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AUSTRALIAN ENERGY

MARKET COMMISSION

HEARING ON TRANSMISSION LOSS FACTORS

COMMISSIONERS:	**JOHN PIERCE** **MICHELLE SHEPHERD** **ALLISON WARBURTON**
SPEAKERS:	**ROBERT GRANT** **JEVON CARDING** **MATTHEW DICKIE** **LILLIAN PATTERSON** **MITESH KUSHWAHA** **JOEL GILMORE**
LOCATION:	**ADINA HOTEL TOWN HALL** **511 KENT STREET,** **SYDNEY, NEW SOUTH WALES**
DATE:	**11.32 AM, WEDNESDAY, 4 DECEMBER 2019**

MR J. PIERCE: Okay. We'll make a start. Good morning everyone and thanks everyone for being here today. I am chairing the meeting today. I am John Pierce, the chair of the AEMC. Also with me are my fellow Commissioners Allison Warburton and Michelle Shepherd. Six people have registered to present at this hearing. Each have 10 minutes to present their views and we will follow the order that is allocated in the agenda, namely, Robert Grant on behalf of the Clean Energy Investor Group. Jevon Carding from the lighthouse infrastructure, Matthew Dickie from Innogy Renewables Australia.

Lillian Patterson from the Clean Energy Council, Mitesh Kushwaha from QIC and my apologies Mitesh if I haven't quite pronounced your name correctly. But feel free to correct me. Dr Joel Gilmore from Infigen Energy. During their allocated time, each speaker is to present their views to the commission. The start and end of each presentation slot will be marked by a ringing of the bell and a warning bell at eight minutes. This hearing is being recorded by an independent service provider. The transcript produced will be checked for accuracy by the AEMC and published on the AEMC website along with any other documents that are used today by the presenters.

The hearing transcript and this material will form part of the information considered by the Commission when making its final determination. While the Commissioners may ask questions of the speakers, to clarify any points that are made, this hearing is really for the Commissioners to listen to stakeholders' views. This hearing is not like our public workshops and our other forums that we have, in that it's not a forum for discussion or debate with either the Commissioners or the AEMC staff and/or other stakeholders today. To allow the hearing to proceed smoothly, we're going to ask that people refrain from interjecting during the proceedings.

Any behaviour or remarks that are of that nature will result in a warning and persistent interjections or any sort of derogatory or offensive behaviour will lead to the participant being asked to leave or a determination of the hearing. And, naturally, any of those comments will be redacted from the transcript. I now call on the first presenter, Robert Grant, on behalf of the Clean Energy Investor Group.

MR R. GRANT: Thank you, Commissioners, for the opportunity to speak today, the predetermination hearing. And for a number of my colleagues, as well, from the Clean Energy Investor Group to join me subsequently. So I will look to talk a bit about the Clean Energy Investor Group generally shortly. But I am also supported today by, as you mentioned, the speakers from Lighthouse, from Innogy, and one of our consultants, EY is here if there are any specific questions related to tough regulatory questions that I can't answer. Look, we felt it was important to present today, given the very important nature of the decision that's about to be handed down by the AMC in relation to the rule change around MLF.

There are, obviously, on our viewing of the Draft Determination, a number of issues which we wish to discuss and present. And we will more fully put those in the final

submission in January. The number of ongoing things, as well, that feed into that, we would just like to draw your attention to as we – as we go through that phase of making final submissions and finally coming to a view of what – what's the right thing for consumers? The discussion today will be a short intro on the Clean Energy Investor Group, our view of what we see the problem being, our view of what we see the solution being and our view so far of what we have seen from the AEMC and its Draft Determination.

And then some suggestions for the way forward, from there. So the Clean Energy Investor Group is, sort of, more indicative now of what we're going to see for the ownership model for the industry into the future. They are, really, the utilities of the future. And it's important that we acknowledge the benefit that that's going to have for consumers. So the amount of competitions that these Clean Energy Investor Group members and many others, we represent 20 investors across six and half gigawatts of generations on the NEM. That's 72 power stations.

But that's not everything in the sector. But it does introduce a very significant amount of competition and has done so over the last few years, which has been demonstrated through the significant change in wholesale price and effect on PPAs and reverse auctions. But it also brings a different level of cost of equity, which we haven't seen from the traditional utilities.

Whether that's been because of the fact that it's been traditionally an oligopoly or as publically listed company, they have a different cost of equity compared to what we're seeing in the institutional investor market which our members, which include sovereign wealth funds, largescale infrastructure managers and pension funds tend to – who are investing directly in this space have quite a substantial difference in cost of equity, which ultimately, flows through to the product that we invest in, the products we deliver and the cost to consumers of those assets. Unlikely utilities in the oligopoly or the incumbents that are in the market at the moment, they are agnostic to the – where they deploy capital.

Obviously, they do have a very strong preference to be in this sector because of the many ESG benefits. But in the end, they are responsible for managing the retirement savings of, you know, future pensioners and of current workers. And they take that role very seriously and if the asset class is not delivering the right level of risk and return or it's just too difficult from a point of volatility returns, then they will be able to migrate to other asset classes. And, you know, John Laing, who I represent is a multi-asset investor and will just rotate to other asset classes should the renewable sector prove too difficult. And there has been some, obviously, public announcements about that recently by John Laing.

So what's been our experience? Well, it's really just a function of the changing world. We centrally designed and delivered, built, and operated a system pre-NEM which was a state utility driven venture, then it was deregulated and privatised. We overlaid the NEM rules on top of that around the 1990s. And it has worked very well for the last 20 years.

As those assets have come to the end of their useful lives and are reaching the end of their useful lives and also the economics of new generation and have changed not to mention the effects of needing to address the carbon pollution reduction that Australia needs to do under Paris Agreements, then that system that we have inherited is probably going to look very different in the future. And the rules that surround it are going to be appropriately different. Now, we have started to see the emergence of that. Probably the first 20 gigawatt hours of the renewable energy target was accommodated under the MLF rules reasonably easily. The last 10 gigawatt of hours hasn't been so easily accommodated.

And certainly, as we move into the ISP and the way that these RESs will be built out, we're going to need a different set of rules to accommodate the – that investment. So far, we seem to be looking in the old places for solutions to new problems. And we think that that's not a great idea. And we have also seen that that is actually having, anecdotally and actually, an investment on investment of late. So whether it's any of those current, 2020/2021 MLF indicative numbers or whether it's the CECs quarter by quarter review of investment, they are all significantly down on the last few years, which is a direct consequence of uncertainty and difficulty to commit to new investment.

So that's the now. And the reality is that we have to deliver a very substantial rebuild of the network of – in the order of somewhere between 70 – in the order of $70 billion to build that 35 gig of new generation and 15 gigawatts of storage that's contained in the ISP. So you know, if we have got this problem now with difficulty with investment. You know, what do we do about the next 35 gig that's going to be needed to either address the greenhouse gas issues or to address the aging population of the current thermal fleet. So our position has been, "Look, there are two things that can happen for this group."

We either say that the volatility that is current inherent in the way that the MLF Transmission Pricing Rules is producing results year-on-year will have to be priced into all investment decision. Which will come through some sort of premium or risk premium attached to the investment case. And we do note the AMC is going through a survey process at the moment to try to quantify that. And it's pretty important that we get some sense of what, you know, you're finding out through that. Because obviously, many of our members are contributing. We are doing our own analysis and survey and I think the CEC will do the same.

But that – that's likely to be in the order of, probably, two per cent on – on top of the cost of equity. Which, you know, across the fleet, across the entire fleet to build out the ISP is going to cost consumers around another $430 over the term of the ISP delivery. So across 9 million customers, it's a very substantial number. Or the other option is that, "Look, it's all too hard." And we just go an invest in other asset classes and we leave the buildout to the current incumbents and the oligopoly and we then revert to a world where the cost of equity is substantially different and higher than what these institutional and pension fund investors have, which would be in the

order of adding another thousand dollars to the consumer cost to deliver this ISP plan.

So neither of those are very palatable and we don't think there is any reason why, you know, moving to an ALF wouldn't be a good interim solution as we decide what to do post 2025 in the review that's currently under away with the ESB and also to dovetail into whatever happens with COGATI into the future. And we have made those cases quite, the case of that quite strongly in our submissions. And obviously, in the draft determination have been somewhat concerned that the emphasis has been put on, you know, two important aspects of the current MLF methodology around dispatch efficiency and locational signalling.

But first of all, not really enough quantitative economic analysis has been included in a draft determination for us to be able to weigh up those benefits versus what we also see as the benefits of moving to an ALF. And that, in any event, in the way that the new generation fleet is configured, i.e. zero marginal cost of generation, we don't have any new generation coming to market, it will have a marginal cost, likely because of the fact that it's not thermal any more.

And the locational signalling effect that also MLF is meant to encourage which, again, is somewhat blunted because we're going to now have a substantial amount of Government intervention in the planning of new transmission as we have seen last week or two weeks ago from New South Wales's announcement on the REZ. So it's not to say they're not important. It's just that the effect of them is probably not as critical as it was – those particular aspects not as critical as it was – as it might have been, historically.

I might ask, I have got a few more slides. And is it possible to cut into the other member's time, just to finish them off? Or you're going to hard stop on 10 minutes?

MR PIERCE: If your other member is willing to give up - - -

MR GRANT: Yes.

MR PIERCE: - - - a bit of time. Yes.

MR GRANT: Yes?

MR CARDING: It's fine by me.

MR GRANT: So I think – you know, a key point, though, is that we had identified in our submissions a number of economic and financial elements which we'd sought to quantitatively assess and put up there as flow-throughs to customers, and in response, we would like to be able to see the full suite of the quantitative assessment, some of which we can't actually model. So there are elements of – in – in our stakeholder consultation program, you know, many groups that we've spoken to would like to see that full analysis, but for us to run the full model that looks at

things like the interregional settlement pool and the size of that under ALF versus MLF, we're not equipped with all the inputs to the – to the model, particularly on the load side, to be able to do that with our own consultants. So we would very much like to be able to do that, to be able to say, "Well, look, in aggregate, when you look across all of the impacts of dispatch efficiency, locational signalling, supply-side effects which come from investor certainty and the – and the change in the bid stack that we had identified and the CEC has identified through Baringa, that they are all equally weighed up in a quantitative and – and objective sense.

So, you know, those numbers are quite significant on the supply side and the bid stack. You know, we were looking at, say, comparing our cost of equity of that of the incumbents and translating that to a – an annual cost for consumers, and it's in the order of $100 – it's a very substantial difference. And we're happy to take the AEMC through those calculations and – and that analysis, and I guess we were looking for the same on the AEMC side, that we would be able to understand from your point of view what is it that – or what – what are the quantitative effects of these other elements that you – that you've mentioned in the – in the determination, and also, of course, that TUOS flow-through that will change when moving to an ALF, because the pool will become smaller because ALF more closely represents actual losses rather than – than marginal. So they are important impacts. We would like to see them quantitatively assessed. And that's – and that's certainly what our key theme is in terms of process now – between now and the determination after all the submissions are received in January.

So, ideally, we'd like to work with you on producing a reference dataset around all of the aspects that need to be included in those four and five, we believe, quantifiable effects and ways of measuring the difference between ALF and MLF, the ..... framework on that assessment, and to be able to then, you know, share and review those results so that one of us can be proven right and one wrong. I think this is – this is very much an objective and quantifiable assessment. We're just sitting a bit with our hands tied behind our back in terms of quantitative assessment because we can't get all the inputs to the model on the load data. But being, you know, financial investors and – and very quantitatively minded, we're very used to being able to look at the information and decide where, you know, if – if it's – if it's one way, then that's what we should go with. If it's another way, we won't – won't continue. So that's basically a – a summation of our request. Obviously, the sort of very one-sided submission in response to the draft determination doesn't really facilitate what we're asking for here, so really just putting that request formally to you now in a way that we could perhaps engage a little more deeply between now and the final determination, particularly taking into account what's still to come on the AEMC survey on WACC and cost of equity. Any questions?

MR PIERCE: You okay? Well, let's go through the others, I think, first - - -

MR GRANT: Okay.

MR PIERCE: - - - at this point. Yes. Happy to do that? Okay. Well, if – can I ask Jevon Carding, then, to - - -

MR J. CARDING: Good morning, Commissioners. Thank you for today's hearing. I'm Jevon Carding. I'm from Lighthouse Infrastructure in Melbourne, and I speak today broadly in support of some of the key points already articulated by Rob on behalf of our partners in the CEIG. Part of my role at Lighthouse is to brief our investors as to the successes of the investments that we've made in recent years in renewable generation infrastructure. I was with several last week, typically, managers of superannuation funds that you would be – names you would be familiar with.

Over the past three years, such briefings have covered a range of challenging topics, from Queensland's black soil to construction contractors have gone bust, rising FCAS charges due to cloud cover and, of course, various delays in additional costs arising from the challenges of grid connection, difficult conversations in the whole; however, of greater consequence of those topics – in fact, all of those topics in combination for us has been the effect of the change in marginal loss factors experienced by our generation projects, and these have caused – without being overly dramatic – extreme anxiety about the prospects of contributing further to new supply in the NEM, and that has been sufficiently – that reaction is sufficiently strong that we feel it's worth raising it in a formal way and reiterating here today.

It is difficult to explain to investors that something like, in our case, a third of the equity value has been lost in – more or less overnight by a change in a locational signal relative to forecasts prepared by genuinely capable experts in this space after we have built the relevant generation plant and, therefore, at a point in time where we no longer have any ability to influence or respond to that signal. Renewable generators cannot save costs by reducing their output and saving on their fuel cost. And, in particular, given that that change is, in most – to a great extent, the result of other parties who have joined the network after us rather than by our own actions.

In this context, from an investor's perspective, loss factors have become less of a locational signal and really feel like more of a lottery. We feel this is quite unhelpful. To be clear, we agree with the AEMC that locational signals are important. The losses should be recovered ideally from the parties that create them. That is clear. You may be surprised to hear that our discussions with investors often reflect on how energy market policy affects consumers. Why are they interested in this? Because their members, the innumerable individuals and families who each own a small share of the solar generators and wind generators being built – they are energy consumers. They are more or less the same groups of people.

So in that context, the sort of generator versus consumer paradigm through which the draft determination was framed doesn't resonate very well with us. We are principally active in this sector to help facilitate an efficient transition for the benefit of their ..... in general. When we assess the existing loss factor regime in this light, we can only conclude that it's failing. This is borne out empirically by the long list

of new generators that have been committed in recent years on the basis of carefully devised loss factor forecasts only to find a small number of years or even months later that those locational signals were – have turned out to be completely different at a point where they can no longer do anything about it.

The AEMC is correct to highlight the importance of new generators being sited efficiently, taking losses into account, but where we differ is in their – in how we feel the appropriate way of delivering that is. We support a – in general, a planning-led approach to coordinating new generation where required with transmission and other network infrastructure so that we achieve an efficient system at a physical level. That is really important, and the inefficiencies that we see in today's network evolution are frustrating to us.

Relying on individual generation developers and investors to forecast an MLF is – whose primary driver is actually the subsequent activities of other market participants feels to us like a poor way of delivering that efficient system plan. But it's also apparent to us that the pathway to fundamental coordination of generation and transmission is a complex one that will take some – maybe years to design and deliver in a physical sense, and the reason for our support of the ALF regime is that we see a temporal gap between now and then.

Consumers cannot wait a few years for the energy transition to continue. They cannot wait a few years for a new generation to be built that reduces prices and proves security of supply and helps Australia make its contribution to emissions reduction. That needs to continue. Investors such as us and many others are keen to continue participating but are having great difficulty dealing with the current volatility we face.

Average loss factors are a compromise. On the one hand, they ensure the cost of losses continue to be recovered and that a meaningful locational signal is retained. On the other hand, they reduce by roughly half the degree of uncertainty that investors face. That's quite material. It's not an elegant compromise from the perspective of economic theory. When it was first put to me, I have to admit I cringed at the thought; however, it is a pragmatic and significant contribution to the important transition that's ahead of that, and, for that reason, we are strong supporters of it. It's simply to implement and, importantly, grounded in the fair principle of allocating actual losses no less and no more. Thank you.

MR PIERCE: Okay. Yeah, all right. Matthew Dickie, please. Thank you.

MR DICKIE: Good morning, Commissioners. I'm a little lower than the previous speaker, so this – so yeah, I'm a bit louder. So Matthew Dickie. I'm from Innogy Renewables Australia. Rob and Jevon have both spoken to the importance of generation investment to reduce energy prices for consumers, so I just wanted to focus instead on how the transmission loss factor regime is impacting new and existing generation investment.

Firstly, a summary of the company that represent. Innogy Renewables Australia is a local subsidiary of German-based Innogy SE. In Europe, energy is currently undergoing a merger, and, in the new year, the company will come under the banner of RWE renewables with an instilled capacity of nine gigawatts of solar and wind farms worldwide and a significant future pipeline. RWE plans to invest €1.5 billion – that's A$2.5 billion – per year in new renewable generation in key growth markets around the world. We are committed to the renewable sector, but what particular key growth markets we target is up for grabs, and whether Australia is one of the key growth markets will come down to how predictable and transparent the Australian market is. And unfortunately in that regard energy's experience with its sole Australian project to date has not filled our board with consequence.

The 350 megawatt Limondale Solar Farm, which is in south-west New South Wales currently under construction – it has seen its business case significantly impacted by MLF movements since making the final investment decision a little over a year ago, and that project is still under construction. As Jevon said, we, too, are supporters of robust locational signally, but the most accurate signal of where to build today is of little use to an investor in a 30-year asset if the signal can fluctuate significantly after the investment is made. At that point, the signal is too late.

The reason why so many renewable projects have been built in the past couple of years in areas that are now facing low MLFs is not that the signal was not strong enough but that the signal was not predictable or transparent at the time of making the investment decision. Investors got MLF forecasts from credible consultants, including the consultants that cross-check AEMOs own forecasts and based on publically-available information about projects. Now, those forecasts fed into investments decisions, and projects started to be built and operate, but, in the meantime, new projects that were not included in the forecasts became committed, MLFs dropped and significant value was wiped from the earlier projects.

Recent reforms by the AEMC to improve transparency, while welcome, really only address one-thirtieth of the problem. They increase transparency for the first year of an investment but not for the next 29. The investors in the earlier projects have no control of that changing locational signal post-FID. Now, this issue is picked up by authors of the recent academic paper Locational Investment Signals in Electricity Markets. I'm not sure if you've already been given copies of that. Do you have the copies in front of you today? Because I do have some with me.

MR PIERCE: It would be useful if you left it behind.

MR DICKIE: I just wanted to take you to a particular paragraph in there, so if you don't mind me approaching the bench - - -

MR PIERCE: Yes. We're not wearing wigs. It's okay. Although, next time, some wigs might be nice. All right.

MR DICKIE: So the three major authors of this paper hail from the Hertie School of Governance in Berlin and are part of the Australian-German Energy Transition Hub, which brings together researchers from University of Melbourne, University of Technology Sydney, the Australian National University and a number of German tertiary institutions. The Transition Hub is supported by both the Australian and German governments. Now, this is not a paper that energy or any of the Clean Energy Investor Group have commissioned. We are only interested readers, if you like.

Now, the researchers find in that paper that of 12 electricity markets they researched worldwide, including the nodal pricings markets of the PJM, CAISO and ERCOT in the US, Australia's NEM has the strongest locational signal with its combination of regional pricing and MLFs. The authors don't find a preferred locational signal from their research of 12 jurisdictions, but they do find a key theme present in all of those policy options which are less effective, and that's a lack of credibility caused by volatility and a lack of transparency. The NEM is included in their grouping of less effective locational signalling policies despite having the strongest signals. If you don't mind be borrowing from the AEMCs archery analogy, MFLs are firing a lot of arrows, but if the target is efficient investment for the benefit of consumers, they are missing the mark, and the PJM, a market which has many similarities to the future state envisaged in the current COGATI design, is also included in the less effective group.

This academic research shows that we are already an outlining in the strength of the locational signal we are sending in the NEM, so making that signal more accurate or stronger again, as COGATI would do, is like increasing the dose of the wrong drug with significant side effects. At this point, if I could just ask you to turn to page 6 of that paper, and in the bottom paragraph, if I quote from the authors the paragraph numbered 5, I believe:

> *For an investment decision, the expect price signals foreseen by the investor matter, which the signals as they materialise do not; hence, the more credible and predictable a price signal is, the more likely it will have an impact on an investment decision. Price signals tend to more predicable if they occur only once with the investment – for example, with grid connection charges or support schemes – or if they are kept stable over long periods of time, for example, grid usage fees adjusted once every 10 years.*

That's the end of the quote. For an investor in the NEM, MLFs dynamic regional pricing and dynamic loss factors do not provide a predictable or transparent investment environment. ALFs would damped volatility for investors in the short-term, giving time for the AEMC and other stakeholders to design a longer term ..... which can serve as a more credible basis for future decisions on where to locate 30-year assets. I encourage the commissioners to read this paper and take the paper's findings into account in conducting its loss factor review to ensure an outcome that is not to the long-term detriment of consumers. Thank you.

MR PIERCE: Thank you, Matthew. Lillian.

MS PATTERSON: Yes.

MR PIERCE: Yes.

MS PATTERSON: Thank you to the commission for the opportunity to contribute to your further thinking on the transmission loss factor rule change proposal. The Clean Energy Council, or the CEC, is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in renewable energy and energy storage along with more than 6,500 rooftop solar and battery installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter, cleaner and more affordable.

There is no denying that business had been booming for renewable energy in the last few years. The 2020 large-scale renewable energy target as a highly successful policy that drove unprecedented levels of investment in new utility scale generation. Between 11 and 12 large-scale projects, equating to around 1.5 to two gigawatts, were financially committed in each of the quarters from Q2 2018 through to Q4 2018. Since then, however, the numbers of financially-committed projects have significantly dropped.

In each quarter of 2019, between two and five projects have been financially committed, equating to between 270 and 630 megawatts each quarter. If you look at that in annual numbers, in 2018, there were 43 projects at a total of 6.3 gigawatts. In 2019, that has dropped off considerably, with 15 projects at a total of just under two gigawatts. We have had as many financially-committed projects for the whole of this year as we had each quarter last year.

It was unfortunate but understandable that investment would drop with the conclusion of the RET; however, there is a significant transition underway, and chaos will inevitably result from leaving the job half done. Unprecedented levels of new investment will continue to be required to maintain reliability and stabilise wholesale prices as a number of large thermal generators retire and need to be replaced. Ideally, we should be building enough generation before they retire to ensure that energy consumers are not surprised by spikes in their power bills or gaps in supply.

In terms of the retirement of thermal plants, coal-fired generation equating to around 70 terawatt hours of energy each year, close to one-third of total NEM consumption, is expected to close between now and 2040. AEMOs neutral ISP planning scenario projects that the lowest cost replacement for this retiring capacity will be a portfolio of resources including 28 gigawatts of solar and 10.5 gigawatts of wind. In total, that represents 38.5 gigawatts over the period or just under two gigawatts a year for the next 20 years.

Given we have had about that amount of financially-committed projects this year and some of those were driven by the RET, we can only assume that that number is likely to drop future. In dollar figures, AEMO has said we need three and a-half billion dollars of new investment in generation every year until 2040. That is what is needed to maintain reliability through ensuring sufficient new generation replaces exiting coal-fired generation and to put downward pressure on wholesale prices.

Generation investment doesn't just assist to meet the National Electricity Objective in delivering benefits to end-use consumers; it also means jobs and regional development. For that necessary investment to prevail, we need to ensure an encouraging investment environment for new generation in Australia. The current marginal loss framework is not assisting the business case for new generation in this country.

MLFs are a significant issue for CEC members. In our most recent survey of the CEOs of our member country – sorry, companies, MLFs was recognised in the top five business challenges facing the industry at the moment. We are seeing MLF risk manifest itself in increased risk premiums for new projects. A higher cost of capital increases the levelised cost of energy, resulting in higher prices for consumers. It is already deterring new investment and new generation at a time when new generation investment is critical. We do not believe that this has adequately been discussed in the draft determination.

Our members suggest that a one to two percentage points premium is currently being added to the cost of capital for new projects in Australia as a result of MLF risk. This equates to an additional 10 to 15 dollars per megawatt added to renewable energy projects. No other country in the world has MLF volatility like we have in the NEM. Compared with comparable markets, such as the US and UK, Australia has the highest cost of capital in the world for new renewable generation build.

CEC members have indicated WACCs of eight to 10 per cent in Australia depending on the level of contracting. At the lower end, eight per cent is for a fully contracted project. At the higher end, 10 per cent is for a fully merchant project. This compares to five to six per cent in the US and UK. Given these levels of capital costs, it is entirely possible that renewable investors will withdraw from the Australian market to invest in markets with less loss factor volatility.

It is not that clean energy developers deny that there are real, physical losses on the system that change instantaneously and need to be accounted for, but the current market framework for allocating these losses is no longer fit for purpose. In an energy market that is changing rapidly, the current regime creates enormous risk for investors.

One of the key issues with MLF risk is that it is unhedgeable. The AEMC has rightly suggested that a generator's MLF risk could be managed by entering into long-term contracts or PPAs. This, however, is not the industry standard. Customers do not want to take on MLF risk. In the handful of situations where the off-taker has agreed

to take on MLF risk, 100 to 150 basis points have typically been added to the contract for this risk.

The CEC was encouraged by the AEMC investor survey which looked to gather information about the quantitative impacts associated with project financing. In particular, we supported that it specifically looked to carve out the impact on WACC of the current loss factor methodology. We have urged our members to complete the survey and return these to the AEMC; however, we note that survey responses were due after the draft determination was release, so it is unclear if and how the survey input has been incorporated into the draft determination. We would like to better understand and see how the AEMC will incorporate these survey results into the final determination.

The CEC notes that there is limited quantitative analysis in the draft determination to support the AEMCs position. As an example of this, in addition to a limited analysis of the MLF risk premium, we note that the draft determination focuses on the AML versus ALF implications for generators. It does not recognise that large users also have an MLF. As such, no analysis has been provided of this. In assessing consumer implications that there is limited analysis of the direct implications to loads seems to be an oversight.

The CEC engaged Baringa Partners to provide analysis to support our earlier submission around the different objectives for a transmission loss factors framework, different methodologies and quantitative implications. We appreciate that quantitative analysis can be difficult, and we intended for the Baringa work to be added to the discussion about the most effective alternative to the current regime and to a robust analysis of the tensions between different loss factor objectives; however, it has been unfairly dismissed by the AEMC as stylised.

The Baringa report also acknowledged that their work did not delve into the impacts of a revise methodology on cost of capital. As a result, their modelled wholesale price reduction could be even more significant in the long-term once the effects of a reduced cost of capital and increased renewables investment are factored in. It is crucial that a decision on an issue as important as transmission loss factors is supported by quantitative analysis to justify the AEMCs assessment that not just ALFs but any change to the MLF framework would not meet the NEO. The CEC and our members are willing to assist the AEMC with a fuller quantitative analysis.

As a final remark, the CEC wishes to comment on the draft determination's statement about the AEMCs coordination of generation and transmission investment review. The AEMC concludes that the COGATI review provides the most appropriate forum for stakeholders to engage in discussing and assessing potential reforms that may be able to provide a long-term solution to their concerns regarding transmission loss factor framework. This statement does not acknowledge the substantial concerns raised by different stakeholders in relation to the COGATI proposal, which has since been recognised in the CEIG Energy Council communiqué

statement that the AEMC needs to engage closely with stakeholders as the COGATI work progresses over coming months.

The Australian energy market is complex. COGATI is adding additional layers of complexity through complex wholesale market reforms and complex new heading product. As mentioned previously, we need to ensure an encouraging investment framework for new generation in Australia to support the energy transition underway. Thank you again for your time and for allowing me to put forward the CECs views.

MR PIERCE: Thank you, Lillian. Mitesh.

MR KUSHWAHA: Good afternoon. My name is Mitesh Kushwaha, and I'm an investment manager in QICs global infrastructure division. I'd firstly like to firstly thank the AEMC commissioners for allowing QIC and the other speakers today to provide our views on the AEMCs draft determination on the transmission loss factor rules.

A bit about QIC: QIC is a leading investment manager with over $80 billion of funds under management, and QICs global infrastructure division is one of Australia's largest infrastructure investors, having committed investments on behalf of our clients totalling 15 and a-half billion dollars to date across 19 infrastructure investment. Our major clients include 13 of the largest Australian superannuation funds who in total manage hundreds of billions of dollars that represent the superannuation savings of a significant portion of Australian households, and it is these clients who are currently and will continue to be a significant source of investment into Australia's future energy infrastructure.

And one notable investment which is relevant for today's discussion is QICs investment in the Powering Australia Renewables Fund, or PARF, and PARF was established in 2016 through a partnership between QIC and its clients and AGL with an aim to develop and own approximately 1000 megawatts of large-scale renewable generation to support Australia's transition to a low-carbon economy. And QIC Global Infrastructure, on behalf of our clients, have an 80 per cent equity interest in PARF which translates to a committed $800 million of equity to PARF, and I should also note that PARF is a member of the Clean Energy Investment Group, and we are supportive of both PARF and the CEIGs written submissions and the CEIG presentation earlier today at this hearing. Since the establishment of PARF in 2016 and the significant financial commitment it has made to both the Silverton Wind Farm and the Coopers Gap Wind Farm in 2017, the investment environment in Australia has declined dramatically. Putting aside all the – the political uncertainty, which has also had an adverse impact in relation to the availability of capital and also the cost of capital in the energy sector, there have been significant developments in the regulatory environment which, in our view, has increased investor uncertainty, and therefore has reduced both access to capital and has increased the cost of capital for the Australian energy sector, and in particular for – for renewable energy.

In particular, the recent unprecedented variability that we've seen in marginal loss factors has created an environment with an – with a unacceptably high level of risk. Without constructive improvements to the current MLF forecasting, we are of the view that there is limited capital available for new renewable generation in Australia, and that any capital that is available will be much more expensive than what it has been previously. And we estimate that the weighted average cost for capital for greenfield development has increased by up to 25 per cent as a result of the increased uncertainty and volatility associated with the current MLF methodology. And this high cost of capital for greenfield developments will feed directly into higher electricity prices for end customers, which is contrary to the current government's energy policy and objectives and contrary to the achievement of the National Electricity Objective. So QIC supports the need to properly assess alternative methodologies to the MLF, in particular the average loss factor methodology, which quantitative modelling has shown will – will result in more predictable outcomes which will go directly to achieving the National Electricity Objective by producing loss factor estimates that are more stable and more robust without adding any undue complexity.

And to put a bit of colour behind this, according to AEMOs forecasts, there is 50 gigawatts of new generation and storage investment required by 2040 to replace retiring generation capacity and to meet forecasted demand growth, which QIC estimates will amount to up to $130 billion of new investments. So given this, it is paramount that the transmission loss factor methodology is able to deliver stable and reliable results, which the current MLF, quite frankly, is not delivering. If a more stable and predictable methodology such as ALF is not adopted, we are of the view that it will be extremely difficult to raise the debt and equity capital that is required to fund significant investment required in this sector. And we are already observing a sharp reduction in investor confidence which has resulted in a steep decline in the committed debt and equity capital investment in the renewable space due to the current MLF methodology.

And just to be very clear, we recognise that there is a strong pipeline of renewable projects looking to be built, but the debt and equity investor appetite to fund these projects has fallen away dramatically. Bloomberg New Energy Finance recently reported that renewable investments in Australia has plunged 49 per cent in the first half of 2019. Leading equity investors have publically stated they are withdrawing from the Australian energy market due to policy uncertainty and regulatory uncertainty as well. Furthermore, debt capital market terms are becoming much more onerous, with acute financial stress have – being observed across the sector, resulting in high debt costs, forced restructurings and forced degearings. So adopting a more stable and more predictable framework such as the ALF methodology will go a long way in restoring investor confidence. A high degree of certainty will allow equity investors to target lower returns, which will translate to lower electricity prices for consumers. Less volatility in cash flows will also allow lenders to provide more debt capital to new generation projects, also lowering the weighted average cost of capital and further reducing electricity prices for consumers. Furthermore,

the proposed ALF approach is simple to calculate and retains the locational signalling aspects of the existing MLF approach.

So to conclude, as a major energy infrastructure investor, particularly in the Australian energy sector, we urge the AEMC to engage and work closely and constructively with the CEIG and its members prior to any final decision being made. It is important that quantitative analysis is undertaken to understand the merits of both the MLF and ALF methodologies. In our view, which is supported by that quantitative analysis, the ALF approach represents the optimal balance between restoring investor confidence by making these loss factors more predictable and stable, as well as retaining the locational signalling aspects of the existing approach to assist with the grid planning objectives. Thank you for your time.

MR PIERCE: Thank you.

MR PIERCE: Now Joel, please.

DR J. GILMORE: Good afternoon. Thank you for the opportunity to speak today. I speak today on behalf of Infigen Energy. We're a renewable energy market participant and retailer to commercial and industrial customers across South Australia, New South Wales and Victoria. We have got about 1000 megawatts of operating, contracted or under constructed wind and firming capacity, batteries and GTs and we are committed to leading the transition to a clean energy future for Australia. As the other speakers have noted, there has clearly been a problem with marginal loss factors, to date. There has been some very large swings in MLFs.

A lot of investment going into places where in hindsight it probably shouldn't have or at least, not in those quantities. And the fact that very recent investments have been hit. And, yes, we agree there has been a real issue. But in our view, that shouldn't override the underlying laws of physics and economics and we shouldn't be trying to change those to solve this problem. This is really an asymmetric information and transparency issue, not a fundamental design problem. We shouldn't lose sight of why we have marginal loss factors in our market to start with. It was a very deliberate design decision, again, consistent with those fundamental economic principles.

And in the NEM, MLF serve two key roles, the first is to ensure efficient dispatch. The NEM operates on marginal pricing of what's the value of the last megawatt you deliver. So getting an efficient marginal price signal means applying marginal losses. And this can be quite material in dispatch outcomes, particularly around interconnected flows. And the reality is that MLFs really do represent the underlying physical operation of the grid. And we find it hard to support a change that is distortionary to power system economics. To be clear, we're not saying that the MLF framework is perfect, the real world rarely is.

But it is the best approximation we have now, given our technical capabilities, for marginal losses which balances the need for efficient dispatch without creating an

excess of volatility in hedge contract markets with respect to known volumes. So we support the AEMC's argument that moving away from marginal losses risks less efficient dispatch outcomes. And that can be quite significant for generators, investors and consumers. So the second role of MLFs is then to guide investment decisions. And that's part of that very sharp marginal price signal in the NEM that forces us all to sharpen our pencils and deliver the most efficient project with the best technology and in the best location, subject to the trade-offs between those.

And historically, MLFs have done a really good job of providing locational signals in the market. This is why we're really opposed to COGATI. There is already very strong location signals in the NEM for both congestion and for losses and creating a whole new framework, changing how we do pricing, new products that probably aren't very useful. We see that actually doing the opposite and hurting investment, at least, over the next five to 10 years. Certainly, we're spending a lot more time right now debating how COGATI goes into contracts than we are around MLFs. It's occupying a lot of our time. And to be running forward contracts beyond 2022 or 2025 depending on how you interpret the time horizon.

So coming back to the original point, "Do we think there has been a – that the recent outcomes have been good for the market?" No. "Do we think there is a need to fundamentally change the design?" Also no. The key problem and cause, as we see it, is that there has been a lack of transparency and guiding information available to market participants including the potential swings in MLFs and their sensitivity to new generation in the neighbouring areas or beyond. So there is clearly things we need to do to improve that transparency. And we see some of the proposals and the steps by AEMO recently around more regular updates, is a very positive step.

We have also suggested to AEMO that they could provide sensitives in their forecasts so we could see the first derivative around MLFs, how is that sensitive? And in the future a – a more form of fee for service arrangement where participants can go to AEMO, they have got the black boxes, they run the software, and get more of those sensitives under a range of scenarios. And this is a natural role for AEMO. And it doesn't prevent these big swings in MLFs. But helping participants to be aware of the possibility and to sharpen those price, locational signals. We're also aware that all of this good information can be swamped by various other policies.

Government driven CFDs which might not always operate – operate with the same ruthless consideration of risk that private developers would. We don't think governments should be writing CFDs. But if they are forced to, to achieve climate objectives, and we do need to act – and quickly, then they should be seeking guidance from AEMO in the first instance, both around the MLFs for the projects being contracted but also other projects in the area, what are those impacts. It's one thing to de-risk a project through a government CFD. It's another to blow up other participants in the market through that process. So we do think there needs to be strong – close communication there.

And, of course, a broader lack of long-term climate policy means that its' hard for us to develop a coherent pipeline of projects, with all the information that goes with that. So sort of up for all, up to all of us in the room to keep pushing back on governments for good policies and keeping AEMO in the loop. And we're thinking about whether the market is broken. We need to consider these recent experiences in context. We have had a huge investment boom to meet the LRET and state targets. In a very short period of time. In three years, we had 92 projects built, some $25 billion of investment.

And this has, this has – we all know that in commodity markets when you have got a classical boom and bust scenario then, well, there are some projects that are optimal and there are some that are sub-optimal. And just because they're sub-optimal – with the benefit of hindsight, again being clear – doesn't mean that we should be changing the whole framework of the market or socialising those losses. The poor suffering electricity consumer probably has been tortured enough and moving to average losses, socialising some component of transmission losses that belongs with investors, we're not sure that's the right move.

And if we keep shifting losses onto consumers then eventually there is going to be more interventions into the market. And that puts the whole market at risk. So we really do think that participants are best placed to manage investment decisions, how much capacity and where. But that means the market needs to – we need to accept both the upside and the downside risks and let the market operate for a while so we can have those clear signals. So in conclusion, Infigen absolutely supports the AEMC's draft determination. We think that the AEMC has fairly considered the risks and tradeoffs between spot market efficiency on one hand and the contract investment market.

We do hope they put down tools on COGATI ..... signalling we need. We don't think there's a need to change the fundamental frameworks in the NEM. It's not an easy market by any means, but we do think that the long-term interests of the consumers are best served by clear market signals, and I acknowledge that we have heard many proposals for changing the loss factor frameworks, but they all have the impact of muting those locational signals and have a high risk of leading to excessive losses in dispatch. So if you're surprised to hear us up here as a renewable energy developer and participant ..... don't be. We're in this for the long term and that means we need good policy built on the fundamentals of the economics and physics of the market and the ..... does risk adversely impacting the dispatch of those investments that have already been made and carefully cited in the market, including potentially Infigen's projects, and again, to reiterate, we shouldn't forget about the successes of the NEM to date and that is the market has facilitated a lot of capacity over the last few years.

At the end of the day, in our experience, the NEM is still investable. We're building wind projects. We're in the market to purchase wind and solar PPAs. We built a battery ..... from 240 megawatts of gas peakers and we are looking at what comes next. So MLFs are clearly a part of our decision project, but it's only a part and it's

certainly not the biggest challenge that we see to investment and, okay, to be clear, there are challenges. The connection delays for new projects, system security, proposals to mandate the free provision of services like mandatory primary frequency control and all the various missing markets that lead to unplanned interventions, whether by AEMO or by governments, and it's those markets and those issues that we really should be directing our attention if we want to ensure that investment continues smoothly into the future. Thank you very much for ..... today.

MR PIERCE: Okay. Look, from our viewpoint, thanks everyone for coming here today. We certainly appreciate the time that people take to engage with our process. There's no doubt that the experiences that you each bring – and not just to this hearing, but in the submissions and the other engagement mechanisms that we have with our stakeholders – is invaluable, and without that input, we couldn't hope to make the best sort of decisions that we're obliged to do. So I just really want to emphasise the importance of the input that you provide in helping us in our decision-making processes, and in that vein, you can be assured that the various statements that were made today – at today's hearing is one part of the process of – one part of the opportunity that people have to input into our processes will be certainly taken into account in our final determination.

I note the various avenues by which the Clean Energy Investor Group is suggesting some further engagement with the commission and certainly welcome that and we will have to talk a bit more about how we manage that, but also manage it in a way so that that is transparent to everybody else that's involved in this project. I also would note that, in the broader sense, the effect on investment decisions, irrespective of the technology at the moment, is being impacted by quite a number of things that are on the go at the moment and – of which MLFs and how they move is but one, but it is there ..... We, of course – and it's particularly important for our processes for us to receive written submissions and we are asking people to provide those to us by the close of business on 16 January.

It is – it always seems to me that every year, there's some important issue which we have to manage over this sort of Christmas period which no doubt puts additional strain on our stakeholders, but it's, I assure you, an unavoidable thing that we have to manage and which the commission ends up, despite our efforts to manage things a bit differently, always ends up having to deal with every year. The final determination, the schedule will be published at the end of February, 27 February, and I would hope, obviously, between now and – certainly between now and the closing of submissions that the various opportunities for direct engagement with participants will be taken up and that that engagement will inform the sort of submissions that people provide to us. All right. Once again, thank you for coming along today and I am now calling the hearing to a close. Thank you.

RECORDING CONCLUDED **[12.39 pm]**