues Nathan Hagarty, the member for Leppington, who is the Deputy Chair; Judy Hannan online, the member for Wollondilly; Warren Kirby, the member for Riverstone; and Ray Williams, the member for Kellyville. We want to thank the witnesses for appearing before the Committee today and the many stakeholders who have made written submissions. We appreciate your input into this inquiry. Some of your inputs were rather large. They were great submissions. I declare the hearing open.

Mr CHRIS MILLS, Chief Executive Officer, Evie Networks, affirmed and examined

Mr BERNHARD CONOPLIA, Head of Public Charging, Evie Networks, affirmed and examined

Mr ANDREW FORSTER, Chief Executive Officer, EVX, affirmed and examined

Mr BRENDAN WHEELER, Chief Executive Officer, EVSE, sworn and examined

The CHAIR: I welcome our first witnesses. Please note the Committee staff will be taking photos and videos during the hearing. The photos and videos may be used on the New South Wales Legislative Assembly social media pages. Please inform Committee staff if you have any objection to photos and videos being taken. Can you please confirm that you have been issued with the Committee's terms of reference and information about standing orders that relate to the examination of witnesses?

ANDREW FORSTER: Yes.

BRENDAN WHEELER: Yes.

BERNHARD CONOPLIA: Yes.

CHRIS MILLS: Yes.

The CHAIR: Do you have any questions about that information?

ANDREW FORSTER: No.

BRENDAN WHEELER: No.

BERNHARD CONOPLIA: No.

CHRIS MILLS: No.

The CHAIR: Would any of you like to make a short opening statement? If you could keep them short, that would be great. We'll start with you, Mr Mills.

CHRIS MILLS: Thank you, Chair and Committee members. I am the CEO of Evie Networks. We are Australia's largest DC public charging network. We have, since 2018, deployed over 300 sites across the country—that is 900 bays of charging capability across the country. We have 75 of those sites deployed already here in New South Wales. With me is Bernhard Conoplia. He is our head of public charging. He is one of Australia's renowned specialists in EV charging infrastructure. We're here to address specifically section (c) of the terms of reference—the use of existing infrastructure and measures to ensure a competitive market, including ring fencing.

The choices made now will determine the long-term health of Australia's EV charging sector. Monopoly distribution networks are seeking to weaken ring-fencing regulations so that they can own and operate EV charging infrastructure, with guaranteed returns paid by all electricity consumers. For the industry, that means our largest suppliers—who already control whether we get a connection, when we get a connection and how much that connection costs, as well as the cost of every kilowatt hour of energy we consume through their poles and wires—will also now become our competitor. I will let you ponder that for a moment.

They plan to charge us a higher cost base than they face themselves. That is not a level playing field. That will kill private investment in public charging infrastructure in Australia. No rational investor will invest in public charging infrastructure in Australia under those circumstances. For consumers, what it means is poorly designed infrastructure by monopolies. They make a regulated return for every dollar of infrastructure they invest, so they do not care where they invest in that infrastructure because they make that guaranteed return. There will be little innovation in public charging. In fact, the only innovation that they will undertake will be how to maximise that investment: How do I spend the most amount of money? Because for every dollar I spend, I get a guaranteed return. The result of that will be higher power bills, as that underutilised infrastructure will have to be paid for by every energy consumer.

But there is a better way. Countries like the United Kingdom, Germany and the Netherlands have proven that market-led, Distribution Network Service Provider (DNSP) enabled models deliver tens of thousands of charge points through public and private investment. Why wouldn't we learn from their success? Our recommendations are, one, to protect and strengthen ring-fencing rules; two, to streamline grid connection processes and costs and modernise tariffs; three, to empower councils as deployment partners; and, four, to target the funding into genuine areas of coverage gap, particularly in regional New South Wales. Done right, EV

charging will reduce emissions and will lower bills for all energy consumers by maximising utilisation of the network. We urge you to preserve competition in New South Wales. Thank you, and I welcome your questions.

ANDREW FORSTER: Good morning. Andrew Foster, CEO of EVX. We're a local manufacturer of infrastructure-grade public EV charging stations, and we also own and operate those charging stations, in partnership with local governments right across the State. In the last 12 months that network has expanded rapidly to cover over 200 publicly available sockets, with over 99.9 per cent uptime, most of which were constructed just in the last 12 months. Unfortunately, our industry and those efforts have been undermined by a systematic misinformation campaign, led by electricity distributors or DNSPs, in an effort to pressure and mislead policymakers and regulators.

DNSPs have falsely asserted market failure to meet demand, using already discredited statistics of global infrastructure ratios. They also continue to make vexatious claims that the kerbside EV charging market is not viable commercially, despite evidence to the contrary. All of these efforts are focused on one outcome, and that's to expand their monopoly rights into contestable and competitive markets, shoring up greater regulated returns by attempting to change ring fencing regulation designed to protect New South Wales consumers. Such changes will have disastrous impacts for electricity consumers and a growing, productive and innovating industry forever.

Finally, claims that competition will in some way be delivered by allowing monopoly infrastructure ownership and the associated delivery model are deeply flawed. Competition is driven by competing hardware design and functionality, competing service and maintenance models, and varying market models delivering genuine innovation, not by channelling customers and service providers forcibly through a risky and singular means of infrastructure ownership. This proposed model is guaranteed to destroy private investment in public charging, deliver poor user experiences, reduce industry-wide productivity, decimate local capability building and manufacturing service, and undermine public confidence in public EV charging infrastructure. Finally, the New South Wales Government's current EV strategy and associated programs are the envy of policymakers and EV drivers right across the country. Ring fencing of monopoly networks needs to be not only maintained but strengthened to ensure that the substantial progress made is not dismantled by uncompetitive regulatory capture.

BRENDAN WHEELER: Good morning and thank you for the opportunity to appear before the Committee. I am the co-founder and CEO of EVSE Australia—a New South Wales business and one of the country's largest EV charging providers. I'm also an EV driver so I understand both the industry and consumer perspectives. We've been part of the EV transition from the very beginning with over 10 years of experience helping to shape and deliver Australia's charging infrastructure. Today, we provide end-to-end EV charging solutions across home, fleet, workplace and public environments. We currently manage over 5,000 charge points nationally, having recently acquired ENGIE's public high-powered DC charging network, adding over 250 charge points across the country.

In New South Wales specifically, we've worked with more than 50 councils, both metro and regional, to support both their internal fleet needs but also for public charging, and have partnered with several New South Wales government departments as they transition their own fleet to electric vehicles. Through Australian Renewable Energy Agency (ARENA) and New South Wales government programs, we've helped deliver over 80 kerbside charge points across eight councils, integrating grid services and smart charging innovations. We strongly support equitable and efficient charging growth across all of New South Wales, using existing electrical assets to serve the public good.

Our key message is this: Removing the ring-fencing protections will harm consumers and the market. EV charging is not a natural monopoly, and DNSPs can already participate fairly through ring-fenced entities. Allowing monopoly suppliers to become dominant competitors would simply distort the market, stifle innovation, raise electricity bills and deter investment because no-one wants to invest when your supplier is also your competitor. Instead, we should focus on improving what's already working: cutting red tape, streamlining processes, and enabling industry to continue scaling the rollout efficiently and fairly, in partnership with councils, DNSPs, charge point operators (CPO), and the Government to deliver a smart, collaborative and future-ready charging network for New South Wales.

Mr NATHAN HAGARTY: Let's dive straight in. Ring fencing—I think we've heard pretty clearly what your views on that are, but I want to dig a little bit deeper on what works currently, what doesn't, could they be strengthened and, potentially, any examples of loopholes at the moment in terms of current ring-fencing policies. I think you touched on this in your opening address, but what is the impact on the end consumer both in terms of EV drivers and wider energy bills? We'll go right to left or left to right—jump in.

BERNHARD CONOPLIA: I'm happy to answer those questions. What works today? Distribution networks have ring-fenced entities. They are allowed to compete with us today. There are strict rules about how they can compete. The costs that they charge us have to be cost-reflective, and those ring-fence entities have to

incur the same costs. They are already allowed to compete with us today and that's okay because we have the same level playing field that we're operating under. I would say the regulation around cost reflectivity is quite relaxed. It's quite loose, so there could be a lot more done to strengthen ring fencing.

We have examples across Australia where we're being charged very, very high amounts for connections. In our report, I quote one example of $20,000 just for an investigation—not for a connection, for an investigation—so you're talking 88 hours of time from that particular network at a cost of $206 an hour just to investigate whether a connection would be possible. That's not the cost of the connection itself, so you might say it's a quote for a quote. This is all costs that are agreed costs under the regulations. I don't know that the 88 hours is agreed, and certainly there's no-one in our organisation who's getting paid that sort of money to do that sort of work.

There are many examples where we're being charged a very high cost today, even under the existing framework, so that needs to be strengthened a lot. We have many examples of sites that are being charged the wrong tariffs under the existing tariff structures, so we end up paying $1,000 or $2,000 a month per site too much for up to 12 months before we can justify those tariffs being changed, and then the tariffs themselves have no concept of the infrastructure that we're deploying on the network. You'll hear everyone now agree that EV charging is good for the network. It increases utilisation of existing assets. Our load profile aligns really well with solar generation, so we soak up solar. Our equipment is highly controllable, and we control it today to avoid peak network events. There were two peak network events last week where we turned down our chargers.

We're deploying infrastructure that is really good for the grid, but tariffs don't contemplate the benefits that our infrastructure can provide. What's working well? The current frameworks allow distribution networks to compete on a level playing field. The rules need to be strengthened because there are many examples where we believe we're being overcharged, both in terms of connections and tariffs. If those ring-fencing rules are relaxed—even if it's in the form of a trial, as distribution networks are starting to apply for those trial waivers—you need to also consider that the signal that sends to regulators and to government entities is very damaging. It sends a signal that monopolisation of Australia's EV charging market is something that Australia is considering. That's also a thought that I'd like to leave you with.

ANDREW FORSTER: On the question of ring fencing and structure, there are a few things that distribution networks have available to them in terms of testing those structures. Regulatory sandboxing is one of those things, and waiver requests is another thing. What we're seeing is a bit of an abuse of those functions, across the board, by distributors to undertake, effectively, what we would consider are commercial activities. What these trial waivers are designed to do is to present innovation and challenges that exist in the market. Unfortunately, the barrier in terms of what information must be provided to the regulator and to the decision-makers is quite low in terms of what innovation is and what challenges exist in the market.

As you've heard, they do have unregulated associated entities that they can compete with. While we don't have a broad issue with that, our main concern is that a lot of the charges and fees that we as a charge point operator incur doing business with those entities are not regulated fees. These fees are commercially decided by the networks. They're not published anywhere. They're not fees that essentially are transparent. At the end of the day, these unregulated associated entities, we can only assume, receive potentially unfair favour in terms of how much those fees are when they're paid. As an example, when we deploy an EV charging site in Sydney, we pay in excess of $1,300 or $1,400 worth of administration fees just to submit the application for that site. When we do 100 sites, there is a cost to our business of about $140,000 or $150,000 just to cover the administration of the application for those sites.

Because those fees are not published—they are commercially negotiated with the distributor—we think that there are some potential changes to ring fencing and shared asset rules that could come about as a result of inquiries like this to force networks to publish those charges, to make them public and make them fair, and to ensure that all of their unregulated subsidiaries or associated entities are also being charged those amounts. What we do know, ultimately, is that under a regulated asset base model, regardless of whether they say that competitive entities such as ours will still be able to participate, they will not charge themselves those fees. To be able to say that they can do this more cost effectively with one hand and then, with the other, be charging us fees that they won't in fact incur when deploying the same infrastructure is disingenuous from a competitive point of view.

BRENDAN WHEELER: I think the gentlemen have covered off the main points there. But the point I'd make is that the industry does have a large set of stakeholders that are already doing this job very well. I think there's a little bit of an incorrect truth out there that somehow we're not doing a good job. You've seen, over the last 10 years or so, tens of thousands of public chargers being deployed. So the system does work, but it certainly could be optimised. I think it really comes down to each of those different stakeholders optimising what they do. Where we can streamline processes, create transparency and speed things up, that will help support further

deployment, bring prices down and enhance a competitive market, which is for the greater good of New South Wales.

Mr RAY WILLIAMS: Thanks, everyone, for attending this Committee. Can I assume from everything that you've said that the current regulatory framework is the fairest at the moment in terms of getting the continued rollout of EV chargers, the continued private investment and also the fairest outcome for consumers, which is ultimately important? Can I assume that from the comments that you've made?

BERNHARD CONOPLIA: I would say the framework is fair. The framework can be strengthened in the way it's implemented and enforced. There are still a lot of barriers within the framework to deploy infrastructure. It's very much about the operational side. There are a lot of barriers to getting new connections on the grid. There's a lot of opportunity for information-sharing across entities. If we get all of the different stakeholders working together to plan networks better between charge point operators, distribution networks and local governments, there are a lot of opportunities for efficiency there. The tariff framework needs to consider the benefits of consumer energy resources and the attributes of consumer energy resources. There is a huge number of opportunities to make things better, but the framework as a whole is reasonable and is probably the best framework we have.

Mr RAY WILLIAMS: If I could continue, Madam Chair, with just another question, I draw on the L.E.K. report. Page 32 of that report is a case study on behalf of Ausgrid, where Ausgrid has suggested that if distribution network service providers were allowed to roll out kerbside charging, it could be done at a lower cost with a lower scale, and that there are cost and speed advantages to a distribution network service providers-led rollout of pole-mounted chargers. Has there been any data or statements, or has that been audited and verified by any independent authority? Has the authority engaged with people like yourself to make such a comment? What do you feel about the comment from Ausgrid's suggestion?

BERNHARD CONOPLIA: There is no data that has been shared. These are broad, sweeping statements that have been made in many, many forums over an extended period of time. We've not seen any data—perhaps some loose anecdotes. I can tell you that when industry is out there hungry and laser-focused on consumers, we are going to be operating a lot more efficiently than a regulated monopoly that has no incentive to operate efficiently. The only way they can do things at a lower cost to us, to industry, is if they charge us costs that they don't incur themselves, and that's actually what's being proposed. So facilities access agreements—DNSPs have said publicly that they would not charge themselves those fees, yet they will charge us those fees. There are discrimination, cross-subsidy issues with that very proposal that's been put forward. Other than that, if you think about the value chain for deploying infrastructure, we don't have legacy systems, as they do. We have an agile workforce that is highly incentivised to do the best job for consumers. We are operating at scale today, and our biggest barriers to deploying this infrastructure are the DNSPs themselves.

Mr RAY WILLIAMS: So, largely, the comment is just a vested interest on behalf of Ausgrid that hasn't been tested.

BERNHARD CONOPLIA: Yes.

Mr RAY WILLIAMS: If that were allowed to occur and the ring fencing was removed, ultimately what could the end consumer—the average person in the street paying electricity bills and seeing increased electricity costs virtually on a week-to-week basis— realistically expect to see? We're not just talking about people who have an EV car and are benefiting from it; we're talking about all consumers, I imagine, right across the board. Have any studies been done in relation to what that cost could be?

BERNHARD CONOPLIA: I can tell you that distribution networks—their incentive is to spend as much as possible because they'll get a guaranteed return. That means you'll have assets being deployed on streets that are heavily underutilised. They won't have any need to plan thoughtfully with councils to deliver what the community needs and what drivers need, so there will be—I'm sure Andrew will give you some evidence about utilisation of kerbside charging—heavily underutilised assets that consumers across the board will have to pay for via the regulated asset base. That means energy bills will be higher for all consumers.

ANDREW FORSTER: In terms of the evidence around some of the claims that are being made around cost and efficiency, we've seen claims by a number of different distribution networks around what they think they can do this for. We haven't seen that from the New South Wales DNSPs. There's been no explicit provision of any evidence of what they think this will cost. We have seen some rudimentary estimations from the Victorian DNSPs which are, quite frankly—based on what we know because we've deployed 100 or so locations in the same manner that they're planning to deploy—overcooked. We can do that more efficiently, and we can do that more quickly, in fact, as a company of seven to eight people, having deployed 100 or so locations in the last 12 months at scale and with really great efficiency.

The two other points that I would make on that is that there is a contestable ASP scheme in New South Wales for contract work for a reason. Level one authorised service providers are able to work on the networks and provide that service in terms of connections, transmission and distribution, and construction. I believe that scheme was brought about because it was fairly clear that distribution networks were not efficient and not cost beneficial when building that kind of infrastructure. So there is precedent there that's been established in terms of an authorised contractor scheme to deal with the fact that networks are not efficient and not cost beneficial to the consumer.

Lastly, just as an example, we have a site that we've deployed in Newport on the northern beaches of Sydney. That site, we've discovered, is experiencing voltage drop. The only reason that we know that is because we have a smart piece of infrastructure that's connected to the internet that reports to us on all of the power quality at that location. It's dropped below the allowable provision of voltage for the network. On querying the network on how long it would take to get that location fixed, the response was "It'll get fixed in the next 12 to 18 months." I would argue that if an EV charging station which is not going to be deemed by them as critical transmission or distribution infrastructure goes down, it's not going to be given the priority. Whereas for CPOs, it's all we do. Our response times for the Sydney metropolitan areas, and even in the regions where we've got authorised contractors, is within 24 hours.

Mrs JUDY HANNAN: I gather what you're saying about the DNSPs, and that there are different councils that you work with, but some councils seem to have an appetite for getting charging in their areas and some don't seem to have an appetite. Would there be any change for the black spots if DNSPs were allowed to—or if ring fencing was removed? How do you get those councils and those black spots fixed without that?

ANDREW FORSTER: I think that's a really important question. I'm not entirely sure that allowing distributors to do this at will with no consultation will get us the result that we want. Councils are becoming increasingly willing and able to support charge point operators. That can be evidenced in a lot of the programs that we deploy infrastructure on—by the hundreds. We recently hosted council workshops and programs of that nature. We're seeing willingness, in the hundreds of locations, come from councils. The important thing is that we're doing that with genuine community consultation. What we've noticed when we deploy this infrastructure is that, where councils don't undertake significant community consultation, we don't see significant acceptance and utilisation of that infrastructure.

Ultimately, the goal here for CPOs and for councils—and for the networks, quite frankly—is to see increased utilisation on the infrastructure and on the networks. Where we work with councils to do this in a meaningful way—that consultation—we see extraordinary levels of community support and we see extraordinary levels of utilisation. In recent times, in upwards of 20, 30, 40 per cent of the time, these pieces of infrastructure are being utilised. Ultimately, it does come down to the council when it comes to demarcated parking. We think that that is a really, really important feature of early-stage EV charging because what we've seen in councils that have trialled what they call opportunity charging—or charging where there is no demarcated parking—is that that infrastructure essentially becomes stranded.

Frustration in the community around access to those charges grows. Ultimately what we're trying to do is increase consumer sentiment around EVs, not to decrease the level of confidence for consumers to buy EVs in New South Wales. Ultimately, we think that working with councils is very, very important. We would say that the appetite for local governments is increasing exponentially because of pressure from the community and because of business models and working models that are being established with other local governments.

Mrs JUDY HANNAN: To further that, with your council courses and all the rest of it, what proportion of the council areas would have been metro versus regional? Do you get the same uptake?

ANDREW FORSTER: Yes, we do. We've run them with both regional and metro councils. To give you an example, we ran a workshop with New South Wales regional councils about six months ago. That has netted an expression of interest for 120 locations across regional New South Wales.

BRENDAN WHEELER: Over the last 10 years, the local councils have been some of the most supportive of EV charging infrastructure. A lot of regional councils particularly see it as a way to almost rejuvenate and bring people to their towns. There has been a really successful program that the New South Wales Government ran, which was the destination charging grants, which basically funded level two charging at small businesses—think wineries, hotels, shopping centres—as well as local government, specifically focused on regional areas. We found that program to be really successful because it enabled some of these areas—that, maybe on the surface, didn't make commercial sense initially—to actually get some data, get some charging infrastructure and show the impact that these sort of solutions were having on the local community. So, from our perspective, the EV transition isn't about metro and regional; it has to be the whole state brought along together. Some of our regional councils are the most vocal and the most supportive of it.

Mr WARREN KIRBY: Since we're talking about regional councils versus metro councils, what are the key differences between metropolitan and regional infrastructure development and maintenance?

BERNHARD CONOPLIA: I think we always start with the driver segments and the driver segment needs. You can look at inner city areas where the problem really is that people don't have off-street parking. You can go to regional areas where the problem is more about enabling journeys. Those are very different needs. The infrastructure we deploy in an inner city area can be quite different to what we would deploy in a regional area for that reason. When we deploy in an inner city area, we pick up lots of different driver segments who are looking for that convenience charging when they go about their day-to-day activities.

When we go to outer suburban areas, we see a different use case where, for us, there are a lot of drivers that are looking for a very fast turnaround. In regional areas, it's a combination of people who are at their destinations, looking to stay for maybe one hour while they enjoy some lunch or maybe they're charging overnight at their accommodation. You've got to think about all the different segments and their different needs across each of those locations.

You asked a question about the costs of deployment and maintenance. Obviously when you're deploying in regional areas, it's a lot more seasonal utilisation. There is a greater co-funding requirement in those regional areas in order to make the business case stack up. But what we see is what used to be a low-utilisation charger over time becomes a much higher utilisation charger. We're at the very beginning of this transition. There are still only 1.5 per cent of cars on the road that are EVs. Over time, there'll be a lot more demand for that infrastructure. There's a long way to go in this transition, and over time I think there'll be strong demand for all types of infrastructure.

ANDREW FORSTER: I think on that point of the way that we view regional infrastructure, we see the metro infrastructure directly enabling that regional infrastructure. As a matter of policy in our business, effectively, for every 10 sites that we deploy, the goal is for seven of those to be in the metropolitan areas, where there is a lack of off-street parking or charging, and for three of those to go out into regional communities. As an example, we have sites located all the way from Newcastle to Byron Bay on the New South Wales North Coast. We're deploying this week—I'm just looking at my calendar now—Wednesday and Thursday in Casino and Evans Head. We've recently done Bellingen, Urunga and previously before that Byron Bay, Hawks Nest and Newcastle. We view those as so important to the business model, because what we see from a commercial point of view is that during holiday periods, the metropolitan infrastructure starts to dip and that the regional infrastructure, commercially, is vitally important for us and for those in those local communities, because the utilisation of those assets increases exponentially.

Now, our view on it is, because we are looking at level two charging infrastructure, we're not necessarily journey related, but what we do is we provide that localised charging infrastructure. The example that I always use is I'll take my family from Sydney to the South Coast in Mollymook. I'll stop in Berry, and that's where the fast charger is, basically. But once I arrive in Mollymook, how I explore the region is limited because I don't have on-street charging opportunities in that small town. As we transition to EVs, EV drivers will make decisions around where they go and how long they stay based on what the localised kerbside long-dwell charging infrastructure looks like, so I think it is vitally important. We are seeing exponential growth in the use of that infrastructure, both by consumers but also by the councils themselves. We're setting up local councils on the Mid North Coast with accounts for their staff and for their fleet cars to be able to utilise that infrastructure when they're out and about in the community, which is vitally important for them because it could be 100, 200 or 300 kilometres between towns when council staff are out there transiting and doing their job. We see it as vitally important, we see it as commercially viable and we see it as commercially necessary for us.

Mr WARREN KIRBY: This is perhaps an awkward question. The arguments that you've put forward in in regard to your concerns about the distributors are not overtly dissimilar to the arguments that were put forward for privatisation of the electricity market. Rather than seeing a more competitive field with better prices for consumers, we actually saw the opposite. What do you see as being the major difference between what you're advocating for in terms of better regulation and transparency and barriers for the providers to not charge themselves fees, for example? How do you see that as being different to the argument towards the privatisation of the wholesalers?

BERNHARD CONOPLIA: With privatisation, it depends on where the natural monopoly is. We've seen privatisation of poles and wires distribution businesses or part privatisation. That is the source of lot of these problems, because that is a very clear natural monopoly. You don't want to have two sets of poles and wires running down the street. EV charging is not a natural monopoly. With a well-planned rollout, if you take the lead from what's happening overseas where you have coordinated rollouts that start with local communities and local community needs, you can very easily make sure that there are at least a few providers of that infrastructure in

each local area. Therefore, those providers will have a very strong incentive to provide the best customer outcomes and the best propositions, at the best price. We can very easily ensure that there is competition at the street level. Basically, kerbside charging is not a natural monopoly. It warrants itself to a competition. Poles and wires are a natural monopoly.

ANDREW FORSTER: Just a little bit further on that point, what we do is customer facing. Ultimately, we provide a customer service directly. We take phone calls from consumers, we provide advice on the services and we provide an active service to that customer. Poles and wires are a very different mechanism to that. It's obviously delivering electrons to a premises but, ultimately, the consumer doesn't directly interface with the DNSPs. That's a really important key differentiator. They will essentially assert that this is exactly the same as delivering energy to your home; it is not. This is a transport service, and it needs to be looked at through the lens of providing energy to the transportation sector. This is not an electricity service under any circumstances.

Mr NATHAN HAGARTY: I think one of you touched on the application fee and that, potentially, they weren't charging their associated entities the fee.

The CHAIR: Administration fee.

Mr NATHAN HAGARTY: Administration fee. There have also been some suggestions that perhaps there is some shared resourcing going on there between the DNSPs and the associated entities. Are you guys aware of any examples of that?

ANDREW FORSTER: There are some really obvious examples of that. There are staff that work across both entities. There has been cross-promotion of the work that the non-regulated business has done by the regulated business. There has been cross-branding of the work that the non-regulated business has done by the regulated business, all of which are in contravention of ring-fencing regulations.

Mr RAY WILLIAMS: I want to draw on some of the comments that have been made in relation to the need for an additional 51,000 kerbside charges. Given the developing technologies, especially around unit blocks and private charge point sharing, do you think that that is actually going to reduce the need for kerbside charging? I recognise that there is going to be a vast difference between the metropolitan area and the regional area.

BERNHARD CONOPLIA: What I would say is how can you predict, with 1.5 per cent of cars on the road being EVs? It's very hard to predict what the market needs to look like when 80 per cent of cars on the road are EVs in many years to come. Let's let the market decide what consumers need. The market will do the best job of fulfilling that need.

Mr RAY WILLIAMS: Then, ultimately, through what we talked about before, it will get the fairest outcome for everybody and the best outcome to encourage that investment. I appreciate that.

The CHAIR: Thank you very much for appearing today. You'll be provided with a copy of the transcript of today's proceedings for corrections. The Committee staff will also email any questions you've taken on notice—which you didn't—and any supplementary questions from the Committee, which you will have 14 days to answer. Thank you very much for a very informative appearance today.

(The witnesses withdrew.)

Ms JULIE DELVECCHIO, Chief executive Officer, Electric Vehicle Council, affirmed and examined

Dr ALINA DINI, Head of Energy and Infrastructure, Electric Vehicle Council, affirmed and examined

Ms LIZ STEPHENS, General Manager, Public Affairs and Strategy, Energy Consumers Australia, sworn and examined

Dr MICHAEL DELLO-IACOVO, Executive Manager, Advocacy and Policy, Energy Consumers Australia, affirmed and examined

Ms PAULINE FERRAZ, Manager, Consumer Advocacy, Energy Consumers Australia, affirmed and examined

The CHAIR: I welcome our next witnesses. Please note that Committee staff will be taking photos and videos during the hearing. The photos and videos may be used on the New South Wales Legislative Assembly social media pages. Please inform the Committee staff if you object to having photos and videos taken. Can you please confirm that you have been issued with the Committee's terms of reference and information about standing orders that relate to the examination of witnesses?

JULIE DELVECCHIO: Yes.

ALINA DINI: Yes.

LIZ STEPHENS: Yes.

MICHAEL DELLO-IACOVO: Yes.

PAULINE FERRAZ: Yes.

The CHAIR: Do you have any questions about this information?

JULIE DELVECCHIO: No.

ALINA DINI: No.

LIZ STEPHENS: No.

MICHAEL DELLO-IACOVO: No.

PAULINE FERRAZ: No.

The CHAIR: Would anyone like to make a short opening statement?

JULIE DELVECCHIO: I would. Thank you, Chair and Committee members, for the opportunity to speak to you today. I am Julie Delvecchio, CEO of the Electric Vehicle Council (EVC), the national peak body representing over 70 businesses across Australia's EV industry. I am joined today by Dr Alina Dini, our head of energy and infrastructure. Our members span car, bus and truck manufacturers; charging suppliers; network providers; and others committed to electrifying transport. Our mission is to accelerate this transition for a more sustainable, prosperous future. We commend the Committee for recognising that EVs are fundamental to Australia's transport future. The EVC serves as the unifying voice for the industry. While our members hold diverse views, we focus on the shared mission of accelerating EV uptake in ways that benefit all Australians.

Transport contributes one-fifth of Australia's emissions, with cars and trucks the main sources. EVs reduce emissions, improve air quality, cut noise pollution, lower oil dependency, offer electricity grid storage and create local jobs and industries. To realise these benefits, we must accelerate adoption. The EVC supports the goal of one million EVs on the road by 2027 to align with our goal of net zero by 2050. While EVs account for around 10 per cent of new car sales, only about 1 per cent of the national fleet is electric. We've seen progress: Over 1,800 fast chargers have been installed, with more level one and level two chargers coming online and heavy electric vehicles entering the market. But it is early days, and policy decisions made now will shape the speed and fairness of the transition. Expanding EV charging is critical to meeting this 2027 target, including kerbside, regional and freight solutions.

We welcome the Government's review of this issue, including work by this Committee, the Australian Energy Regulator and the Australian Energy Market Commission, and we also note proposals from energy networks to play a stronger role. We believe an evidence-based, consultative inquiry is essential. It should examine international examples and Australian data to guide the best approach—one that ensures a fast rollout, protects competition, delivers taxpayer value, grows local industry and jobs, and benefits consumers. We also urge the Committee to consider how a targeted review of charging models can promote equity; expand access in regional areas; stimulate sectors like tourism, skills, and innovation; and enhance opportunities for freight and logistics.

Electric trucks are already operating in New South Wales, with 18 models available and ranges of up to 500 kilometres. But without a dedicated path and plan for charging along freight routes, the benefits, such as lower costs, emissions reductions and regional jobs, cannot be realised. To deliver a holistic market outcome, further work is needed, including charger demand mapping, cost-benefit studies, tariff reform and tackling installation barriers. The decisions made today will determine the speed, fairness and success of this transition. We look forward to supporting the Government and industry to deliver a well-informed, effective path forward.

LIZ STEPHENS: Thank you for the opportunity today to present to the Committee. Energy Consumers Australia is the independent, national voice for residential and small business energy consumers. As part of our remit, we research household and small business expectations, values and needs for the energy market, and we share those findings and our recommendations, engaging in processes like today, to make sure that the long-term interests of households and small businesses are considered. EVs offer a huge opportunity for consumers. Our Stepping Up report shows that, by 2030, the average household with an EV can save about $1,440 a year, and modelling we commissioned from the CSIRO suggests that EVs will reduce electricity bills for all consumers, not just those who own EVs. That's because EVs tend to be charged at times of day when demand on the network isn't as high. That results in more bang for buck from the existing infrastructure.

EV ownership is growing; however, our latest national Consumer Energy Report Card survey suggests that current consumer interest in EVs is not as high as might be expected given those potential cost savings. Research by other organisations such as Consumer Policy Research Centre suggests that this is in large part due to the lack of charging infrastructure available. We strongly believe that an EV transition will only be equitable if all consumers are able to charge their EVs conveniently and fairly, which requires a public EV charging network that prevents certain community segments and demographics from being excluded. We're happy to answer any questions the Committee may have.

Mr NATHAN HAGARTY: This one is for Energy Consumers Australia. In your submission, essentially, you say that we need to ensure that EV charging serves diverse communities. What's your view on the current regulatory framework? I think it's very much geared with the carrot rather than the stick in terms of providing grants and incentives. But do you have any thoughts on potentially having it in planning controls and things like that where, if you're building an apartment building that's of a certain size or you're building a shopping centre of a certain size, there is a requirement in the controls to deliver X amount of parking spaces like they do with, say, disability? What is your view on the regulatory framework at the moment and what things could we learn from other jurisdictions about how to improve that?

MICHAEL DELLO-IACOVO: Our research didn't look at that particular issue, but what we would say is that we commend the New South Wales Government's investment in EV charging stations across the State through their grants. We believe that rolling out an EV public charging network is a task that requires collaboration between a number of different stakeholders, including State but also Federal government and local councils. We have commissioned a consultant to examine ways to improve the provision of public EV charging infrastructure. We are still finalising our position, but we would be happy to share that with the Committee in the coming weeks. There is an important role for State Government to play in determining where EV charging infrastructure needs to go, including providing funding. But also councils play an important role given their position in local planning and knowledge of local issues. The State Government could do more to help councils to share their lessons learnt with other councils to ensure access to charging.

Mr NATHAN HAGARTY: Does the Electric Vehicle Council have anything to add?

JULIE DELVECCHIO: Could you repeat the question?

Mr NATHAN HAGARTY: It was about the current set of regulatory incentives to propagate the EV charging network and any examples from other jurisdictions that potentially we could take on board to improve it. At the moment it's very much an incentive-based scheme where the charging companies can apply for grants. But is there a need to mandate charging at certain locations such as, say, shopping centres or apartment buildings to encourage EV charging and, by extension, EV take-up?

JULIE DELVECCHIO: I think it's fair to say that we have come a long way when it comes to charging infrastructure. We have 1,800 charging points that are available to motorists. There are a series of regulatory processes that are underway by the Australian Energy Regulator (AER) and the Australian Energy Market Commission (AEMC). Australia has been successful in convincing the early adopters to convert to electric vehicles. I think we are at a very unique point where taking some time to reflect and analyse the data on where we are up to on that charging journey—where we are and where we need to be—does present some opportunities to create additional incentives.

The EVC's position is that we would like to see a comprehensive national dashboard which tells us where the current charging infrastructure exists and where the gaps are, and the opportunities that exist in order to be able to accelerate that—so where there are gaps, the regulatory environment is such that it is motivating the right kind of behaviours for those gaps to be closed. But we feel that the evidence base and the data that is required are a key priority so that the market develops in the most effective way possible that serves the interests of consumers.

ALINA DINI: Can I add a point? In relation to international jurisdictions, I'll just add that what we've seen overseas in the US and in Europe is an initial wave of commercialisation policies targeted at supporting the development or establishment of an EV market, particularly fast-charging electric vehicle infrastructure. What we're seeing now is a movement to a broader acceptance of electrification, which means a need for greater types of charging infrastructure and potentially additional support from government to enable that. That's certainly what's happened in other jurisdictions, so it would be likely the case that Australia would need to move in that direction.

In relation to your specific question around the mandate, I think it might not be the most cost-effective mechanism to explore mandate in the first instance because, as you would know, the installation of charging infrastructure relates to an assessment of consumer demand, opportunity for network access and capacity as well as an understanding of what land is available. Looking at those variables as well as others, planning cost-effective solutions for charging is paramount to supporting consumer access affordably.

Mr RAY WILLIAMS: My question primarily is to the Electric Vehicle Council, but I welcome any responses from anybody else. Thanks so much for attending the Committee today. You stated in your submission that before government and regulators support any proposed models for increased kerbside charging, including proposals put forward by distribution network service providers that they are the best ones to make this continued rollout as opposed to the private sector, you've suggested that there should be an inquiry into what model best suits that rollout, the cost to government and certainly the cost to the end user, which is the consumer. Would you like to expand any further on those concerns and ultimately suggest who would be the best one to inquire—which body would be the best one to make those initial inquiries and provide a report back to government?

JULIE DELVECCHIO: Sure. The current regulatory system is well established, and energy networks do play a role as part of their unregulated business. We are aware that a number of energy networks and Energy Networks Australia are advocating very strongly for the networks to play a far stronger role. With any form of regulatory reform, it is so important that the future path is informed by data and evidence. One of the things I think that is lacking is a comprehensive, holistic understanding of where we are when it comes to existing charging and where the gaps are. We know that in regional areas, fleet and freight heavy vehicles are areas where we would like to see more charging infrastructure.

Ultimately, the role of the Electric Vehicle Council is to represent the holistic view of our members and there is a range of diverse views among our membership. In order to develop the most appropriate path forward, the role of the EVC is to advocate for additional charging infrastructure, but it is ultimately the role of regulators to determine market design and the most cost effective—what is the best regulatory mechanism that will get consumers access to charging in the fastest, cheapest, most effective way. That is ultimately a regulatory decision. What we are advocating for is the evidence base to inform that so that any decisions are made in consumers' interests that balance those diverse perspectives. We believe that the most important thing that we can do is really encourage and advocate for additional charging infrastructure because we do consider that to be a key obstacle in the uptake of electric vehicles in future.

Mr RAY WILLIAMS: Therefore, a subsequent inquiry—who do you feel is best? Would that be government? Would it be led by an independent inquiry? Who do you suggest is best placed to do that? Obviously someone independent of the of the industry, I imagine.

JULIE DELVECCHIO: Certainly, I think the work of this Committee is an important input into any of those processes. But the Australian Energy Regulator—its role is to make decisions in the long-term interests of energy consumers. The AEMC also plays a really critical role. The Electric Vehicle Council would welcome the opportunity to be involved in consolidating that data and bringing forward those perspectives. But, ultimately, the decision-making really needs to be made, in our view, by regulators, being the AEMC and the AER.

Mr RAY WILLIAMS: Is your feeling at the moment that the current regulatory framework—whilst everyone agrees is not perfect and could be improved—provides the best and fairest outcomes for everybody at this moment for independent investment, for the current distribution service providers and ultimately for the end user, the consumer? Do you think that provides the fairest outcome for everyone?

JULIE DELVECCHIO: I think, ultimately, that's a question around is it working now? In order to do that, again, it comes back to the data and the evidence base. If the evidence demonstrates that a rapid acceleration

is required, then looking at what other mechanisms might exist to accelerate that in a way that balances consumer needs and competition issues and speed—but, ultimately, in the absence of that evidence base that can be scrutinised, challenged and really understood, it is difficult to say whether what we have already is fit for purpose. There is a well-established regulatory framework that exists. Should a need for acceleration be required, then the evidence is the path to get there and then, from there, what are the mechanisms that could exist. That ultimately is a decision of the AER and the AEMC.

Mr RAY WILLIAMS: Are you suggesting that any deviation from where we are at the moment may impact on non-EV users, which are still in the majority at this point in time—people that won't necessarily be using kerbside chargers or any chargers in the future? How do we balance that so that the people that won't be end users end up paying for people who are driving EV vehicles?

JULIE DELVECCHIO: Ultimately I think that is a regulatory decision. We are quite cautious in advocating for one view over another, because our ultimate mission is to grow EV uptake holistically and on behalf of the entire industry. The one thing I would observe around EV uptake is that, while the cost benefits do accrue to individual EV drivers, the benefit of EV uptake for the whole community accrues to everyone, not just EV drivers. When it comes to emissions reductions, air pollution, there are a range of benefits that are shared broadly beyond just the individual driver. But, again, these are fundamental policy issues that need careful evaluation based on the evidence. Whatever path forward, what we are looking for is something that is holistic and really balances those competing demands in a way that really does encourage and give consumers the confidence that, if they are unable to charge at home, there are alternatives for them.

The CHAIR: In terms of freight—and maybe the Electric Vehicle Council could answer this question—there seems to be a plateauing out of EV chargers, which you said were around 10 per cent. Do we know what the uptake looks like for freight vehicles in electrical sales?

ALINA DINI: I might take that one on behalf of the Electric Vehicle Council plus Energy Consumers Australia. We're actually seeing early days in the electric truck sector. There are different types of vehicles that have been electrified, like last-mile delivery rigid vehicles—the ones you might see in your neighbourhood. But we're just beginning to see the rollout of prime movers. Those are the primary vehicles that you would see in the logistics sector. In fact, in Brisbane Volvo Trucks have announced that they will be manufacturing vehicles here in Australia from 2026. So it is early days for electric trucks. The point that we made in our submission is that the charging infrastructure that is required to support the logistic throughfare—so not point to point but travelling through Australia—is underdeveloped.

The CHAIR: Is that because there is a disconnect? The Federal Government has responsibility for truck stops and rest stops. You have your petrol stations where you'd see these normally and then you have your truck stop development. Is there some coordinated approach amongst all three levels of government to put that infrastructure in, given they're mainly Federal highways that they would be operating on?

ALINA DINI: My understanding is that, to date, there hasn't been coordination to that degree. In 2023 the Commonwealth released a National Electric Vehicle Strategy and that did not include strategic direction for heavy vehicles. We call on government to look at that more closely.

Mrs JUDY HANNAN: Having had discussions with some freight providers of electric trucks—first of all, how do electric trucks charge differently to electric cars? Do you see that there will be charging stations that every freight truck can go in and out of? Or do you see these people who are using the electric truck freighting system putting their own charging systems in?

ALINA DINI: Fundamentally, electric trucks don't charge differently to cars. What's different about the vehicles is their shape and size—the size of their battery pack, which is traditionally much, much larger than vehicles, so it would take longer for them to charge. Thirdly and most importantly, the way that the vehicles travel is quite different to cars. You will have different types of logistic operations. For example, you might have a truck from a Woolworths depot doing regular deliveries all day long to households for groceries. You may also have shipments travelling once per day from a depot to a number of locations and then returning to depot. Then, in the third instance, you might have a vehicle travelling, for example, from New South Wales to Victoria. All of these methods of travel are different and have different charging requirements.

Mrs JUDY HANNAN: Do they plug in or are there drop in and out batteries? What routes are working at the moment?

ALINA DINI: In the first instance, plugging in is the most common way for those vehicles to recharge and often they do so either in between routes or at the end of their normal route per day.

Mr WARREN KIRBY: One of the questions that I had was in regard to the DNSPs and allowing them to own and operate. Are you comfortable with the current transparency obligations on them?

JULIE DELVECCHIO: Could you just repeat the last part of that question?

Mr WARREN KIRBY: The current data transparency—we heard from the last witness that there were significant fees and charges being charged to retailers but they seem to be somewhat opaque and not very clear as to how they're justifying those charges. The imputation was that that was to make their business model better than the retailers on the other side. In the first part, how do you feel about them owning and operating chargers? In the second part, do you feel like they're doing enough to make sure that those commercial decisions are fair and equitable for retail charging points?

JULIE DELVECCHIO: One of the things that we hear consistently certainly from charge point operators is two challenges. One is the time delay in processing applications by the DNSPs and, equally, the data transparency—so having visibility of how long it will take for applications to be processed. That's certainly a very valid concern that we hear. Again, any changes to roles in the regulatory environment need to take into account some of these concerns and, again, we would encourage the AER and the AEMC to look at these issues closely. To the extent that they explore that, there are some opportunities potentially for those things to be addressed as part of any market reforms.

MICHAEL DELLO-IACOVO: I would add, on the topic of network ownership of electric vehicle charging infrastructure, electric vehicles benefit everyone. They benefit EV drivers and they benefit all energy consumers. We believe that all consumers deserve access to the benefits of EV charging and that an EV transition will only be equitable if all consumers are able to charge their EV conveniently and fairly. That requires a public EV charging network that prevents certain community segments and demographics from being excluded, such as those without off-street parking. We are open to electricity distribution networks playing a role in providing EV charging infrastructure if that will result in the best outcome for energy consumers. We are, in principle, supportive of regulatory sandboxes and trial waivers to explore different ownership models for EV charging infrastructure, including network ownership, to find the best path forward for consumers.

On data sharing, particularly network data, distribution networks do have a role here in providing data on the capacity of the network, the electricity network itself, to host more electricity demand or distributed energy resources. The networks aren't currently required to share this information. Some do in various ways. The New South Wales Government has, in collaboration with New South Wales electricity distribution networks, published a network hosting capacity opportunities map. We expect this tool will be useful to help third-party providers of EV charging to identify favourable locations in the network. There is value for the analysis for these maps to be updated frequently and for them to be performed at an even more granular level. To that end, we've lodged a rule change request to change distribution network planning requirements called the integrated distribution system plan rule change request, which would require networks to move towards collecting more granular electricity network data and sharing that with third parties.

On roles and responsibilities, there are multiple roles and responsibilities that will form the requirements for rolling out public EV charging infrastructure in the best way for Australian consumers. We're undertaking, as I've mentioned, a stakeholder process to outline these roles and responsibilities. With our consultant, we're engaging with Australian regulators, government departments, electricity distribution networks, EV charging infrastructure providers, EV companies, charge point operators and others. As I mentioned, we'd be happy to share the details of that report as it's released.

Mr WARREN KIRBY: Perhaps to take up Nathan's point about regulatory controls, specifically when it comes to freight, you've made the assertion that EV freight is viable but there is a lack of charging stations. Should there be some kind of regulatory framework around freight and logistics companies to have that infrastructure as part of their destination, particularly when it comes to rural and regional New South Wales? Thinking about the movement of freight, it moves from a warehouse at a dock or somewhere like that out towards a distribution warehouse in a region or a drop-off point. Should there be some kind of planning controls or regulatory requirement so that there is adequate charging for heavy vehicles at the destination points?

ALINA DINI: My view on that would be it is still early days for freight and logistics in Australia, and there is a bit more work required to understand particularly what pathways can be enabled. We'd be happy to take that question on notice and come back to the Committee with a more detailed response in relation to what, if any, mandated or regulatory frameworks should be considered.

Mr WARREN KIRBY: It's fair to say there hasn't been enough research done on that to have an adequate answer?

ALINA DINI: That's right. It's really early days. In fact, we can say with confidence—just having attended the truck show in Brisbane a couple of months ago—that there's incredible momentum around vehicle electrification in the prime mover sector. But it's just early, early days for those vehicle routes to be established, so I think it will take a little bit more time and proof on the ground to understand and collect data from those trials.

Mr WARREN KIRBY: Slightly off EVs, but given you were at the truck show, I'm curious. There are some manufacturers who are of the opinion that when it comes to, particularly, prime movers, the solution is hydrogen rather than electrification. Do we have an understanding of how that market is going to go and whether putting a lot of focus on EVs with heavy vehicles may very well get swamped in a short space of time by hydrogen? Or is hydrogen part of the thought process?

ALINA DINI: Certainly both fuel options are up and coming and will have a role to play in our transport future. Obviously, being a staff member of the Electric Vehicle Council, we're quite keen on electricity as far as it relates to transporting vehicles and their goods. But what I can say is it really does depend. What we're seeing in the market now is that solutions that are purpose fit are coming into application and being tested in the Australian context. A little bit more time is required for us to understand what the right mix might be in future. It is my understanding you'll hear from some specialist expertise on the hydrogen market later today that might be able to speak to its market development in a bit more detail.

Mr NATHAN HAGARTY: Just on EV adoption—I think this is for the Electric Vehicle Council—if you look at those targets and you look at where we're currently at, obviously there's a bit of work to do. In your modelling, does it suddenly start to ramp up? What are the factors there? Is it just range? Is it price? Trump's tariffs might help. We might get some Chinese vehicles dumped on our shore. In your modelling, how do you see us getting to that 27 per cent adoption rate by 2027 and 50 per cent by 2030, given where we're at now?

ALINA DINI: I can take that one. What we have seen in the last couple of years, particularly since Australia had its own electric vehicle policy announced by the Commonwealth, was a signal to the global market that Australia was open for business. Since that point, we've seen incredible growth in the electric vehicle market, both in terms of models of vehicles that are available—of which there are now more than 150 vehicle sales, for which we have roughly 10 per cent year on year—and that the overall fleet is now greater than 1 per cent. So we're seeing that growth.

What is likely to be a shift, however, is that, as Julie mentioned earlier, we have moved away from the most likely risk-supportive customers—those who are willing to take on new ideas and inventions. The early adopters of the world have already adopted electric vehicles. The next lot of customers who might consider them are those who are perhaps a little bit more risk averse. What the market seeks now more than anything is confidence—confidence in the product and in its viability; confidence in the charging infrastructure that it might utilise to support its development; and an understanding from government that its support will continue.

JULIE DELVECCHIO: The only thing I would just add to that is that, increasingly, we're seeing electric vehicle price parity come into play. It's possible now to get an electric vehicle under $30,000 a year. One of the things that we know is that the people who are purchasing EVs typically come from those outer suburban areas of Sydney, Brisbane. I think in the order of about 43 per cent of EVs are being driven by people in those outer suburbs. Contrary to the myth that EV uptake is dominated solely by inner city Sydney and Melbourne, we are seeing uptake rise in those outer suburbs, particularly given that often people have their own driveways. They're able to charge at home and they have a relatively long commute into the city.

As the economic drivers start to change, consumers see that they're able to save in the order of $3,000 a year by switching to an EV and the up-front cost of an EV is coming down, we're confident that we are going to see uptake increase. The other factor which is worth considering is that the model range is changing and expanding. Now it's possible to get a ute or an SUV in a plug-in hybrid, so that consumers who perhaps were not able to make that choice 12 months ago now have that option. As that range increases, it means that the full range of consumer lifestyles—whether you're a mum with kids or you're a tradie, there are EVs and plug-in hybrids that are available to consumers. As that grows, so too do we expect the uptake to grow.

The CHAIR: Do we know the demographics of that outer suburban uptake? Is it young families or older people that are retired? Do you know the demographic breakdown on that increase in sales?

JULIE DELVECCHIO: We do. I don't have it to hand at the moment, but we'd be happy to share that with the Committee.

The CHAIR: If you could take it on notice, that'd be great.

JULIE DELVECCHIO: Yes, happy to.

Mr RAY WILLIAMS: I'd pose this to probably other people on the panel outside the Electric Vehicle Council, but if the Electric Vehicle Council wants to chip in, please do so. If monopoly networks such as Ausgrid, Essential and Endeavour are given a mandate to accelerate the continual rollout of kerbside EV charging, is there a potential risk to customers? If those networks are given a waiver from current ring-fencing laws to allow them to accelerate the deployment of EV chargers, can network customers and competitors all be protected?

MICHAEL DELLO-IACOVO: I would say that it's important that we consider all of the options to ensure that everyone gets access to the benefits of driving electric and being able to charge their electric vehicle conveniently and fairly. We are open, as I've said, to different models, and look forward to the results of some of the trial waivers and regulatory sandboxes, particularly on the topic of network ownership of EV charging infrastructure, to take an evidence-based approach to see whether that should play a role in public EV charging rollout. I would say that that should come with the appropriate regulation and oversight from bodies like the Australian Energy Regulator, for example.

Mr RAY WILLIAMS: The reason I posed that is that Ausgrid have already provided commentary that they are best placed to provide the continual rollout, and that that will provide cost savings and speed up the deployment. Yet we have seen no qualified evidence—that hasn't been tested. No-one's audited those comments. It looks like totally vested-interest comments on behalf of Ausgrid. How, therefore, can we trust that commentary and move forward? Once again, I say that if there is a monopoly in terms of those particular networks, how is everybody going to be protected?

PAULINE FERRAZ: At this stage, we believe that it's not appropriate to assume that the market will deliver public electric vehicle-charging infrastructure for all Australians, as it would likely leave out a number of consumers. This is also why we commend the New South Wales Government's investment in electric vehicle charging stations across the State through the grants. That being said, as Michael explained before, we've established that there are multiple roles, roles and responsibilities, because there are multiple stakeholders involved in the rolling out of public electric vehicle charging infrastructure.

This is also why Energy Consumers Australia has undertaken this stakeholder process to outline these roles and these responsibilities. With our consultant, we are engaging with Australian regulators, government departments, electricity distribution networks and EV charging infrastructure providers and all the other stakeholders involved. We're really trying to understand what is happening and how this can be improved. This process will conclude with a final report becoming available in the coming months. We'll be delighted to share this with the inquiry when it comes out.

Mr RAY WILLIAMS: Could we glean from that, therefore, that the current regulatory framework—whilst perhaps not perfect and certainly can always be improved—is providing the fairest outcome for everybody at the moment through private investment on behalf of customers and on behalf of everybody?

MICHAEL DELLO-IACOVO: We would be happy to take that on notice and provide that report at that time.

Mr RAY WILLIAMS: Please do.

The CHAIR: We're probably out of time anyway, so it's good you've taken it on notice. Thank you for appearing today before the Committee. You'll be provided with a copy of the transcript of today's proceedings for corrections. The Committee staff will also email any questions taken on notice—there were a couple—and any supplementary questions from the Committee.

(The witnesses withdrew.)

Ms EMMA SHANKS, Acting Chief Executive, Energy Networks Australia, affirmed and examined

Mr DOMINIC ADAMS, Chief Operations Officer, Energy Networks Australia, affirmed and examined

The CHAIR: I welcome our next witnesses. Please note that the Committee staff will be taking photos and videos during the hearing. The photos and videos may be used on the New South Wales Legislative Assembly social media pages. Please inform the Committee staff if you object to having photos or videos taken. Can you please confirm that you've been issued with the Committee's terms of reference and information about standing orders that relate to the examination of witnesses?

EMMA SHANKS: Yes.

DOMINIC ADAMS: Yes.

The CHAIR: Do you have any questions about this information?

EMMA SHANKS: No.

DOMINIC ADAMS: No.

The CHAIR: Would you like to make a short opening statement?

EMMA SHANKS: Thank you for the opportunity to present to the Committee today. I would like to begin by acknowledging the Gadigal of the Eora nation as the traditional custodians of the land we're meeting on. I'd also pay my respects to Elders past and present. Energy Networks Australia is the national industry body representing Australia's electricity transmission and gas distribution networks. Our members provide more than 16 million electricity and gas connections to almost every home and business in Australia. We made a submission to the inquiry, so I won't take too long now. But I would like to take this opportunity to highlight a few key elements. Firstly, our members are focused on driving a sustainable energy future for all Australians. A report by BCG in 2023 highlights that getting coal out of the system is the first and biggest opportunity to decarbonise Australia. The second-biggest opportunity for decarbonisation highlighted in that report was electrifying transport.

At ENA, we know from our own recent research that owning an EV lowers the general costs of owning and operating a car, and lowers customers' overall energy wallet bill by as much as $2,500 per year, while also significantly lowering our emissions. However, we believe Australia's lack of adequate public charging infrastructure is creating and will continue to create barriers to uptake. Currently, there are 76 EVs per public charge point in Australia—far worse than the global average of 11. This understandably increases range anxiety for existing and potential EV drivers and is contributing to lower adoption rates. In addition, recent analysis shows that almost half of those Australians currently driving an EV are thinking of switching back to an internal combustion engine due to difficulties with charging. Access and perceived access to public EV charging is key to supporting wider adoption and collectively lowering our emissions.

Our submission outlines data-driven research that shows that we as a nation are suffering from a "chicken or egg" problem, whereby a lack of EV density currently doesn't encourage significant upscale in private investment. But, without more visible public chargers, drivers continue to be hesitant to switch to an EV. Existing power poles across the country, and particularly here in New South Wales, present an immediate and low-cost solution for expanding EV charging infrastructure. At ENA, we believe there is a case and, indeed, an opportunity to allow distribution networks to install and maintain small EV chargers on existing power poles to offer convenient kerbside charging to customers. The solution we propose in our submission would see faster deployment, lower costs, universal and competitive access, and what we believe to be an increase in customer confidence to purchase an EV.

Our proposal suggests that kerbside chargers would be treated as network infrastructure, like poles and wires are today, and would be open to retailers and charge point operators to use that infrastructure to offer competitive services to customers. Allowing distributors to deploy EV chargers was also recently put forward as a recommendation by the Climate Change Authority in its June 2025 *Unlocking Australia's clean energy potential* report. We believe that, by embracing this plug-and-play solution, policymakers and industry leaders can deliver a scalable approach that benefits consumers, strengthens the grid and accelerates emissions reductions at lowest cost. Thank you for the opportunity to present, and we look forward to taking your questions.

The CHAIR: Thank you very much. We'll now go to questions, starting with the member for Leppington.

Mr NATHAN HAGARTY: Thank you for coming in. You make the point that, compared with other places around the world, charging stations have been slow. But what would you say to the suggestion that one of the major hindrances to that are in fact the DNSPs themselves? I give the example of Ampol's AmpCharge

network. They had very ambitious targets, but they've been slowed down by the fact that, essentially, there are issues with the grid. It's a nice argument to make, but I think there are some other complexities about that. Do you have any comments on the fact that it is in fact slow grid connections that are slowing down the rollout of charging bays?

EMMA SHANKS: I might make a few comments, and Dom can probably add some detail. I think that, certainly, there is a significant difference in installing a fast charger at a location than there is on what we're talking about in our submission, the kerbside ones on the poles. We've had it explained to us by the networks that installing a fast charger can be the equivalent of installing a 12-storey apartment building. The connection requirements, the design and the amount of electricity purely needed for those things can take longer. The networks, in New South Wales particularly, are all really focused on how they can improve those connection times and how they can help accelerate that.

I think that certainly there are areas of improvement, but as we continue on this path, it's one of those things where we believe you need charging everywhere and you need all types. The kerbside-mounted chargers on power poles is certainly not a replacement to destination charging and fast charging. It is more residential-style charging. One of the reasons we propose it is that it is far easier to install. It's a few hours to install and it's far quicker, and it's one of those solutions we can get out quickly.

DOMINIC ADAMS: It's also probably important to note that fast charging is not an area that where a distribution network is wanting to get into and provide any services in relation to. To the extent that there are any delays in that space, then that's not really inhibiting a competitive market that the distribution networks want to be in at all. We at Energy Networks Australia are also working across our membership across the country on how to raise the bar or get to a highest common denominator place when it comes to installing fast chargers and looking at the service installation rules across the country and trying to work towards getting clear and efficient processes in place to install this infrastructure.

Mr NATHAN HAGARTY: Do you have any other examples of where one monopoly has been used to create another monopoly that benefited consumers and fostered innovation?

EMMA SHANKS: I think, in general, what I will say is what we're proposing today and through the submission is essentially getting networks to do what they already do, which is provide the assets—the poles and wires—to connect to homes and create a competitive retail market for the consumer to then get the best deal that they can when they choose to use that infrastructure. I think that this is an expansion of that with good regulatory oversight that we already do have in place for the delivery of the current assets that the networks manage. This is looking at a problem and saying that the skilled workforce and the capability is there. We could roll them out at scale and offer the same service as we do with poles and wires today, where the customer still chooses their retailer, seeing this as infrastructure for the community rather than a competitive business avenue.

DOMINIC ADAMS: At the moment the distribution networks do poles and wires. They connect energy up to your home but, obviously, in your home you can choose what retail provider you have. You can look across the board and say, "I'd like this provider rather than this provider. The service that they are offering me is good." Essentially, we want the same situation for EV owners. We think it would be a good outcome for customers if you're able to go to the nearest charger to you and have it be open and competitive so you are able to choose the services that you want, rather than having to drive two kilometres up the road to choose a different service because they are locked in, both hardware and energy services in the one device.

Mr NATHAN HAGARTY: Who would own the physical charger?

EMMA SHANKS: The networks would own the charger and keep it maintained at the required level, like they do with poles and wires and any other network infrastructure today. But they would open up the retail space so that you could have multiple charge point operators or retailers using, accessing and selling services from that one device. So they wouldn't interface with the customer.

Mr NATHAN HAGARTY: One of the issues I'd have with that is that currently, depending on where you charge and who you use, they've got different bells and whistles and different bits of software, and they offer different services. How would they be able to accommodate that without massive cost to the end consumer?

EMMA SHANKS: The networks would open up the device for all of those existing charge point operators, if they chose to, to sign up to offer their same services to their customers. I might use the charger today and charge with one charge point operator, and Dom could use the same charger tomorrow and pay a different one based on the subscription that he signed up to or the deal he has with various retailers. We would be looking to have that model replicated. That way, as Dom said, the consumer doesn't have to move to a charge point that has the provider that they're already subscribed to. It's open and it's literally standing there like the poles and wires are today. You pick your retailer when you get to the charge point.

Mr NATHAN HAGARTY: Given the issues we've had previously with the wider electricity network around gold plating, how would we stop gold plating happening in this space?

EMMA SHANKS: It's a good question. What we are saying here is certainly not a free-for-all from the networks. We're actually asking to use the regulator in the way that we use them now. It's required that the regulator has good oversight of capital expenditure by all the networks. This is really opening up this as an avenue for something in which the networks could propose their capital expenditure to the regulator for this type of infrastructure. It would have regulatory oversight, and the regulator is required to make sure that it's prudent expenditure and it's in the long-term interest of consumers. It certainly wouldn't change things such that, with this change, they would just be able to start rolling them out. They would actually have to put that through the regulatory requirements to get it approved by the regulator.

Mr RAY WILLIAMS: Thanks for attending the Committee. I note that Energy Networks Australia and L.E.K. undertook a joint report. If I draw from page 32 of that report, which was based on a case study regarding Ausgrid, Ausgrid has stated that there are cost and speed advantages to a distribution network service provider-led rollout of pole mounted chargers, as well as less community disruption, due to the use of existing infrastructure. Given we've established today that there is no data whatsoever, nor has a verified independent authority provided information in relation to their comments, I've drawn the conclusion that that is just a vested interest comment from Ausgrid. I'm curious as to why, in your submission, you would be strongly supporting the loosening of the ring fencing that is currently in place, which may have massive implications for both the competitive framework that we sit underneath at this point in time and, ultimately, the end user, and cost to both competitors and customers.

EMMA SHANKS: To answer that with a little bit more detail from the last answer, we acknowledge that, from the work we've done, getting more EVs on the road is really going to help decarbonise and that some of that work in the report you refer to says that, if we can get even more EVs on the road, we can actually increase the utilisation of the grid. By doing that, we bring down customer bills whether you have an EV or not. Some of those recommendations in that report say that just the average customer who doesn't have solar and doesn't have EV can save up to $160 a year in 2030 alone if we use the grid smarter and we pull all levers available.

In New South Wales, we know that there's a goal to get, I think, approximately 30,000 kerbside chargers by 2030. At the moment, we're sitting somewhere in the mid-500s—300 to 500. We're acknowledging that to get more EVs on the road, to have people have that confidence, we need a solution that we can roll out quickly. The networks are not asking to have free rein to just roll these out wherever they like. They're asking to be able to propose to the regulator that they spend some of their capital expenditure on this. The regulator would then have the oversight of whether that's prudent expenditure. The figures by various networks, including Ausgrid, would be reviewed at that point.

The Ausgrid data is based on a model of it being able to purchase a large quantity and install quickly with its workforce, and that would all have regulatory oversight before it was approved to go ahead. The modelling that they've done stacks up on what they can do at this point. At the moment, they can't propose to the regulator to spend any capital on this type of infrastructure because it's not considered a distribution service. If we can look at the longer term interest of consumers and say that this is something we would like the networks to be able to consider, then it would have that regulatory oversight before it was approved.

Mr RAY WILLIAMS: Thank you for your answer, but it's in extreme contrast to what we've heard this morning from competitors who are already rolling out electric vehicle chargers across New South Wales. As everybody knows, any monopoly position is only going to be in the vested interests of that person who owns, or that particular company or distributor that has, the monopoly. Ultimately the end user, the customer, will end up paying. So I beg to differ in relation to your views how you believe so strongly that we should revert from the regulatory framework where we are at the moment—which I think everybody agrees may not be perfect but is as close to fair that we can find at this point in time—where the advantages are going to be for the end user and the customers ultimately from a monopoly situation on behalf of Ausgrid, Endeavour and Essential.

EMMA SHANKS: Apologies if that wasn't clear. I think what we're actually saying is let's use the regulatory framework that we have in place. We don't want to revert away from it. We want to say in 2025 and with these plans for 2030 and beyond, how can we use it better? This is an avenue we think benefits all customers. That report that you referred to shows that more utilisation of the local distribution grid is going to help bring down bills, and we're talking about soon, bringing them down from now and in 2030—real cost savings for consumers. The more connections we have to the local grid, the more everybody's paying; therefore, the network chargers become for everybody. We've identified that the local distribution networks can do more of the heavy lifting when it comes to the transition. Some of those things include getting more EVs connected. The more EVs

we have connected to the grid in the middle of the day, the better utilisation we have of the grid and, ultimately, that is going to bring down costs for customers.

The regulator, through the regulatory process, would have to see from the networks quite detailed workings for that, and has within its remit the ability to see if it is in the long-term interests of customers and what those cost impacts would be for customers. We feel like that is a good avenue for customer protection. I think from the commercial sense, what we're saying is that the networks don't want to play in the retail space at all. They don't want to have the interface with customers and sell the electricity. They want to open it up. The customer experience would be that you could drive up to any charger and charge no matter who your retailer is or who your charge point operator is, and you wouldn't have to search for individual operators based on who you've signed up to.

Mrs JUDY HANNAN: I'm curious how we're using poles and wires, and I've certainly not seen that work very well for the people of Broken Hill in the past couple of weeks. You're talking about using the grid better.

Mr RAY WILLIAMS: It's government run; it's Country Energy.

Mrs JUDY HANNAN: Yes, well, there have been various providers that people can choose but it has just not worked out very well, and I don't think I've seen power prices come down anywhere. You talk about using the grid better. Would it not be sensible to just improve your provision to the private companies and the local distributors and use the grid that way better?

DOMINIC ADAMS: We think both are needed. At the moment there's a lot of work from across our distribution members to raise the bar and improve the service to connections for EV charging infrastructure, whether it's fast charging or otherwise. But what we haven't really seen is kerbside charging happening at scale, in the absence of significant government support. Essentially, if we're to get to the point where we have that—give or take 30,000 chargers by 2030, as the CSIRO recommends—we need to work out what the pathway is to get there. It is either continued government grants or continued piecemeal approaches to roll that out, or you can go down a distribution network service provision approach, which we think would be cheaper, give a lot more long-term certainty and provide a better service and, ultimately, customer experience, if those charge ports are genuinely opened up to competition to provide those services.

Mrs JUDY HANNAN: I would like to see some actual data on that because, as we all know, poles and wires have not delivered cheaper power. Anyway, I am finished with my questions.

The CHAIR: Perhaps you could take that on notice, if you do have any data that you can provide.

DOMINIC ADAMS: Yes. Maybe I can add a little bit of colour in terms of the utilisation story, which is, essentially, we've been going on quite a journey where solar power has been hollowing out the utilisation of the grid through the middle of the day. What that means is that your fixed infrastructure needs to be recovered over, essentially, less megawatt hours, so your prices do go up. With electrification and with, in particular, the electrification of transport, we've essentially got a once-in-a-generation opportunity to improve the utilisation of the grid. If you are recovering the costs of that fixed infrastructure over many more megawatt hours or a lot more use, then the price for that reduces. So it's really important that we get all of the infrastructure right as well as all of the tariff structures and the incentives to be able to, essentially, fill in the gaps—so get those EVs charging in the middle of the day to soak up that solar.

Mrs JUDY HANNAN: That's interesting, because I have seen—going back to Broken Hill again—where one provider goes down but regulation is only allowing that one provider to put the stuff into the grid. The solar panels and those things that are around—regulation can actually get in the way, especially when there's a monopoly provider.

The CHAIR: I think we're getting a bit away from the electric vehicle chargers there. I'll just move over to the member for Riverstone.

Mr WARREN KIRBY: To begin with, you make a lot of assertions about poles and wires going out to retailers and, effectively, extending that model to make it better for consumers. Is there any evidence at all that that model has brought down prices for consumers?

EMMA SHANKS: I would say that the model—as Dom has just explained, the more we have connected to the grid the more we can share the cost of the grid. Some of the research and models that have been done by the networks vary, depending on their network prices. You would have seen in Ausgrid's that they're proposing that if we had 11,000 additional chargers on the grid at the kerbside end and we got to 600,000 more EVs, we'd see customers overall—all customers—reduce their network charges by $18 a year. So the cost of $1 to $2 a year to put those on the grid, as opposed to the $18 saving everybody would receive, is really offset.

I think that there are a number of ways, though—I will say—in which you can fund this model, and it doesn't have to be dispersed across all customers as a standard regulatory service. That would be something that—with regulatory oversight, we would be using the regulator to make sure it was in the best customer interest. There may be a model where it is a user pays. It may be a model where it's like a kickstarted funding from the networks and the Government, and then it's later put on when it has rolled out and there are more EVs—it's later dispersed across the electricity customers. But at this point there isn't even an avenue to discuss it with the regulator to put it into the capital expenditure. That's where we're saying, "Let's open this path up", because the networks have the skills and they have the workforce and they have the experience to put these on. It might roll out differently in different network areas.

DOMINIC ADAMS: In addition to the price outcomes for customers, it's also important to look at innovation in offerings here as well. It would be great to get to a position where there is a range of different innovative offers to provide energy services for your vehicle, things like cheap charging in the middle of the day to soak up that solar or even something that links your own solar production. If you don't have a driveway, to be able to soak that up down the street at the EV charger that's a public charger because it's the same entity and it's the same retailer that does your home and does your EV charging wherever you go, and you can have it all on your single monthly bill. These are the sorts of innovations in service provision that we would like to see.

The CHAIR: I'm just wondering, is there potential here to build a bit of inequality into the system? In the inner city, where there's no off-street parking, you would be building the infrastructure to service those providers whereas, in the outer suburbs, we've just heard there is the big uptick in electric vehicle purchases and they're purchasing because they have got driveways and they're plugging into their own source. If it's shared across all the poles and wires, basically, the inner-city areas without the off-street parking would be being subsidised, essentially, by those outer suburban areas.

EMMA SHANKS: That's a really good point, and it's one that we have been conscious of. One of the reasons that we also believe in this model is that the networks wouldn't be driven solely by uptake or utilisation. In the private market, we can see that chargers tend to appear where they know there's EV growth. With the networks, they would be looking to have a model where they could put them in in many other locations, because they wouldn't be driven by usage; they would be driven by other benefits that can be utilised in the grid. It would be a fairer access. One avenue to look at is where there is EV growth, but another one to look at is where do we want EV growth. I said earlier today that consumers seeing and feeling confident that EV charging is around is part of the barrier to them purchasing an EV. The ultimate goal here is to get more people purchasing EVs to decarbonise. Some of it is a perception. Putting them in more places, and not just in places where we already know there's a high uptake of EVs, would be part of this proposal.

The CHAIR: But the fundamental point is that they won't require that in the outer suburbs because they're using their home, but they would be paying the essential levy to put the infrastructure in for the inner city.

EMMA SHANKS: What we might find, though, is that charging in the day is often the best time to charge, as Dom was saying. Even where you can charge at home—and, as an EV driver myself, I know that if you're not home all day, you tend to charge at night. If you're parked on a street, whether it's a high street or a small high street, other areas in the neighbourhood where you can charge through the day can actually benefit everyone. I think what we do know is that we're changing the way we use electricity at home for consumers to really benefit and bring their bills down at home. Often charging at night is not the most cost-effective way. Having more chargers where your car is through the day is also a benefit.

DOMINIC ADAMS: I make the point that everyone benefits from improved grid utilisation. No matter where you are on the network, your price per unit will be reduced as the utilisation of the network improves due to increased uptake of EVs.

Mr WARREN KIRBY: I have a question on DNSPs' data that they provide. At the moment, it's only on request. It's also that there is the option for DNSPs to say that it's confidential or it's commercial in confidence. Wouldn't it be a better outcome, if they were truly supposed to be bringing down prices and making a level playing field, for all of that data to be publicly available?

DOMINIC ADAMS: When you say "data", which specific data are you referring to?

Mr WARREN KIRBY: We heard this morning that there are administration costs in the tens of thousands of dollars that don't seem to have any particular justification for or merit. There's an opaqueness of the way that they deal with independent companies who are setting up charging stations, and they were concerned about quite a lot of that data. For example, if they're running their own poles and wires, and charging stations on poles and wires, they're not charging themselves fees but they are charging competitor fees.

DOMINIC ADAMS: I don't think that would be the case that there would be a difference between how a distribution business can deal with its own entity or an affiliate entity versus a third-party entity.

Mr WARREN KIRBY: That was the evidence that we heard this morning.

The CHAIR: We'll give you the figures that they provided, if you can have a look at them and maybe get back to us on notice. Is that okay?

DOMINIC ADAMS: Yes.

Mr NATHAN HAGARTY: Further to that, we're aware of evidence that's been given around shared resourcing, cross-promotion between the network and their unregulated associated entities. That's hardly a fair playing field.

EMMA SHANKS: Again, probably at the industry body level, we don't have the oversight of that specifically. I think what we're proposing, just to reinforce that, is that we want the regulator to have oversight of this. We don't want to give them any advantage to putting these out without proper regulatory oversight because we do believe that the regulator is what keeps the customers' interests at heart and keeps that cost pressure down. Individual arrangements between DNSPs and their other entities is not something we'd probably have information at hand on.

Mr RAY WILLIAMS: Are you aware of any of your members breaching the current regulatory framework in terms of the ring-fencing rule? Is there a lack of oversight in relation to that?

EMMA SHANKS: We wouldn't be made aware of that, no.

The CHAIR: Thank you for appearing before the Committee today. You'll be provided with a copy of the transcript of today's proceedings for corrections. The Committee staff will email you any questions taken on notice from today and any supplementary questions from the Committee. Thank you very much for your time.

(The witnesses withdrew.)

(Short adjournment)

Mr SCOTT NARGAR, Senior Manager, Future Mobility and Government Relations, Hyundai Motor Company Australia, affirmed and examined

The CHAIR: I welcome our next witness. Please note that Committee staff will be taking photos and videos during the hearing. The photos and videos may be used on the New South Wales Legislative Assembly social media pages. Please inform Committee staff if you object to having photos and videos taken. Can you please confirm that you've been issued with the Committee's terms of reference and information about the standing orders that relate to the examination of witnesses?

SCOTT NARGAR: I have.

The CHAIR: Do you have any questions about this information?

SCOTT NARGAR: No.

The CHAIR: Would you like to make a short opening statement before we begin the questions?

SCOTT NARGAR: Yes, I'll make a very short one, because I'd rather have a lot more questions—and knowing that the member also has to leave at 12. From Hyundai Motor Company's perspective, we've always been very supportive of the progress and transition to low- and zero-emission vehicles, especially zero-emission vehicles. We imported the very first hydrogen fuel cell car into Australia in 2014, and built the first hydrogen station in the Southern Hemisphere. We also introduced our electric IONIQ in 2017 and since then had a number of new models come onto the market, including several new EV models coming onto the Australian market this year, including a new hydrogen fuel cell vehicle as well. We also launched a hydrogen truck at the Truck Show this year in Brisbane.

We've continued to work with all industries—both the EV charging and hydrogen refuelling industries—to ensure that the very best stations are in place to give customers the very best experience. We look forward to working with the Government and also the members of the infrastructure community to get the best reliable hydrogen refuelling and EV charging stations we can to ensure that our customers, both private customers and commercial vehicle customers, have the very best charging experience with their vehicles. I'll leave it at that. I'm sure we'll get to more. I welcome Committee members, when they come out to our site in Macquarie Park in the coming weeks, to view that new hydrogen refuelling station, EV chargers and different things out there.

Mr NATHAN HAGARTY: Just on the Xcient, obviously it has been a success overseas. What can we learn from deployments in other parts of the world where the rollout has been more successful?

SCOTT NARGAR: The success has been, I suppose, demonstrated best in Switzerland, Germany. We've got the trucks now in the US and in Korea and other places around the world, including New Zealand. The success has been driven by infrastructure. Without infrastructure in the right locations, it's very hard to demonstrate a truck. The benefits over EV to fuel cell—it's something we use with the media quite often—is that EVs will replace petrol as we move into the future and diesel will be replaced by hydrogen fuel cell. There'll be a combination of different technologies.

Hydrogen fuel cells do have batteries in them as well, but in most cases we don't use the grid to charge those batteries up. It is charged by the truck as it drives. But in all the cases infrastructure has been critical. We see in the US at the moment—we've got trucks deployed across the US. We've just opened up a new car manufacturing facility in Georgia, and we're using hydrogen fuel cell trucks to bring the resources onto that factory, building new EVs but also batteries, and then they're taken away in hydrogen fuel cell trucks. We're using temporary refuelling equipment at the moment until our more permanent, larger scale hydrogen refuelling equipment is deployed.

Mr NATHAN HAGARTY: Of those first two examples, the geography is a little bit different, but America is probably the closest in terms of those long-haul distances. Is that where we should be looking to? What are some of the lessons learnt there?

SCOTT NARGAR: Yes, that faster recharging. We look now, with passenger cars—and I'll use the Hyundai as an example, as I'm representing Hyundai today. The fastest we can charge an IONIQ 5 or 6 is 10 per cent to 80 per cent in 16 minutes. That's using an 800-volt, 350-kilowatt station. With a hydrogen fuel cell car, we can charge in three to five minutes and get 650 to 700 kilometres out of those vehicles, and that's what we'll demonstrate when we're out at the office in a couple of weeks time. With trucks, we can refill in that 10- to 15-minute mark—so those quick turnarounds, those long distances. The rigid truck that's deployed in Switzerland—you may have seen those pictures—and the one we've got here in Australia, that's got about a 400-kilometre range, loaded. The larger prime mover truck we're using in the US market, that's about

700 kilometres, and that one's refuelling at the higher pressure—700 bar of hydrogen pressure; the ones in Europe are at 350 bar of hydrogen pressure.

Mr RAY WILLIAMS: A bit of a change of pace. Thanks so much, Scott, for coming in and, certainly, congratulations to Hyundai. I saw that particular hydrogen fuel cell car when it first came to Australia. You spoke about the one restriction on expanding the opportunities for hydrogen fuel cell and, ultimately, electric vehicles is going to be the infrastructure. How do you feel about a proposed monopoly in terms of the providers of that particular infrastructure, as opposed to where we are at the moment with the current regulatory framework, where it seems to be fair across the board for investors and, ultimately, the end user, the consumer?

SCOTT NARGAR: And this is based around hydrogen, or a bit of both?

Mr RAY WILLIAMS: I suppose it's based around both, yes, hydrogen and electricity.

SCOTT NARGAR: We want our customers, both private and commercial, to have access to as many reliable EV charging stations as possible. I know, talking to members previously at different committees, that infrastructure reliability is a big concern of mine. I drove from Glenmore Park, out between a number of your electorates, down to Canberra, when Parliament was sitting, to engage with the Federal Government through the NEVS process, and I found it frustrating—the reliability of the EV charging infrastructure. That hasn't changed. I think, also, the number of chargers. You're waiting behind dozens of people when you're wanting to charge, especially during busy periods of Parliament sitting while school holidays are on, down in Canberra. It can be quite a challenge, so we'd love to be able to get a charge on the way.

We want to see as many chargers as possible, so whether it's an unregulated or regulated business, or whether it's—we heard from the witnesses this morning. I, as a driver, but also our customers, want to see as many EV charging spaces as possible. From a hydrogen refuelling perspective, it's a lot more complex, and also, the same challenges, but we do rely on a larger requirement of energy for the grid. Even with our station we're putting in Macquarie Park, and other stations we're looking at, energy infrastructure on the ground is critical to be able to do that, especially if you're looking to make hydrogen onsite with electrolysis. That's quite an energy intensive process, so you've got to have that energy in play to do that.

The station in Canberra that was commissioned in March 2021, that's been going now for several years; it's into its fifth year now. One of the biggest issues we had with that station—the cars worked very well, from the surveys we got from the ACT Government users. The biggest issue we had was station reliability, and a lot of that was caused when it was taken off the government-owned entity, ActewAGL, and it was put back with a private company called Pacific Energy, who did build the station, but then they took control of it in the last year or two. A lot of the issues were caused by network reliability, especially overnight, with the fluctuations of energy, which then starts to trip sensors. Then the first drivers pull up in the morning to get hydrogen and it hasn't been produced overnight because there's been a trip. So energy reliability for hydrogen is critical, and also for EV charging.

Mr RAY WILLIAMS: If I can add a further question to that, on the rollout of hydrogen, especially in relation to heavy vehicles, as you've already touched on, can you see a time frame for that? I don't want to narrow you down to a year, but can you say how long before we see the progression to heavy vehicles operating on hydrogen as an alternative to diesel on a commercial basis?

SCOTT NARGAR: That time frame is very hard to judge. Hyundai has always been involved with a number of associations. We were one of the founding partners of the Electric Vehicle Council. I was the founder of the Australian Hydrogen Council and on the board and was the chair for quite a while. During the truck show, we did announce we've opened up or started another industry group just focused on the OEMs, the truck, car and bus manufacturers called the Australian Hydrogen Transport Forum. That is where we're focused on working with ARENA and other funding agencies—whether it be States or Territories or even local government—to ensure that whenever infrastructure is put in place that it's put in place in the right location and, especially with hydrogen refuelling, which is far more expensive than putting in an EV charging station, that the customers are in place. That's really critical that we see the right locations and the right customers before we spend any public funding on any infrastructure.

Mrs JUDY HANNAN: I have two quick questions comparing electric and hydrogen. What sorts of distances do these vehicles, the trucks, travel? What is the time to refuel?

SCOTT NARGAR: I will use a passenger car. We've got 614-kilometre range in the passenger car IONIQ 6. That car can charge from 10 per cent to 80 per cent in 16 minutes. Our passenger car equivalent, the Hyundai Nexo, that's actually just finished its production now—we're going into production of the next generation car—we can charge that in around three to five minutes, depending on the pressure of the station and the temperature that the hydrogen goes in at. It's all dependent on the temperature it flows at. In Sydney, in a couple of weeks, when you come out, you'll see that we're flowing at the maximum standard, which is minus 40 degrees,

so we can fill it in three to five minutes there. That car will get 666 kilometres. The next generation car that's due later this year, I don't know the range of that yet. It's still in planning, and we need to go through the Australian requirements for testing of fuel consumption out here.

Mrs JUDY HANNAN: What about the trucks?

SCOTT NARGAR: In a 350-bar rigid truck, the ones we're running in Europe, we can fill those in about 10 to 15 minutes. That's always dependent on what the refuelling station is and what pressures they're filling at. In Europe we're running 350-bar pressure, which gets you about half range, which is 400 kilometres. We're running the same set-up, a truck, where they're using it as a prime mover, but very similar to the set-up of the rigid truck in Europe. We're running it in the US as a prime mover with a trailer. They're using 700 bar—so twice the pressure—for refuelling, and we can refill that truck in about 15 minutes as well.

It's all dependent on the flow temperature of the hydrogen. Going at minus 40 degrees is getting it filled far quicker. When hydrogen compressed very highly at 700 bar or 10,000 PSI goes in the tank, it expands quickly which causes heat. So we have it chilled down to minus 40 degrees. That goes in, and we keep the integrity of the tanks in place. Certainly when the Committee comes out, we can go through it. We've got tanks on display, and hydrogen fuel cells and everything to pull and cut apart. We can look, touch and play with all of that when the Committee visits the station and the EV chargers.

The CHAIR: Brilliant.

Mr WARREN KIRBY: What was the basic rationale for looking towards hydrogen for heavy vehicles versus all electric?

SCOTT NARGAR: From a Hyundai perspective, it's something I was discussing last week down at ALGA, the Australian Local Government Association, and presenting the technology. We're lucky enough within the Hyundai Motor Group that we make cars, buses, trucks, trams, trains and ferries, and we're one of the biggest shipbuilders in the world and moving into aircraft, both hydrogen and electric. We want to ensure that we cover as much of the technology as possible. There are different use cases for different technologies. Some trucks that run around Sydney will work perfectly fine on electric battery. We've got an eight-tonne electric truck within the Hyundai range now, and that's great for back-to-base operations. But if that truck needs to run 24/7, you certainly need other technology where you can get the truck back to the depot, refill it in 10 minutes and get that truck—or bus or whatever it might be—back out into the environment doing its job. So it's that quick turnaround and longer range which is a difference for hydrogen.

We think both technologies are complementary. Usually when we publish something or advertise something, you've got one side of the equation that wants to kick hydrogen or the other side wants to kick EVs. We're a global manufacturer. As we said, we do everything from road, rail, marine and air. We're not picking a winner; we're using both technologies. In a lot of cases, the same technology flows across EVs and fuel cell. We still use lithium ion polymer high-voltage batteries in our fuel cell cars, trucks, buses and marine applications as well, and trams.

Mr WARREN KIRBY: Is there potential in the market, in your opinion, for hot swap batteries?

SCOTT NARGAR: We don't see it, from our brand, as something we're looking towards. There are a number of complexities with that, including just the battery swap-out itself. But also, we're one of the first brands with high-voltage EV batteries with cooling. We can control the temperature of our batteries with cooling systems that are connected into a heater control unit and also a heat rejection unit. When you're charging a vehicle on a very hot day, say, out at Broken Hill, and it's 45 degrees and you're putting a whole lot of voltage into the battery, the car will turn itself on while you're at a cafe having a coffee and hopefully spending money in that town and it'll cool the battery down. Having swap-out systems, where not only are you replacing plugs and connections but also cooling systems, and ensuring you're not getting bleed problems and air bubbles and other things in the cooling systems, is an issue. It's not something we're looking at for passenger vehicles or commercial vehicles from road, rail, marine or air.

Mr NATHAN HAGARTY: It is very cool tech, very cool stuff. Let's say this rolls out quite rapidly. How comfortable are you that workers across a whole bunch of industries at the moment are ready? What can government do to ensure that people are skilled and trained and ready for this transition?

SCOTT NARGAR: I think for the OEMs—and especially ourselves, as we're an RTO and we used to run all our apprentices through our own building at Macquarie Park and our other sites around Australia, training our technicians in hydrogen fuel cell tech and also EV tech, we're quite comfortable with that. Sitting on an advisory board for Sydney Uni on the net zero initiative, I was presenting to a number of students—probably 100 students—last year about the jobs of the future: the jobs in engineering, construction design, diagnosing,

hydrogen refuelling stations, energy networks, EV charging networks and bulk charging setups. One of the things I was really concerned about off the back of that was that every student I spoke to was not staying in Australia; they were heading back overseas. I think building up a network of technicians here is critical.

We've just finished a station in Macquarie Park. It's been a year overdue, and a lot of that's been due to a lack of skilled engineers and technicians. The industry is growing—I won't say rapidly—when it comes to infrastructure, both EVs and hydrogen refuelling. We're seeing quite an issue with hydrogen of those skilled technicians that we need to start to plan for today. If we're going to have emission regulations that come into play in the coming years on trucks, then we really need to start planning today for what those stations are going to look like for the future.

One of the biggest stations in the world has been finished in the last couple of weeks, down in Geelong in Victoria. It's with Viva Energy. It's a big Shell station down there. That was a very big project, but a lot of those engineers—I met guys that had come in from France and other places to work on that. We need to look at our domestic skilled workers, both apprentices across electronics and design and manufacturing, diagnosis, fitter machinists and different things across all technology. But certainly hydrogen, I can foresee, is a big issue if we do start to chase after an emission regulation for commercial vehicles. It'll be the number one thing I'll be discussing with Minister Bowen this week.

Mr NATHAN HAGARTY: You mentioned France, but are there other parts of the world that have done this transition well that are training people up?

SCOTT NARGAR: Germany is probably the best example. There's a great app you can put on your phone called H2.LIVE. If you zoom out of Australia and zoom into Germany, there are about 90 operational stations in Germany today. There are another 19 under construction. Probably one of the best things about hydrogen infrastructure, and we spoke about the different entities when it comes to EV charging—when it comes to hydrogen, traditional oil companies want to sell hydrogen, and they do. Probably half the stations I use in Germany are Shell branded. Then you've got traditional gas companies also selling hydrogen.

Then you've got companies making renewable energy who are taking curtailed renewables and making hydrogen through electrolysis and who are competing with big oil and big gas, which I think is wonderful. It's a great competitive market when big oil and big gas are going head to head and then you've got a third player coming in and competing with both of those. I think it's a great way to drive market competition. But one of the things, as I said, is infrastructure. In Germany there is a great process for training technicians. I've been on sites in Germany, up in Hamburg, where I've spoken to a number of guys that have gone through the training and are servicing very complicated technical hydrogen equipment, because you are compressing gas up to up to 10,000 PSI or 700 bar, or actually higher than that. You compress up to 1,000 bar.

The CHAIR: That training is being done in house, is it?

SCOTT NARGAR: That's being done in house, but I know a lot of the guys do the publicly provided technical training—I suppose the version of TAFE over in Germany.

Mr RAY WILLIAMS: It's wonderful, Scott. H doesn't just stand for hydrogen; as they've often said, it stands for hero. It really seems to be the move in the future, especially around heavy vehicles. The fuel itself—we're seeing a lot more facilities that are opening up in this country. Are we producing, currently, enough fuel to provide for the current demand? Is there a correlation between that demand in the future and what we are going to provide?

SCOTT NARGAR: Yes, we're producing enough fuel, but it's what colour the fuel is. It's whether you want a fuel that's made from steam reform natural gas, which has got a heavy carbon footprint, or fuel made from renewables. I think the best way is taking curtailed renewables and making hydrogen when you're getting paid for it. For example, up in north of Germany, you've got the big wind farms and solar farms. When there's excess energy flowing into the grid, there are companies that get paid money to help maintain frequency in the grid. They will turn on their electrolysers and make all their hydrogen when they're getting paid to take energy off the grid. That's a great business model. I don't think we're at that point here in Australia with our energy networks—where there's that much curtailed renewables—but certainly customers that want to move to electric vehicles or hydrogen fuel cell vehicles want to be able to start using greener fuels.

In New South Wales—I don't know the exact figures—I think it's 70 to 80 per cent of the energy that comes off the grid is coal-fired at the moment, but we're obviously transitioning away from that. At the moment it's probably the same with hydrogen, where for 10 years we took hydrogen from Port Kembla from the Coregas facility. It was grey hydrogen. With our new station in Macquarie Park, we've got an electrolyser on site, where we make our own hydrogen and deliver that into the vehicles.

Mr RAY WILLIAMS: Is the current fuel that you guys are using and others are using being imported at the moment?

SCOTT NARGAR: No, nothing's being imported. With hydrogen, we're making it all domestic. It's probably one of those things where we look at national fuel security. We import a lot of liquid fuels into Australia—just about all of it—but with hydrogen we have the opportunity to make it and store it. A lot of people are looking to make it as hydrogen gas and move it around, either as a liquid or a gas, or as ammonia. There are a lot of projects for ammonia. I was up in Port Hedland just two weeks ago, looking at some massive ammonia projects. Not only is Australia currently a net importer of fuels for our transport networks, but in the future we're going to be a massive exporter of our renewable hydrogen and ammonia to power transport networks in other countries. Probably one of the biggest questions I'll have when I head back down to Canberra in the coming weeks is, what are we doing to fortify our networks in the future in Australia, both for passenger vehicles and also commercial vehicles, and to keep as much of our renewable hydrogen or ammonia here to power our networks?

The CHAIR: Thank you, that was brilliant and very informative. Would you like to make a final statement?

SCOTT NARGAR: I was listening intently this morning. As an EV user—I drive fairly long distances in EVs quite often and I like to explore the greater reaches of outer New South Wales; we test a lot of EVs here with camouflaged cars and with our engineering teams—recharging, whether it be in metro areas or certainly outer metro areas—we do a lot of hop-offs from Broken Hill and head out west, Bathurst and other places—can be quite challenging for our international test teams that come and test cars here, let alone what our customers must be experiencing. I'll hand out this document later on, or even when we visit. We really are pushing hard for what's happened in the UK with legislation with reliability. I know the coalition of councils across Australia of the State Ministers spoke about targets for EV charge uptime and then hosting a DC chargers pricing—making sure pricing is visible. There's not a station I visit where pricing is visible unless you go on the app.

A number of stations I visit—one was North Goulburn, heading down to Canberra. I couldn't get phone reception, let alone use an app to turn on a charger. Having things in the best way, giving customers the best experience—I know a couple of the members here drive EVs and we've all experienced the stress it can cause trying to charge a vehicle. How do we reduce that and ensure we've got the most reliable chargers, 99 per cent uptime and having a publicly available—and I don't think it's done by an independent, whether it be the EVC or the NRMA or other people. I was formerly with the NRMA. They run their own charging networks, plus the Chargefox network owned by the greater motoring clubs. Having something independent may be similar to the Green Vehicle Guide that tracks vehicle emissions that shows reliability and uptime and real, live data of uptime pricing. Nothing's more frustrating than being an EV driver that goes to a station and it says it's not operating.

The CHAIR: That's probably a good point. Would you like to table that document? If you're okay for publication, we'll consider it in the deliberative at the end of the meeting.

SCOTT NARGAR: That'd be great.

The CHAIR: Thank you for appearing before the Committee today. You will be provided with a copy of the transcript of today's proceedings for corrections. The Committee staff will also email any questions taken on notice from today, and any supplementary questions from the Committee.

(The witness withdrew.)

Mr RALPH GRIFFITHS, General Manager, Policy and Regulation, AGL Energy, affirmed and examined

Ms MABELLE REYES, Head of eMobility, Electrification and Innovation, AGL Energy, affirmed and examined

Mr SIMON ORME, Director, Tahu Consulting, affirmed and examined

Ms STEPHANIE BASHIR, Chief Executive Officer, Nexa Advisory, before the Committee via videoconference, affirmed and examined

The CHAIR: I welcome our next witnesses. Please note that Committee staff will be taking photos and videos during the hearing. The photos and videos may be used on the New South Wales Legislative Assembly's social media pages. Please inform the Committee staff if you object to having photos and videos taken. Can you please confirm that you've been issued with the Committee's terms of reference and information about the standing orders that relate to the examination of witnesses?

SIMON ORME: Yes.

MABELLE REYES: Yes.

RALPH GRIFFITHS: Yes.

STEPHANIE BASHIR: Yes.

The CHAIR: Do you have any questions about this information?

SIMON ORME: No.

MABELLE REYES: No.

RALPH GRIFFITHS: No.

STEPHANIE BASHIR: No.

The CHAIR: Ms Bashir, I note that you're appearing from the United Kingdom and therefore may not be covered by the New South Wales law of privilege. Any defamatory statements made may therefore not be privileged, for your information—not that you're probably going to defame anyone.

STEPHANIE BASHIR: Yes, that's fine.

The CHAIR: Would anyone like to make short opening statements? We'll start with you first, Mr Griffiths.

RALPH GRIFFITHS: I am the general manager of policy and regulation at AGL. I am joined by my colleague Mabelle Reyes, who is the head of eMobility. Our submission to the Committee was informed by our experience in developing EV products for customers. This includes home charging, kerbside and destination charging. The submission addressed two broad topics: funding and location of public electric vehicle chargers, and use of existing network infrastructure. Delivery of EV charging is competitive, and we believe competition puts customers at the centre. There is a need for support to accelerate the rollout of EV charging, and competition is even more critical to ensure value for money where public funding is provided. Electricity networks are, of course, central to enabling EV charging. They provide access to the electricity network.

Providing timely connections and supportive tariffs and charging low rents for customer assets like poles will accelerate the rollout, reduce costs and support equitable access. AGL is working with networks on EV charging. We are thrilled to partner with PLUS ES, a subsidiary of Ausgrid, on their kerbside rollout in the Ausgrid area. However, we do not support a regulated monopoly rollout. We believe contestability will drive better value and better outcomes for customers. Ring fencing is critical where DNSPs compete in their own service area, and this is to maintain confidence others will get fair access, service and pricing. If policymakers do consider allowing a regulated rollout, then an effective regulatory regime will first need to be defined in order to protect customers. We acknowledge that trials will require flexibility in the regulatory framework. However, flexibility must not come at the expense of competition and consumers.

SIMON ORME: Why am I here? I am an independent consulting economist. I'm appearing on my own behalf today. I have about 40 years of relevant experience, including in New South Wales government, both previously and now. Two of my reports have been submitted alongside submissions to this Committee. For disclosure, one is by the National Electrical and Communications Association. That's on network regulation and ring fencing. The other one is for a company called Evie Networks, which is a charge point operator. That's on

the topic of whether EV charging should be a mandated network monopoly. I'll comment briefly on the terms of reference regarding the use of existing infrastructure to ensure a competitive market, including ring fencing.

The main comment I would make is that I do not agree with the views that have been expressed by the electricity networks that an accelerated EV charging infrastructure rollout requires the relaxation of the ring-fencing rules. I don't think this is in the long-term interests of customers, so I agree with AGL on that. But if Parliament did want to accelerate EV charging infrastructure—and there are good arguments for doing so—I would argue that this can be done without ring fencing. One of the things about good legislation and regulation is that you should always look at alternatives. One alternative to the status quo is the network mandate.

But another option is another form of regulation that retains competition in this space, which would be beneficial for the networks, beneficial for EV customers and beneficial for network customers. These alternatives can be considered. The other thing I would comment on—and it gets into a bit of detail—is there are problems with the existing ring-fencing rules. In my view, they need to be strengthened. There should be improvements to the monitoring. I make the comment that it's relevant to the Committee that these ring-fencing rules operate under New South Wales statutes. There are two relevant New South Wales statutes, so it's welcome that the Committee is looking closely at this topic.

STEPHANIE BASHIR: Nexa is an independent firm focused on accelerating the clean energy transition with people in mind. We've got over 20 years of experience across technologies, market segments, energy regulation and transport. We focus on electric vehicles and the acceleration of electric vehicles in Australia. We know that the uptake of EVs is gaining real momentum, but the rollout of public charging infrastructure, particularly in New South Wales, is being held back. That's not by a lack of demand but by regulatory and structural barriers that limit competition and restrict customer choice.

We've consistently raised concerns through our submissions to the Committee, but also through a new report that we released last week, which I'm very happy to share with the Committee, about the challenges third-party charging providers face when connecting to electricity networks. These include long delays, opaque connection processes, inflexible tariffs and a lack of access to basic network data like hosting capacity and congestion points. These issues give monopoly network businesses an unfair advantage. They're not subject to the same commercial pressures to deliver efficient, customer-focused services. In fact, recent programs like the community batteries and the smart metering rollout, specifically in Victoria, have shown that network-led solutions are often more expensive and less responsive to consumer needs.

To address this, we have outlined our recommendations, as you have seen in our submissions. Rather than what the ENA and the distribution networks are requesting, which is the watering down of the ring-fencing rules, we believe that there needs to be a reinforcement of ring-fencing rules to prevent regulated monopolies from owning and operating EV charging infrastructure and other consumer assets. We also believe that instead of these debates, there are fundamental issues that need to be addressed, such as requiring networks to publish key data to support fair competition and inform planning and, of course, the standardised, streamlined connection processes; modernise tariffs to reward flexible loads; and ensuring consumer outcomes are front and centre.

The CHAIR: Thank you for joining us at what must be a very early hour in England. The report that you've just released that you said you would provide the Committee, would you be able to email that to the Committee chairs?

STEPHANIE BASHIR: Absolutely, and that can be made public.

The CHAIR: We'll take that as a tabled document. I assume we already have Mr Orme's submissions as well.

SIMON ORME: Yes.

Mr NATHAN HAGARTY: We're on the topic of ring fencing, so maybe just from each of you: what works currently, what isn't working and how can it be improved, and not just around ring fencing but other regulatory changes. I think it was raised earlier that compliance and enforcement is one of the areas, but if we could expand on how we could improve things, that'd be a good way to kick off.

SIMON ORME: I'll make a comment. I did a project for what used to be called the Ministerial Council on Energy; I think it now has "climate" in there. I did a report for that group more than a decade ago on network connections competition. It was basically arguing that we should roll out what we have in New South Wales to the rest of Australia, or certainly the rest of the NEM. We have a very good regime in New South Wales because we have the Accredited Service Provider Scheme here, which means that you have a lot of resources and innovation and so forth and network connections. With the formation of EnergyCo, we also have competition in the rollout of transmission for the renewable energy zones.

We have some great things going on. However, with the transfer of ring-fencing regulation from IPART to the national regulator, we did lose something, which was monitoring of these accredited services providers' markets. IPART used to get the information and publish that so you could see that, for example, in Country Energy for understandable reasons there was less competition, because it was more difficult to get out there, than there was in the cities. That information is no longer available. Ring fencing is essential. New South Wales really has leadership in that area and contestability, but there are some areas where it needs to be improved.

The other comment I would make is that the ring-fencing rules include a branding component. If anyone follows me on social media, I have noticed that some of the branding looks to me like it could be problematic in terms of the branding part of ring fencing. As I understand it, NECA advised the AER of that issue but, so far, when I checked with them last, they hadn't received a response or an explanation, and similarly the network involved hadn't provided a public explanation. As to whether it was consistent with the rules and there was no breach, or whether there was a breach and it was being fixed, it is unclear.

RALPH GRIFFITHS: Just briefly, I think that the key thing is that there needs to be information for people to have confidence in the regime. The intent of ring fencing makes sense. If you are a monopoly in an area and you're competing in that same area, it's very hard for people to have confidence that you're treating them fairly. I think the Committee heard this morning from a range of providers who don't have that confidence. Whether they're right or not, there's not necessarily enough information, monitoring and enforcement to show that the system is working. Currently there's a range of waivers going through and waivers being proposed and alternate models that could, in and of themselves, reduce confidence that other providers—whether they're trying to put EV charging on kerbside or whether they're trying to do it on retail premises or whether they're trying to do it anywhere—are going to get the same sort of access to workforce to connect, the same sort of information as to whether the network can host them and the same sort of pricing so that they're getting fair tariff.

The CHAIR: Ms Bashir, do you want to add anything?

STEPHANIE BASHIR: Yes, I do, actually. I guess one of the key things that the ring fencing was designed to do was to protect consumers from the regulated monopoly framework. In particular, basically, at the moment, the objective was to promote the national objective, which is about long-term consumer benefits, by providing for the accounting functional separation of the provision of direct control services by these DNSPs from the provision of other services and by their affiliated businesses. So we're also talking here about affiliated businesses of the electricity networks. The other objective of the ring-fencing framework that was introduced was to promote competition in the provision of electricity services. The ring-fencing framework prevents the DNSPs from cross-subsidising the contestable activities with revenue earned from electricity consumers and from regulated services.

What's now happening with the watering and the provision of these ring-fencing waivers, whether it's a trial or whether it's one such as the one that we've had with the community batteries, is it's watering down these rules, and that is not in the best long-term interest of energy consumers. And where the regulated electricity monopolies are provided with subsidies to roll out infrastructure, that's really also taxpayers' money as well as energy consumers' money, especially when they're allowed to put these assets on their regulatory asset base and earn regulated return on them.

Mr NATHAN HAGARTY: So more stringent on the waivers and perhaps beefing up the compliance arm. I think there was some evidence given earlier about the time and cost for third parties: mandated SLAs and fines for not complying. Are these some of the things that should be explored?

RALPH GRIFFITHS: I definitely think, outside of ring fencing but just in the provision of EV charging and a whole range of services, everybody would benefit from having, say, for pole-mounted, free or low-rent fixed prices to access that—so the network to identify which poles are suitable and what they can host, and then any party can access that on those same terms; make connecting AC EV charging infrastructure a fixed price, essentially across the network, where it can host it, whether it's on poles or in car parks or wherever it is; make standardised and understandable, usable information available to people as to where the network has capacity, because people have to—it's like pinning the tail on the donkey. They have to find out where they can put it, then apply, incur costs—to find out where they can.

Then the tariffs—the long-term, enduring pricing and service standards for tariffs. EV charging tariffs build on existing arrangements, and they often tend to be demand charges, which don't necessarily align well to the type of use that they're being put to. I think we heard from the ENA about the opportunity for solar soaking. This requires a network tariff associated with it that discounts the use in the middle of the day to complement the low energy price. All of those things are necessary to make it an even playing field but also just to accelerate the rollout and give people confidence.

Mr NATHAN HAGARTY: You mentioned the poles. I've been made aware of examples where it's up to the DNSP to go, "Here are the poles you can use". But I've been made aware of them being somewhat selective about which poles are appropriate or not, which may be to the detriment of the third-party charging company and might help their associated entities. Are you aware of that going on?[1]

RALPH GRIFFITHS: I've heard the same comments you've made. I've got nothing direct to add to it.

MABELLE REYES: I can only speak to the experience we've had. In the partnership with PLUS ES, which is the 149 chargers that we rolled out throughout Sydney, we were, effectively, told what poles were already selected, but I have no real visibility as to how those poles were selected.

Mr NATHAN HAGARTY: If you were to create a fairer playing field and change the way this is regulated, who should have the ultimate decision making over which poles would be appropriate or not? How would you fix that?

MABELLE REYES: Speaking as a charge point operator who is, effectively, absorbing the risk of the consumer then choosing to use that pole, I think, under the model that we're using, we have a fixed return on the hardware usage that is available on those poles. [2] We are then taking the price risk or the cost risk of getting that return from the consumers, who then would use that. I believe that the charge point operator should have a say because they are taking the risk as to which poles they should be using, in what location and how they are then able to drive traffic to that particular location.

RALPH GRIFFITHS: To clarify a bit more, the network should obviously determine whether a pole is safe and whether the pole has capacity and whether the electrical network at that point has capacity to connect. And then market providers should determine which poles out of that subset are the best and in what order to develop them.

Mr NATHAN HAGARTY: My concern and line of questioning is that they hide behind the safety excuse in order to create an unfair playing environment.

RALPH GRIFFITHS: And that's a regulatory problem and the regulator—I'm not saying that they are.

Mr NATHAN HAGARTY: Potentially.

RALPH GRIFFITHS: Whether people have confidence that that is the case is a regulatory failure. If people have confidence in the regulatory regime, then it would be clear that the network had gone through a process, identified the poles that were available, and made them publicly available to industry so that people knew where they were and they knew what terms they would get when they came to it. They are a monopoly. Because they are a monopoly, they have to do everything publicly and transparently.

SIMON ORME: I was just going to add one other comment, if I may. I've been imagining a little bit about what a regulatory regime would look like to support an accelerated rollout but without a network monopoly. I do think there potentially is a role for a coordinator—an EV charging installation coordinator role—that could be in local government or something that just makes sure this information is available and to monitor the performance. That's one possible model where you've got this third party. That's a model that's used in metering infrastructure. You might be aware that here in New South Wales we've got an accelerated deployment of interval metering and you've got this idea of an independent metering coordinator, which is not part of a network and it's also not the metering supplier. I know that adds some complexity, but that is one alternative option that Parliament could consider to improve the regulation of this sector while maximising competition.

The CHAIR: Ms Bashir, did you want to add anything on those questions?

STEPHANIE BASHIR: Yes, I might just add two points. I think the first one is that there hasn't been any review that looks at overseas models as well, as to how some of these things are coordinated. There have been a number of overseas models that are way ahead of where we are. I'm not saying we adopt them as they are, of course. We have a very different market and they need to be recalibrated within our structures. But I think a really good starting point is looking at some of these other overseas rollout models that have occurred. The second point I would make is that we've got a fundamentally flawed regulatory system where the regulated electricity distribution networks are the planner and the coordinator.

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[1] The Committee received correspondence from AGL Energy, providing further information, which is published on the Committee's webpage.

[2] The Committee received corresepondence from AGL Energy, providing clarification on this statement, which is published on the Committee's webpage.

They do their own pricing and their own tariffs. While the Australian public—the energy consumers in Australia—pay for these services, there is no transparency around that operation. There is no transparency around where the capacity or lack of capacity is. There is no transparency on the assets and where the opportunities are. I think that is, fundamentally, a really key point and starting point that, perhaps, could be looked into around the data transparency of the network operations data. This is where there are capacity issues on an electricity network that allows different providers to know, "We can avoid that area or we can provide a non-network solution, like batteries", which is a technology that can be adopted to reduce network constraints.

But, at the moment, without that transparency, it's very hard. There is transparency within the networks and their affiliated businesses, and that creates a discrimination. This is where the ring-fencing rule needs to be enhanced to stop that discrimination. The AER needs to be enforcing those rules and ensuring that any waivers granted are based on evidence and ongoing reporting of those benefits that these regulated monopolies are basically putting forward in their applications for waivers. They need to be able to demonstrate how these benefits are going to flow to energy consumers who are going to end up paying for these assets.

Mr RAY WILLIAMS: I thank everyone for attending the Committee. I have raised, on behalf of all witnesses today, that a L.E.K. report that you're all probably aware of, on page 32 draws out a case study based on Ausgrid where Ausgrid stated:

> There are cost and speed advantages to a DNSP led rollout of pole-mounted chargers, as well as less community disruption due to the use of existing infrastructure

Everybody I asked that question of this morning said that there is no justification for that statement. There is no data to support that. It hasn't been audited by a verified and independent authority. If I am gaining the same impression from everybody who is currently here, I think you're backing that up as well. Ms Bashir raised the issue, as have others—I think, Simon, you may have as well—in relation to the need for specific data. Ms Bashir just went on about some of that in her previous answer.

I am wondering, on behalf of the Committee, and probably more importantly on behalf of competitors who see the current regulatory framework as being the fairest that it can be at the moment—perhaps not perfect and can be improved. But it is the fairest playing field for competitors, new investment and certainly on behalf of the end user, the customer. I am just wondering what data you require, or should we be seeking, in order to make informed decisions and not personal vested interest comments that I have already spoken about from Ausgrid?

STEPHANIE BASHIR: I'm happy to go first. DNSPs currently possess monopoly access to critical network data. That includes locational information and hosting capacity constraints, which are critical to the integration of not only where EV charging goes but, more broadly, consumer energy resources, such as rooftop solar and batteries. These are all important to how we roll out EV infrastructure anyway. Added to this, the third parties don't have adequate access to that information to support the delivery of third-party owned infrastructure. The other thing is that the current role of the DNSP is to identify and forecast distribution network needs, with no requirement to share that network data with other market participants, which means it is not possible to identify where and how a third-party investment, such as in EV charging, could offer value.

There is a Distribution Annual Planning Report—the DAPR—and the energy networks opportunity maps, so some would say we already provide some data. They do not provide sufficient publicly available up-to-date data at the low-voltage level to underpin that development of third-party infrastructure rollout of EV chargers, particularly with a connection location and the configuration of an EV charging connection point that forms input into a business case. Of course the usual criteria is it has got to be in a location where there's customer convenience and access to it, otherwise these charging points could become stranded assets.

Now, this information asymmetry benefits the DNSPs, creating the potential for discrimination against third parties, because the limited access to network data impacts third parties' ability to develop viable EV charging projects. That basically is really critical when we're talking about some of the solutions that need to be resolved. This is not a new issue. It's been going on for a long time, but it does suit the electricity distribution networks that nothing has been done about it, because they will claim, "We're having a slow rollout of infrastructure." But the reality is that they are agitating the rollout through expensive connections, lack of tariffs that promote value and also a lack of a symmetry of information that is accessible to third parties. Thank you.

RALPH GRIFFITHS: I'd like to add to that. You won't know what the cost is for anything until you get actual costs. You have to ask for and you might be able to get through the Australian Energy Regulator or from the distributors what their actual costs for proposals, or ARENA you could ask for actual costs. But for future costs, as with any project, you really won't know until you do tenders. That's why we think competition is the way. A regulated model—that is what I was saying about the importance of having a regime. If there was an intent to go down the path of a regulated model, it's really important to have the full service and price value locked in first before deciding on it, because otherwise the customers bear all the risk. Any cost blowouts, any time blowouts

et cetera tend to get added back onto the regulated asset base. In fact, in some ways, financially they're actually beneficial to the person who's got the regulatory asset base. The bigger that number, the better.

In the classic environment, they'd call that a capex bias. Then they have a range of incentive mechanisms to try and both incentivise someone to invest but also reward them for not investing. You have to set the uptime and the type of services that are available. Really, these high level proposals that are put out, they could cost anything. There would have to be a regime. For the in-principle ones, there's no monopoly here. If people knew where the poles were that could be used and the standard of the meter that had to go in them, you could run a tender and you would then reveal what the efficient price would be. If the owner of that system is also a tenderer to that, then that's where you need the really, really strict ring fencing. Again, it's really hard for confidence, because often those tenders tend to be won by the related party to the network in their own network, not in other networks. It's tricky, but it can be done. You certainly need the strongest ring fencing if you are going to go down that path.

Mr RAY WILLIAMS: Is it fair to assume that, if we step away from the current regulated ring fencing that we have and head into a fully monopolised system based on the provider being Ausgrid, Endeavour or Essential Energy, we jeopardise the current protections on behalf of consumers and ultimately the competitors?

RALPH GRIFFITHS: Well, you remove them. You remove them completely, so you'd have to put in new protections and you'd have to decide which chargers could they put in. If they're doing pole-mounted AC, you then need to have a regime to make sure that it's very clear that they're not preventing other charging from going in. Any DC fast chargers at the supermarket, at the hardware store, at the council car park—they all need to be protected to be allowed to put theirs in. If they overinvest and there's low utilisation on those chargers, you need protections for their other customers, because you can quickly see a world where they go, "Well, we've invested this customer money on EV charging on pole mounted. It's now on the regulated asset base and no-one's using it, so we'll have to charge people who charge at home, because it's unfair for people to charge at home, because all consumers are using the chargers on the grid."

I'm just saying there are a whole range of complex questions. It's not as simple as allow it. If that was the model that you wanted to go with, you'd have to start somewhat at the beginning. We certainly would recommend staying with competition and a contestable approach. But if you went for a regulated approach, you've got to give the regulator a lot more tools and define a regulatory regime and protect all of those other—because they're all customers of the network. An EV charging infrastructure provider is a network customer, and they need to be protected from competition from the network.

SIMON ORME: If I could just follow on from that, going back to the L.E.K. report, there are New South Wales guidelines on best practice regulatory design. I'm a practitioner of regulatory impact statements and so forth, both for New South Wales and other jurisdictions. Exactly as AGL was just describing, you need to describe in the proposed regulatory scheme what is involved, what that consists of. The L.E.K. report doesn't do that. It doesn't describe that if you move the ring fencing out another layer, you'd have to build a whole new set of ring fences, and that's extremely complicated. There would be requirements to change legislation and so forth. It would be quite a big exercise and quite a lot of delay.

The other thing that the L.E.K report doesn't do is compare an alternative. For any regulatory impact statement, the Treasury guideline, the Auditor-General for this Parliament, always requires consideration of at least two alternatives. The alternative is one where you have competition alongside an accelerated rollout. So I just make the comment that the L.E.K. report for the networks doesn't really do what a regulatory impact statement is required to do in terms of implementation, complexity and comparing with an alternative.

The other comment I'll make is I did do some work in Victoria on distribution annual planning reports, the amount of disclosure that is available to the users of networks. This is in Victoria, but we've got broadly the same scheme here in New South Wales. Those arrangements were designed in the 1990s. They're just no longer sufficient. When you're rolling out Consumer Energy Resources—not just EVs, but batteries, solar and all the rest of it—you need a lot more timeliness of information. The timeliness isn't there, and you need a lot more high resolution. At the moment, it's just down to the major network components: zones, substations. You need to go right down, especially for individual EV installation sites.

Mr WARREN KIRBY: Perhaps following on from what we've just been discussing, the DNSPs are not required to pass over information that they consider to be confidential or commercial in confidence. Are you satisfied with the current data transparency obligations on DNSPs and, if not, do you have any recommendations on how they should be modified?

STEPHANIE BASHIR: I might just quickly jump in there. I guess, in addition to what we've said earlier around data transparency and going down to the granular level of the low-voltage level, one of the things

that has happened, for example, here in the UK, the way that they've sorted that out is by introducing a licence obligation on the electricity distribution network to disclose network operations data. So in the UK it's now become a licence obligation on the DNSPs to provide that. At the end of the day, they are regulated monopolies with a regulated return on their revenue. That information shouldn't be commercial in confidence. That information should be available to the public and to the consumers that are paying for the network.

I also just want to highlight the issue of capex bias—this is way that the regulation and the framework around how the networks are incentivised. The current regulation basically incentivises the networks to spend more, and the more they spend, the more money they make. I'm putting it in very simple terms; it's actually more complicated than that. At the moment, the DNSPs are regulated to recover all investment costs from consumers via network charges and earn regulated returns tied to their regulatory asset base. That's why the more they spend, the more regulated returns they make.

Consequently, the network regulation has been designed to keep the DNSPs out of the markets through the ring-fencing framework and other matters. But because consumer energy such as solar PV, batteries, EVs are all challenging the traditional role of the networks and their business models, the DNSPs are now looking for ways they can benefit from these assets. So the DNSPs' current reliance on earning regulated returns on their regulated asset base creates a systemic bias towards capital expenditure, potentially at the expense of lower cost non-network alternatives that can be provided, such as third-party EV charging, batteries and other sources. But the DNSP involvement in EV charging and other competitive markets really stems from the desire to directly control equipment outcomes and services instead of procuring them from other players.

There's currently nothing stopping the electricity distribution networks from procuring these services from EV charging operators and other third-party providers if they see a need or a benefit for their network. What happens, because they are not actually going directly and procuring these services, and there's no valuing of these services, this both stifles innovation in the market and also removes choice and agency for consumers. So DNSPs are directly competing with their customers—a point that AGL just made—and dedicated suppliers of services and owning EV charging. They're actually competing with their customers in that space.

RALPH GRIFFITHS: Can I add, more usable information is always good, but I should also emphasise they're all getting a lot better. The New South Wales Government and the New South Wales distributors are getting better every year, and there are better tools available with more information out there. Everybody will always ask for more. We'd like more, but they are getting better. I just emphasise that, because it can sound negative. We think they're all reasonably aligned at wanting to get more EV chargers out in the system, and we're all working together on that. We just have the sort of pro-contestable approach for that. So, yes, information is really important. The information that's out there is getting better, but it's still got a long way to go to perfect.

MABELLE REYES: If I could just make one addition, which is on the incentivisation of private investment into acceleration of EV infrastructure. In order to do this, they must be able to make ROI stack up within their own business and make it an investment that's worth making within any retail business. So predictability of tariffs and costs associated with putting this hardware in is important for that private investment to put chargers where people want them to be—for example, in shopping centres and post offices. It is important to also incentivise private as well as fairly responsible distribution of public funds to accelerate. I just want to add that point.

The CHAIR: We have run out of time, I'm sorry. I probably could have gone on all day. Thank you for appearing before the Committee today. You will be provided with a copy of the transcript of today's proceedings for corrections. The Committee staff will also email any questions taken on notice from today and any supplementary questions from the Committee. You'll have 14 days from the receipt of those to answer. Thank you very much.

(The witnesses withdrew.)

(Luncheon adjournment)

Mr ROGER JEFFRIES, Transport Decarbonisation and Mobility Leader, ANZ Region, AECOM, affirmed and examined

Mr JOSHUA BRYDGES, Principal Transport Planner, AECOM, affirmed and examined

Mr ANOOP SRIDHAR, Transport Decarbonisation Leader, NSW and ACT, AECOM, affirmed and examined

Mr WILLIAM BARTON, Vice President, Institute of Public Works Engineering Australasia NSW and ACT, affirmed and examined

The Hon. DAVID ELLIOTT, Chief Executive Officer, Institute of Public Works Engineering Australasia NSW and ACT, sworn and examined

The CHAIR: I welcome our next witnesses. Please note that Committee staff will be taking photos and videos during the hearing. The photos and videos may be used on the New South Wales Legislative Assembly social media pages. Please inform Committee staff if you object to having photos and videos taken. Can you please confirm that you've been issued with the Committee's terms of reference and information about the standing orders that relate to the examination of witnesses?

ROGER JEFFRIES: Yes.

JOSHUA BRYDGES: Yes.

ANOOP SRIDHAR: Yes.

WILLIAM BARTON: Yes.

DAVID ELLIOTT: Yes, we have.

The CHAIR: Do you have any questions about this information?

ROGER JEFFRIES: No.

JOSHUA BRYDGES: No.

ANOOP SRIDHAR: No.

WILLIAM BARTON: No.

DAVID ELLIOTT: No.

The CHAIR: We will start with opening statements, if you would like to make one. Perhaps AECOM could start and then the institute could make a short statement before we go to questions.

ROGER JEFFRIES: I'll give the opening statement on AECOM's behalf. We thank you for the invitation to attend today. We welcome the opportunity to participate in this inquiry. At AECOM, we are passionate about the energy transition. It's a strategic priority for our business—specifically as it pertains to this inquiry, the decarbonisation of transport through the transition to zero-emissions technology in infrastructure and vehicles and fleets. In Australia, AECOM has delivered projects supporting the electric vehicle transition in New South Wales, Queensland, Western Australia, Victoria, Tasmania and the ACT. Globally, we have worked extensively with government and the private sector for over 10 years on the transition to zero-emission vehicles in North America, Europe, the Middle East and Asia. Our teams have delivered over 600 electric vehicle transition projects, from road maps and strategies to the delivery of charging site infrastructure.

Here in New South Wales, we are working with government on the electric vehicle charging site assessment for EV infrastructure on government property and we are designing the first electric vehicle charging hub to be delivered by New South Wales government. Our experience in the EV transition for the transit sector is especially strong. In the US alone we have helped 48 transit agencies transition over 130 depots and fleets to battery electric buses. In New South Wales, we're currently working extensively in the development and delivery of the New South Wales zero-emission bus program. In terms of freight and fleet, we are supporting the Federal Government to develop a strategy, with industry consensus, to create clear pathways for the adoption of electric vehicles for all on-road freight across Australia, from urban deliveries to line haul freight.

From our experience, we know Australia is at a tipping point. We are moving beyond early adoption to wider societal transition. However, to unlock this opportunity fully and accelerate it, we suggest two things must remain central to our collective approach. Our conversations on electric vehicle transition should adopt a holistic view, beyond the private car, and consider all modes in the transport sector, across fleets, buses, freight and micromobility. There's also a significant need to empower and enable infrastructure and asset owners to support

them in the transition. Providing assurance and support to help them confidently embrace electrification should focus not on those embracing the transition already, but on those who need more support to embrace the process.

We made a submission to this inquiry that set out 19 recommendations to accelerate the EV transition in New South Wales. Those recommendations can be summarised into four categories: The first of those is delivering the right infrastructure; the second, tackling heavy vehicles; the third, utilising existing infrastructure and ensuring market competition; and the fourth, the transition measures required. We thank you for your time and we look forward to answering any questions you may have.

WILLIAM BARTON: On behalf of the institute, I'd like to thank the Committee for the opportunity to appear here before the inquiry into the infrastructure for electric and alternative energy source vehicles in New South Wales. The Institute of Public Works Engineering Australasia NSW and ACT is a 100-year-young organisation that has membership of over 1,000 across government and non-government, right across New South Wales, from councils to State Government and private companies. The Governor of New South Wales is our patron. We were established for the purpose of enhancing the lives of our communities in New South Wales and ACT through excellence in public works.

The submission which we submitted to the Committee was written by our chief engineer, and it was informed by the experiences and the observations of our board members, who hail from the City of Sydney to the City of Hawkesbury, Cobar and all other corners of New South Wales. In that, we have drawn out the disparity that exists across New South Wales, whether it be from Bondi to Bourke or Wahroonga to Wilcannia. As predominantly a membership-based organisation that draws its members from councils, we fear that it will be councils that are left as the level of government as a last resort, particularly in our regional, rural and remote communities, which are left to fill the gap of the electric vehicle infrastructure where it is not profitable or the other commercial aspects don't stack up. This places enormous pressure on our members, who are struggling to do the rates, roads and rubbish, let alone dealing with the nuance and the complexity of negotiating with charge point operators, network distributors and so forth.

As an institute, our members are dealing with the impacts of a changing climate every single day. At the moment, we've got members up and down the east coast who are preparing to deal with the next salvo from Mother Nature. We are committed to all measures to decarbonise our economy, and we see one of the biggest and most significant is decarbonising transport. We stay in our lane, and we resist making remarks on energy policy. We're here to happily answer questions on how local government, councils and our members can support this transition for the New South Wales fleet.

The CHAIR: Thank you very much for the opening statements. We'll go to questions now. We'll start with the member for Leppington.

Mr NATHAN HAGARTY: My question is for AECOM. You broadly categorised your recommendations into four. I want to talk about the first one—essentially making sure the right infrastructure is in the right place. Are there any examples of the wrong infrastructure in the wrong place that we can learn from?

JOSHUA BRYDGES: Certainly, I think you could probably point to individual sites. I don't think we'd be in a position to say it's a hundred per cent the wrong site at the moment. We're so early in the transition to electric vehicles that would be a bit difficult to say whether or not any particular site may be viable in five or 10 years once more vehicles are coming online. At this stage, it's probably more that we are falling behind on opportunities to transition certain aspects of the transport network. That is the biggest issue. It's not necessarily "Are we delivering the wrong infrastructure?"; it's more that we have yet to deliver the infrastructure that some sectors are desperately in need of.

Mr NATHAN HAGARTY: Would the institute like to chime in on that one? Amongst your members, have you seen examples of the wrong infrastructure being rolled out at the wrong time? You spoke about—I think you used "Bowral to Brewarrina" or some alliteration there. That was fantastic. Are there examples of where you think places are being left behind unfairly, or the incentive structure could change to make sure that this is rolled out equitably?

WILLIAM BARTON: Yes, absolutely. There are a couple of aspects to that. The first is that, while we support a free market, one of the concerns that we hold is that we will see a repeat—as we've seen with, say, mobile phone towers. Where it's economic and where it stacks up, the telcos understandably want to go in and profit from that. Where it's not, it's either a black spot or it's councils who are having to go out and seek grant funding to then go and pay the telcos to come in to put a tower in. That's my own experience in my own council in the Hawkesbury. We have no doubt that we will see that. We're hearing from our members that, whether it's my colleague on the board who's out at Warren, they just don't have the population to attract charge point

operators. So they're either having to go it alone—and I don't think there are many councils beyond the sandstone curtain who do have the expertise to play in this space—otherwise the transition is going to leave them behind.

Mr NATHAN HAGARTY: What about in Western Sydney? We heard evidence earlier that there has been pretty decent uptake in Western Sydney for economic reasons. The argument made is that houses are bigger. They've got driveways and they're able to charge themselves. But I think some of these submissions have been that there needs to be a mix of chargers: You need the fast charging and the DC chargers. So there is an equity issue in Western Sydney where, sure, I can go home and plug in my EV and it'll take 12 hours, but I might just want to drive down the road and spend 15 to 20 minutes and pay a little bit more money to get myself a quick charge. Are we seeing that as well?

WILLIAM BARTON: To an extent. It comes back, I think, to the philosophy of build it and they will come. The balance has shifted the other way. Again, in my own council at the Hawkesbury, we don't have a high EV uptake, so we see a very, very limited opportunity for commercial charging. You can almost identify the boundary between the Hawkesbury LGA and, say, the Hills LGA or Blacktown LGA. When you look at a map of the publicly available charging stations, it almost mirrors the boundary because the data that's driving those investment decisions is based on where the registrations are. As, for whatever reason, a suburb or a local government area lags behind, so too does the charging infrastructure. Then the uptake lags behind because there isn't the publicly available charging infrastructure to support or to assist with that, whether it's range anxiety or some other barrier to ownership of EVs.

ANOOP SRIDHAR: Since we are in the early stages of the transition, there have been different types of technologies being tried in different areas within New South Wales. I think, since it's an emerging market, it's hard for each of the individual operators or providers to come up with a defined solution for all the different charging requirements. What we're seeing is now it's getting more standardised, but there needs to be more work done in that space. The rates are also now becoming similar across the different operators, but previously it was on the higher side for some of them. Some of them were lower depending on the area that they're in. In terms of the uptake, it was driving the cost down in some areas. But there needs to be more work done in that space where there are more standardised approaches for these hubs. Where we see an opportunity is, currently, it's all focused on private vehicles, but there needs to be consideration for having charging hubs for other modes as well, where everyone can use that facility. If it's like a smaller van or a even a mini truck sort of vehicle that can come in and charge at that point, that would be very helpful.

DAVID ELLIOTT: Can I just add to that? On the back of what Vice President Barton was commenting on, I know in the electorates of Riverstone and Kellyville—I don't know about your electorate—they've got some of the highest numbers of EVs per capita in the State. I think Kellyville is actually the highest at the moment—well, it was for a little while there. To get to the point of your question, we do have this situation on the horizon where there will be a disparity in those that have the availability of purchasing EVs, because obviously they're an expensive bit of kit at the moment still. It's much cheaper to buy a diesel Hyundai than it is to get a Tesla. As the vice-president said, build it and they'll come: If there are EVs around, then people are going to invest. Particularly the private sector will invest in providing the infrastructure, because they'll get a return.

The other issue that we focus on a lot at the institute is the tyranny of distance. The vice-president and I were caucusing this morning. The concern amongst those who would like to transition to electric vehicles is that you can't leave the Sydney CBD with one. Some of the concerns that I heard as we were preparing our submission was that if you're going to be able to encourage people, public transport and truckers to drive interstate, you're going to need to have the fast charging stations every 300 or 400 kilometres. Of course, it goes back to the comment on what quality of charger you'll get and how much that's going to cost, because you're not going to get a trucker, obviously, to sit and wait eight hours at Coffs Harbour. They might be sleeping, but they don't do that anymore.

Mr RAY WILLIAMS: Thank you, everyone, for attending the Committee. I've raised this point on behalf of all witnesses, so don't just think that it's directed to you or personally—or indeed you, Mr Elliott. There was a report undertaken by Energy Networks Australia and L.E.K. That report contained a comment from Ausgrid that there are certain cost and speed advantages to distribution network service provider-led rollout of pole-mounted chargers, as well as less community disruption due to the use of existing infrastructure. Now, that comment to date—and I'm happy to have that refuted—has not been based on any data. It has not been audited, nor verified, by any independent authority.

There is a great fear amongst all the witnesses who have presented themselves to this Committee today that a monopolisation and a loosening of the ring fence regulation that we currently have will remove the protections for competitors for private investment into the electric vehicle charging infrastructure equipment, but, most importantly, remove protections on behalf of the end user—the consumers—who ultimately see a user-pays

system for those in EVs. To those people who don't have an EV—and they are actually in the majority at this point in time—where do those protections lie if, indeed, you're suggesting that we support a monopolised system? The question would be: Are you supporting a monopolised system?

WILLIAM BARTON: Where the market is prepared to meet the demand, we support the market, with the caveat that we also need supports for our members and our councils. What I mean by that is that the introduction of charging equipment on existing assets—predominantly light poles, electricity poles and so forth—changes the paradigm for councils as the land manager and as the road authority, in that it introduces a third-party activity which necessarily attracts a level of risk and liability, whereas in the current paradigm, which is refuelling on private property in a petrol station, councils aren't exposed.

The introduction of charging cables and the introduction of these sorts of assets into the public domain brings with it an increase in the risk that councils face through liability, through third-party damage and through third-party injury. What we would be seeking from the State Government is, instead of 128 different iterations of how this rolls out across New South Wales, some sort of standard or guideline that councils can subscribe to that sets the rules for how we interact with charge point operators, with distributors or whoever it might be that's looking to install this infrastructure. That's our overriding concern.

Mr RAY WILLIAMS: Therefore, as has already been mentioned in the Committee today, you remove one regulation and put other regulations in place. Otherwise you end up with a monopolised situation. I can imagine if you have a low uptake in Hawkesbury, which is my neighbouring council area at this point in time, how would those people feel, with continuing rising cost-of-living expenses, about paying for EV charging stations when there is only a small number of EV vehicle drivers, as you've suggested, compared with next door in the Hills, where there is the highest uptake of EVs of any local government area in the country at this point in time? How do you discuss that with your community and say, "Put your hands in your pocket and pay Ausgrid, Essential Energy or Endeavour to implement these charges, but we haven't got too many people here at the moment using them"?

WILLIAM BARTON: We support the market, as I said. I will speak to my own experience. We're in a skills shortage. We have difficulty attracting staff to look after our road assets. To try to attract staff, let alone find budget for somebody who can actually develop and do the work necessary to ensure that there's adequate protections for councils in terms of these liabilities and risks, is a challenge. It's an even greater challenge for our members and councils on the other side of the Blue Mountains.

It's more about ensuring that councils are in a position to be an informed third party or other party to when these charge point operators come and knock on our door, because they are knocking on our door. Sometimes they walk away because the risk equation doesn't work. Sometimes it's because the commercialities don't work. In some council areas, I'm sure it's because there isn't the level of skill, knowledge and experience on the other side of the table to discuss, negotiate and consider the contracts that are being offered by these charge point operators. I would say that it rebalances things to be an enabler for charge point operators to come along and utilise existing infrastructure, whether that's the electricity poles and the light poles, or whether it's a bollard in a canteen or the wall of a public toilet in a council-owned car park. Having an informed buyer in local government will actually improve the rollout of EV charging infrastructure across the State.

DAVID ELLIOTT: To answer your question, our submission is silent on ownership, only because, like energy policy, there are some fights that even I'm not prepared to have. But you and Nathan would be aware from your local government experience that councils work very well with private providers. When Nathan was on Liverpool council, he did it with waste. You did it on the Hills council. Our main concern is to make sure nobody obstructs the relationship we have with whoever the provider is. We don't want any regulation to say, "Chief Engineer, City of Sydney, you can't talk to this provider or you can't talk to that provider. You've got to go through an independent or government body." That would be the worst for us.

Having said that, it's safe to say that local government—given that the institute represents private engineers as well, it would be remiss of me not to say that we're very keen to make sure that there's lots of competition. An observation also has to be made about who is paying councils for access to the street parking or the car parking. Is Ausgrid doing anything at the moment? There needs to be consistency as well. That's probably outside our remit as the institute. But I would say, on behalf of the councils, that at the moment you might have a charging station in a council car park run by Ausgrid, and Ausgrid isn't paying the council for making money out of that spot, are they? I don't think so. Nathan, are they?

Mr NATHAN HAGARTY: No.

DAVID ELLIOTT: I don't think so, so I think that needs to be considered as well by the Committee when you're talking about a fair and level playing field, because I would hate to see any tier of government or a

private provider being told, "You better not go to the private sector provider because they're not going to want to play with you because you have to charge them rent." Therefore you're creating this forced monopoly on the big guys, because they're getting it rent-free.

Mr RAY WILLIAMS: I'm happy for AECOM to weigh into that as well.

ROGER JEFFRIES: I'm not sure we're in a position either to comment maybe on ownership models, but I'd probably agree with all of those sentiments that were made by our colleagues from the other end of the panel here. I guess at a bigger picture, I guess we'd always, from our point of view, be focused on outcomes when we're talking with government. My colleagues have previously stated that we all recognise that, to support the ongoing acceleration and the uptake of EVs, you need a range of solutions for charging. Most people now who own an ICE vehicle don't fuel their vehicle at home. With electric vehicles, we have the opportunity to do that, but there are also other opportunities to do that as well, especially, for example, people who won't have the opportunity to charge their vehicle at home—for example, people who are in more challenging locations like apartment buildings. Having on-street charging does support that, but also destination charging at shopping centres and the like.

The CHAIR: One of the issues that was raised by the charge point operators was that they don't know where the capacity is on the network and which poles are appropriate. Their view was that you needed more transparency from the monopoly holders on which places were suitable to start putting these charge points in. Particularly with heavy vehicles, that's going to be a big issue—it's probably easier on the Pacific and Princes highways, but once you start talking about the Newell Highway, those Federal highways that go inland—where the capacity is to put those in. Do you have a view on what the model should look like to enable the infrastructure to be identified in a much easier way by the monopolies?

ROGER JEFFRIES: Maybe I can start off and pass off to my colleague. I agree with your statement that you made about previous evidence around providing information to other parties in the market. I think it goes without saying that that helps to open up the market to different parties. In terms of looking at major highways and bringing in other modes like heavy vehicles, there is some work that we've done in that space working with the Federal Government, and I might let my colleagues provide some more information on that.

JOSHUA BRYDGES: Certainly. We are in the process of wrapping up some work with the Australian Renewable Energy Agency, specifically looking at how the Federal Government in conjunction with the states, and potentially even local governments, can support the electrification of road freight. Through that work, the challenge of enabling highway charging obviously emerged. Everybody recognises that it's one of the key challenges. Interestingly, from our research broadly speaking around heavy vehicles, highways actually probably shouldn't be our number one destination of looking at where and how to electrify that sector. Enabling electrification within urban areas is a huge opportunity that we cannot pass up, and we're probably already starting to fall behind.

There are large movements in that space being made overseas that are electrifying freight within cities, which is also having tremendous impact on local communities avoiding the noise and the emissions from trucks. That's a large component of it. When you move onto the highways, that's a longer-term discussion that we need to be having. At this current stage, it seems the best and most appropriate approach would be to just at least identify the corridors which we need to be delivering the infrastructure upon. As you mentioned, the key highways—the Pacific Highway, heading down to Canberra, heading to Melbourne—all of those are obvious choices for electrification, and there is a little bit better alignment with the electrical grid as well. Whether or not there's full transparency with the provision of electrical supply, I think that's a challenge across electrification. Having access to good quality data has been a challenge for the past several years as we've been working on these projects. But, as you move into that highway charging, the main highways offer opportunity.

In terms of models, there are already the heavy vehicle rest stops that are owned by the government. There are opportunities to see if we can expand upon those. Whether or not there are different ownership models or delivery models, I don't think we'd be in a position to say how that can be delivered yet. I'm sure there is a range of different operators out there who'd be interested in that. But, at the moment, we don't have that final plan on a page of these are the networks, these are the corridors we need to look at, these are the charging spots that we want to provide electrification at and the upgrades that will be needed to provide the electrical power to it, but also the reservation of space. Some of these rest stops are not particularly large. They may not have large facilities. Especially if we're talking about freight electrification, they would all need upgrades to allow—even if it's letting a truck charge in half an hour, the drivers will probably want to get out, have some food and go to the bathroom. All those sorts of upgrades that are incidental need to be considered as well. We're just not at the point where that has really been nailed down, so we don't really have a path forward for that.

Moving into regional, it becomes even more challenging, obviously, as you mentioned. The electrical networks are not aligned with smaller highways, and enabling some of our communities who are the most dependent on road freight becomes a real challenge that is going to take several decades, probably, to really nail down. I don't think anybody has the be-all and end-all solution to solving for that problem as yet.

DAVID ELLIOTT: You mentioned the Newell Highway, and it's a point that we touched on, but it can't be understated. That is, if we make it very easy for electric vehicles to be used for freight on the Newell Highway and lesser roads, they'll use it. As the vice president said, build it and they will come. Be prepared for the fact that those roads are not ready for the heavier vehicles, particularly if those roads are still relying on wooden bridges anywhere. But the heavier vehicles that are EVs will well and truly need to see an upgrade in some of those roads that we're building them on.

The CHAIR: This is because their batteries are so heavy and it adds an extra two tonnes to the vehicle weight.

DAVID ELLIOTT: Yes.

The CHAIR: Sorry, I jumped in ahead of you.

Mr WARREN KIRBY: That's okay. A couple of questions from me drawing together the concerns regarding appropriate locations and wasted resources. Tying that together with "if you build it, they will come", is there any data that supports the idea that if you build it, they will come?

DAVID ELLIOTT: The Australian mindset. We love technology. And I think the cost of fuel has everybody looking at—again, your electorate. You've got one of the highest users of solar panels per capita in the State, as well as electric vehicles—your electorate and Ray's electorate. I think people have got to a point where they're looking for an excuse not to go down that space. At the moment, a lot of it's obviously ease of access to recharging. Some of it is price, but there's easy ways for government to manipulate that.

Mr WARREN KIRBY: But we're assuming that, because there are other societal impacts. Hawkesbury versus Kellyville and Riverstone is a great example. It borders both of our electorates. It would at least raise a question mark if two electorates have the highest uptake of EVs in New South Wales, and the one that's right beside it—

DAVID ELLIOTT: Has got the lowest.

Mr WARREN KIRBY: —has got the lowest. Are we sure that "if you build it, they will come" is the actual answer, or are there other factors in people's choices to make the switch?

DAVID ELLIOTT: I think you'd need to do some very high-level qualitative research and find out what is stopping people from buying an EV. If it is ease of access to charging, then you've got your answer. Yes, we're all aware of EV charging stations around metropolitan Sydney, not far from our very homes, which just don't seem to be used, for whatever reason. My advice to government would be to do some serious qualitative and quantitative research and collect the data. It may be a case where some routes would be 110 per cent and some routes would be never.

Mr WARREN KIRBY: To your knowledge, that data doesn't actually exist.

DAVID ELLIOTT: No, we didn't research that. Our chief engineer didn't visit that question when we did our submission. Did you want to add anything?

ANOOP SRIDHAR: I can probably add a couple from our work that we've done with different agencies and stakeholders—not directly the demand-driven data but more around industry and stakeholder perceptions. We did some surveys with stakeholders as part of our projects. What we hear often is, "If you have the infrastructure, we are willing to get an electric vehicle and transition to an electric vehicle fleet." There is that industry or stakeholder consensus that there is a lack of infrastructure.

Mr WARREN KIRBY: Are you talking about freight now?

ANOOP SRIDHAR: No, in general light vehicle but also freight as well. People have now started to realise the total cost of ownership and the ease of maintenance of these electric vehicles, especially the light vehicle fleet. They want to change or transition to electric vehicles but they are concerned, or their users are concerned, that the infrastructure isn't there yet. But this is, again, qualitative and based on our industry and stakeholder consultation.

JOSHUA BRYDGES: It's interesting, in some of these discussions, how little it can take to make the switchover. It speaks to having the right infrastructure, largely from a psychological perspective. There are fleet operators who we have spoken to who found that their staff remain hesitant with EVs, even if they have a range

of chargers at their depots or their facilities, until they put in, say, a fast charger, and then it's just that backstop of reliability and knowing that that's an option that has allowed immediately all of that psychological stress and unwillingness to adopt to shift away. I think it speaks to allaying those obvious concerns that people have and whether or not we rely too heavily on slow charging, be it kerb-mounted poles, on electrical poles or at destinations. Obviously, we go that route because it's cheap and much easier to deliver and a lot less technically challenging. But providing that backstop assurance that you'll be able to get wherever you need to go is something that we're probably still lagging behind to some extent.

Mr WARREN KIRBY: On a completely different topic, we have seen in certain areas of New South Wales—very close to my backyard—extraordinary uplifts in population density and changes in planning controls et cetera. Do you have any recommendations on whether or not EV charging should be incorporated into planning controls, both in city environments but also in outer metropolitan and then rural and regional?

JOSHUA BRYDGES: Our understanding is that it's a very mixed bag, obviously, and council controls vary widely when you cross one road to another road. I think there's work that probably needs to be done around some commonality on that front. But, certainly, there is a need for greater provision of electric vehicle charging within buildings that are being developed to try to tackle the housing crisis. One thing that I think we've begun to work through as well is that a lot of the provision currently is quite small. It's almost more of a demonstration of some EV charging within a building. We know that, in the future, there's going to be need for much more within that same building, which would necessitate wider upgrades to the electrical network. I'm not sure that process has already been worked through to understand what we need if all of this housing is developed and in 50 years time everybody needs a charger. That's a different quantum of infrastructure required. To my understanding, that has not been considered as of yet.

WILLIAM BARTON: From the perspective of the institute, our concern would be that if, as has just been alluded to, the demand can't be met for private charging through private dwellings, then it falls to, again, the public road environment to meet that demand. That is incredibly costly. It is incredibly challenging to uplift and retrofit significant capacity into that space. I speak to any one of my colleagues and we've already got significant challenges dealing with utility providers who are just providing water, gas and overhead wires.

When we start talking about whether it's a charge point on every street pole or dedicated pillars for charging in the road environment, that presents some significant risks for community in the future if there isn't that allowance for development to accommodate that. Now, whether it is futureproofing, or some element of futureproofing, that's not necessarily within our lane, as public works engineers. But we would not want to see the road environment be the default opportunity, or the default space, for charging to occur. We would prefer to see—a range has been alluded to—a range of options, part of which does include on-street parking but not that as the default or the primary mechanism to achieve charging a fleet.

DAVID ELLIOTT: What my vice-president is trying to say is you'd be nuts not to.

Mr WARREN KIRBY: Yes, but at the moment there's no regulatory requirement. Obviously, developers aren't going to do that just because it's the right thing to do.

DAVID ELLIOTT: You'd need to look at the economic modelling, obviously making sure that if I don't have an EV car in that block, I'll be pretty upset if I've got it on my rates, for a start, or if it's on my body corporate fees. You'd need to have it cost recovery and, quite frankly, it should be cost recovery because nobody gets free energy. I think, as the vice-president said, it'd be either futureproofing or doing it as a standard input into your planning regulations or your planning permission. You'd be crazy not to, particularly in the electorates that are represented here today.

Mr WARREN KIRBY: David, this kind of leads on from your point about Newell Highway, road surfaces and wooden bridges et cetera. In your opinion, particularly from an engineering point of view, if the electric fleets of heavy vehicle transport into regional areas do have a fairly significant uptick, is there a serious problem with the road infrastructure, the underpinning infrastructure, in order to cope with that, outside of electric vehicle charging—the wooden bridges, the underweight culverts et cetera.

DAVID ELLIOTT: I'm not the engineer.

Mr WARREN KIRBY: I understand that.

DAVID ELLIOTT: I'm appointed for my looks, but Will is. The answer is yes, but Will will give you an educated answer.

WILLIAM BARTON: Yes, is the answer. We're already facing an infrastructure backlog in our roads and bridges. I think our last survey was in the order of between $700 million and $800 million. That's assets that aren't being renewed, which should be renewed effectively today, and that's with general axel limits as they

currently are. Now, I don't think anyone's suggesting that this has to work whilst maintaining axel limits. You lose productivity because you'd lose two tonnes of products that you can ship around and supplement with batteries, or substitute it for batteries. I think there's a general acceptance that, for this to work, we have to increase those axel limits, but that will have a huge impact on the road network. That backlog, which is already approaching $1 billion, can be absolutely guaranteed to go north of that.

ANOOP SRIDHAR: If I can maybe add to that. When we did the work for the Federal Government, that was a common theme that came up in terms of infrastructure that underpins the transition role—so the width restrictions, some of the height restrictions and all that along some of the routes that we're looking at to put in the charging infrastructure. Even the bridges and the road design standards—they're quite different, or the new vehicles don't comply. That was raised as a concern. We also found that some of the areas we were targeting to put the infrastructure didn't really support the vehicles to go through that route. That's also an emerging challenge.

JOSHUA BRYDGES: It speaks to the overall challenge of freight in that to consider a fully electrified freight ecosystem that allows you to deliver to small regional towns, the same way that you could deliver to Brisbane from Sydney, is a long multi-decade challenge with a sizeable infrastructure deficit that we need to overcome. It also speaks to some of our findings that I mentioned earlier that cities are really the opportunity when it comes to freight that we need to be moving on today. There's less of a large-scale infrastructure deficit that we may be having within cities. There are greater opportunities for smaller vehicles that are less impactful on the local environment to be facilitating a number of those journeys, and it fits more economically into the current ecosystem of the network. What we're missing is that we don't have, I'd say, a full view of how and when we want different aspects of the road freight ecosystem to be electrified. Without that, we can't then do that forward planning of saying, "Okay, these regional highways—we need to be starting to think through some of the early planning today, with the view that we can deliver in 10, 15 years when they're more enabled and the wider market is ready for that, versus making moves immediately to help support that urban freight decarbonisation."

The CHAIR: Thank you. Sorry, we've run out of time.

Mr RAY WILLIAMS: I might just put a question. I am happy for them to take it on notice if they want. Nathan also looks like he has one.

Mr NATHAN HAGARTY: Just a quick one—we're sort of dancing around this, but fuel excise, right? As transport and cars become electrified, then the Government's fuel excise obviously goes down. Have you done any work in that space about what to replace it with or are you more in the infrastructure space?

Mr WARREN KIRBY: I deliberately didn't ask that because they're engineers.

The CHAIR: They can take it on notice.

ROGER JEFFRIES: Luckily we're not all engineers.

DAVID ELLIOTT: But it is an important point made. It is tradition. It would be remiss—engineers always come to Macquarie Street to ask for money, because any problem that can be solved can be solved with money. Therefore, I'm not going to disappoint you. You're right. The money is going to have to come from somewhere and it's not going to—when we consider the Newell Highway case study and the bridges case study, the multiplier effect of rolling this stuff out is going to mean that our roads budget will need to go up as the revenues are coming down.

Mr RAY WILLIAMS: Absolutely quickly, just on all of those points that have been raised in the last 15 minutes, have you had any consultation whatsoever with the New South Wales Government in relation to the EV infrastructure requirements in terms of changes to planning criteria, changes to strata laws, development of technical applications for residential buildings? Have you undertaken any consultation?

The CHAIR: You will have to take that question on notice. We are out of time and we've got some people online for the next session.

Mr RAY WILLIAMS: It is a simple yes or no.

DAVID ELLIOTT: A little bit.

The CHAIR: Thank you very much for appearing before the Committee today. You will be provided with a copy of the transcript of today's proceedings for corrections. The Committee staff will also email you any questions taken on notice—I think there may have been one from today—and any supplementary questions from the Committee. You'll have 14 days to answer them.

(The witnesses withdrew.)

Associate Professor SCOTT DWYER, Research Director, Institute for Sustainable Futures, University of Technology Sydney, and Electrification and Energy Systems Network Partner Representative, NSW Decarbonisation Innovation Hub, affirmed and examined

Dr JAMES CHRISTIAN, Business Manager – Powerfuels including Hydrogen Network, NSW Decarbonisation Innovation Hub, sworn and examined

Mr MARK TWIDELL, Industry Professor of Practice, UNSW Energy Institute, before the Committee via videoconference, affirmed and examined

Mr IAN CHRISTENSEN, Managing Director, iMOVE Cooperative Research Centre, iMOVE Australia Ltd, before the Committee via videoconference, sworn and examined

Mr ROSS DE RANGO, Individual, before the Committee via videoconference, affirmed and examined

Ms DANI ALEXANDER, Chief Executive Officer, UNSW Energy Institute, before the Committee via videoconference, affirmed and examined

The CHAIR: Good afternoon. I welcome our next witnesses. Please note that Committee staff will be taking photos and videos during the hearing. The photos and videos may be used on the New South Wales Legislative Assembly social media pages. Please inform the Committee staff if you object to having photos and videos taken. Can you please confirm that you have been issued with the Committee's terms of reference and information about the standing orders that relate to the examination of witnesses?

SCOTT DWYER: Yes.

JAMES CHRISTIAN: Yes.

ROSS DE RANGO: Yes.

MARK TWIDELL: Yes.

IAN CHRISTENSEN: Yes.

The CHAIR: Do you have any questions about this information?

SCOTT DWYER: No.

JAMES CHRISTIAN: No.

ROSS DE RANGO: No.

MARK TWIDELL: No.

IAN CHRISTENSEN: No.

The CHAIR: Mr Twidell and Mr Christensen, I note that you are appearing from outside of New South Wales and, therefore, may not be covered by the New South Wales law of privilege. Any defamatory statements may therefore not be privileged. That is just for your information. Ms Alexander has now joined us online. For your information, Ms Alexander, you are appearing from outside of New South Wales and, therefore, may not be covered by the New South Wales law of privilege. Any defamatory statements may not be privileged. I assume you have a copy of the Committee's terms of reference and information about the standing orders that relate to the examination of witnesses.

DANI ALEXANDER: I do.

The CHAIR: And you have no questions?

DANI ALEXANDER: Not a problem. I think I might not be the only one that is calling from outside of New South Wales.

The CHAIR: I covered that before you were online. We are happy for people to make a short opening statement. We will start with the people online and then go to the people in the room. Mr Twidell, would you like to start with a short opening statement?

MARK TWIDELL: I'll defer to Dani Alexander, who will make the statement on behalf of the Energy Institute.

DANI ALEXANDER: Firstly, I'd like to thank the Legislative Assembly Committee for the invitation to make a submission to this inquiry and also to attend this hearing. This is an enormous opportunity for

New South Wales to leverage electric vehicles to provide the energy storage requirements to support the decarbonisation of our electricity grid, as well as achieve our emissions reduction goals. Analysis by ARENA suggests that by 2030 the potential storage in Australia's EV fleet will likely surpass all other forms of storage in the national electricity market. New South Wales is at the heart of the National Electricity Market (NEM), and transport infrastructure is at the heart of leveraging this extraordinary energy resource.

I'd like to draw attention, first, to our submission's recommendations in relation to deploying different levels of EV charging in a way that maximises existing infrastructure. I would also like to highlight the importance of achieving the best value for consumers. This relates to the equitable distribution of any additional costs across the entire energy system. Finally, I'd like to acknowledge that our submission focuses on some of the near-term challenges of EV charging, particularly for light vehicles, and has less focus on the infrastructure requirements for heavy and long-haul transport routes. Technology pathways in the latter area are evolving, including high-power electric charging, battery swapping or alternative fuels like hydrogen and biofuels. We would be happy to discuss these with the Committee either now or at a later date. I and my colleague Mark Twidell from the UNSW Energy Institute look forward to your questions.

IAN CHRISTENSEN: iMove Australia is the host organisation for the iMove Cooperative Research Centre, which is established under the Federal Government's Cooperative Research Centres Program. We thank the Legislative Assembly Committee on Transport and Infrastructure for this opportunity to reflect on the path towards decarbonisation of the transport sector and, in particular, the role that electric vehicles and electrification is likely to play in that process. Whilst electrification is the most feasible path towards decarbonisation of the transport sector, we also recognise that it's a complex process and there are many interdependencies.

As we progress towards this destination, we need to reflect on or acknowledge the interdependencies and the connections to other parts of the economy that need to be understood in order for the transition to electric vehicles to be done in an efficient and effective manner. In that respect, we would commend that the New South Wales Government take a relatively holistic approach towards the deployment of electric vehicles and electric vehicle infrastructure and, in fact, their combined decarbonisation agendas. Because only a systems approach will get to a satisfactory destination in either the short or longer term. Thank you for the opportunity to comment.

The CHAIR: Mr De Rango, do you want to make an opening statement?

ROSS DE RANGO: I would, thank you. First, thank you to the Committee for having me and providing me the opportunity to give evidence. I'm here today because the energy networks in New South Wales are trying to change the rules. The outcome they're after is that they be allowed to deploy tens of thousands of public EV chargers in an inefficient way. They want to be able to make everyone who pays a power bill cover the cost of this exercise, not just of the deployment but also of the maintenance and also their profit margins. This is anti-competitive. The idea that anyone trying to compete with network-owned public EV charging would be able to compete in a future where the networks control access to electricity for everyone and are able to wash the costs of their own public EV charging hardware across all bill payers, not just the EV drivers, is silly.

The ring-fencing rules in our market exist to protect Australian consumers and Australian businesses from this type of behaviour on the part of the multibillion-dollar monopolies that control the poles and wires. These are the crucial consumer protections that your energy networks are asking you to set aside, and the data on which they are basing that ask, is weak at best. Given that this proposal from the DNSPs is effectively a call for the imposition of a regressive tax on everyone who pays for electricity to support an expanded role and higher profit for monopolies, it's reasonable to ask why any government would even consider it.

The CHAIR: Dr Christian, do you want to make an opening statement?

JAMES CHRISTIAN: Yes, please. Again, first of all, I want to thank the Chair and the Committee for the opportunity for us to be here today and present our insight as well. We are here today representing the NSW Decarbonisation Innovation Hub. We are a state-funded initiative established by the New South Wales Government to support and accelerate transition to net zero through innovation and collaboration. The hub sits within New South Wales universities. We serve as a nexus between academia, industry and also the Government, bringing together expertise and facilities of the 10 major New South Wales universities, alongside a growing number of industry partners and policy partners. I'm here with Associate Professor Scott Dwyer, who is also from UTS, part of our network member universities and with expertise on the vehicle electrification and grid integration.

The hub is uniquely positioned to support the Government through evidence-based advice, with access to cutting edge research and infrastructure, and also acting as a concierge for collaboration, connecting government and industry with the right researchers within New South Wales universities. I want to say that as the State plans for its future transport infrastructure, we encourage a holistic approach for both electric and alternative

energy vehicles. This includes also renewable fuel supply chains and enabling infrastructure at the ports, logistics and hubs. We welcome this opportunity to contribute our insights and support the Committee's important work. Thank you very much.

The CHAIR: We're going to go to questions. I'll actually start, which I don't normally do. Dr Christian, if you could just elaborate a bit more on acting as a concierge on behalf of the New South Wales Government, one of the issues that has been raised is that with the Charge Point Operators (CPO), in terms of poles and wires and capacity on networks, there is no transparency around availability and it's very expensive to actually make an application. Would that fall within what you're actually doing, or is that more administrative within the monopoly of operators of the wires and poles?

JAMES CHRISTIAN: We're funded through the Office of the Chief Scientist and Engineer, so we sit with the New South Wales Government, and we have a representative with the 10 New South Wales universities. When I say we want to be the concierge, it's because we have insights within the research and expertise within all these 10 universities. Whether the Government needs expert advice or industry want to find the correct researchers or correct professors to look for as for their problem—

The CHAIR: It's the theory that scientists are the best people to understand the research that's necessary.

JAMES CHRISTIAN: Yes. We can connect with the right researchers and scientists.

The CHAIR: I was just clarifying. I'll go to the member for Leppington now.

Mr NATHAN HAGARTY: Mr De Rango's been pretty clear on his views around ring fencing, but we've heard plenty of evidence today about ring fencing and some examples of maybe loopholes, grey areas or where that compliance hasn't been enforced: things like shared resourcing, cross-promotions, and the DNSPs charging what potentially could be exorbitant fees and taking a long time to see applications. Do you have any specific examples, Mr De Rango, that we can add to the mix—and, for anyone else, your views on ring fencing and whether that needs to be strengthened or weakened?

ROSS DE RANGO: Certainly. I can provide further information on notice, noting we've got a short period here. But in brief, while we are here, the existing ring-fencing provisions prevent the DNSPs from owning public EV charging hardware. To the extent that they are involved in the ownership of that hardware, it is through either affiliated enterprises or wholly owned subsidiaries—the likes of PLUS ES, Ausconnex, Intium—in the New South Wales context. The ability of those organisations to own EV charging equipment is not currently in question. They are legally allowed to own that hardware and they are deploying.

The key difference between those organisations owning the hardware and the energy networks owning the hardware directly is that those associated enterprises do not have the ability to put the cost of that equipment on the regulated asset base, which is what triggers everyone in the region having to pay for that equipment through their energy bills. You will hear a distinction and a variety of views, but there's a critical difference there. My personal view, which I'm here to represent as a private citizen, is that ring-fencing provisions as they are currently written need to be protected so that energy networks cannot start owning this type of equipment in the regulated asset base. I hope that's reasonably clear.

Mr NATHAN HAGARTY: Yes, but some of the evidence we've heard today suggests that there's been shared resources and cross-promotion and things like that. So while, technically, these associated entities are using some of the resourcing from the DNSPs and, in a way, they're able to drive the price down in that way, it's not a fair playing field. Are you aware of that?

ROSS DE RANGO: Not being particularly well informed, I do not have a specific example to point to, but I would observe that my understanding is that PLUS ES, for example, shares a building with Ausgrid. Staff will, from time to time, change employers from one to the other, so there is a closeness of relationship there that is perhaps in excess of the closeness of relationship between any other charge point operator seeking to own equipment on the energy network.

Mr NATHAN HAGARTY: Thank you. I'll open it up to anyone else who wants to discuss ring fencing and their thoughts on it. Any opinions?

DANI ALEXANDER: I want highlight, maybe in a broader sense, some of the principles that we were suggesting in our submission. At the end of the day, or at a very high level, it's crucial that the decisions that are made in this space, as I mentioned in my opening statement, reflect the cost to consumers and are considered in an equitable manner. In this way, I also want to highlight that we talked in our submission about the long-term impacts of greater or less competition. When considering the cost to consumers and the equitable distribution of that, it's also very important to understand the time horizons by which those costs are incurred. In the case of competition, there is maybe a better value option now, but does that sometimes come at the expense of a better

value option later? So it's important to consider the time horizons as well, but also the simplicity to consumers. Our suggestion is that the level one charging infrastructure and the benefit that could come from that if that was widely deployed—essentially wherever you parked, you could have a very slow but effective charging point—would likely come at that shared infrastructure level. Mark may have some additional comments to make on this point.

MARK TWIDELL: I think one needs to look at access. The DNSPs' primary role is to provide access to electricity connections. That access should be contestable, but to the extent that energy infrastructure can be modified at scale at a low cost to provide ubiquitous access to charging—for example, every streetlight to have a socket which simply allows a car to plug into. I think we need to take a very pragmatic attitude to who is best placed to provide those services. The DNSPs will be one, but advice would be for that to be a contestable, as opposed to a monopoly situation.

SCOTT DWYER: I'd definitely second that opinion—that we have to really focus on the outcomes that benefit consumers here and look to encourage innovation and market development, where you're looking for choice and value for that. We are really at the early stages of kerbside pole charger deployment in Australia. There's a number of different projects, including one I'm involved with looking at deploying hundreds of pole chargers across multiple States with multiple DNSPs, including the New South Wales one, led by a Sydney-based company EVX. I think these types of projects are—we're specifically looking at things like business models, regulations, connection costs, connection time, and really looking across DNSP areas and across states as well. I think it's about taking that evidence base and being really clear about what problem we are trying to solve before stepping in to make fundamental changes that might not be based on real-world development of these early-stage markets.

IAN CHRISTENSEN: I would just like to add a further comment about being clear on what we're aiming to achieve, both in the short term and subsequently in the longer term. We're at the early stages of the uptake of EVs in Australia. In that respect, a very high priority needs to be placed on establishing a degree of ubiquity in the availability of charging points, both in the city and in rural and regional. There has to be an investment. At the early stages of any market, where the demand is relatively thin, it means that other players have to be persuaded to invest in the infrastructure that we're seeking to deploy. Whether that's kerbside charging for passenger vehicles or it's high-powered charging for trucks, there is a cost to be borne for that infrastructure that is required.

The challenge for the New South Wales community, as in every community in Australia, is to work out who is going to make that initial investment, how are they going to get a return on that investment, and how do we spread the cost over the community in a way that's fair and equitable. Taking note that some people use electricity but they don't drive cars, it's a little bit unreasonable to expect them to pay for the infrastructure for EV motorists. My contention to you is that the arrangements that need to be made in the immediate term are to attract the investment and the establishment of the infrastructure. But we need to be very cautious in that, in the attracting of investment, we don't establish a set of monopolies that could lead to abuse of market power at a subsequent time.

Mr RAY WILLIAMS: I don't think there is anybody who has presented here today—or, indeed, anyone on the Committee—who disagrees with continuing to progress with electric charging. The major concern I have, and the overwhelming issue that has been raised by every witness who has come through—and there have been many—has been the ultimate protection to the end user or the consumer, as Mr Christensen has just pointed out. We have the three major providers at the moment—Ausgrid, Essential Energy and Endeavour—seeking to have the ring-fencing regulation removed, which provides that protection, giving them the ultimate monopoly to roll out the EV street chargers. Whilst I note that there are variables between the Sydney metro area and rural areas—and they do need to be treated completely and utterly separately—at this point in time, my understanding is that over 95 per cent of the charging happens in the family home. It's certainly where it happens, and I'm an EV driver.

Given that, plus the current 2,000-odd chargers that we have across the Sydney metro area, the innovation of those chargers that I'm seeing—and I know that there's one down the road called JOLT. If you're lucky enough to plug into them, you get your seven kilowatts for absolutely nothing and you pay on top of that. It's very, very popular, and that has come at no cost whatsoever to the consumer. I just wonder what your views are in regard to the permission, on behalf of the DNSPs, to completely monopolise that system, where they will have ultimate control—and register them as assets, as Mr De Rango has already pointed out. How do we provide those further protections to the consumers if we release that regulatory framework that we currently sit in?

ROSS DE RANGO: I would observe that the ring-fencing protections that currently exist are the consumer protection in this area that the energy networks are seeking to remove. You can imagine those existing ring-fencing protections as the fence that protects the hens from the foxes, and it is the foxes getting together and

saying, "Please tear down that fence. You'll have happier hens if they are allowed to run around free and collect feed from wherever they wish, and they'll produce more eggs." I grew up in the country, sir. If you tear down the fence between the foxes and the hens, the chooks get eaten and there are no eggs. That's my statement to that question.

Mr RAY WILLIAMS: Good analogy.

SCOTT DWYER: You mentioned 90 per cent of people charge at home. Again, today's EV users are still very much the early majority of EV adopters. Something that's important to consider in the deployment of infrastructure is around those groups who could face exclusion and benefiting from this transition of transport—low- to medium-income households, multi-unit-dwelling residents, vulnerable groups and regional remote communities, people with disabilities. Around that aspect, through our research, we're looking at strategic investment and the need for an innovative transdisciplinary partnership, shared community assets and learning from early deployments. Those are where our research efforts are, to understand how to make sure there's nobody excluded from this. I think that's where the focus of our research is, as opposed to looking at major changes to regulation around energy and infrastructure provision.

IAN CHRISTENSEN: Just quickly, I'd like to step past the charging of passenger vehicles and look towards the charging of trucks and buses. I just reflect that because of the higher power levels that are required to charge trucks and buses in a reasonable time, in these situations it nearly always requires an upgrade to the distribution network—usually to the local substation—to accept the greater power. That comes at a cost, and I think we have a challenge to regulate how that cost is to be dispensed. At the moment, if a bus company wants to charge its buses at depot, it's the bus company that has to pay for the upgrade in the substation, never mind that the neighbouring truck company next door, who might subsequently benefit from that substation upgrade, doesn't have to pay. I don't exactly have a solution, but I think when we're thinking about funding the grid-strengthening process, we have to think about how to take DNSP self-interest out of the equation.

DANI ALEXANDER: I wanted to also draw attention to the other side of the equation, which is the benefit side. I know we talk a lot about costs here, but there are also the benefits, and I think it's important to consider that. In my opening statement, I mentioned that I guess by 2030 the potential storage of our EV fleet is likely to surpass all other forms of storage, and the benefit of that to the community is likely to be larger if we are able to leverage it through the infrastructure that we deploy. I think it's very important to consider that side and the mechanisms by which we are able to share the benefit of this mobile storage asset, which, again, I feel is likely to be one of our most flexible storage assets as well. There is a piece here also around pricing, which leads to the benefit to consumers. Particularly, what we're seeing at the moment is the reflection of the true costs of the energy that is being generated at certain times of the day with that shared infrastructure. As an example, I suppose you have the public charging infrastructure having very high tariffs during the day and lower tariffs at night, not reflecting the very low cost of electricity that happens, particularly where we have surplus solar generation. I also wanted to raise that point.

MARK TWIDELL: To make the point around access, if we just consider passenger vehicles at the moment, roughly 80 per cent of the charging is going to be for short-duration requirements, and cars are going to be parked for the majority of their day. Building on the points that Dani Alexander made about leveraging those capabilities, it's very important in the long term that, when a car is parked, it's plugged in. If it's plugged in, then that car can then benefit from lower cost energy when it's available, or the grid can potentially benefit from services of vehicle-to-grid into the future.

Those services don't need to be at a high power rating. We've seen with residential PV that the networks can accommodate up to five kilowatts of PV relatively simply across millions and millions of homes, and the same can be true of vehicles. From a policy perspective, my advice would be—as was the case made in the UNSW Energy Institute submission—to move to a case where, when a car is parked, there is a plug available. To the extent that those services can be provided at lowest cost from DNSPs, I don't think they should be excluded from providing that service. But it should be contestable and it should be transparent. The issue that we've seen is that DNSPs aren't necessarily the lowest cost, and the transparency around those costs is often hard to find.

The CHAIR: Can I go back to Dani and the point you were raising on substations where there would be a shared benefit across the community? Is there an argument that on that infrastructure there is a benefit to the community that it is added to the overall infrastructure cost, rather than one operator picking it up, particularly where there is a large amount of transport—for example, Moorebank interchange? I have Silverwater where we have Woolworths and a lot of electric vehicles coming out of the large distribution centre they have just built there, which you would expect to be picked up by the other industries around them—the Tooheys Brewery, for example.

DANI ALEXANDER: Yes, of course. Maybe also building on what Mark was saying, when we're talking about the level one charging that could be rapidly deployed without necessarily needing to upgrade the network and incur those costs, that is separate to those higher levels of charging where we would propose that more caution is taken about where it is deployed, because of the nature of the network costs and how that is spread across the consumers or borne by those consumers.

The other point I would raise is, as you were saying, in those locations where there is increased EV charging infrastructure, and the load and the likely network uplift that will come with that, there's an opportunity to co-locate other energy infrastructure, whether that is a community-scale storage system or some other type of generation, that will be able to leverage or complement the EV storage that will exist at that location. As you mentioned, those industrial locations are prime examples of that, where you may have the opportunity to have larger EV charges but also there may be an opportunity to have greater solar deployment, if you're able to keep that load flexible to use the solar.

ROSS DE RANGO: Building on what Dani and Ian were saying, it is absolutely worth giving consideration to who pays for infrastructure upgrades and how and when. It is also important to consider how long those upgrades take. It has been the case for many charge point operators that it has been a really long wait time between starting a project and actually being able to energise it. I can provide further commentary on notice.

Mr WARREN KIRBY: My question is specifically for Mr Christensen, but I'm happy for everybody else to add in a little bit. In your submission, you discuss differentiated infrastructure needs, and you've spoken this morning about a system approach. How would you identify the infrastructure needs for New South Wales in terms of planning controls specifically, not just in terms of charge points but also road infrastructure and whether it's an appropriate strain on the grid, bearing in mind we have only 1 per cent of vehicles on the road at the moment with EV charging? Particularly with hot weather in New South Wales, we have an extraordinary strain on the grid. Is that a factor that needs to be thought about as well?

IAN CHRISTENSEN: Thank you for the question. I agree with your underlying premise. Because the infrastructure build-out is going to cost, and it's going to take some time to implement, we need to be thoughtful about the pattern or the rollout that we undertake. I would commend the New South Wales Government to review the routes that different classes of vehicle follow. Passenger vehicles go everywhere and so their demand is fairly ubiquitous, but buses follow routes and usually come back to a depot at night. Urban trucks typically are depot-based; long-haul trucks go from A to B.

For us to build out the infrastructure in an efficient and cost-effective way, we really need to start with a perspective on the routes that are taken, the level of energy that is required by the set of vehicles that take those routes and the likely locations in which they would need to recharge. In that way, we can then prioritise the establishment, especially of higher-power charging locations, to be present and available at the common origins and destinations, particularly of truck and bus travel, to the point where it might be prudent to develop a proposed pattern of installation and then reach back to the operators of relevant fleets to encourage them to come on board with the rollout pattern that the Government is proposing to make.

Rather than looking at trucks and waiting until they buy their electric truck and then calling on somebody to install a truck recharging facility, we might need to go the other way and look at where trucks go in New South Wales—clearly there are major routes readily available—and then put in the infrastructure at suitable locations along the route and at each end, and reach back to the operators to encourage them then to buy the electric vehicles, trucks and buses and the like, that could take advantage of the newly installed charging infrastructure and, in that way, accelerate both the introduction of EVs and the attainment of cost reductions for the operators. Does that answer your question?

Mr WARREN KIRBY: A little bit. That's in terms of the charging points. Does that also go to the strengthening of that infrastructure et cetera?

IAN CHRISTENSEN: Road infrastructure—yes. Electric vehicles and trucks in particular are substantially heavier than their fossil fuel equivalents. This is posing a significant challenge for the road authorities because some of the roads will need to be strengthened in order to take the load. In any case, the road network is likely to suffer increased wear and tear from the passage of electric vehicles. Quite apart from the charging infrastructure, there will be a need to invest in road infrastructure—physical infrastructure—on those routes where we expect and would want to encourage electric vehicles to operate.

The CHAIR: If you could be quick, Mr Dwyer.

SCOTT DWYER: Yes. Just specifically on the grid's impact and aspects, that was a really good question. You can look at it as a negative impact, or you could look at it as an opportunity as well. In one of our EV research projects, we're looking at dynamic pricing. For pole chargers, you can encourage a lower tariff so

people get a cheaper price to charge in the middle of the day when you've got lots of excess solar, and then increase the price so it discourages charging at those peak times. There's also a feasibility we did here in Sydney looking at a bus depot where they didn't have a lot of capacity for installing onsite solar, so a neighbouring gym that had lots of roof space and a big demand looked at the feasibility of taking that excess solar for powering the electric buses. So there are different technical business model innovations there which could actually flip it to become an advantage rather than a disadvantage, in terms of the grid impacts.

The CHAIR: We have run out of time. I'm very sorry; I can see that Mr Twidell has got his hand up. We will probably have some supplementary questions for you. Thank you for appearing at the Committee today. We probably could have gone for another few hours. You will be provided with a copy of the transcript of today's proceedings for corrections. Committee staff will also email you any questions taken on notice from today and any supplementary questions from the Committee. You have 14 days to provide answers to those. Thank you so much. We are very lucky to have people like you come to our hearings. That concludes today's public hearing. I thank the Committee staff, Hansard, the recording guys, and the witnesses in particular.

(The witnesses withdrew.)

The Committee adjourned at 15:30.