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SENATE

SELECT COMMITTEE ON ENERGY PLANNING AND
REGULATION IN AUSTRALIA

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SELECT COMMITTEE ON ENERGY PLANNING AND REGULATION IN AUSTRALIA

Wednesday, 30 October 2024

Members in attendance: Senators Canavan, Ghosh, Grogan and Van

Terms of Reference for the Inquiry:

To inquire into and report on the institutional structures, governance, regulation, functions, and operation of the Australian energy market

WITNESSES

ADAMS, Mr Dominic, General Manager, Networks, Energy Networks Australia	1
BARNES, Mr Ben, General Manager, Corporate Affairs,	1
Australian Energy Council [by video link]	1
BASHIR, Ms Stephanie, Chief Executive Officer, Nexa Advisory.....	8
CARLAND, Dr David, Executive Director, Australian Resources Development Pty Ltd.....	20
FEENEY, Mr David, General Manager, Wholesale and Environment,	1
Australian Energy Council [by video link]	1
JOHNSON, Ms Vicki, Chair, Regional Victoria Power Alliance [by video link]	14
KATZ, Mr Michael, Director, HumeLink Alliance Pty Ltd [by video link]	14
McINTYRE, Ms Marcia, Executive,	14
Wallaloo and Gre District Alliance Incorporated [by video link].....	14
O'SULLIVAN, Ms Cindy, Wallaloo and Gre District Alliance Incorporated [by video link]	14
STRONG, Ms Andrea, President, HumeLink Alliance Pty Ltd [by video link]	14
VAN DEN BERG, Ms Dominique, Chief Executive Officer, Energy Networks Australia	1

ADAMS, Mr Dominic, General Manager, Networks, Energy Networks Australia

BARNES, Mr Ben, General Manager, Corporate Affairs, Australian Energy Council [by video link]

FEENEY, Mr David, General Manager, Wholesale and Environment, Australian Energy Council [by video link]

VAN DEN BERG, Ms Dominique, Chief Executive Officer, Energy Networks Australia

Committee met at 14:02

CHAIR (Senator Van): I declare open this hearing of the Select Committee on Energy Planning and Regulation in Australia. I begin by acknowledging the traditional custodians of the land on which we meet and pay my respects to their elders past and present. I extend that respect to Aboriginal and Torres Strait Islander people here today. These proceedings are being video-streamed live via parliament's website, and a *Hansard* transcript is being made. I remind all witnesses that in giving evidence to the committee they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee. Such action may be treated by the Senate as contempt. Witnesses before parliamentary committees cannot be sued or prosecuted for giving evidence or for the content of the evidence they give. It is also a contempt to give false or misleading evidence to a Senate committee. Witnesses also have a right to request to be heard in camera. If a witness objects to answering a question, they should state the ground upon which the objection is made and the committee will determine whether it will insist on an answer having regard to the ground on which the claim is made. If the committee determines to insist on an answer, the witness may request that the answer be given in camera.

I now welcome representatives from Energy Networks Australia and the Australian Energy Council. I understand that information on parliamentary privilege and the protection of witnesses has been provided to you. Would anyone like to make an opening statement?

Ms van den Berg: Thank you for the opportunity to present to the inquiry today. Energy Networks Australia is the national industry body representing Australia's electricity transmission and distribution and gas distribution networks. Our members provide more than 16 million electricity and gas connections to almost every home and business across Australia. We made a submission to the inquiry so I won't take long now. I would like to take this opportunity to highlight a few key elements. Our members are focused on driving a sustainable energy future for all Australians. As shown in the AER's recent network performance report, in 2023, after adjusting for inflation, electricity consumers on average paid the lowest cost for electricity network services since this reporting started. The report also found that gas network costs were the lowest since the series began in 2011 both in real and nominal terms. At the same time, we are seeing near all-time highs of reliability performance.

As highlighted in our submission, there are strengths in our current framework that make Australia an attractive place for the long-term investment that Australia needs to attract during the energy transition. The strong institutional and governance arrangements in the energy market also directly support the long-term interests of consumers in ensuring efficient levels of investment. The Integrated System Plan is an important point of reference for the industry in describing the lowest cost pathway to deliver against a set of government policy objectives and ensuring that the system is reliable and secure. Australia's national energy framework has evolved over time and will need to continue to flexibly evolve to deliver outcomes for consumers through the energy transition.

Together with large-scale generation and transmission, ENA's *The time is now* report identifies opportunities within the distribution grid that can be unlocked to help achieve national climate targets and deliver benefits to customers, making better use of what we have. Examples of this include options for promoting the faster and wider delivery of electricity vehicle charging infrastructure, getting more generation connected to the distribution grid and soaking that up with more distribution connected batteries. Importantly, these benefits can be unlocked now by a targeted, pragmatic set of actions available to policymakers and regulators under our framework. In addition, ENA's *Renewable gas for a future made in Australia* report also highlights key opportunities for policymakers to support a decarbonisation pathway for our nation's heavy industry, which will be key in achieving the nation's decarbonisation goals. Thank you again for the opportunity to present. I welcome your questions.

CHAIR: Does the Australian Energy Council have an opening statement?

Mr Feeney: Yes, Chair. Thank you very much. The AEC is pleased to appear and give evidence to the select committee inquiry into energy planning and regulation. The AEC is the peak industry body for electricity and downstream actual gas businesses operating in the competitive wholesale and retail energy markets. AEC

members generate and sell energy to over 10 million homes and businesses and are major investors in renewable energy generation. The AEC supports reaching net zero by 2050 as well as a 55 per cent emissions reduction target by 2035 and is committed to delivering the energy transition for the benefit of consumers. In our submission, we highlighted the critical importance of maintaining a clear governance structure that separates the roles of the AEMC, the AER and AEMO. Previous reviews, such as the Vertigan review, have underscored the need for this separation to promote effective governance and investor confidence. We note that there has been a shift from energy policy being driven largely by market bodies to a situation where governments at both state and Commonwealth levels are taking a more hands-on approach. Governments have created new institutions to give effect to this hands-on approach. While we understand the policy rationale, we do note that this could complicate roles and responsibilities. We support a timely review into the national electricity market's future market design to ensure clarity and certainty for investors. If the review were to be conducted by an institution such as the Productivity Commission, we think it's important to coordinate the review with existing market bodies and jurisdictions.

Lastly, we noted that streamlined regulatory processes, including post implementation reviews, are important to evaluate the impact of major reforms. Finally, we call for AEMO to incorporate a baseline scenario in its Integrated System Plan. This transparency is vital for managing the energy transition effectively and ensuring it benefits all consumers. Thanks, Chair.

CHAIR: Thank you.

Senator CANAVAN: I might start where you just finished, Mr Feeney. I'm interested in your idea of AEMO being required to model what you called a baseline. Take me through what you would expect that to include.

Mr Feeney: Thanks, Senator. What I meant by that—I think there has been a lot of evidence given by AEMO and a range of different market bodies—is that currently the Integrated System Plan really models what it would take to find an optimal development path to support the emissions reductions at different levels of government. We think it would be a more valuable document if it also included a different scenario or a range of sensitivities that take into account what we're learning as we progress with this energy transition. Things such as supply chain constraints and social licence challenges for things such as windfarms could alter the trajectory the transition goes on. We think there's value, from a market participant's perspective, in having that as a scenario that gets modelled as well as scenarios that are consistent with hitting emissions targets.

Senator CANAVAN: I suppose the question here, though, is that currently, as I understand it, they do their modelling based on government policies. That includes the 82 per cent renewable energy target, net zero emissions et cetera. I'm trying to work it out. Are you suggesting that the baseline should have none of that and that it should be purely market driven, if you like? If not, what policy should it have and what shouldn't it have? I'm struggling to understand that.

Mr Feeney: I think what would be useful is to have a most likely case of how that trajectory looks. To the extent there's a delta between what would need to happen for that emissions reduction to come through and the trajectory that it looks like the energy system is on, I think that gives an opportunity for policymakers to help narrow that gap. You would still be aiming for the 82 per cent reduction, but something that is more grounded in what is happening out there in the market would help us have a more informed debate about energy policy.

Senator CANAVAN: I suppose the political problem with that is, in effect, you're asking AEMO to rate the performance of their ministers in achieving their policy goals. For example, if AEMO said, 'Look, we don't think 82 per cent renewables will be built by 2030, it will be 50 per cent or 60 per cent', of course the headline in every paper in the country will be, 'Energy expert says government is falling 50 per cent short.' I don't think I'll ever be going back to the ministerial level, but I can't believe any minister agreeing to such a process. Wouldn't it be more logical to say, 'What if we just ran a baseline with no policy interventions at all?' Then we can compare the two. That way, they're not trying to mark. You're not asking AEMO to be put in a very difficult position of marking the government's homework, so to speak.

Mr Feeney: Yes. That would be an alternative approach. I guess in the end it's a matter for policymakers. The sense I have is that AEMO feels somewhat constrained by the National Electricity Rules in terms of how it can do the ISP, so it's open to policymakers to change that.

Senator CANAVAN: You make that point in your submission. Your submission, I think, says that you don't think they are constrained by the rules from doing this. Is that right?

Mr Feeney: That's our interpretation of it. We think that a version of a baseline that is more grounded in what is going on feels just like the usual kind of sensitivity analysis that you would do. You would generate what-if scenarios—if this doesn't happen, what you do next. It seems like a pretty good risk mitigation strategy to us.

Senator CANAVAN: Ms van den Berg or Mr Adams, do you have anything to add on this issue about the ISP and how it is conducted?

Mr Adams: I think overall we would agree that what's included in the ISP is a matter for policymakers as to what they feel would be a helpful input for them to make the calls they need to make. If they intend to use the ISP as an input into their policy decision-making, it's a call for them to set that direction for AEMO as to what is included within it.

Senator CANAVAN: I will go back to the Energy Council and another issue in your submission you raise. Do you support a capacity mechanism?

Mr Feeney: Just to be clear, are you talking about the Capacity Investment Scheme?

Senator CANAVAN: No. I'm talking about the previous proposals—I don't know the exact status of them—to establish some kind of market for capacity that I believe the ESB back in the day might have been recommending or working up. It seems to have fallen by the wayside now. What is the Energy Council's position on that?

Mr Feeney: Look, to be clear, there's probably a range of views within our members. We do observe that as the penetration of variable renewable energy increases, an energy only market in terms of seedling investment to come forward can be challenged relative to a capacity market. On the other hand, the energy market is incredibly well designed to signal operational time frame decisions and make sure the right mix of energy shows up when it's most needed. Another thing we did say in our submission is that we understand there's a potential market settings review that the Productivity Commission may or may not conduct. We're keen to see that process kick off. We think it would be a really instructive process. As we understand it, the CIS induces some of the VRE to come on between now and 2030, but you do need those market settings to be known well ahead of time so that investment can flow more based on market settings and less based on government intervention.

Senator CANAVAN: Your submission says there's meant to be a review of the future market design of the national energy market. Apparently, in March, ministers agreed that they would finalise this review, including the final decision of any capacity mechanism, by no later than the end of 2025. Your submission also says that the terms of reference for that have not yet been released. Is it still the case that we haven't even got terms of reference for it yet?

Mr Feeney: That's certainly my understanding. We are hearing that it's not too far away, but we're no clearer than any other participant.

Senator CANAVAN: How long is the review expected to take? Have they mapped that out?

Mr Feeney: I think what's happened is that the terms of reference has taken time to come out. At this time, the end date hasn't shifted. One thing that worries us is if you compress the time frame of the review, it will be less instructive than it could otherwise be.

Senator CANAVAN: For sure. I will move on again. You also talk about some of the changed responsibilities of the different market bodies. I don't know if you use the word 'confusion', but that's what I took away from your submission—that there's a bit of muddying here. I want to drill down to this issue of AEMO's services. It's something that jumped out at me when I read your submission. Apparently AEMO's services will have some role in running the tenders for the Capacity Investment Scheme. Of course, AEMO itself also designs this ISP, which seems to have become quite definitive in terms of planning for the energy market. To me, it raises an issue. Is there a potential conflict here between one arm of AEMO actually making effectively investments or deciding on investments on particular technologies, so it will be judged on the performance of those investments one way or another, and then designing the system, which will probably have a significant impact on whether those investments work or not?

Mr Feeney: I don't know whether I would characterise it as a conflict. You could make an argument that doing the upfront planning and setting out what sorts of technologies you need more of and less of gives you a good springboard into making the tender decisions. It is fair to say that AEMO's, I guess, scope of responsibilities broadens year on year. It is a new set of activities. My understanding is that AEMO services were set up as part of the New South Wales roadmap initially to administer the LTESAs for New South Wales. That role was morphed to running CIS tenders on behalf of the Commonwealth largely because they developed that expertise in the New South Wales context. I guess it's an example of how in the energy system there has been a history over the last few years of one intervention begetting a further intervention. It feels a bit piecemeal at times. That is why I would circle back to the NEM 2030 review. I think it has a lot of merit in having a fresh look at things.

Senator CANAVAN: Bouncing from one crisis to the next, basically. Before I move to Energy Networks, is there anything you want to add on that issue? You don't have to. It wasn't in your submission. I will turn to your

submission and your opening comments. You said that the cost of electricity network services is the lowest since 2011 in absolute terms or is it as a share of the bill?

Ms van den Berg: Absolute terms? Say again. Is it a share?

Senator CANAVAN: You said it is the lowest cost for electricity network services. Is that in actual cents and dollars terms, or is it as a share of an electricity bill?

Ms van den Berg: No. That's adjusting for inflation; that's cost.

Senator CANAVAN: The total cost? Maybe you could give me the numbers. Have you got the numbers in front of you?

Ms van den Berg: We could give those on notice. I don't have those numbers in front of me. I can produce them.

Senator CANAVAN: You will have to take that on notice for what it was. Presumably, this is the lowest since 2011. I was a bit confused.

Mr Adams: I think the numbers are coming from the AER's network performance report, which looks at the cost of delivering services over time. The observation from that is that the incentive framework that underpins and sets the revenues for networks and provides incentives for networks to outperform is a framework that is delivering and driving greater performance for lower cost over time. That is the observation or takeaway there.

Senator CANAVAN: Maybe you could take it on notice. Your submission says:

The report also found that gas network costs were the lowest costs since... 2011.

I wasn't sure if that time frame was relevant for the electricity point as well in the sentence that preceded it. Maybe you could take on notice over what time period that point in your submission is relevant. So it is the lowest cost over what time frame? What were the actual numbers at its previous peak?

Ms van den Berg: I'm happy to do that.

Senator CANAVAN: And the previous low and its low now. I might leave it there, Chair. I have more questions if there is time.

CHAIR: If there's time, I'll come back to you.

Senator CANAVAN: Thank you.

Senator GHOSH: I will ask a question firstly to Energy Networks Australia. One of the debates that has emerged in this committee in the last couple of hearings has been a debate on the balance to be struck between distribution opportunities and whether consumer energy resources can be realised instead of building large-scale transmission projects. Could you offer your view on that debate? Do you believe that to be the case? Are these alternatives? In essence, do we just need to be investing in all of these different options?

Ms van den Berg: Thanks for the questions, Senator. We firmly believe that this is not an either/or situation and that to achieve net zero we need transmission. We did publish this report, which is I think what you are referring to, called *The time is now*. This shows that the distribution network can do more of the heavy lifting now to achieve the targets on time and, importantly, deliver benefits to customers. These benefits delivered by the distribution network do not mean that any of the large-scale transmission projects are no longer needed or that they should be meaningfully delayed. The modelling done largely brings forward actions on the distribution grid that have been assumed for the next few decades, which then relieves some timing pressure on the large-scale and brings benefits to customers now. What this report said is that there are benefits to taking these actions on our distribution grid irrespective of large-scale timing. One of the largest drivers of consumer benefits comes from accelerating EV adoption. This is a real impact on driving down customers' total costs. We can also get more generation connected to the distribution grid and soak it up with more distribution connected storage.

The key point of this, though, and why we kicked off doing this report is that these actions are achievable now with the assets and resources we have today. Importantly, all customers benefit regardless of whether those customers have solar, a battery or an EV. There are levers available to policymakers and regulators under our existing framework that can deliver benefits to all customers.

Senator GHOSH: What do you see are the potential risks in terms of reliability and prices if there's a failure to invest in transmission infrastructure or an underinvestment in that infrastructure?

Mr Adams: That's possibly a good question for Nexa Advisory, who did a great report on this a number of years ago looking at the ISP and the impacts for customers if ISP projects are delayed—monetising and costing out what those impacts are. I don't have available to me the exact numbers and so on. It's quite large numbers. For

each year or six months that the transmission optimal development path is delayed, the costs for customers increase.

Ms van den Berg: I will go to your question on why we need transmission. We see this through the lens of how coal-fired power stations are closing. They are closing because they are ageing and they are becoming less reliable. We are as a society committed to net zero. Removing coal from the electricity system is one of the lowest cost ways to get there. Added to this, we are expecting the electricity grid to increase significantly—to more than double. This necessarily means building new transmission infrastructure to connect energy from where it is produced in the future in the solar and wind rich regions into our cities and our regions.

Senator GHOSH: Thank you. I will ask now the Australian Energy Council some questions. Your submission noted that our energy market governance structure and the responsibility of independent market bodies for different aspects of the system is a best practice model. Are you able to elaborate on that and give your views on your confidence in the ISP as reflective of independent expertise and a document that you have confidence in generally?

Mr Feeney: Sure. In relation to best practice governance, I would direct you to the Vertigan review. It was a while ago, but it's really quite instructive. Vertigan found a few different things. The first was that the three different market bodies were set up with different roles and with distinct responsibilities. There is an element of almost creative tension built into that governance, which represents best practice. There was a period of time after the Finkel review where the Energy Security Board was established to, I guess, drive more of a consensus decision-making approach. I think the high point of the ESB was when they were trying to usher in the NEG. But the problem with the ESB was that it put all the market bodies on the same level rather than having the rule maker, the AMEC, as the prime market body of the three. I think a return to those more distinct roles is likely to lead to better outcomes than we've seen. I think there has been a bit of confusion amongst the market bodies about who does what—who has a policymaking role and who operates the market. I will pause there.

In relation to the ISP, I think AEMO is very much doing what it is being told to do in terms of generating that optimal development path consistent with the emissions reductions policies of government. I note in some of the questioning some frustration or perhaps some confusion about the purpose of the ISP. It can be different things to different people. I think it's apparent that at times AEMO is essentially doing a modelling exercise of what would need to happen, but it can be received by stakeholders as something that will definitely happen. That's where some confusion could kick in.

Some submissions we've made to AEMO on the ISP is that they could more carefully communicate what the ISP is and what it isn't. As I was saying to Senator Canavan, the other thing we would like to see is that kind of baseline scenario of what we are on track to achieving. To the extent that's something lower than 82 per cent by 2030, it is about what are some decisions that policymakers might be able to make to help bridge that gap.

Senator GHOSH: One of the suggestions that emerged from testimony yesterday was that the removal of legal prohibitions on the nuclear industry in Australia would offer a benefit to the Australian energy system. From the Australian Energy Council's point of view, is there industry interest in developing and investing in nuclear power in Australia?

Mr Feeney: From our perspective, we and our members deal with what is currently on the table. To the extent the framework is that there's a moratorium on nuclear power, I think some of our CEOs are on the record as saying that if they are actively exploring rolling out nuclear power, they are not focusing on their day job. If policymakers were to change that approach at some point in the future, I think there would be interest in exploring it. Generally speaking, killing off options and taking options off the table in an environment where there's uncertainty over the next 10 or 20 years isn't advisable. Our perspective is very much a technology neutral perspective.

Senator GHOSH: Do I understand your answer as essentially being one that all options ought to be explored? Can you confirm that and give me the Australian Energy Council's view? For instance, if tomorrow prohibitions on nuclear power were removed, would that obviate the need to continue to invest in renewables and storage transition, or is it an all-of-the-above approach?

Mr Feeney: So, if it were lifted tomorrow, I don't think it would obviate the need to invest in renewables from a timing perspective. It is also worth making the point that you want a mixture of different generation types. They have different economic and technical characteristics. This idea that you should just have one or two generation types I think introduces more risk into the system than is required.

Senator GHOSH: Thank you.

CHAIR: Thank you very much. I want to go to the ISP. Your submission talks about the draft rule and that it might facilitate consideration of distribution networks within the ISP. At the moment, am I correct in saying that the ISP really looks at transmission networks in its planning?

Mr Adams: I think it looks at both but in different ways. So the ISP treats what happens on the distribution system essentially as an input into its modelling process. It needs to work out what is the optimal development path or set of investments that would best deliver government policy objectives over the long term and that decarbonisation journey to 2050. The output is a plan at the transmission level. It needs to take into account a whole range of different inputs, including what sort of loads are expected but also what sort of generation types are sitting within the distribution system. A lot of detailed modelling, inputs and assumptions—about a year of the process—is working out what those inputs are and how you frame them up in a way that stakeholders agree with.

CHAIR: I think you then agreed with me that the only outputs of the ISP are transmission projects? For example, while it might take into account the distribution network, it doesn't take a view on how it could be improved and add more economic value to either the NEM or the transition?

Ms van den Berg: We do agree that the ISP needs to continue to evolve. It should evolve, as it has evolved over the last few years. There are recent AMEC proposed rule changes on better integrating gas and better integrating consumer energy resources. Through conversations with AEMO on distribution networks, it will continue to evolve to better look at distribution networks. Moving it from a static input to a more dynamic input is a good thing to do.

CHAIR: We had our first ISP in 2018. We now have the 2024 one. We are working on the 2026 one. We will be lucky if there are any outputs towards anything other than transmission in 2026. ENA put out an incredibly good report. *The time is now* report highlights some of the benefits that could be brought to the energy market that are just network based. It is a fantastic piece of work and something I've been calling for over a long time. It shows a real vision of what our national electricity market could and should look like. At the moment, AEMO looks like a hammer and every problem is a nail, and that nail is transmission. Surely we have to very quickly move beyond this approach and start to look at more unique ways that we can add new economic value to the national electricity market.

Ms van den Berg: Like I said in my opening statement, we do see that the time is now for action that can be taken relatively quickly within the policy framework and within the governance framework. That needs to happen. I have heard Daniel Westerman talk about battery storage and about CER. I think there is a strong desire to get more of that in the system. I think there's a difference, though, between what the ISP is set out to do, what David outlined in his testimony, as to what it does do and what it doesn't do and accepting it for that and hoping it evolves. A lot of these recommendations in *The time is now* can be done through policy change and through the regulatory framework. We can actually get on in a relatively quick space of time. We don't see that, to do the set of recommendations here, you need to throw everything out. I think you can work within it and you can get them done.

CHAIR: I think those things should be done and should be done now. They probably should have been done years ago. My point is that they make real economic sense moving forward. The ISP does make an economic benefit case for more transmission. I'm not arguing that more transmission is needed. If you are planning an energy system, particularly an integrated energy system, as the ISP is called, you need to be looking beyond just one aspect of that, which is the transmission aspect.

Mr Adams: I tend to agree. The question for AEMO is probably just one of modelling and computing capability. It is pretty difficult to have a fully co-optimised distribution set of inputs as well as a fully co-optimised transmission set of outputs. As a task, I think an exercise that could produce that perfect outcome, where you know exactly what to do on the transmission system and exactly what to do on the distribution system as an output of that report, might be asking a bit too much of it. But the question is whether we can better take into account and get a better understanding of what different occurrences on the distribution scale might be able to do and what that means for the optimal development path on the transmission scale. A lot of that is happening in the rule changes that Dom mentioned just a moment ago. AEMO is being asked to better take into account the interactions with the gas system as well as better take into account the distribution system and the range of possible outcomes that could occur on the distribution system.

CHAIR: Sure. The report focuses on and highlights bringing in more EVs. They are lots of things that are adding real value and economic value. I would assume, although it has not been modelled by anyone, particularly AEMO, that displaces other projects. By having more rooftop solar, do you displace the need for line augmentation somewhere? With batteries, either co-located with generation at either end of the transmission or distribution lines, how do you strengthen the system? The ISP has one single counterfactual, which is all or

nothing transmission. It doesn't even differentiate between connecting REZs, for example, and interstate interconnectors. I go to Mr Feeney's point. There is probably a lot of baselines that it wouldn't be difficult for AEMO to model other than the one they do, and that seems simply because they want one particular outcome.

Mr Adams: We can probably only comment to the extent that this was tested within the modelling that underpinned our *The time is now* report. What that did was to take the inputs for the ISP and add more solar and more batteries within the distribution system. The outcome at the transmission system, though, is that you still see a need for those transmission projects. The renewable energy zones are still getting filled up. It may take a tiny bit of timing pressure off some of those investments, but not really on the modelling. You still need them to come through at pace.

CHAIR: Thank you. I have lots more questions on that. I might put them on notice. Your members are also gas distribution networks?

Mr Adams: Yes.

CHAIR: There is the move to electrification and away from gas. What thoughts do you as a peak body and your industry have on how we make that a just transition, if we have to make it?

Ms van den Berg: I think it's important to put gas into context. Seventy per cent of gas is for industry and heavy manufacturing. 10 per cent of gas is in the home. Where customers on any side of that spectrum can electrify, they should electrify. But there is also an incredible role that gas currently plays in Australia and will continue to play. I think it's becoming increasingly clear that it does underpin the economy and that we need a decarbonisation pathway for it. The recent Future Gas Strategy went some way to address that, but there is more that needs to be done to make sure that heavy industry in particular and high heat feedstock has a decarbonisation pathway. We put out a report *Renewable gas pathway for Australia* that sets out a kind of optimised way of getting this, but it's going to need renewable gas and it's going to need policy that underpins that to make it happen. Otherwise we're going to see those jobs go offshore and we're going to see manufacturing go offshore.

CHAIR: I agree 100 per cent. I'm more asking whether the industry is working with government. Obviously once the gas distribution networks are stranded or you hit a point where customers are paying more and more because there are fewer customers on the network and the charges stay the same, it sounds like a bit of an economic black hole that is coming towards us. I am concerned whether that is being managed properly.

Ms van den Berg: When it comes to gas distribution, it is important to notice that isn't just gas in the home. A lot of industry is still connected to gas distribution networks. That said, there are high levels of uncertainty around the pathway and the pace of the overall energy transition and the potential for the economic life of the overall network to be shorter than previously considered. Networks are proposing adjustments to depreciation following engagement with customer representatives and a consideration of a range of scenarios. This is not the entire solution to this uncertainty. Adjusting for depreciation provides one way to recognise potential asset stranding risk. It also supports intergenerational equity, to your point, by allowing more recovery of the network asset capital base where there are more customers on that network.

CHAIR: There is no view that if it is a government driven decision, it should be transferred to the government balance sheet rather than to energy users?

Ms van den Berg: There are no easy answers to this question. I think the continuing engagement between the regulator, the different market bodies, customers and the industry is something that will need to continue over the next few years.

CHAIR: But this is largely just a Victorian problem, isn't it?

Ms van den Berg: Not necessarily.

CHAIR: No? But Victoria has the largest gas distribution network and it's only the Victorian government, as far as I am aware, that is pushing to turn off gas to Victorian homes.

Ms van den Berg: Victoria has 70 per cent of the domestic gas demand into homes, so it is absolutely topical there. We continue to work with the Victorian government on this issue.

CHAIR: Terrific. I look forward to hearing more about that moving forward. Thank you for appearing today. Thank you for your evidence. The committee has set Wednesday, 13 November as the due date for questions taken on notice. I'm not sure that there were any. You will most likely receive some written ones from me.

Ms van den Berg: We have got one from Senator Canavan. I've got that, thank you.

CHAIR: Terrific. Thank you for appearing.

BASHIR, Ms Stephanie, Chief Executive Officer, Nexa Advisory

[14:45]

CHAIR: Good afternoon. Thank you for appearing at the energy planning and regulation Australia hearing. I understand that information on parliamentary privilege and the protection of witnesses giving evidence to Senate inquiries has been provided to you. Ms Bashir, would you like to make a short opening statement?

Ms Bashir: Yes, I would, thank you. Nexa Advisory welcomes the opportunity to appear before the Select Committee on Energy Planning and Regulation In Australia to discuss this important issue. Nexa is a for-purpose advisory firm. Our unwavering focus is accelerating the clean energy transition in a way that provides secure, reliable and affordable power for consumers of all types. As technical as it might seem, there is a straight line from the issues of planning and regulation to the electricity bills that Australian families and businesses pay. Debate about how to deliver best practice governance of the energy market has been ongoing for many years, including several reviews initiated by the former Council of Australian Governments, or COAG, energy council. There is a broad agreement that Australia's energy market governance is not fit for purpose. That means Australians are bearing the unnecessary cost of delays to the energy transition. The reviews have consistently highlighted issues which have not been adequately addressed. These include the need for energy ministers to have a clear role in providing policy and strategic direction, the lack of clarity about the role of market bodies and the potential for that to lead to conflicts of interest, poor engagement with stakeholders and a lack of transparency. Nexa Advisory's submission to the committee sets out the issues in detail and offers six detailed recommendations. I will summarise them here into three key asks.

Australia needs a strategic energy plan with bipartisan support. It must set the roles and priorities for the market bodies and regulators, including governance and engagement. The federal government must commission an independent review of the boards of the AER, AEMC, AEMO and Energy Consumers Australia to ensure alignment with the strategy and clarity of roles and to ensure that they have the right mix of skills and knowledge and are appropriately independent. The federal government must also commission an independent review of the electricity networks. In particular, it's important that the review assess whether ringfencing rules in place to protect Australian taxpayers and energy consumers are being appropriately applied in spirit and in law.

Current market structures and governance arrangements are not keeping pace with developments across the world in new energy, new business models, changing consumer preferences and decarbonisation. If this is not addressed, we will have little success in managing the risks and embracing the opportunities of a more dynamic power system let alone meeting our climate targets. There is a clear need to provide greater strategic leadership, policy coherence and coordination for the energy sector. This would increase customer engagement and social licence and, most importantly, investment certainty. It would support the development of critical transmission infrastructure and the buildout of renewable energy to replace our fleet of ageing unreliable and expensive coal powered generators. It would get the clean energy transition done and it would provide secure, reliable and affordable energy for all consumers, who are also taxpayers and voters, and meet our commitments to international agreements on emissions. Thank you for listening. I'm happy to take your questions.

CHAIR: Thank you very much.

Senator CANAVAN: Thank you very much. I am trying to get to the bottom of this. You might not be able to help. Is it consumer energy resources?

Ms Bashir: Consumer energy resources. That is the term used in the energy industry, yes.

Senator CANAVAN: I get confused with all the acronyms in this space. How are they dealt with at the moment in the ISP? I think we learned from last week and yesterday that it would appear that AEMO don't cost the acquisition of, say, batteries—I don't know about rooftop solar—and that sort of stuff in their modelling. Do you know how that works in the ISP?

Ms Bashir: I will leave that question for AEMO to answer in detail. From my perspective, the ISP currently provides a forecast on the types of investments that basically are required to close down the coal power stations based on the dates they are provided from the coal owners. Obviously, there are a couple of scenarios. There is the step change scenario, which has been, if you like, chosen as the pathway. Obviously, the step change is not a 1.5 degree scenario. It is a 1.8 degree scenario. That really is a very conservative scenario to look at what sort of investments are needed, in their terms, at lowest cost to deliver the transition and drive the investment needed in order to have the right replacement generation ahead of the coal closures.

Senator CANAVAN: Just to be clear, I know this area is really complex. I'm not trying to be cute. To be clear, what AEMO said last week is that the coal closures in their model are driven by carbon budgets, primarily, not closure dates. The closure dates in the ISP are often sooner than what has been publicly announced. On an

FOI, or freedom of information, request, AEMO revealed that their battery forecasts in the ISP require a 50 per cent capex subsidy from this year. You might be able to correct me, but I don't believe we have such a policy in place in Australia. What do you think is needed? Do you think we need to get these forecasts to be paying for half the costs of the installation of a battery at people's homes?

Ms Bashir: At the moment, the ISP is forecasting that we need 22 gigawatts of energy storage—so it's not just batteries but more broadly—by 2030 and roughly 49 by 2050. We currently have three gigawatts in the system connected. Of course, there's a lot of projects in the pipeline. To get from three gigawatts to the assumed forecast of 22 gigawatts is a huge investment that is going to be required. This is where basically the Capacity Investment Scheme that was announced by the federal government plays a really significant role, especially dedicated options that would support energy storage projects. At the same time, the New South Wales has the long-term service agreements, the LTESA scheme, which was designed really to encourage and incentivise energy storage projects. In my view, these things are not happening fast enough even with the options that are available. We did some research earlier in the year, in partnership with a clean energy investor group, on the ability to finance energy storage in Australia. We outlined some of the key issues around energy storage and some of the key policies required to really expedite investment in energy storage.

Senator CANAVAN: I will come back to this issue of whether we should subsidise it. We learned last week that we are now introducing what I have called a sun tax. From next year in Sydney, if you are on Ausgrid, you will have to pay to export your solar power to the grid. Seemingly, this is a result of the over-subsidisation of solar energy and that we have too much of it. We have to tax it, even though apparently the sun is free. If we go down this path of getting people to install batteries as much as they can—AEMO seems to suggest subsidising it to a significant degree—aren't we just creating more problems? We push an energy network and tilt it towards this technology, and then we have these other problems down the track, like now, where we have to introduce a sun tax. How do we avoid that?

Ms Bashir: Energy storage is actually quite a big solution to a lot of the problems that we've currently got. There are minimum demand issues on the network because of the increased uptake of solar. Batteries actually can resolve that, especially home batteries. You hear that there's an electricity price and people are really struggling to pay their bills. Solar and batteries solve that directly. We hear consistently from the market operator about all the system issues with variable renewables and the uptake of solar energy. Storage really is a firming technology that, if expedited, can resolve a lot of the issues we've got right now. As we are phasing out our current coal power stations that have served us well for decades, we actually need as a country to make very similar investments in replacement technologies. Right now, energy storage is a really big benefit for us.

Senator CANAVAN: I'm not disputing any of that. I suppose the issue is at what cost. As least as far as I have heard so far in this inquiry, we're not really getting a good measure of the cost of installing consumer energy resources through the ISP, or anything else I have seen. Installing batteries might help this issue of excess solar. It might reduce peaks in the evening et cetera. Someone should still, I think, run the ruler over this and decide whether it is worth it. Do you know of anyone who has done that? You are obviously an advocate for this option. Where is the cost-benefit analysis showing this is worth it?

Ms Bashir: I think there have been a lot of different cost-benefit analyses over the years. It is important to separate consumer energy resources and batteries in the home versus utility scale batteries. That topic really needs to be separated. People are investing in consumer energy resources, even with some subsidies with solar. Australians are investing in those technologies to put them in their home so that they can reduce their bills. On the utility scale side, one of the key issues, I guess—which is why it requires the right incentives and governments to have the right policies—is a lack of certainty on when the coal power stations will close. Certainty would allow investors to understand when the revenue streams for these investments can actually take place. That has a lot of impact on the financial capacity and financial closures of these projects.

Senator CANAVAN: How much does a battery cost at a household level?

Ms Bashir: Up to \$15,000.

Senator CANAVAN: Fifteen thousand dollars?

Ms Bashir: That's a rough estimate. There are a lot cheaper batteries as well.

Senator CANAVAN: How do you get a payback on that, then? Let's run some rough cost-benefit analysis. I have brought up the average bill in Ausgrid, the network I was mentioning. The average residential bill is around \$1,800 a year at the moment. Unless the battery can get your bill down to zero, which is probably unlikely—obviously, you need to install solar and other things to power the battery—that is not going to be paid back in even seven years. I'm coming back to this point; it seems that even AEMO needs to force a 50 per cent subsidy to

get that down to \$7½ thousand to get people to take it up. I'm looking for the quantitative data here for why this is a good idea.

Ms Bashir: Even without really direct subsidies here in Australia, Australians are still buying behind the meter batteries. We've had over 400,000 batteries installed over the last decade. In this year alone 147,000 batteries have been installed. You can look at just the pure cost. You can also look at it from a broader perspective. What are some of the things we can do to help actually incentivise these batteries? An example is tariff reform. We've talked about network tariff reform for decades. We still don't have the right tariffs that incentivise these types of purchases. It is just like what we had with solar a decade ago. Solar technology was very expensive. With the right incentives, tariffs, demand for it and competition, Australia now leads the way in rooftop solar. We really should be looking at how we can replicate a similar model for behind the meter batteries.

Senator CANAVAN: Thank you.

Senator GHOSH: I would like to stay on that topic. I was interested to see in your submission that opportunities to manage some of the issues by incentivising consumer behaviour have been neglected. I notice that you have been talking about some of those incentives with Senator Canavan. Are there any others that you would like to mention or elaborate on in terms of encouraging desirable consumer behaviour?

Ms Bashir: Thank you for the question. We actually did quite a number of analyses into consumer energy or distributed energy resources. We found that there are some really low hanging fruit that, if we take action now, can accelerate the take-up and mitigate a lot of the issues that get talked about in the industry. For example, we hear a lot that rooftop solar is causing minimum demand issues on the system. However, we are also hearing that the distribution electricity networks are underutilised. We've seen that from the Energy Networks Australia report and some of the reports that have been released by the AER. The key thing around consumer energy is that it reduces bills directly. What do we actually need to do? It does solve the problem of a lot of the issues that people are talking about, especially when we are talking about it being coupled with a battery or a battery on wheels, which are the electric vehicles. The uptake of electric vehicles does solve the minimum demand issue with charging at the right times. Right now, from a low hanging fruit perspective, there's no visibility at the low voltage level on the network in a public reporting way where these capacity issues are and, if the network were to augment these capacity issues, how much it would cost. Those signals are very important to be able to attract non-network solutions, be they bigger batteries on the network or behind the meter batteries that would present a business case for providers and aggregators to deliver these types of options and solutions. Publicly available data on network capacity and constraints with the cost is really important.

The other low hanging fruit, as I mentioned, is tariffs. We keep talking about tariffs, but we are yet to see a proper review on how we actually get tariffs that are up to date and consistent with where we are in the industry in the energy transition we are in. We continue to introduce mechanisms and tariffs that penalise consumers who are trying to do the right thing, such as the export tariff Senator Canavan mentioned. We also see that AEMO, working with the states, has introduced the backstop mechanism. They are saying that it will only be used in an emergency state, but we haven't really seen what are going to be the steps ahead of that before it gets to an emergency. There are solutions that can be applied. I think energy storage does play a big part in that.

Senator GHOSH: Another aspect of your submission is related to Energy Consumers Australia. You observe that they focus on advocacy for traditional energy customers, including vulnerable hardship customers and lower socioeconomic customers. I think that is very understandable. Perhaps there is less focus on new energy consumers. In terms of resolving that issue, is that a function of having a separate advocacy body or is that simply a function of having Energy Consumers Australia widen its remit?

Ms Bashir: It is a gap at the moment. It has been a gap for many years. The new energy consumer, which is more a key part of the energy market, is driving the transition. We can either review the board of the ECA and its remit or have a separate energy consumer focus. Our submission really is calling for a review of the boards of all the market bodies and regulators, including the ECA, to ensure that the consumer voice and investor voice are represented. Where we are and we are moving to is definitely not where we have been. It is definitely not fit for purpose.

Senator GHOSH: In fact, one of the earlier witnesses referred to your work in this space; I'm not sure if you heard it. I want to ask you about some of the work you've done on the importance of transmission investment. Are you able to elaborate on why investment in transmission is so important in our energy context?

Ms Bashir: Absolutely. I guess we have done quite a lot of analysis over the years focusing on that question of what is holding up the renewable investment or the replacement generation coming online to replace the coal power stations in a timely, orderly way. The key answer keeps coming up as transmission. Transmission right

now is holding up the investment in renewables, be it a lack of capacity on the existing grid or transmission that is needed in new areas where renewable projects can actually generate the wind and the solar that is needed. We have also done an analysis of continuing to delay the build-up of transmission. We've been talking about it for a very long time. Before the ISP, AEMO used to produce what was called the national transmission network development plan. In those plans, AEMO basically had many of the transmission lines that are currently in the ISP. They are things such as the Western Renewables Link, VNI West and Project EnergyConnect. These were all projects identified as needed in the system even before the ISP came about. We still have them in the planning, but we're not building them or we're not building them fast enough. One of the key issues is that not only is our regulatory framework not fit for purpose; the regulatory investment test that assesses the investment in transmission is not. The Project EnergyConnect transmission project is quite significant in connecting South Australia, Victoria and New South Wales. It took over 10 years for that transmission project to get approved through the pipeline and ongoing loops of the regulatory system. More importantly, there's just no accountability on delivery. So you identify a project, but there is no-one accountable to deliver these projects on time, and the dates just keep moving.

Senator GHOSH: What do you see are the consequences of the delayed investment in transmission in terms of price for consumers?

Ms Bashir: It's higher electricity prices. We've done modelling. We engaged with Endgame Economics to help do the modelling on the implications of the delays of transmission buildout and the continuous push of these timelines. The delays and implications are quite significant. I'll give you an example. This is not just on the wholesale prices. On the wholesale prices it is quite significant, especially in New South Wales and Victoria. In New South Wales, for example, a three-year delay in building transmission results in a \$1,092 increase in consumer bills, and these are households. Businesses are impacted a lot more. Right now, there is a minimum focus on business customers and the implication of delays to our businesses, whether they are small or large, here in Australia.

Senator GHOSH: Thank you very much.

CHAIR: Ms Bashir, one of the things you refer to is a lack of accountability in our market bodies for delays in planning approvals and delivery. You say that they are all having an effect on our system. Correct?

Ms Bashir: I would slightly correct that, if I may.

CHAIR: Please.

Ms Bashir: The accountability for actually delivering things on time. It's not necessarily the market bodies per se. There is no-one right now accountable to deliver infrastructure in energy on time. The transmission networks that are appointed to deliver these projects in the regulatory framework have no accountability for delivery on time.

CHAIR: Thank you. This inquiry was set up to look at accountability right throughout our system. With that lack of accountability we're seeing delays, as you mentioned. We also see price increases as transmission projects get more and more expensive. The stated reason is inflation over time, even though those timeframes are very short. Given all those things, we're still relying just on transmission to help with the transition. Is there not cause, or would you believe that there are reasons, to look at the way we plan the system in a more holistic way?

Ms Bashir: I don't think we need either/or. We absolutely need to build the big stuff. We need to invest in new transmission lines because we do need the replacement generation to be built and connected in a timely way or we all pay for it. However, there are some medium and short-term solutions that can help accelerate and minimise the implications while we are building the big infrastructure. I go back to my earlier point on energy storage. Utility scale storage is one of the solutions that can help reduce and alleviate some of the capacity issues on the existing transmission to minimise the curtailment of projects. We can also use energy storage—

CHAIR: I will come back to that because I have some specific questions about storage as well. There is uncertainty about the closure of coal. Are all these delays due to the current processes we're using now? Are they contributing to, in your mind, keeping coal in the system longer?

Ms Bashir: Yes. We're not building things fast enough, absolutely. Our solution is always to extend the date rather than think about using the carbon budget as the time line or using the time line that the owners of the coal power stations publish and report to AEMO. For either of these, we should be planning ahead of time and ensuring that we are shoring up investment in replacement generation coupled with the firming required to make sure that these dates are not extended and taxpayers are not paying unnecessary subsidies to keep those coal power stations open.

CHAIR: Thank you. I agree. The fastest way to get rid of coal is more renewable generation, probably in the REZs. The documents behind the ISP point to a lot of proposed generation or generation that is proposed to be built. We then need transmission to get that into load centres from the rhombus of regret into Melbourne. We need to get that energy into the system. Going to your point, we also need storage or other non-network solutions. The problem is not just the network, is it?

Ms Bashir: No.

CHAIR: A large part of the problem we're facing at the moment—this is on the consumer side as well as on the large-scale side—is that given the enormous amount of generation happening in the middle of the day, we're seeing negative prices and lots of other distortions in the marketplace that transmission alone won't solve. Is that correct?

Ms Bashir: That's correct, yes.

CHAIR: A better way to plan the system would be to look at all the solutions that might solve the problem we've got, which is largely time of day and being able to move load around. It is to be able to arbitrage that energy and to be able to provide FCAS services. Batteries have not just an economic benefit; revenues can be derived from batteries, can't they?

Ms Bashir: That's correct, yes.

CHAIR: Batteries derive revenue and provide system services and benefits to the grid as a whole. They can recover their own costs on a revenue basis. Batteries are a better way to grow the network or hasten the transition. It becomes better, faster and more economical if you're not just relying on a piece of infrastructure that relies on getting a guaranteed return from energy users. Is there an economic argument that should be made for a broader sense of how we plan the system?

Ms Bashir: Yes. Go back to the ISP. It does forecast quite a significant amount of storage needed to come in. It's then about what are some of the mechanisms and tools to make sure that we remove the barriers that exist for these projects to come online faster. How do we incentivise the right market and provide the right market signals and incentives, essential services inertia, system strength and all of these things that really should be in place to value energy storage and the services they provide just like other technologies in the system? I think these things should be prioritised by the market bodies. There should be a direct focus on looking at some of the low hanging fruit—things we need to create now that bring and shore up energy storage and services and value from energy storage into the system—rather than other things.

CHAIR: I agree 100 per cent. Thank you for that evidence. The decarbonisation of the grid is really going to depend on this, isn't it?

Ms Bashir: Yes. Absolutely.

CHAIR: It's nearly 2025. All this transmission that AEMO has planned for is still years off being built. Is Project EnergyConnect connected and finished yet?

Ms Bashir: No. It's not. It has been delayed again. VNI West is due to come online. That is not shovel ready. We've got the Western Renewables Link. It is stuck as well in the environmental processes and assessments. We need to step back and think about some of the things we are going to need, because we are infrastructure building for the nation. We did it the first time when we centralised coal and the transmission buildout back in the day. We need to have a similar approach. If we are serious about building this infrastructure, we are going to have to take a very different approach to how we build it and get it done on time so that we're not paying more than we have to.

CHAIR: Thank you for that. A key reason behind this inquiry is to hear evidence like that. It is quite apparent—we have lots of evidence now to show this—that for the market bodies the planning and approvals process isn't actually working at the moment and isn't delivering any of the things we need it to deliver. We have lots of people wanting to build renewable generation but can't get the product to market. Even if they could, they can probably get only a small proportion of it to market. A normal capacity factor from a solar farm is 30 per cent—

Ms Bashir: Absolutely.

CHAIR: less network and economic constraint. It seems to me that our planning and how we look at this transition needs a fundamental shake-up and a review from economic first principles, not just least cost principles.

Ms Bashir: Yes. Absolutely. I guess social licence is a really big one that we mention in our submission that goes to these same conversations. We do talk about how social licence really starts in the home. When we are disincentivising the uptake of solar and batteries, we continue to delay introducing the right incentives for people who are trying to do the right thing. It really doesn't build the trust needed, so when we are building the big stuff,

there is a lot of dis cohesion, if you like, around that. It is a really important conversation when we are talking about the transition.

CHAIR: Thank you. The Commonwealth government has never had a role in energy historically, not even in the constitution, at least for electricity. Would you agree that when the Commonwealth government has to step in with large programs such as Rewiring the Nation and the CIS, they are signalling that the market or the system as we have it at the moment is failing?

Ms Bashir: I wouldn't say it's failing. We do require significantly more investment than we've had in the past. That has been quite necessary. It does provide a strong signal regarding uncertainty for investment. Of course, there's going to have to be \$140 billion invested in private capital to build this infrastructure. That capital can't come into the country and be invested here in this infrastructure without that certainty. These policy signals from the federal government have been very important for that.

CHAIR: I understand. I think your point is correct. However, the ISP was designed to be able to clearly map out needs for, and send signals for, investment in the energy system and to assist the transition. It has failed at that, hasn't it?

Ms Bashir: Well, it's not really supposed to be a policy roadmap.

CHAIR: No. I didn't say it was. It's meant to map out the needs.

Ms Bashir: Map out what is needed, correct.

CHAIR: The needs and then signal that they are ripe for investment.

Ms Bashir: Yes. It is not helpful when we have to re debate the scenarios. It's important that we have a roadmap that is not static, that is updated based on what is happening at the time and incorporates the development of government policy. I think with the lack of bipartisanship on the roadmap on which we need to go, it is very difficult for investors to find that certainty. You do need other mechanisms.

CHAIR: Thank you. I trust and hope that the bipartisanship that this committee is showing towards this inquiry will result in a report with some findings and recommendations that might assist with all of this. Thank you, Ms Bashir.

Ms Bashir: Thank you.

CHAIR: If you were asked to take any questions on notice, the committee has set Wednesday, 13 November as the due date for answers. Thank you very much.

Ms Bashir: Thank you very much. Thanks for your time.

CHAIR: We will suspend for afternoon tea and come back at 3.40 pm.

Proceedings suspended from 15:25 to 15:41

JOHNSON, Ms Vicki, Chair, Regional Victoria Power Alliance [by video link]

KATZ, Mr Michael, Director, HumeLink Alliance Pty Ltd [by video link]

McINTYRE, Ms Marcia, Executive, Wallaloo and Gre District Alliance Incorporated [by video link]

O'SULLIVAN, Ms Cindy, Wallaloo and Gre District Alliance Incorporated [by video link]

STRONG, Ms Andrea, President, HumeLink Alliance Pty Ltd [by video link]

CHAIR: I now welcome representatives of HumeLink Alliance, Wallaloo and Gre District Alliance Incorporated and Regional Victoria Power Alliance. I understand that information on parliamentary privilege and the protection of witnesses giving evidence to Senate committees has been provided to you. Does anyone have a short opening statement?

Ms Johnson: A small one. I did provide you with a statement earlier today. I'm not too sure whether you have had a chance to read it. I might do a small statement, if that's okay.

CHAIR: Please.

Ms Strong: I have a statement. Shall I go ahead?

CHAIR: Yes, please.

Ms Strong: Thank you for the opportunity to address the committee. The current system of energy planning and regulation is doing significant harm to the nation. It is both inefficient and inequitable. The objective of the national electricity market is to provide efficient investment in, and efficient operation and use of, electricity services. Efficient outcomes require the lowest cost electricity for the nation as a whole taking into account all the financial, environmental and social costs of the options. This is the triple bottom line. In a major policy failure, transmission is planned in the national electricity market ignoring environmental and social costs. The environmental and social costs are only considered at the end of the process when the project goes to government for planning approval. However, because these costs weren't considered early on in the planning process, the project option before government is often highly damaging to the environment. The transmission network service provider then argues it's too late to build another option, such as underground transmission, with better environmental outcomes. Prior to the federal election, Minister Chris Bowen stated that the regulatory investment test for transmission is not fit for purpose and not serving community interests. He vowed to fix it. Former Australian Energy Infrastructure Commissioner Andrew Dyer also said it's not fit for purpose. Excluding environmental and community costs from the cost-benefit analysis of transmission is why the regulatory system is not fit for purpose. This major flaw in transmission planning must be corrected.

If environmental and social costs were taken into account, different energy market investments would be made. Instead of thousands of kilometres of overhead transmission lines, large water batteries remote from load centres like Snowy 2.0 and renewable energy projects dispersed geographically long distances from load centres, there would be underground transmission; more battery storage in coast and urban load centres; a concentration of renewables in regions where transmission infrastructure already exists, such as where coal-fired power stations are shutting down; offshore wind farms close to coastal urbanisation; and more rooftop solar. Governments overseas have come to the conclusion that when you take into account all the environmental costs of overhead transmission lines for the next 80 years, underground transmission is often the least cost option. Engineers are telling us that there have been major advances in underground cabling technology. It is entirely feasible. The world is looking on in disbelief as Australia builds more overhead transmission lines. Amplitude Consultants has estimated the cost of undergrounding HumeLink to be 1.1 to 1.5 times the cost of the overhead option. The recently signed contract for the Marinus Link project confirms this to be a conservative estimate.

There are significant benefits of undergrounding as follows. There's less impact on biodiversity with the smaller easement with undergrounding. Sections can be horizontal, directional drilled or tunnelled. There's less risk from bushfires. Consultants Deloitte Access Economics estimated the cost of the 2019-20 black summer bushfires at \$230 billion. You only need to stop one bushfire to pay for the extra cost of undergrounding. In July 2021, California announced it is burying 1,000 miles of overhead powerlines to reduce the risk of wildfires at a cost of between \$15 billion and \$30 billion. When asked about the cost, the CEO said that it's too expensive not to do it. Lives are on the line. Underground transmission also has less risk in severe weather. With global warming, severe weather is increasing both in intensity and frequency. Recent blackouts in Broken Hill caused by severe weather will have big costs to businesses and consumers. There was also a major outage in Victoria in February 2024 caused by severe weather, where 620,000 homes and businesses lost power. The cost of the South Australian 2016 blackouts has been put at \$367 million.

There are other benefits of undergrounding transmission. There is no loss of visual amenity, no loss of noise amenity, no loss of the productive efficiency of agriculture, no loss of tourism and no loss of regional development. In addition to the extensive environmental benefits of HVDC undergrounding, there are important operational benefits. There's less maintenance and there are fewer transmission losses.

We need environmentally responsible transmission as well as generation as we transition to net zero. We can't put our solar farms and wind farms underground for less environmental and community impacts, but we can and should put transmission lines underground. We urge you to require a triple bottom line assessment when planning transmission projects. Give priority to underground cables as a principle in planning. Review the HumeLink project as an overhead line and require it to be delivered underground. Thank you.

CHAIR: Thank you. Anyone else?

Mr Katz: I was going to talk at length about bushfires, but I have made a written submission which goes into some detail about that so I will not talk about it. I will go more directly to the terms of reference. I want to talk about the current regulatory regime, which is attempting to grow our transition from a coal based energy system to one built around renewables and low carbon emission technologies. It is totally unfit for purpose, as many people have said. When the system was established, transmission was treated as a national monopoly. As such, transmission assets were treated as a regulated asset. While this possibly made sense in the old environment, it doesn't make sense in a brave new world where we're attempting to redesign from scratch our electricity market. The investment in new assets under the current regime is a complex process. It is largely initiated by the development of the ISP, which you are well aware of.

There are no costs associated or imposed on transmission network service providers such as Transgrid, who are proposing an overhead option with a high risk. Indeed, they are required to come up with the least cost alternative in terms of initial capital cost. They do not have to consider the losses both direct and consequential which come from strong winds, storms and bushfires. Broken Hill is still without power as we speak as a result of only moderately high winds destroying the overhead transmission line, which services the whole region of Broken Hill. This shows the danger of a system that favours the development of overhead lines as opposed to fully costed long-term assets.

Charging for transmission, which is currently based on the regulated value of the assets, irrespective of usage, does not make sense. Asset owners receive a guaranteed return on their assets independently of usage. This, to my mind, is nonsense. The charges are funded, of course, by levies on consumers. The critical point is that there are no price signals to inform and influence the allocation of capital to this activity. As such, this is a central planning or industrial policy approach at its worst.

We urge the committee to recommend that urgent work be undertaken to explore other models of pricing transmission assets. Spain and Canada have developed alternative models that may provide some guidance. We cannot expect central planners to efficiently allocate resources to the development of a resilient transmission grid in the absence of information from markets, which reflect actual market behaviour. This is compounded by the emergence of what we have described as a regulatory industrial complex. An unfortunately overclose relationship has emerged between various regulators and the transmission companies. This complexity of ownership and relationship is unfortunate and could lead, or possibly already has led, to extremely bad behaviour. We would like to see a change in approach that would force regulators to take a more distant and arm's length approach to their servicing of the transmission companies.

One approach that could be considered is to force the regulators to be funded by fines levied on the transmission companies. This would make them self-funded and would actually cause a great deal of distance to be established. The key point is that while this non-market based approach to transmission is in place, we are not destined to have an efficient market based solution to the development and change management of our electricity grid. Thank you.

CHAIR: Thank you. Is there anyone else briefly so that we have time for the senators to ask questions?

Ms Johnson: Thank you so much for the invitation to appear at this inquiry. As you may be aware, our group did not do a submission to the inquiry. I was invited to appear. As I said, I am the chair of the Moorabool and Central Highlands Power Alliance. We trade as the Regional Victoria Power Alliance. I will give a really brief overview of our groups and the way we work. Would that be okay?

CHAIR: Very briefly. I know the senators have questions. It might be better putting the structure in writing on notice.

Ms Johnson: Sure. As I said, this morning, I provided the committee with a much longer statement. It goes into some detail about the toing and froing of these two projects. As I said, the Western Renewables Link goes

from the western outskirts of Melbourne all the way west to Bulgana, which is near Ararat. The Victorian section of VNI West goes all the way northwards to the Murray River. In that statement, as I said, there's a lot of detail. I would be grateful if the committee would accept that and publish it as RVPA's submission. Obviously, if that statement raises further questions upon reading, I'm happy to be contacted at a later date. I hope that isn't taking too much time. I can answer questions.

CHAIR: That is very kind of you.

Ms O'Sullivan: We are from Wallaloo and Gre District Alliance. We represent a group of farmers and land owners. We deal with AEMO on the ground. We want to share some of what we would call horrendous experiences that we've had in our community that have led to hundreds of farmers locking AEMO off their land and saying they will not deal with this organisation at all. They won't be getting on to our properties. VNI West will not be coming through this area. That is what we want to share. Thank you.

CHAIR: Excellent. Thank you. That's why this inquiry was set up. I will move to questions.

Senator CANAVAN: Thank you all for being here today and giving up your time. I know you must be getting some fatigue from all of this, but it is important. I will start where the last speaker left off—on the consultation and discussions you've had with the transmission planners that you've had to be involved with. Take us through what that process has been. It sounds like there has been some frustration. Could you concentrate on what you think has been inadequate and what could be better going forward either for you or in other areas.

Ms O'Sullivan: We would like to say that our community has experienced what we have decided to call a search and destroy mission by AEMO. From the moment they stepped into our communities, they couldn't answer our questions. Their microphones were not working. They then tried to put us into small groups so that we couldn't be with our friends and family. They've also targeted widows and more vulnerable people in our community consistently. Grievances have been lodged around this. There have been false claims to police about community members assaulting or being abusive. All this is documented extremely well. Lots has been reported and lodged as complaints to AEMO. It has then gone to Andrew Dyer because it hasn't been actioned. It has been disappointing and completely shocking. Everyone has had an experience run by our own government that they couldn't believe would be part of their life.

Senator CANAVAN: I have some follow-up questions for you before we go to others. You can finish.

Ms McIntyre: I suppose there have been a number of situations. Specifically, AEMO has released documentation saying that they have section 93 powers that give them authority to enter our land and that they have compulsory acquisition powers. They've said that in meetings and they put it in their landholder guides. It was later found that they didn't have that. I think they also said it on the radio. They actually had to remove that from the documentation. I know Vicki was also involved in that. That is just one example. Basically, they are saying, 'We have this power. We're going to do this.' They didn't have the power. When that was pointed out, they then said, 'We're applying for a licence and we expect to get that imminently.' That was also not true. They've just recently applied for it now, which we think is concerning considering the only reason they want a licence is to coerce and bully to get on to people's land. I think it clearly shows the kind of behaviour we are facing.

As Cindy was saying, there has been behaviour. A young leader in the community brought in a stereo system so that the older people in the community could actually hear in the meetings, even though we don't get any answers. They tried to take it off him. They have security at all these meetings. They actually put him on the ground. They actually physically handled him and took him down to the ground. In our small rural communities, these things are shocking to see and to be part of, I suppose. I think it's important that the politicians and everybody understands what these organisations are doing on the ground and how that is impacting us all.

CHAIR: Thank you. I want to ask a clarifying question. What licence was it that you referred to that AEMO is applying for?

Ms McIntyre: In Victoria—if I don't get it exactly correct, I'm sure Vicki will probably correct me on it—you need to have a section 93 to be able to force access onto people's land and have compulsory acquisition powers. They were claiming to have that and actually put it in writing. They also said it at meetings. They didn't have it at all.

CHAIR: Thank you. I want to get that on the record.

Senator CANAVAN: I will come to others. I have a quick couple of follow-up questions so it is fresh in my mind. I will give everybody an opportunity. You mentioned targeting widows. What do you mean by that? How were they targeted? Why were they targeted? Was that for compulsory acquisition?

Ms O'Sullivan: No. They don't have powers of compulsory acquisition. They would visit single women who live at home in the towns or on farms alone. They had been requested by maybe the husband and the family that work on the farms not to go to those houses and to come and speak with them. They would continue to go back to those houses of people that we consider are the most vulnerable—widows who live on their farms kilometres out from town with no-one else around them. They would be visiting them with a number of people. It is extraordinarily intimidating. They asked that they deal with them by email and not be on their property, but then they would come back.

Senator CANAVAN: They would come anyway even though they were asked not to?

Ms O'Sullivan: Yes. People now have cameras up so they can see.

Ms McIntyre: People are frightened.

Ms O'Sullivan: They are frightened, yes.

Ms McIntyre: Vulnerable.

Senator CANAVAN: Do you think the proponent should have to help fund legal representation for people at these meetings? It is a lot for a widow to be sitting there having to deal with these issues without anybody on the other side for them defending their rights.

Ms O'Sullivan: Yes. They would say that they do provide some assistance for legal—

Senator CANAVAN: They do?

Ms O'Sullivan: If you want to pursue that line. Maybe they could follow their own procedures and when grievances are made, take action and have those staff be responsible for some of their behaviour.

Ms McIntyre: I think there are laws. If someone has asked you not to come to their house, I believe there are laws about not coming to their house. I think there are expectations on these organisations, particularly one the size of AEMO with the responsibility it holds, to behave in a specific way.

Senator CANAVAN: You said they isolate you in small groups. Did you have opportunities for town hall meetings and what have you so everybody got to hear concerns?

Ms O'Sullivan: No. They won't do that. They want to put you into small groups of three or four at once, which is completely unsatisfactory—

Senator CANAVAN: Absolutely.

Ms O'Sullivan: because there are certainly some people who are not confident enough to speak. It is hard to understand how to get your questions articulated. It's just not acceptable. Certainly meetings have been closed. There have been major problems.

Senator CANAVAN: That is an old tactic to divide you all and avoid you sharing concerns you might have and convincing others.

Ms O'Sullivan: And understanding that other people have concerns as well that are similar.

Senator CANAVAN: That's right. That is a travesty. I'm sorry about that. I know I might use all my time on this, Chair, but that's okay. I will go to others now. Ms Johnson, I think you had some points to make.

Ms Johnson: Thank you, Senator. I want to follow through with what Marcia and Cindy said. The licence that they were talking about is a transmission licence. It says that the company will transmit electricity. It gives them other authority under the Electricity Industry Act. That is section 93. Marcia is actually on our RVPA steering committee that I'm chair of. We are strongly allied. I can speak, though, to many of the Western Renewables Link experiences, which has involved AusNet. AusNet is the project contractor for Western Renewables Link. In the case of Western Renewables Link, we didn't even know that the project existed until a year after the RIT-T was completed and six months after AusNet was contracted. So there was utterly no engagement whatsoever. The Western Renewables RIT-T started in 2017. We've had it landed on us as well. Unfortunately, that was in COVID times, so it was extremely stressful. There has been not a single town hall meeting. There have been a lot of webinars and drop-in sessions that people have found extremely unsatisfactory because they were getting entirely different answers to their neighbours. We didn't even have experts at the meetings.

As the engagement and consultation became more and more fraught over the years, meetings were cancelled because AusNet felt that they were being threatened, which they weren't. They were the ones who always had security there. They even have security now in trying to access people's land. They do a transmission licence so they do have that section 93 ability. There are plenty of stories of them knocking over a man in the early days trying to move his pregnant mares because they had already jumped the fence. That was actually filmed and appeared on *A Current Affair* in the early years.

We have been fighting Western Renewables Link for 4½ years now. Marcia and Cindy have been fighting for VNI West for 1½ years. We have been combined fighting for 1½ years. It could literally take an entire day for all three of us to give examples of the entirely poor treatment—the misinformation and the deception—we've all suffered.

Senator CANAVAN: Thank you. Mr Katz, do you want to add anything about the consultation?

Mr Katz: I would support the previous speakers in saying that Transgrid's consultation has been very nearly appalling, if not worse than that. In particular, they offered all of us along the HumeLink line an option agreement that had a ridiculous structure. It provided 110 per cent of everything that Transgrid would require early on in the process against a \$20,000 payment which, in the context of what they were trying to do, can only be described as chicken feed. It was enough to get some of the very small landholders, I think, to accept it because for them it was a realistic amount. For the larger landholders who understood what it was, this was absolutely outside the gamut of what should be allowed. At no stage has Transgrid had anything other than a very small opportunity to compulsorily acquire the actual easement for the line, whereas the option gave them the opportunity to use without acquiring anything they wanted to, basically. I thought the structure of their proposal from the very beginning was outrageous.

Senator CANAVAN: Thank you. Finally, Ms Strong?

Ms Strong: I think the community engagement review undertaken by Andrew Dyer speaks to the incredible failures of engagement. Ninety-two per cent of respondents were dissatisfied with engagement or damning. In addition, something a bit more specific to HumeLink is that, in early 2023, Transgrid said in a community consultative group meeting that they were going to contact the 4,322 indirectly impacted land owners. They had mentioned contacting those land owners back in 2021. We said, 'If you are going to contact them, we would like to see the brochures you are going to send.' The early contact with land owners that were directly impacted had no images of what they were actually building in the first brochure. Later brochures did not show the actual towers. They were showing towers of a smaller transmission line. It had been raised in 2021. We're up to 2023 with these indirectly impacted land owners. They are going to lose hundreds of thousands of dollars potentially in the value of their property. Because they are indirectly impacted, they will receive no compensation. They are likely to be strongly opposed to the transmission line. Transgrid, in early 2023, said they would directly contact those people and doorknock them. Land owners in the district went out and did doorknock those land owners. In early 2024, most of them knew nothing of the project. This is a major failure of Transgrid's consultation. It's 2024. The environmental impact statement submissions closed on 10 October 2023, so they had no opportunity for input to ensure that the best route was selected that minimised impacts. It was very disappointing.

Senator CANAVAN: Thank you. I have more questions, but I think it is important to let people disclose those experiences. Thank you all.

Senator GHOSH: Thank you to the witnesses for appearing today and giving evidence. Some of the evidence you've given is quite distressing. In terms of what you would want to see with consultation and engagement on these projects, what sorts of things are going to be effective and alleviate some of these concerns? Putting aside the bad behaviour, what are the consultation and engagement mechanisms that you would want to see or are going to be effective?

Ms McIntyre: I think this whole thing falls down right at the beginning. Agriculture and regional communities are not considered at all. The importance of agriculture itself, the importance of food production and the importance of the communities that do that are not considered. They are not mentioned anywhere. They are not even considered stakeholders. They are basically an afterthought when they get on the ground. If agriculture in its entirety were actually considered in the way it should be and had the importance it should have, we wouldn't be facing this issue. The way this should be happening would minimise these impacts straight up. VNI West, for example, is a completely unnecessary transmission line that is only going to allow three wind factories onto it for the cost of it. The whole project is an absolute farce. Damage is going to be done to the community, agricultural land and biodiversity because of a ridiculous project. It wouldn't be happening if agriculture and our food production were considered in the way it should be. I suppose in Victoria it's really apparent. The Victorian government wrote a report. It was an offshore winds direction paper in 2022. They stated that up to 70 per cent of all Victorian agricultural land will be required for wind and solar. That in itself shows the complete—

Ms O'Sullivan: Ignorance.

Ms McIntyre: ignorance and lack of understanding about our food and the importance of our food. It should be in terms of government, our own sovereignty and our own security. COVID should have taught us that we need to be protecting very carefully our very precious—

Ms O'Sullivan: And limited.

Ms McIntyre: and very limited—we have a very small amount—agricultural land. Other nations have actually productive—

Ms O'Sullivan: Viable.

Ms McIntyre: Viable productive agricultural land. We should be protecting that as the No. 1 most special thing that we hold. If that were happening, we wouldn't be facing any of this rubbish. Food security comes before energy security. It is not even being considered. Every time it is brought up, it is pushed to the background. We have been to a number of these things and it's never considered. When it's brought up, it's like, 'We'll sort it out when we get to the end somehow.'

Ms O'Sullivan: When we've got no food left.

Ms McIntyre: When we've got no food left. I also want to very quickly say that the Paris agreement, which is behind all of this, actually states that we need, as part of that, to act in a manner that does not threaten food production. That is nowhere in all of the policies actually being adhered to. I want to add that in. Thank you.

Mr Katz: Another thing I would add, if I may, is that the consultation that takes place is largely irrelevant anyway. As soon as a serious objection is raised, you fall back on the problem that all of these decisions are governed by the regulatory infrastructure, which consists of the ISP followed by the RIT-T followed by an august word salad of acronyms. They do not add up to a proper system of developing long-term assets to change the way we deliver energy. That is why your committee I think has a duty to reinvestigate the very fundamentals of the regulatory process. It is to actually start charging for transmission instead of treating it as a sunk cost. It is to actually look at things properly from a market perspective and from an environmental perspective. It is to look at things in that way rather than the current way, which is set up with so much complexity that people like us, even with some experience, find it incredibly difficult to navigate this amazing web of organisations and suborganisations with almost unlimited budgets to throw lawyers at us and any other objectors.

Ms Strong: I will have some input to this discussion on consultation. Consultation isn't going to result in what needs to happen. What needs to happen is the rules need to be changed so AEMO, in developing the Integrated System Plan, and transmission network service providers, when they are looking at different options—when they are comparing an overhead option to an underground option—are required to take into account all the costs. They need to do that so they will look at the least cost option for the nation as a whole. They will take into account the costs of bushfires. They'll take into account the costs of severe weather. They'll take into account the costs of loss in biodiversity, the loss in visual amenity and the loss of our landscapes of great natural beauty. It's critically important that, first of all, they assess these things against the triple bottom line. When you talk to them about the fact that they are not coming up with the least cost overall option, they say, 'Well, the rules don't require us to take into account those costs.' Therefore, they dismiss the option. It's critically important that those costs are taken into account and we get the option that is the least cost overall for the nation, which will often be the underground option.

CHAIR: Thank you. I have ceded my time to my colleagues here. I won't put any questions today. I might have some on notice. However, I would like to acknowledge the very good work of Commissioner Dyer, whom many of you mentioned before. I thank him for his work. I'm sure the new commissioner will continue to do an outstanding job. I look forward to putting some questions to him in estimates next week. Thank you all for appearing. If there are any other statements or submissions you wish to make, please do. Please provide answers to any questions on notice by Wednesday, 13 November 2024. Thank you for appearing.

CARLAND, Dr David, Executive Director, Australian Resources Development Pty Ltd

[16:21]

CHAIR: Welcome, Dr Carland. Would you like to make a short opening statement?

Dr Carland: Yes, briefly, Chair. Thanks for the opportunity. I have been writing in this area for several years. Sometimes I'm not sure where this is getting, but I've kept at it. My approach to this was to try to take a higher level look at the ISP and what it was actually doing. It says it's a plan, but it actually describes itself as an optimal pathway. We might come back to that, because I think it is quite important, especially some of the things said earlier about planning.

My first major issue is that, under the national electricity objective, the ISP is required to make sure that renewable energy targets are met—essentially carbon dioxide emissions. The ISP assumes that this can be met only by firmed renewables. No other option is looked at. There are about 10 little buttons you can tick in the spreadsheets. You can go to the counterfactuals and see all the coal plants shutting all the time with no other form of technology. There is just various levels of intensity of batteries storage versus generation et cetera. In particular, there's no analysis of the nuclear option, which is another way of getting to low emissions. The reason it is not analysed—it is directly said by AEMO—is that the technology is banned. I think this is a highly disingenuous statement. Because a particular technology is banned doesn't stop us from analysing it. It hasn't stopped another committee analysing it here. It hasn't stopped the CSIRO analysing it here. It hasn't stopped AUKUS in the investigation of nuclear submarines. I think that is a very limp reason not to investigate nuclear.

Second—and I think this comes to this pathway versus plan—the ISP does not produce realistic projections. It is seen to develop this optimal plan with a load calling for various generation investments and closures and gas and back-up to meet reliability. It has very strong growth in wind, solar and batteries, with coal plants shutting. AEMO has another publication, the *Electricity statement of opportunities*, which comes out about two months later. That is focused on reliability, not about optimising, growth or paths. They look at 10 years. By 2031, the 10th year—2031 is the last year I looked at—the difference in gigawatts in the system is 30 gigawatts. The ISP says 100 would be in operation. The ESOO says 70. That difference is big. ESOO looks at anticipated and committed projects. It is not optimising anything. That is what they really look at doing. The wind projects aren't coming forward at the rate they've been through the optimal path. What I have just listened to may be a reason. The batteries aren't developing. Anticipated and committed aren't developing. The irony is that the only reason we've got 70 gigawatts is Eraring stayed open. I think we'll come back to that on dealing with risk.

My third point is that the ISP significantly underestimates the cost of all this. We are told that the step change scenario cost is \$122 billion, of which \$16 billion is transmission. I have gone through in my paper in detail a brief statement. That excludes the non-capital costs of the existing plant. It excludes the cost of the existing generation and assets transmission and distribution assets. The one that I think is quite worrying is that it includes the cost of investment in the distribution network. As the ISP goes forward—we heard this earlier today—it is relying on this CER. That is going to put a lot of pressure on the distribution network, backflowing, increasing scale and associated cost. The ISP says that it relies on this to deliver the plan or as part of the plan. I think it says something like it will be paid for in another way. That is completely excluded in the cost.

The last point is the cost of the subsidies for these schemes. When all these costs are included via the back-of-the-envelope calculation, I think it could be \$0.6 trillion. If someone doesn't like that number, I invite them to tell me what the right number is. I think someone asked a very relevant question. No-one has investigated the distribution and how much this is going to cost. It is very difficult to put a handle on it. I do know that the regulated asset base of the distribution network is nearly four times that of transmission.

I think this has been settled. Throughout the ISP, reference is made to affordable electricity. If you actually work your way through it, it confuses lower cost electricity with affordable electricity. I have a chart in my submission showing the significant rise in real electricity prices over the last couple of decades. Lower cost doesn't mean affordable. If AEMO wishes to sustain this claim, it will need to explain why federal and state governments feel the need to subsidise electricity for retailers. Why would you do that if it is affordable? Secondly, if it is affordable, what was it five years ago? Was it really, really affordable? There is an increase in price.

Finally, we are continually hearing that renewables is the lowest cost. I go back to my point about never investigating nuclear. If the only thing you investigate is renewables, you have no basis for that statement. Thank you.

CHAIR: Thank you.

Senator CANAVAN: It's a very useful submission, Dr Carland. Thank you for it. I want to explore the point you made about the difference between the ISP and the ESOO. You have a chart on your submission at page 8 that compares the projected energy sources in the next seven or eight years with the ISP. There are stark differences. Can you explain it a bit? We know what the ISP did from last week's hearing or how they get to those numbers with carbon budgets and other carbon climate policies.

Dr Carland: That is ESOO?

Senator CANAVAN: Sorry, the ISP. The ISP is one of the government policies.

Dr Carland: The ISP is the optimal plan. The world goes forward.

Senator CANAVAN: We kind of know that. How do they determine the ESOO, then? What do they do to determine what is there?

Dr Carland: It's anticipated and committed. It is a bit opaque. It is anticipated and committed projects only. I think what is actually happening—I think this is most exposed in the transmission—is that in the ISP, particularly the generation side, they are assuming the capacity. Its model is that we've got a lot of umpteen terawatt hours this year. We're heading towards net zero. We've got to meet that condition. We will have to put all this plant in. We'll have to put these batteries in. In ESOO, they go and actually look. It's more akin to planning. You start planning from a point of reality. With planning, you can generally have a business plan. I have a finance background as well as a background in energy. You would sit down and have a good look at where the next couple of years would go before you kick off your optimised plan. Again, I'm happy to be corrected if AEMO can tell me that I'm not comparing like with like. I suspect I might not be, but that's the point. The ESOO is very focused on reliability gaps that are opening up when the ISP is saying the world is lovely and it's all lower cost.

Senator CANAVAN: Is it fair to say, then, that the ISP kind of just assumes that it can open? It just assumes that these things will happen rather than actually looks at the reality of whether they can happen?

Dr Carland: Yes. The model has a series of costs in it that optimises it and minimises the cost. It never asks whether the HumeLink transmission line can be built. That doesn't come into it. In ESOO, they are looking at that. They are looking seriously at what is coming in the near term.

Senator CANAVAN: I will go to the price impact here. Something I found underwhelming last week was the look at prices. You have a chart at appendix 3 of your submission. It shows the incredible rise in Australian consumer prices. What do you put it down to? Why are our prices so high now relative to some other comparable countries?

Dr Carland: I have another chart, Senator Canavan. I put the real prices in it. They are just nominal prices. I point out a few bumps. Compare the real price of retail electricity to the share of generation from renewables. There is an uncanny correlation. I am an econometrician by trade, and I understand that correlation is not causation. Again, is it just happenstance? As we've pushed more and more renewables into the system, what has happened to the retail cost of electricity? The very obvious answer is the bill stack. Sticking green taxes into the bill, for a start, must be directly related to transmission et cetera.

Senator CANAVAN: Could you provide us that chart on notice? I've probably seen it before. It might be useful for the committee to have it.

Dr Carland: Sure. It's straight out of catalogue 6401.

Senator CANAVAN: Great. How would you change the ISP, then? What do you think needs to change to provide a more realistic projection?

Dr Carland: I think they need a plan. I think Senator Van was saying something earlier in the day. The starting point for a sound financing plan is a risk matrix and risk allocation. Sit down and look at all the potential risks you are facing. Look at the consequences of those risks and look at the ways you might mitigate them. In this instance, compare the ISP with ESOO, as we've just been doing. What could we do if the wind capacity development doesn't come or the batteries? What could we do? There's nothing in it. There's no fallback. There's no plan B. I think it's quite ironic that the default plan B is to leave the coal plants open. If you seriously look at the ISP and say, 'What is your mitigating factor?', it looks like it is to leave the coal plants open.

Senator CANAVAN: They are getting older and harder to maintain.

Dr Carland: They are getting older. I have been involved, as you know, in buying old power plants in Queensland. It is not so much that they're old. Grandfathering has actioned a lot of it. There are creep life issues. There is an end of life. I was watching the dispatch regime be explained last week. We are backing all these people off. I looked half an hour ago. There were negative prices all over the place. Tonight at 8 o'clock or 9 o'clock, they will be \$200 or \$300. That is because the coal plants keep going and they keep pressure up in their

boilers. A lot of them haven't got generator steam bypass, so it's costing them significant money to keep the pressure up to gain the benefit of supplying the load.

I think there are two issues to be looked at. For years, I have been saying that we need to have some mechanism that allows the coal generators to run at mingen levels. This massive amount of rooftop solar pouring into the market, as an economist would say, is worthless. It has a negative value.

Senator CANAVAN: We are having to tax people now for it.

Dr Carland: It's like a Swiss bank account. You actually have to pay a negative interest for the security of keeping your money there. That's how they sorted that out. They are juicing all this power that no-one wants.

Senator CANAVAN: Maybe I will get you to expand on it. From the evidence last week, it seemed to me that we've got this situation where we're already starting to impose taxes now on solar exports to the grid because of the excess solar. The government has a Capacity Investment Scheme that will encourage more grid-scale solar or potentially encourage that. Won't that just exacerbate this?

Dr Carland: Absolutely. The only reason we've got so far with renewables is because we had some excess capacity in some older coal plants. I know intimately the Gladstone station. It can go from 280 to 100 times six, so during the day there's a lot of megawatts sitting in there. It has been able to come up and take the load. If you keep pushing renewables into Queensland, Gladstone won't be able to keep going during the day. They will go to a four-unit operation. I think they are already on low units over weekends and stuff. You won't be able to keep the lights on. I know the solution. We'll have the Victorian Mornington Peninsula solution or the Adelaide Oval solution. You'll have gensets sitting on the back of trucks connected to an oil tanker trying to make sure we don't have outages. Someone really needs to sit down with a realistic plan of how this is going to work.

Senator CANAVAN: Finally, you mention nuclear in your submission. Is that another thing you think the ISP should look at? Should it at least look at the cost and possibility of nuclear?

Dr Carland: Yes. It should look at all technologies and not look at a particular one because it is banned. Is offshore wind fully approved and whatever? It doesn't stop them from looking at it. That's all I'm saying.

Senator CANAVAN: Hydrogen, too, for example?

Dr Carland: I would look at that. I'm quite agnostic on this. I think we should have the lowest cost here. I don't agree that people can say that renewables are the lowest cost way of delivering a low-emission outcome until they look at nuclear. Let's have the big debate about how much per kilowatt it is and its safety and whatever.

Senator CANAVAN: Thank you. I have more, but I realise there are time constraints.

CHAIR: Senator Grogan has joined us in place of Senator Ghosh. Senator Grogan, do you have questions?

Senator GROGAN: Dr Carland, thank you so much for coming in this afternoon. I really appreciate it. I am interested in your perspective on nuclear energy. The AER chair and a number of other experts both in this inquiry but also in the other nuclear inquiry that is running at the same time have said that the timeframes do not line up. Nuclear is too slow to really play a role in replacing coal as it is currently structured to exit, which, as we know, is a decision made by the coal plants. What is your view on the potential role of nuclear power? Would that really require coal to be extended? Would we have to look at extending those coal plants?

Dr Carland: Thank you. I always make a joke at this stage. My name is Carland. It wasn't my grandmother who wrote the books. No-one gets that joke. There are two things. My view is to put nuclear into the planning framework. Put realistic assumptions in there. I heard yesterday 11 years. Okay, put that in. Put its cost in. Look at how that can be fitted in together or compare it with renewables. Part of my discussion to date is, I guess, leading to the point that I don't think renewables are going to fill the hole either. Put it this way: by observation, they are clearly not filling the hole at the moment. We've kept Eraring open. Yallourn is going to stay open. My gut feeling is that we're going to have to keep them going for a hell of a lot longer until either renewables do the job or nuclear does the job or some combination thereof, which gives us the least cost outcome. The nuclear group were here yesterday, perhaps in another meeting. I totally accept that if it is 11 years, it is 11 years. What is the best time to plant a tree? Eleven years ago. If you didn't plant 11 years ago, what is the best time to plant a tree? Plant the tree now. That's what I'm saying. I'm not a nuclear advocate by any means. I don't think meeting emissions targets is a bad thing. It is a worthwhile thing. That's fine. I just think we should take a realistic view of how we're going to get there.

Senator GROGAN: Thank you. That's very helpful. I may have heard you wrong. I did note that you said you were buying coal plants in Queensland.

Dr Carland: Years ago, in my part of my career, we bought the Gladstone power station. It was quite an old power station. It is just a point of fact. There were major engineering studies of its life. We bought it in 1994. It is

in the public domain. Its contracts run until 2029. My mates around the place still say it is running quite okay. Its biggest issue is getting on the system. It has not got mine mouth coal. In a marginal cost basis, it is pretty high. I think it has trouble staying on when there are huge and growing amounts of PV power in the system. That is my experience with that.

Senator GROGAN: Thank you. If we were to look at nuclear, how much capacity do you think is required in the system? We know that the policy being put forward by the coalition is seven sites. How much nuclear capacity do you think we would need?

Dr Carland: In some senses, it is like mathematics. Tell me its capacity factor. How much will it produce? Will you back it off during the day and bring it through in the night? Nuclear power actually works quite well because the fuel cost is quite low once you've bought it. It will tell you, in a sense, how many you need. Again, I think that is a number that the AEMO technical modelling people should be able to get relatively easily. My bigger issue—I think this is what needs to come out in all the stuff we just talked about—is that we won't need the transmission lines from the REZs. We won't need this growth in the distribution network to the extent we are now talking about. At the wholesale level, the numbers will be what the numbers are. Let's say they are more expensive than firmed energy. That's almost a matter to be worked out. Certainly the distribution and transmission costs will be much lower if we build on existing sites.

Senator GROGAN: Okay. I think that the sites total around 11 gigawatts, which is about four per cent of the capacity that we'll need by 2050, according to MYEFO. What would you see as that nuclear plant distribution around Australia to make up what we would need?

Dr Carland: Sorry, the 11 gigawatts are from what technology? I didn't hear.

Senator GROGAN: I think it is the coal capacity for the nuclear part. That is what would go in. Effectively, the 11 gigawatts of the seven sites is what I believe would equate to four per cent of that capacity that we're going to need in 2050. That would be the coal capacity we have now but also the increase in demand we will get to.

Dr Carland: Sure. The load growth, sure. The benefit of putting them on existing sites is the transmission networks are thick and they are there. We don't have any social licence issues. What you may be alluding to is we may well—

Senator GROGAN: How much would we need? I wouldn't have thought seven would do it. My expertise is not in how big you can make a nuclear power plant.

Dr Carland: I understand. This is not a question I'm going to answer here. I'm happy to go away and think about it. You will have to—

Senator GROGAN: Good. Great.

Dr Carland: tell me the capacity factor of those units. If I'm going to run them at 50 per cent, I will have to double the amount. Obviously, the dollars per kilowatt hour are going to double.

Senator GROGAN: To be perfectly honest, I don't think anyone has modelled that, so I'm not sure. I might go away and have a think about that and scope that up into a question on notice.

Dr Carland: Okay.

Senator GROGAN: If that's alright?

Dr Carland: That's fine.

Senator CANAVAN: Chair, I think Senator Grogan needs to adjust the AEMO figures for the capacity factor of solar and wind. It's not directly comparable to nuclear when you say four per cent of capacity if nuclear is running at 90 per cent and solar at 20 per cent and wind at 30 per cent. It is quite hard to compare them. It's not apples for apples.

Senator GROGAN: Thank you very much.

Dr Carland: That is why, Senator Canavan, you need to do a system analysis. With that running in the system and something else running in the system, what is the total system cost?

Senator GROGAN: Yes. Indeed. What I'm trying to get to without unpacking it to a highly technical scenario is how much we would need. Let me take it away and bring it to you on notice, just to save us. I know we're short on time.

Dr Carland: I'm happy to respond.

Senator GROGAN: Thank you. I want to touch on the inclusion of emissions reduction alongside the issues of affordability and reliability and the national energy objectives. What is your view on that?

Dr Carland: Well, AEMO has been doing this for several plans. Previously, it used to say, 'We've put in the assumption that we'll meet government emission targets because we think it's in the best interests of the community.' AEMO had a view on it all along. My issue with putting them in is that policies are transient. The Labor Party in 2019 took a 43 per cent reduction to the 2019 election. At the next election, it was 82 per cent. It then morphed into net zero at 2050. No-one has clean hands. In November 2021 before the Glasgow conference, the Liberal-National Party came out with a plan for net zero by 2050 which had nearly as absurd projections of how rich we're going to be in the future. I think that's my issue, Senator. In three years, it will actually make it very difficult for AEMO. They could be chasing their tails. It is all the state government plans as well as the federal plan. These targets could change. They've got to now rework the whole thing. That's my problem with that. Cost minimisation is pretty universal. It's not going to change.

Senator GROGAN: Emissions reductions are recognised in the national energy objective. Let me ask you the question this way. Would you say that emissions reduction is an international focus? There are many countries, particularly countries that we trade with, that are very keen and dedicated to emissions reduction. Would you disagree with that?

Dr Carland: No. That is a societal decision. In everything I've written I've said that. It's not that I have any objection to low emissions outcomes. I say it is not a bad thing. I say it is worthwhile. My issue is that you should tell people the cost; that's all. People have goodwill. They want to do the right thing. They are being told that renewables are lower cost. That is my challenge to that. It is society's view. It's their call. Net zero 2050 has bipartisan support in this country. There is no question about that.

Senator GROGAN: Okay. I will build on that. As you say, the 2050 target is an agreed, bipartisan scenario. Would you also agree that the burning of fossil fuels is the primary driver of dangerous climate change and, from that, as a result, there is an imperative to move away from fossil fuel generation?

Dr Carland: I will not answer those sort of questions. I wrote a submission about the ISP. You want to entangle me in some sort of environmental thing. I'm not interested. I've tried to look at the figures. I've made my point about cost. I might have made my point about agreeing with the current policies. I will leave it at that, thanks.

Senator GROGAN: Dr Carland, I'm sorry if I have offended you in any way.

Dr Carland: I'm not offendable, Senator. I am an ex investment banker. I am totally not offendable. My name is Carland.

Senator GROGAN: That is what I said—Carland.

Dr Carland: Okay. Thank you.

Senator GROGAN: I have it right here in front of me. I do try to get people's names right. I do try not to offend. My apologies, Dr Carland.

Dr Carland: You are safe with me. Thank you.

Senator GROGAN: Thank you.

CHAIR: Senator Canavan, you have a quick question?

Senator CANAVAN: I have one more, if there's time. You mentioned that nuclear should be included et cetera. What about coal? Should we look at investing in new coal-fired power stations or at least look at the cost?

Dr Carland: That's almost the same question. I came here under the ISP. Under the ISP, the national electricity objective is to meet emissions targets. In that environment, going ahead and building new coal plants is not within, if you like, the remit of AEMO. Would it be a cheaper outcome? It is something we could go away and test. It will certainly blow the emissions.

Senator CANAVAN: Yes. I thought you might have mentioned, though—

Dr Carland: My issue on coal—

Senator CANAVAN: I thought I heard you mention, though, it's useful to look at a lowest cost scenario.

Dr Carland: I did that two submissions ago. I got pilloried in the *Guardian* for being someone who suggested a coal-only scenario.

Senator CANAVAN: Join the club.

Dr Carland: With all due respect, I was aware where that was heading. People google me and then come up with that.

Senator CANAVAN: I think I'm bedding you, Dr Carland.

Dr Carland: It was a completely different context. For instance, what carbon tax do we need? The way you would set the carbon tax is to run the coal-only scenario and look what taxes you need to put in place to get there.

Senator CANAVAN: Well, they won't even tell us the shadow carbon price. I don't know if you've followed that. AEMO won't even give it to us.

Dr Carland: I know. I understand that.

Senator CANAVAN: What the shadow carbon price is.

Dr Carland: I'm just saying that the rational way to do it is to run a coal-only scenario. That tells you the cost of it. It might be perfectly fine and acceptable. If the community wants that, perfect.

Senator CANAVAN: It would be useful, at least, to know the cost of that.

Dr Carland: That's my point. I think people aren't being told. They are being told that renewables are the lower cost. People have goodwill. They've been put in a world where it's not only doing the right thing for the environment but it's cheap. I think that's my graph. That's all sort of falling apart.

Senator CANAVAN: I think people are waking up to it.

Dr Carland: Don't accuse me of that. Heaven forbid.

Senator CANAVAN: I certainly can't accuse someone of being too pro-coal. It might not fly.

CHAIR: Thank you, Dr Carland. I don't have any questions other than to recognise the work you did in your submission. It was excellent to look at the economics of the ISP et cetera. Thank you for appearing today.

Dr Carland: Thanks very much. I appreciate the chance.

CHAIR: Thank you to the secretariat and Hansard for looking after us today. We will be back tomorrow morning. Thank you everyone.

Committee adjourned at 16:52