

TRANSCRIPT

LEGISLATIVE ASSEMBLY ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into Tackling Climate Change in Victorian Communities

Melbourne—Wednesday, 26 February 2020

MEMBERS

Mr Darren Cheeseman—Chair

Mr David Morris—Deputy Chair

Mr Will Fowles

Ms Danielle Green

Mr Paul Hamer

Mr Tim McCurdy

Mr Tim Smith

WITNESSES

Ms Violette Mouchaileh, Executive General Manager, Emerging Markets and Services,

Ms Nicola Falcon, Group Manager, Forecasting, and

Ms Monica Morona, Senior Energy Policy Analyst, Australian Energy Market Operator.

The CHAIR: Welcome to the public hearing. Before we begin there are some important formalities that I must outline. All evidence taken today will be recorded by Hansard and is protected by parliamentary privilege. This means that you can speak freely without fear of legal action in relation to the evidence that you give; however, it is important to remember that parliamentary privilege does not apply to comments made outside the hearing, even if you are restating what you have said during the hearing.

You will receive a draft transcript of your evidence in the next week or so for you to check and approve. Corrected transcripts are published on the Committee's website and may be quoted from in our final report. I understand that you have been informed that today's proceedings are being broadcast live on the Parliament's website. Please be aware that the footage from the website can only be rebroadcast in accordance with the following conditions. The materials must only be used for the purposes of fair and accurate reports of the proceedings and must not be used in any circumstances for satire or ridicule or commercial sponsorship or commercial advertising. Broadcast material must not be digitally manipulated. Any excerpts of the proceedings must be placed in the context to avoid any misrepresentation, and remarks that are withdrawn are not to be rebroadcast unless the withdrawal is also rebroadcast.

Thank you for making the time with the Committee today. Could each of you please state your name and titles before beginning your presentation.

Ms MORONA: Monica Morona, Senior Energy Policy Analyst at AEMO.

Ms MOUCHAILEH: Violette Mouchaileh, Executive General Manager of Emerging Markets at the Australian Energy Market Operator.

Ms FALCON: Nicola Falcon, GM of Forecasting at the Australian Energy Market Operator.

The CHAIR: These here are for the purposes of recording. They do not actually amplify your voices at all, so just speak clearly so the people behind you can hear, and I would not be mucking with the microphones, because I think that might upset broadcast.

Ms MORONA: Firstly, AEMO would like to thank the members of the Committee for inviting us to attend today's proceedings. And we understand that the Committee would like to gain further insight into the integrated system plan and AEMO's work plan on distributed energy resources.

For your background, AEMO is the independent market operator and planner of several Australian energy systems. Specifically, we are responsible for the operation of the national electricity market and WA's wholesale electricity market, as well as aspects of gas and retail markets. Our functions are determined by statute, including the National Electricity Law and rules. AEMO also undertakes work at the request of the jurisdictional ministers and the COAG energy council. AEMO's statutory role is to ensure the security and reliability of Australia's electricity and gas supply, which we do at the lowest possible cost.

As set out in our corporate plan for 2020 to 2023, our board has adopted six strategic pillars for the delivery of AEMO's duties: reliable and secure system operations; future system design; adaptive markets and regulations; consumer engagement and access; digital and data; and people, culture and capability.

AEMO is technology agnostic in our approach. We provide information for decision-makers, to enable the participation of generation assets the market chooses to invest in and operate.

Ms FALCON: So one of AEMO's responsibilities is informing the design of Australia's future energy system through the preparation of the integrated system plan, or ISP for short. The ISP provides an integrated road map for the efficient development of the national electricity market over the next 20 years and beyond. It

aims to maximise value to end consumers by designing the lowest cost secure and reliable energy system capable of meeting any emissions trajectory determined by policymakers at an acceptable level of risk. It utilises the opportunities provided from existing technologies and anticipated innovations and distributed energy resource, large-scale generation, networks and coupled sectors such as gas and transport.

In the next 20 years over 60 per cent of the NEM's coal-fired generation fleet is expected to retire. We find a balanced portfolio of investments to be the most cost-effective way to replace this exiting generation capacity. This portfolio consists of market-led investments and large-scale and distributed renewable energy resources, which are firming with the combination of gas, including potentially hydrogen in the long run; pumped hydro; large-scale and distributed battery systems, including electric vehicles; and other distributed energy resources, such as demand-side response.

These investments are most effective when integrated in a well-designed physical marketplace that is a carefully augmented electricity network which has passed the appropriate investment tests set by the AEMC, the Australian Energy Market Council, and viewed by the Australian Energy Regulator. AEMO's draft 2020 ISP, that we published in December 2019, identified several priority grid projects for Victoria, including a minor upgrade of the existing interconnector between New South Wales and Victoria by 2022–23 and a much larger new interconnector between Victoria and New South Wales, named VNI West, to be delivered by 2026–27. This connection will give a Victoria much-needed dispatchable capacity to maintain reliability when the next major power station retires, which at this moment is expected to be Yallourn.

The route selection of that VNI West will depend on renewable generation development priorities in local areas. One of the options considered would connect North Ballarat and Darlington Point via Kerang, providing network expansion to support developments in the Murray renewable energy zone and the south-west New South Wales renewable energy zone. An alternative would be to connect North Ballarat and Wagga Wagga via Shepparton to support developments in the central-north Victoria and Wagga Wagga renewable energy zones.

Each option provides Victoria with access to Snowy Hydro's existing and future generation capacity and helps alleviate constraints from renewable investment in the north-west or central areas of Victoria. There is also a committed western Victoria transmission augmentation, expected to be completed in 2025–26, to help unlock renewable energy resources in western and north-western Victoria, reducing congestion and improving the productivity of existing assets.

Ms MOUCHAILEH: I might just talk a little bit about the distributed energy resources work that AEMO is doing currently in partnership with quite a number of people across the energy system. Distributed energy resources, which from our perspective include solar PV systems, storage systems and electric vehicles—whether it is microgrid or community based—are becoming a key driver of change in the energy landscape. Australia is leading the world in this particular area, and particularly homes and businesses. Just touching on what Nicola said, the integrated system plan forecasts that by 2040 across the east coast of Australia, including in Victoria, we expect quite a significant amount of distributed resources to form part of the energy mix to provide reliable, secure energy and less cost for our services to consumers both locally and from a whole-of-system perspective. We expect that at least 22 per cent of the energy will be supplied from distributed resources, and that could vary depending on assumptions that you do make. In Victoria we do anticipate that by 2025 or by the end of the 2020s rooftop solar will likely supply over 40 per cent of the entire state's demand—under certain conditions of course; it will depend on those conditions.

This transformation to a decentralised electricity generation model does create short- to medium-term system management issues, but we see those and the industry sees those as opportunities for the Australian system to design a future world-class power system and supporting market to encourage those investments and not only leverage those investments for those communities and consumers who have distributed resources but share those with everyone that is connected to the grid that does not have those kinds of resources.

So in recognising some of those challenges in the energy ecosystem we have stood up a program of work that looks at not only some of the technical challenges but the short-, medium- and long-term things that need to be done and put in place to really acknowledge as well as—you will hear the term a lot—integrate. But that is really to leverage distributed resources in the way we design the future and the way we actually design the supporting markets. Currently everything is designed—from the way that the energy system works and the network works, and the supporting market—to be very one-way. It goes from large generation down. What we

are trying to get to in the energy space particularly is to move to a two-sided system and a two-sided supporting market, and that is in effect starting to leverage all resources across the system, whether they are large scale or decentralised.

In terms of AEMO's distributed energy resources program, it is not any one organisation that is really driving it; it is in partnership with quite a number of people, from consumer advocates to new players entering the market to traditional retailers playing in the existing markets. It is energy market bodies—it is the distribution networks—who play a really critical role in this. We are very connected into some of the electric vehicle councils as well, just to make sure that we not only think about that but think about distributed resources from a whole ecosystem perspective and also working with our COAG and energy council representatives. With some of the Solar Homes work in Victoria we are working very closely with the Victorian Government and the Victorian stakeholders to make sure that we can effectively implement some of those policies in Victoria as well.

In terms of AEMO's distributed energy resources program, it includes quite a number of areas. It is trying to take a holistic approach here. The first one is making sure we have got the right operational tools in place. With the tools that we have today, the way we operate the system and the supporting market was designed to be very one way and assumes no distributed resources in place. We are in the process of uplifting those to make sure that we have got the right visibility and the appropriate tools to ensure that we keep the system secure and leverage distributed resources appropriately in the way we operate the system. So there is quite a lot of work happening in that particular space.

In terms of data and visibility, we have worked in partnership with networks in the last 12 months to put in place a distributed energy resources register, which actually provides visibility of where the DER is being put into the system so that we have got the right visibility to enable effective grid integration. That will go live on 1 March, which is next week.

Standards and protocols are quite critical to make sure that we have got the right capabilities, from technical capability right through to the way that the whole ecosystem communicates. You will hear a lot around communication standards and interruptibility and cyber standards, which are a key focus for us because we want to make sure that when consumers make choices they can easily switch providers as needed. So we want to make sure that the design is meeting consumer needs and can support changing consumer requirements as well.

And there is quite a lot happening in the market and the regulatory reform which is about trying to introduce other actors into the market, put the right signals and investments in place. There is a lot of work that we are doing with Energy Networks Australia in partnership to go, 'How do we actually put the right capabilities in place so that at the localised level and the whole of system we have got that working seamlessly over the next, you know, three to five years?', and a lot of work in the microgrids and standalone systems as well, so working with our colleagues at the Australian commission to enable the right frameworks to be put in place so that we can remove any blockers in that regard.

We have also, to support that, got a pilot program that we have put in place, and the whole point of the pilot program is really to try and design and execute on a small scale innovative sort of approaches to the integration of distributed energy resources. We have done two. We have done one with ARENA to leverage demand-side response into helping keep stable under emergency conditions, and it has been a very successful trial that we will roll out and embed into the new frameworks. We have got one in train at the moment which is called a virtual power plant, so in effect enabling parties to aggregate distributed resources and offer those services into grid operation, both to support frequency and other types of requirements to keep the system stable.

And we are just about to embark on quite a large program of work which is looking at distributed resources at the localised level. Our first project will be in Victoria in partnership with AusNet Services and Mondo to leverage some of the community resources in Yackandandah, and we will look to extend that hopefully across Victoria. So that is quite an important initiative to go, 'How does local and network and whole of system work together to make sure that local communities and other consumers connected to the grid get the value from some of those resources?'

So there is quite a bit of work going on in partnership with a number of players in this particular area, and we see it as a very important program of work to help shape the future landscape. I might just leave it there. I just want to again thank the Committee for inviting AEMO to attend this hearing, and we are happy to answer any questions that you have.

The CHAIR: Terrific, I am sure all of my colleagues will have some questions. It became apparent through the course of the Inquiry that there is not necessarily a great deal of transparency about the capability of the grid to accept additional renewable energy. We heard I think in north-east Victoria of three solar farms that were going through building their farms and they were informed that they would only be able to distribute I think it was 50 per cent of the energy that they generated back into the grid. It just seems to me that if the three developers were aware of that, then perhaps one of those developers would not have proceeded and that spare capacity would have been taken up without excessive generation being achieved.

As a regulator, how might we go about best informing the market about where there is a spare generation capacity and where future investments might be made, subject to budget processes and the like, so that renewable energy developers can best locate their projects where there is capacity? Is there a way in which we might have more transparency around that so we do not see that private sector investment go to waste?

Ms FALCON: I will take that question if you like. There are a number of things that we are doing. We are clearly very aware of those issues in that particular part of the region. Some of the work that we have already done includes putting out maps now to demonstrate where connection interest is in the regions so that other developers can actually get a sense, even if some of the confidential data needs to be protected still, of where the locations are and where there might already be a number of competing projects for the same spare capacity. The integrated system plan is also in many ways intended to be almost a circuit-breaker if you like, so to start getting ahead of the information and the planning and the decision-making that is made so that we can actually start flagging where there is spare hosting capacity on a transmission system, where there are better areas of system strength and therefore encouraging investment more into those areas. We are certainly also talking to the bankers, and investment seems to now be taking that more seriously to say, 'Well, if you are coming up with a project, you're wanting funding but it's not actually part of a renewable energy zone we've identified in the integrated system plan, what have you done in terms of your due diligence?'

But there are also a number of operational things we are doing. Some of the issues that have emerged are actually very technically complicated, and some of the models that we have had to develop to be able to better understand those capabilities are still ongoing and something that we are working with industry on, but to the extent that we can actually share some of that modelling work and analysis to allow others to actually also get into the really detailed engineering and understand those risks is something we are also working on very closely with them.

The CHAIR: Because it just seems to me that if we are going to have a more decentralised grid moving forward, providing that intelligence to the market is going to be critical to ensure investment happens and that the sector has confidence, those investors have confidence that the market is well informed about where that capacity is and where it is not.

Ms MOUCHAILEH: Can I just add to Nicola's answer. Probably one of the pieces of work just to build on some of those short and medium measures is some of the work that we are talking to the Government in terms of our corporate plan and the role that a potential simulator could play in helping to inform. If that gets up, it allows people to actually use simulation to understand where to locate at the bulk system. So there are a number of short-, medium- and long-term initiatives, and the simulator is one of those long-term initiatives that we think is very important in creating the transparency so that people can go in, do the simulation and understand where best to locate so they can make the most appropriate decisions.

That is at the bulk system transmission. When you go down to the distribution side of things one area I think that we have been working very closely with a number of the networks is to get a lot more visibility in terms of where is the excess capacity, what is the hosting capacity in those areas and how do you get then to the transparency of that to understand where some of the distribution-connected resources might need to go and give third parties—like through virtual power plant—an ability to locate those resources, aggregate them and then offer consumers locally and whole of system benefits.

That is probably its infancy, I would say. The level of transparency or understanding around local capability and constraints is something that a lot of the networks are working on as well—an important piece of work I think.

The CHAIR: Just in terms of very local communities, obviously with respect to people installing solar panels, depending on where you reside within the grid there might be capacity to send electricity back into the grid or there may not. What role could potential localised batteries attached effectively to power poles play in—I am going to call it a circuit, a block?

Ms GREEN: A microgrid?

The CHAIR: Well, not a microgrid. A battery that just provides balance to the grid in some of these cul-de-sacs, for want of a better term. Do you see that sort of technology potentially being useful for providing a slight enhancement in a very local context to support the deployment of solar panels? Is that type of technology being looked at either by yourselves or by the networks?

Ms FALCON: We sort of talk about it in terms of community energy storage as much as anything, don't we? So there are a number of ways. You can put your storage obviously on your own home. There are certainly new development areas where they are looking at options for community energy storage to really maximise the value for that community, and you can do that up to that point where that meets all of their consumption requirements. Obviously if you are going to put a whole lot of renewable energy generation in an area, at some point that surplus to requirement will need to go back into the grid. But, yes, those community energy storage options are certainly quite a viable option.

The CHAIR: So I am not talking about community ownership of it. All I am saying is using balances—

Ms FALCON: To service a community.

The CHAIR: to provide balance to that little bit of the local grid. It would be owned by the network or whatever, and it is just a point of storage along their system.

Ms MOUCHAILEH: There are restrictions currently from a regulatory perspective in terms of a network's ability to own that. That is something that is being looked at as part of the energy securities board, given some of the reforms that the Western Australian Government is talking about around storage at the network level and enabling networks to invest in those. So that is something that is being explored, but third parties could absolutely put in storage. The idea there is it is a network or a commercial kind of construct, and how do you use that storage, both for the community and for the local network, and then—absolutely to Nicola's point—offer services for the whole of the system so that those values are actually released to manage things at various levels? So absolutely that is something that is being looked at at the moment, but there are current restrictions in terms of who could do it.

The CHAIR: So from a Victorian perspective, should that be a piece of work that the Victorian Government should look at about how we might better support that capacity or that opportunity?

Ms MOUCHAILEH: I think that is something that the Victorian Government would need to consider in terms of: is it part of its energy policy priorities? If it is, then yes. And if you want to talk about where those locations are and the analysis around that, we would welcome working with the Government to help work those things out.

The CHAIR: Because it just occurs to me the more panels we employ the more parts of the grid we are going to discover are limited.

Ms MOUCHAILEH: Absolutely.

Mr FOWLES: So do you think batteries are better considered as generation assets or network assets?

Ms MOUCHAILEH: Well, I think it is both. It depends on what you are trying to achieve. If you want to actually unlock the value from the resource for trying to solve just one problem, then you might take it down a network path, but if you want to invest in the asset and want to make sure it is being unlocked for various value streams—a collar system and other things—you might want to think about defining it a little bit broadly.

Mr FOWLES: So what is the best way to encourage mass deployment of batteries then to ensure that we have the network that meets the dispersed generation model but also provides that reliability aspect?

Ms MOUCHAILEH: It is probably a combination of things, I would think. Some of that is about, to my point before, Victorian energy policy. If that is where you want to take your mix of resources, you could do it through those particular avenues. There are things around the regulation that you would need to look at and which I have already noted are being looked at across the east coast as well, not just for Victoria. There is also market reform that just needs to kind of be put in place, and there is some work just to make sure that we are not creating barriers to the leveraging of any of those resources that go in to manage localised network issues or whole-of-grid issues through retail or other business models, because we want to have all business models be able to play and offer resources to manage security and reliability issues at the localised and whole system levels. So it is probably a combination of things I think you would need to think about doing, depending on where you want to drive your energy policy.

Mr FOWLES: So in the context of some pretty aggressive renewable energy targets, it strikes me that it is just madness that we have got renewable generators being capped in terms of what they can put into the grid. How quickly can we address that in the system, how expensive is it going to be to do that and who should pay for it?

Ms FALCON: There are a number of questions coupled up into one. You may or may not be aware that at the moment any transmission development, for example—and that could be a network or non-network development, which could include batteries—and anything that is a regulated asset needs to pass a regulatory investment test, which means that it does not necessarily guarantee that there is going to be no curtailment of renewable generation if the transmission is going to cost too much to actually relieve that capacity constraint. So we need to follow a set of criteria to demonstrate that any investment is cost-effective and that it will actually deliver benefits more broadly to the market, not just for that particular local area, which will mean that inevitably there will be times when there will not be a business case to justify expanding the transmission network to access generation that potentially might have been built in a location that is congested. Different options are available at different costs, and really it is bespoke; you need to assess each option that is presented to you for addressing the particular problem that is there at hand and working out at that point whether it is cost effective or not. So that question of how expensive it will be depends on what the value it might unlock is and therefore whether it actually passes the cost-benefit assessment.

Mr FOWLES: But does that cost-benefit analysis adequately factor in the imperative of creating more renewables in the entire system? Do you think it is the right mechanism? Because from our perspective hearing that there are these new renewable generators and the fact that they are getting their input into the grid capped, I mean, that just feels *prima facie* to be running counter to the objective of maximising the number of renewables from the bar to the grid.

The CHAIR: Particularly if there were opportunities for one of those three parties to go, ‘Well, I can move over to this geographic location where I know there’s capacity’.

Mr FOWLES: Yes, exactly right.

Ms FALCON: Well, in fact that is part of the problem, because if there is an option for them to have moved over to this part where there is capacity and you could have avoided the need to build transmission, then you have to actually think about those options. There could be winners and losers out of that; the investor that has chosen the congested area of the network is not going to be as favoured as one that has got a spare capacity. But to your point, is that cost-benefit analysis adequate, there is a very, very narrow remit to it in that it has got to focus just on market benefits to consumers of electricity. So it does not consider some of the broader public policy objectives that might be available in terms of unlocking jobs in a particular development area or anything like that. It literally looks at it from a perspective of: is it the lowest cost way of supplying electricity demand? So there are some limitations in terms of what it can and cannot look at.

Ms FOWLES: So when we are talking about lowest cost, does that give any value to a zero carbon option as opposed to a high emission option?

Ms FALCON: Currently under the national electricity objective there is no reference to sustainability, so it has got to be lowest cost.

Mr FOWLES: Should there be?

Ms FALCON: I will probably answer it back in that we have certainly got sustainability as part of our mission and values. But our role as the Australian Energy Market Operator is not to set policy but actually to implement it at lowest cost.

Ms MOUCHAILEH: That is a question I think, because that sits in the legislation, and that is really a question for the COAG energy council, who will look at that objective and go, ‘What are we actually trying to drive in terms of outcomes for the whole energy ecosystem?’. So they have considered that in the past. If that is something to be revisited, I think that is really a question for the COAG energy council.

Mr FOWLES: To Darren’s point about the hypothetical, the three energy businesses, there is enough for one facility in a particular part of the network. Hypothetically, all three could do 99 per cent of the work, invest a huge amount of time and money in getting a proposal up, energy company A gets through the gate first and at that point energy companies B and C have totally wasted that effort. What is the policy rationale of holding confidential the fact that those three businesses are sort of bidding effectively for similar or perhaps even identical projects?

Ms FALCON: Well, it is not so much a policy rationale for keeping that confidential. It is most often them requesting that we keep their bid confidential from other participants.

Mr FOWLES: But we have enabled that as policymakers. We could presumably introduce a rule saying, ‘No such thing as a confidential application anymore’, because there is a public policy benefit in not burning a whole bunch of time and money and to directing your energies to a part of the grid that might be better suited to it.

The CHAIR: A way to do that potentially could be that: ‘This part of the grid has this amount of capacity. We have got three applications before us; this is where they are at in their stage of the process’. It may not identify who the investors are or specifically along that line where that application is being made, but just provide clarity into the market that there is some competition for that available capacity. Like, is there a way to do that somehow or another that is sensible?

Ms FALCON: There is, and there is actually a rule change that came through and has just into force literally just this year around key connection information. So now there is a requirement for every network service provider to provide to AEMO, and we publish it on a quarterly basis, any project once they have made a connection inquiry—so right through. And as they change and they get their application granted and so forth we update that information. So that is exactly to address that issue—that that information will now be published on our website.

Mr FOWLES: But if they have made an inquiry, how then do you respond, or how does AEMO manage the competition for that capacity? If 300 megawatts of inquiry have been made and there are only 50 megawatts of capacity, how do you then manage it from there on in? Do you just rely on those applicants to go slow or go fast in order to be first through the gate, or is there some information-sharing mechanism?

Ms FALCON: We do not actually decide what capacity goes on and at what limit we say no more capacity. We will connect up any applicant that has met a certain criterion in terms of power system security and quality. We have got a number of things that we must follow when we look at a connection inquiry, but one of those criteria is not, ‘Sorry, this area of the network is full; you cannot connect anymore’. That is still then a risk for that business.

The CHAIR: So, yes, you can connect, but ultimately—

Mr FOWLES: You might not be able to sell any of the power.

The CHAIR: we will only accept 50 per cent of what you are capable of generating or whatever other figure.

Ms FALCON: Well, yes. It does not quite operate in terms of an acceptance that we would literally, if we needed to manage the power system securely, risk constraining. And that is not about who got in first either; it is literally about the physics of the system as to how we would manage that.

Ms MOUCHAILEH: But going back to the original question, I think it goes back to the point that was made earlier around making sure some of these things are a bit more transparent and people have the information at hand so they can make those commercial decisions. So if you have that information at hand—and there are some rule changes in place and other pieces of work we are working in collaboration with the industry, including some of those developers in those areas, around ‘Well, what does that transparency look like so you have got what you need to then make the decisions around whether you are willing to take that risk on or not commercially’. So it does go to information and transparency more broadly I think.

Mr FOWLES: What powers do you have to direct the transmission networks to pre-empt future generation rather than just respond to it—to actually say, ‘It’s sunny up north. Make sure you’re upgrading lines there so there is that opportunity for people to be appropriately sited where the natural resource is rather than them going, ‘We’ve had all these inquiries. Now we should start thinking about it’, and five years later magically the powerlines appear?

Ms FALCON: The integrated system plan and the rules that are getting changed around actionable ISP is probably the greatest power we have to say, ‘We can see that this is where in the future there is a lot of development interest going on. We think that it is going to be a cost-effective way to augment the network so that you can accommodate that, ideally through interconnectors as well that will enable and open up some of those zones’. The action of the ISP—they are required then to go off and do their regulatory investment test to assess whether it still delivers benefits to consumers. So that is about the limit of our powers to instruct them to go and invest.

Mr FOWLES: So if I found some phenomenal geothermal resource in part of Victoria that currently has very limited transmission infrastructure, would you have the ability to direct AusNet or whomever to actually support the development of that resource?

Ms FALCON: We would have the ability to tell them to do a regulatory investment test, but that would then have to go through that process with the oversight of the AER and others to determine whether it goes ahead.

The CHAIR: So just thinking about south-west Victoria for a moment, it is windy and there was the Alcoa transmission line. I remember some of the early renewable energy maps that were released to the market identified south-west Victoria as a particularly good place, and there was obviously clearly capacity to export the electricity to the grid because there was that asset already there. Should we be looking, or is your entity looking, at where there might be an opportunity to build a greenfield line like that, where we know that there is a particular set of circumstances which would lead to a high take-up of whatever type of renewable energy for that geographic location? Is there a capacity to do that?

Ms FALCON: Yes, it does come a down to a little bit of a chicken-and-egg issue that the ESV is looking at through what they call COGATI, which is coordination of generation and transmission investment. At the moment the burden of proof does actually really rest with us to demonstrate that there is not going to be a risk of a stranded asset. So if we were to build the transmission on the anticipation that this generation will come, and it does not proceed, then that is a risk that would then be transferred to consumers because they would have to pay for transmission that is no longer needed. The chicken and egg is if you have certainty that that geothermal plant is now committed and will be built, then the benefit assessment is pretty strong to say, ‘Yes, we now need transmission to get out there’, and it all goes through quite swimmingly.

The CHAIR: I am thinking of say a place like Sunraysia. You could potentially build a transmission line from effectively Mildura to Bendigo or wherever the logical point is, and then it demonstrates to the market that is what you are going to do and effectively then you would anticipate a whole lot of opportunities for solar energy at a commercial scale to be built along that transmission line. I just think that could potentially be a logical example.

Mr FOWLES: It is even built into the name.

Ms FALCON: Yes. Look, it is very consistent with what we are hearing from the developers—that at the moment they are getting to a point where, ‘Tell us where there’ll be new transmission and we will actually develop in that location’. So it is trying to break the old patterns, definitely.

Mr FOWLES: Cart-horse nexus, yes. So to what extent then—and sorry, Monica, we will come to you—are the lags making things uncommercial? I am Joe solar developer. I want to put a 10 megawatt facility in position X. It requires AusNet to upgrade some transmission at the site. It meets that regulatory cost-benefit test, but it might cost me six months to build the solar farm and it might take three years to get the transmission there.

Ms FALCON: Plus, yes.

Mr FOWLES: So does that actually cruel our chances of getting far more renewables into the network, and for that reason shouldn’t we be pre-empting by providing transmission assets to places that are windy and sunny?

Ms FALCON: Or looking at a way to coordinate that development of the generation and transmission with a bit more of a plan as to not only where new generation is going to be built but when generation is going to be retired, so that we can actually make sure that the assets are there to support them when they need to come online.

Ms GREEN: But that seems to me it goes not just in the context of climate change. I represent a growing electorate, and I hear numerous consumers and numerous developers that have got really significant—whether it is housing or commercial—developments and they are waiting years for power.

Ms FALCON: It is demand, generation—everything. A coordinated vision plan is what we are certainly trying to move towards with integrated systems.

Mr FOWLES: And who ultimately makes that happen? Like, where does the political imperative and the regulatory imperative come from? If, for example, we were to address that issue and build transmission where it is windy and sunny, what do you need as the operator to have happening on our side of the fence and on the Federal Government side of the fence to actually ensure that we are putting the cart before the horse?

Ms GREEN: And the need for where power is. The Victorian Government, we do planning for water and sewerage inside the urban growth boundary. We know where it is going to be, and if we need to supplement the water authorities’ budgets we do that, but in a privatised electricity network what is the mechanism?

Ms MORONA: I might answer that one first, because that is a distribution network issue rather than something that is specific to AEMO. So we probably do need to separate those two issues because that is quite different to the ISP, which really goes to the heart of that overall plan, and I think we do need to just keep coming back to that as an AEMO responsibility and remit. That is the primary vehicle that we use to identify all of these things that we are talking about at the moment. But I might throw to Nicola to get to a little bit more of the specifics about anything that we are looking at at the jurisdictional level.

Ms MOUCHAILEH: The integrated system plan is, to your point, Nicola, what we think needs to happen to be able to make sure that the resources come on in the system. In terms of how it gets actioned—I think this is to your question—those sit with government, networks, regulators, at the end of the day, if I am going to answer your question honestly around ‘How do you action it?’. We have got a plan out there. There may be other things that government want to achieve in terms of building transmission and other network infrastructure to meet other kinds of community and state requirements. It requires decisions by government, networks and the regulators to action those. AEMO does not actually action them—it does not have responsibility to action them currently.

Mr FOWLES: And you will forgive us for picking on you, because you happen to be here—

Ms MOUCHAILEH: No, no, no.

Mr FOWLES: But the reality is that core issue of building renewable capacity is great—getting the electricity to market is bloody fundamental to that. So, what do you—perhaps not you—what does the market

need from government to ensure that that happens? You are saying it is a combination of regulators, government and the operators. That feels like a cat-herding exercise. If you had a clean sheet of paper—

Ms GREEN: Yes, who's the dog?

Mr FOWLES: If you had a clean sheet of paper, what would you do to ensure that new renewables can come onstream efficiently. Based on the establishing odds, I think it is completely reasonable to foresee that solar and wind are going to be a part of the mix for at least a generation now. Knowing that, what would you like to see, or what do you think the market ought to see to have that happen?

Ms FALCON: If we were in a wish-for-everything-you-want environment, having certainty about where the generation is going to be located makes it a lot easier for us to be able to plan how everything should connect together. I mean, you know, it is a system of systems.

Mr FOWLES: Sure.

Ms FALCON: The problem is that we deal with—and the reality is that there is always going to be—uncertainty, as you have pointed out yourself. You know, battery storage can be imagined and built within two years, whereas we have to take a lot longer to build our transmission. So unless there is some policy from government—

Mr FOWLES: But in terms of places that are windy and sunny, we know; right?

Ms FALCON: So you would almost be saying, 'We're going to put in support'—so you have got your Victorian renewable energy target, which is a regional target, something that is more subregional, that means it is a public policy that then we implement and say, 'Well, we know that there is backing behind that. We can now go and plan it'. It actually helps break some of that uncertainty for us to be able to plan.

Mr FOWLES: So if we as Government directed or said to the market, 'In addition to having a renewable energy target of X, we anticipate we'll be supporting wind farms in this subregion, solar farms in this subregion, hydro in the fairly obvious subregion', do you think that would assist—

Ms MOUCHAILEH: Yes.

Mr FOWLES: the market and ultimately transmission infrastructure being sent to the right spots?

Ms FALCON: We would then be able to look at the system and say, 'What's needed to facilitate that generation in that area?'.

The CHAIR: I think I am going to ask the same question. So the Alcoa transmission line supports south-west Victoria, it is windy and it was beautifully located there in the 1980s. That is fantastic. Should we be looking as a government or as a Parliament at creating a similar pipeline to support solar, which I would think could be somewhere between central Victoria up through to Mildura basically, where it is sunny? Would it be actually helpful to the market if Government said, through whatever mechanism, 'We're going to build that and they will come'?

Ms MOUCHAILEH: I do not know if we have done the analysis to be able to answer that question thoroughly enough.

Ms GREEN: It might be to Bendigo, but it might be to Adelaide too.

Mr FOWLES: But hypothetically if there was a very sunny place or a place that was particularly well located for solar assets but is currently supply constrained, would it assist in getting transmission infrastructure there sooner if we flagged that very publicly as being a priority route?

Ms FALCON: I mean, to Violette's point, I think it would be preferable if we used that as something we worked with you guys on, because if that is a location you have chosen but we said, 'By the way, it's going to be really, really expensive to be able to connect up to that area', you would want to be able to have that balance to inform your decision. So I think it does need to be a partnership we would work through.

The CHAIR: Okay, but what you have just then flagged is that those types of discussions are potentially not happening to the extent that they could.

Ms FALCON: I would say that in the last couple of years they have been happening quite a lot more and we have quite common discussions, not just with Victoria but with other jurisdictions as well, to understand where they have got those priority focuses. So, yes, that needs to be a continuing discussion.

Mr HAMER: These are sort of generally still related. At the start of the presentation, you talked about a transmission through to New South Wales which was seven–eight years off in terms of when you think it would be planned to be done. Is that just purely an interconnector, or is that sort of what we have been talking about in terms of actually upgrading the transmission to go through some of those particularly northern Victorian solar sites? I was having a look at the assets in Victoria and there is an enormous amount—I mean, they are still at the inquiry stage, a lot of them, but there is an enormous amount of assets in that northern belt already before there is even a specific proposal on the table. So I guess just understanding whether that sort of addressed some of the issues we were talking about and then also what is driving that date? Is it just purely that economic cost benefit, that it will not be economic to invest until that time? They are not sort of discounting some of those other environmental factors and other factors that we have talked about?

Ms FALCON: Sure. To your first question, yes, absolutely, the route selection and the scale and need of any interconnector, including that in VNI West, is absolutely based on considering where the interest in renewable generation is and where we can most cost effectively open up those areas from the west. Now, it is not going to reduce completely the congestion—there will still be some curtailment required at times—but the route selection is definitely thinking about where the interest in renewable generation is in that area. The time line, that 26/27 time line, is the absolute best case time in that we believe, if we started today, by the time we went through the planning approvals, environmental approvals and then actually started construction, that is the absolute best timing that we would be able to get that transmission line in. It is quite a large bit of infrastructure.

Mr HAMER: So it is just that from a physical development point of view that is the earliest time frame that it could be delivered?

Ms FALCON: Physical and planning. So I think the construction window is maybe three years, but the rest of it is getting everything else—there is community engagement and everything that will be necessary.

Mr HAMER: And who pays for that?

Ms FALCON: So that will end up ultimately being consumers for something that passes the regulatory investment test that we talked about. It then goes—the transmission network service providers end up having the money put in their RAB, and then they will be able to charge the network charges to consumers.

Mr HAMER: I have got another question which is relating to payment, and this is probably a broader question. I think you mentioned the potential of rooftop solar providing about 40 per cent of the demand or that amount?

Ms MOUCHAILEH: Under certain conditions in Victoria.

Mr HAMER: Yes, under certain conditions. So obviously that provides some challenges for the energy distribution companies and then potentially changes the cost. Does the cost recovery become more difficult for some of the major infrastructure when so much local energy is being distributed? Have you done any work in that space?

Ms FALCON: One of the things that we have done with our integrated system plan is we went through quite a significant period of consultation on scenarios of what the futures might look like, including what would happen in a future when you have got a lot more PV build and distributed energy resources; does that change the business case for that transmission investment. On the actionable ISP projects we have identified, including that VNI West, is one that is robust to a number of those future worlds, including more distributed energy. So while it might change the absolute net market benefits, they are still positive and beneficial.

Ms GREEN: I am not sure whether you heard earlier, I asked a question of Mr Thornton from the bushfire CRC about when we had been in Yackandandah and they had been talking about having had their own power

to be able to continue to fuel fire trucks et cetera. I was surprised—and I am not an engineer and I am a novice in these things—but they were saying that there were AEMO safety barriers to them actually being able to operate their microgrid, even in times of emergency. I mean, I think it is in times of emergency, but I have also been thinking post the royal commission and post the impact of Black Saturday on my electorate, could there be a future particularly for smaller tourist towns, remote towns in the context of code red days when distributors are able to shut down the grid? AEMO might say, ‘Okay, you can run your grid today’, which will then mean that they are still open for business, but also vulnerable people there, they might then have a safer place to go to be safe from heat or a potential fire. But just if we look to a future where there are going to be a lot of those summers and you look at all these towns that have had such an impact not just from the fires but from lack of power, what do you think we would need to do to be able to do that, so to keep those places open for business and safe?

Ms MORONA: I was just going to say this is quite a specific one. We might need to take a little bit more time to get some detail for you. But perhaps we can answer at a high level.

Ms MOUCHAILEH: Yes, particularly because that is something we would need to work with the distribution network on in terms of how you could enable that from a local safety perspective. So that is probably something I might just take away and have maybe some discussions with our distribution networks in some of those areas, because some of those calls do get made by the local network to keep, and we work very closely with them to make sure that we minimise safety risks under those circumstances. But certainly it is something we will take on notice.

Ms GREEN: Even in terms of climate change, there is climate change and there is safety. But hearing in the last few days about how many towns had the supermarket running on a diesel generator, I mean, I just sort of think: why should they have to do that if there was solar capacity and battery storage in the town?

Ms MOUCHAILEH: And it also goes to some of the work that we are doing in terms of resiliency into the system, I think—the broader question. We are doing quite a lot of work in that space with governments around ensuring there is resiliency in the system under those conditions.

Ms FALCON: We are. We have been working quite closely actually also with the Bureau of Meteorology and CSIRO in the last couple of years to better understand what the vulnerabilities in the system are, not just from bushfires but from climate change and extreme events and compound extreme events, which seem to be coming up more and more. I know, as part of a broader collaboration, we have been having discussions about exactly the concept you are talking about: sort of the grid of microgrids, where when needed you can actually de-energise and operate safely as a microgrid community. So lessons learned from summer over the need, whether it be evacuation centres and the need to be able to have power on stand-by for those centres so that people can keep up with the telecommunications. All of those things are certainly being looked at very closely, but it is part of a broader industry discussion rather than just only AEMO.

Mr FOWLES: Do you reckon community groups like that, or those aspirations even, are adequately enfranchised in the decision-making process? Obviously the distributors, the generators, they all get a seat at the table, but do you think those other things are in the thinking of the regulator, of the operator?

Ms MOUCHAILEH: I think they need to be more involved. I mean, we do have, as part of some of those discussions, consumer representatives at those discussions, and we have seen that really increase more so as part of our processes on the integrated system plan. I know the Australian Energy Regulator has a consumer challenge panel that is part of some of their decision-making. I am seeing a lot more of consumer voices being part of that conversation, but in terms of resiliency, I think there is absolutely a seat. We need to hear from the communities around their needs to make sure we design for them.

Ms GREEN: But particularly in the context of essentially we have had these campaign fires that have impacted huge areas of communities for many, many, many, many weeks, and so it is not just the smoke but it is the lack of power. Surely it is not actually going to impact the bottom line of distributors and generators. For these smaller communities the economic impact and mental health, everything else, has been massive—towns like Mansfield, for example, that have not been anywhere really near being impacted, but their economy has been gutted. If they had their own microgrid—I do not even know what they have got around there—then they could say, ‘Look, we’re open for business. Still come to Lake Eildon. You’ll be able to refuel your houseboat’.

What we heard at the round table with the councils up in the north-east, and I suppose it is something that Government will need to review because of the first use of the state of disaster, councils were just saying that it just meant that because they were evacuated so often then people just went, 'Well, we're just not going anymore'. When we asked local councils too, for example, 'How many of your relief centres or your neighbourhood safer places or where your vulnerable people go'—and this might be just from heat—'how many of them had off-grid power?', they all said none. I just thought, 'In future, God, shouldn't we be doing that?'. It is almost like for each township you would say, 'Well, you've got to have at least two public buildings that are going to have their own power, and why should it be a silly bloody diesel-operated generator when it could be a less dirty and cheaper option'. What the Yackandandah people said to us when we said, 'Okay, you were under threat from fire for weeks and that has really impacted on your businesses. Given you generate so much, could you have run your microgrid?', was no—and you said it was a whole lot of people, but they said to us specifically it was about the safety of the grid and that they could not do it because of AEMO's regulations. Is that something specifically you guys could look at?

Ms MOUCHAILEH: We might need to go away and look at that one and take that on notice and reply back.

Ms FALCON: Yes. We are not familiar with that exact example.

Ms GREEN: Just on that too, because the thing will be too that since the royal commission the distributor has got the ability to shut down the grid when there is no threat; it is just code red. So for the insurance industry long term, for tourism you think, 'Okay, they've got all their fridges stocked up and they could actually preserve their food and keep trading if they could use those microgrids'. Even if we were able to just look at it, you would say, 'Okay, Diamond Creek and Hurstbridge know you are part of metropolitan Melbourne. We are not going to give that freedom to you because that is going to impact the distributor's bottom line'. Kinglake is a bit further and those small communities—

Ms MOUCHAILEH: So we will definitely look at that question around Yackandandah and we will come back. We are happy to provide more information around some of the resiliency work and how maybe that work might be able to address some of the broader questions.

The CHAIR: I am happy for you to take that on notice. If you could have a look at Yackandandah—

Ms GREEN: As a case study, but its applicability more broadly.

Ms MOUCHAILEH: Yes. Sure.

The CHAIR: That would be, I think, beneficial. Are there any other questions? I am conscious of the time.

Mr FOWLES: I just wanted to clarify the structure of the rule setting. The commission makes the rules, the regulator enforces them—is that right? Then the operator—

Ms FALCON: Adheres to them.

Mr FOWLES: administers them practically.

Ms MOUCHAILEH: That is exactly right. You have got laws that are set by the COAG energy council, and South Australia is the lead legislator to get that through and then other states apply it. You have got rules that then are set by the Australian Energy Market Commission, and AEMO and the Australian Energy Regulator apply those to operate the system, and the AER has got responsibility for regulation and monitoring around compliance.

Mr FOWLES: So why is the AER separate from the commission?

Ms MOUCHAILEH: Those were decisions made by the COAG energy council 11 or so years ago when they thought about the governance structure for setting policy, setting rules and regulating and applying.

Ms MORONA: It probably helps for context that the AER is actually part of the ACCC so it is a separate body and obviously aligned from a more economic perspective with that Commonwealth agency.

The CHAIR: Thanks, everyone. Thank you for your time.

Witnesses withdrew.