Energy Futures - *Is it time to leave the grid? The rise of distributed generation and the consequences for consumers and the electricity sector* – *28 May 2015*

1.4 million Australian homes have installed solar energy to save money and contribute to addressing climate change. With the prospect of cheap battery storage, maybe they also expected to disconnect from the grid. But, has the result been all that we expected and what does the future hold? This *Energy Futures* seminar explored the economic case for solar and how we need to get network prices and policy settings fixed to ensure that solar really can help deliver fairer, cheaper and more sustainable electricity.

Moderator: Tristan Edis, Climate Spectator

Speakers: David Blowers, Grattan Institute
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DAVID BLOWERS: Thank you all for coming this evening. So, the topic of tonight's lecture is, "Is it time to leave the grid?" Well, the answer's maybe, depending on where you live, but before we go to that the presentation is really going to look at a number of issues.

Really it's going to look at the way in which the falling costs of solar and the emergence of battery storage will change the way in which we use electricity and the way in which our traditional electricity sector operates in the future. When you combine this with more cost-reflective pricing we're going to see households and businesses with these technologies save money not only on their own energy bills, but help reduce the costs for all other consumers as well. Additional to this, going off-grid is going to be a real possibility for households and communities in remote and rural areas where the cost of the grid and supplying electricity through that grid is currently quite high. But with this transformation what we're going to see is a real challenge in the way that the traditional electricity sector is both managed and regulated and what needs to happen is governments need to take appropriate action going into the future to ensure that solar can take its place in the sun.

So, the question everyone asks is solar PV and batteries are disruptive technology. For me, I don't like the term "disruptive". All new technology changes things and this is just another technology that changes, but there's a story here and what we've had is traditionally all consumers or pretty much all consumers have relied on fossil fuelled central electricity generation. That electricity generation is transported through our transmission and distribution networks which are valued at the moment combined at about $80 billion and it's transported there to our homes where we use it. There have been some remote areas of Australia which haven't had access to the grid, they've had to rely on other forms of generation through distributed generation, mainly traditionally through diesel generators, but as time's progressed this has been supplemented with solar and eventually been supplemented with batteries. But what's obviously happened in the last ten years is distributed generation has moved away from remote areas and it's come into urban areas and residential areas through the forms of solar PV and what solar PV has allowed people to do is to reduce their reliance on the grid and reduce their electricity consumption.

Now, when battery technology comes along they'll be able to reduce their reliance on the grid even further and reduce that amount on the grid and this reduction could go as far as some of those people going off-grid. Now the emergence of a technology that allows people to leave the grid has given rise to what some commentators have described as the death spiral. So what is the death spiral? Effectively when people leave the grid fewer and fewer people are left to pay for this infrastructure that's cost us $80 billion. The result is that the prices rise and then more and more people are incentivised to leave the grid. This goes on and on and on until you've got a raft of people paying a very high price for a grid that's not going to be used. So, is the death spiral really likely the end of the grid? Before I answer that I'm going to go into some of the economics of solar PV and battery and how we get to that point.

In the past 10 years what have we seen? We've really seen 1.4 million households in Australia take up solar PV. That is by far the highest penetration rate in the world. As you can see, it's been more prevalent in rural areas than it has cities, but once you actually take out those people that can't get solar, either because they live in an apartment or they rent, the actual penetration rate has been 1 in 4 households. This has been a massive take-up across Australia. But when you look at that from a global perspective, Australia is about 2.3% of the installed capacity across the globe. That's pretty understandable, given the fact that we're quite a small country with quite a small population, but Australia has been really unique in the fact that it has driven residential solar compared to other countries which have focused far more on some of the more commercial aspects of solar PV and using that for commercial businesses.

So what has driven the rise in solar PV across Australia? From an economics' point of view, from a purely financial perspective there are three things. One is solar PV costs have been coming down; the second one is we've been facing increasing retail electricity prices, so reducing that saves you money; and the third thing is people have benefited from generous government subsidies when they have put solar PV on their roof. So what has happened is that all these factors have combined to a point where today, according to our analysis, in every single city with the exception of Melbourne it is economically viable to have solar PV on your roof.

I apologise for using Melbourne as an example because it's not the best one, but given we're in Melbourne I thought I'd use it to show this. What we've done is looked at the economics of putting a 3kW solar PV system on your roof and what we've done is that the savings that you make as a consumer you save from not using electricity generated from the grid, you're going to gain money from exporting some of that electricity back to the grid at between 6c to 8c a kWh, and you're going to gain a subsidy from the SRES which is the subsidy that's given out through the renewable energy target. That is then balanced by the capital cost of installing the solar PV system and any maintenance that goes on with the system over its lifetime. So what our analysis showed was that over a 15 year period you'd come out with about a net cost in Melbourne of $1,000. This compares to higher figures and net benefit that you get in every other capital city. But what is about to change or what should be changing soon is that we're going to stop having the current form of electricity tariff that we have where you basically pay according to the amount of electricity that you consume and we're going to move to what is known as "demand tariffs".

The reason we move to demand tariffs is because the actual cost of producing electricity or the cost of moving that electricity around the network is actually determined by the maximum amount of

electricity you use at peak periods; it's not determined necessarily by the total volume that you use. As a result, if you want to reflect the cost you actually place on this you have to change the tariff structure so that tariffs actually reflect that pressure that you put on the network at that time. What this means for solar PV is that all of a sudden solar PV goes from what was an economic situation in most capital cities and goes to a non-economic or non-financially viable situation with the emergence of these demand tariffs. The reason for this is if you have a 3kW solar PV system on a north-facing roof, the time when the maximum amount of consumption is being generated from that solar PV is around midday. As the afternoon wears on your consumption decreases and then by the time you hit those areas of peak or when people generally have their maximum demand, it's between five and seven o'clock in the evening, your solar PV isn't producing much at all but you're going to be paying for that peak period. So, what that means is that effectively the economic goes from being -$1,000 to -$2,200.

This will not last for very long and there are two reasons that this is not all a bad news story. Firstly, the cost of solar PV will keep falling and so all of a sudden you will take what was perhaps not a financially viable situation into financially viable. As you can see from this chart that we've got here, in Adelaide, Perth and Brisbane the cost of solar PV only has to fall just over 10% to become economically viable. According to IEA forecasts, which forecast about a 25% reduction by 2020, you're going to see that become economically viable around 2017/18, pretty much the time when some of those demand tariffs are supposed to be in by. Okay, for Sydney, Melbourne and Hobart it's going to be a little bit longer, but it will come back. The other thing that will change it is going to be battery storage because with solar PV if you have these north-facing panels that produce at about 12 o'clock and stop when you reach your peak, you're not going to reduce that demand tariff, you're not going to reduce that amount of money you'd have to pay to deal with the peak. When you get a battery what you can do is store that electricity that you generate during the middle of the day and then use it to limit the amount of maximum demand that you get.

The reality is that with a demand tariff and with a battery you could technically save somewhere between $300 and $400 a year on your electricity bill just by flattening the amount of consumption, so storing it when you're producing and then using it to make sure that the energy from the grid that you get is pretty much flat across the day. And this is about $100 better off per year than you would be if you stuck with the current volumetric tariffs that we've got. So yes, demand tariffs are going to hurt in the short run. In the long term they will benefit if they come in with solar and that is really shown here. This is the price that a battery has to fall by under both a volumetric tariff, which is our red bar, and under a demand tariff, which is our orange bar. And what you can see is, let's take Brisbane as an example and this is for a 7kW battery, the price of the battery has to fall to under $2,500 in Brisbane for it to become economic under a volumetric tariff. Under a demand tariff the price of that battery only has to fall to about $3,100. So that means that under these tariffs batteries will become economically viable for everyone a lot sooner than they otherwise would.

But getting back to the question that I asked at the beginning, is there going to be a death spiral? On the basis of our calculations we think no. Now, there are opportunities to go off-grid and, depending on the level of reliability you want, you could get a 95% reliability for about $36,000, but that kind of reliability means that there will be a number of days during the year or a number of hours for quite an extended period of time that you will not have electricity, unless you alter the way that you use your energy consumption, in which case it will be a bit less if you manage your consumption better. If you were to go fully off-grid with the same level of reliability that you currently have on the grid electricity

and you don't change your behaviour, the cost of putting in a system that would support you would be $72,000. The other thing to note with this is that even on the lowest one, even with that 95% reliability, you would require 7kW of solar panels on your roof. That's a lot of solar panels to fit on your roof and not every household in urban areas are going to be able to do that. But the really interesting thing is this grid backup one. So you can go for your 95% reliability, but just for spending a little bit of extra money and using the grid as your backup rather than extra batteries you can save money and be almost 95% off-grid, but the grid will still be used.

So whilst we don't think that there's going to be a death spiral, there are still going to be challenges for network businesses and challenges for the electricity sector. One of the things that batteries have the ability to do is obviously reduce the amount of peak demand we have in the system, the amount we need to use the grid. So one thing that it's great for is it's going to reduce the need to build extra infrastructure in the future, but what it also does is it reduces the need to use the existing grid that we've got and eventually that grid may become redundant and not needed anymore and will need to be paid for. So governments actually need to work on a framework about how to pay for that grid that becomes redundant and there are three options.

The first option is that consumers pay, so you take that redundant grid and everyone pays for it in a rate-style system in the same way that we pay for water. The second option is that the network businesses pay, as any other commercial businesses, their asset no longer has any value, you write it down; it's just gone from their bottom line. The other option is that governments pay for it, and when I say "governments" that basically means taxpayers. So those are the three options, but this is likely to happen and it's important that governments start acting now to make sure that the framework is in pace to be able to do it. The other one is really around making sure that there is no unnecessary new infrastructure spending.

So there are two things that we have suggested that can be done to help this. One is that network businesses in general should really look at all alternative options for network deals when they're looking to spend capital investment. At the moment under the regulations they only look at where capital investment is used for the growing network, they don't look at it for replacement spend. We think that should change because there will be places where when it comes to replacing the network infrastructure it might be better to have alternative solutions, such as distributed generation. The other thing is making sure that the financial incentives that we've got in the regulatory framework are correct and that the incentives that are faced by network businesses are right to ensure that they don't spend on excessive infrastructure.

But whilst I said for urban areas previously that going off-grid wouldn't be likely, there are places where it does make sense. There are places where we've built a grid where if we were to build it today it would be so expensive that it makes more sense to put in a system which involves solar PV, batteries and a generator to run the system than it would to have the network. There's an area in north New South Wales where the cost of building the grid per customer would be over $300,000. As a comparison, an off-grid solution for 30 years for that, that would cost $90,000 per customer. And there situations like this all over, for both individuals and for communities, but there are also some barriers to delivering this. Network businesses are the ones that are best placed to be able to see where the areas are where this is most cost effective, but at the moment there are ring fencing

arrangements in place for networks that only allow network businesses to operate as a network business. They don't offer the ability to provide this whole-of-system solution.

One of the things that we've recommended is that the AER (Australian Energy Regulator), through their review of the ring fencing arrangements, will look at this and see whether or not there are barriers to network businesses being able to deliver these solutions, but we also think it should not just be network businesses that should deliver these solutions. We think that because there are now these whole-of-system solutions, why shouldn't other parties come in and, as part of a competitive process, actually bid to be able to deliver those services? At the moment we don't have a competitive tender process in place and one of the things governments should look at is introducing this to be able to bring it in place. The other important thing for all these factors is to bring the right kind of pricing signals in place.

To sum up, we think that solar PV and storage can save all consumers and money and really make a contribution to reducing emissions in the future, but there are things that governments need to do. Firstly, learn from the past: do not put it place policies that have unintended consequences, specifically cross-subsidies. At the moment the electricity system is full of cross- subsidies, let's not make that situation and ensure that other people pay for other people's benefit. Secondly, get tariff reform right. This tariff reform is going to be fair, it's going to be fair on everybody although it is going to hurt some people, but governments need to follow through with it. They need to follow through with it so people get a fairer pricing for their power and, if they do this, they will incentivise the use of battery technology.

Thirdly, redundant assets will need to be addressed. We've talked about this in a previous report before, we were talking about it then because we're close coming up to the time when someone's going to have to start making a decision about this. Fourthly, the policies and regulations need to be correct to ensure that network businesses make efficient decisions around future infrastructure spend and, where possible, when they look at those decisions they can also look at where it could be possible for distributed generation or alternative non-network solutions to be delivered, instead of maybe making spend on replacement. And finally, remove those barriers to the uptake of the off-grid solutions.

If governments manage to get this right it can help solar PV and storage become an integral part of our electricity system going into the future and no-one need pay for it. Thank you.

TRISTAN EDIS: Thank you David. Our next speaker is Michelle Groves. Michelle is very much at the pointy end of all of this because she's the Australian Energy Regulator and there's an interesting role there where under the Australian regulatory structure we have a rule-maker who sets the rules and the parameters around how our market operates and then Michelle is there to, I suppose, enforce and monitor those rules. In-between there is extremely large room for interpretation and I suppose that makes her job a very, very interesting one, but also creates challenges for what she can and can't do within those rules. So I'd like you all to thank her as she comes to speak about her role in what is a very challenging context. If you could welcome Michelle.

MICHELLE GROVES: Good evening and thank you very much to Grattan and the Melbourne Energy Institute for the invitation to participate in this seminar tonight. It certainly is a very timely discussion around these sorts of issues. Thank you Tristan for that introduction. Clearly I'm not the AER itself, I

am the CEO. The AER has an independent board and decision makers who are responsible for steering our ship, and myself and perhaps 125 of my closest colleagues hopefully contribute to the board being able to do that effectively. One of the focuses that I really wanted to put on my remarks tonight was to remind us all about where we should be coming from whenever we're thinking about questions around energy market reform and energy market policy. So I think the report raises a range of clearly absolutely fascinating issues and some suggestions for future improvements, particularly in respect of how we go about meeting some of the opportunities that will be provided through technological change over the next few years.

What I think is really terrific about the report is it absolutely emphasises how important it is to get the fundamentals right and the consequences for consumers if that doesn't happen, in particular in this case considering the installation of solar PV systems, the impact of the policy, the regulatory framework, and the consumer behaviour that those have had. It warns that we need to learn from these situations, and David's just reminded us that we should always be mindful of our past when we're moving forward because what he has highlighted is emerging technologies have the potential to compound problems that we're already currently experiencing. But what is also terrific, it really sets out how emerging technologies can be a big part of very positive outcomes for consumers, as long as we get those fundamentals right.

As the report draws attention to, and I think Kiera will be speaking about it a bit more, perhaps the most significant of those fundamentals is around network pricing and the reforms that we need to do to network pricing to make those more cost-reflective. But as I said, I'd like to think about some of these issues in a slightly broader perspective. So the questions raised by the report around network tariffs and regulation, the framework, the new technologies and competition I think all need to be considered within what we should always remind ourselves is our ultimate objective. I'd propose that that objective is about getting it right for consumers, individually and collectively. In essence, this is what the National Electricity Objective is all about: efficient investment in and operation of energy markets in the long term interests of consumers with regard to reliability, safety and price – slightly shorthanded person of the NEO, for those of you who know it I'm sorry.

So I think what our framework needs to have at its absolute centre is a focus on enabling and empowering consumers to make choices that meet their needs and preferences. They should be able to engage with the market and different types of service providers with confidence, including understanding the effects and consequences of their decisions. If they're misled or deceived they should have appropriate redress through frameworks that protect them and the good service providers. Most consumer feedback that we receive highlights price and affordability as some of their major concerns, but we also know that consumers want much more.

Firstly, they, and as we are all consumers, we want a safe and reliable service; we don't want to be paying more for that than we should. We want energy to be affordable and we generally want price stability with limited shocks. Given the potential for rising energy prices, we want energy plans that suit our needs including greater time of use plans and flexible payment options. As technology changes, we want a broader range of related products and services; we want to be able to buy green energy products, solar panels, smart meters, electric vehicles (EVs) and batteries. Also though what we want is clear information on which to base the choices if we're to be able to take advantage of all of this. We want a positive consumer experience, particularly when there are problems or when we

need to change our energy arrangements. And, most increasingly, what consumers want is to be consulted on the decisions that actually affect them. Overall, I don't think that these demands and expectations are unreasonable for us to be able to deliver.

So we need to have ways of encouraging genuine consumer engagement with the issues. At one level I think one of the other things that's perhaps not picked up by the report, but I think we can see from issues like the solar PV uptake, is that consumers can engage very strongly with quite complicated products, systems and policies, determine whether they suit them personally and act accordingly. So it's clearly possible to get customers informed and engaged when we invest in good communication. Customers made decisions around solar PV even for them when the economic pay-off was sometimes quite a number of years down the path. They needed to be able to take all of that into account and they could understand that cost/benefit analysis when it was communicated properly and they acted on it to suit themselves.

I think network pricing reform should be seen through this lens. It's about providing customers with real information to let them make decisions that suit them. It enables consumer choice in the same way as new technologies – metering, solar PV, batteries and electric vehicles – provide other options for consumers, other choices. But it needs to provide incentives for efficient behaviour, so we need to make sure the prices send the correct price signals for usage and for investment. Our policy and regulatory framework should be technology neutral. It should focus on allowing efficient service provision, not dictating how that should be achieved. Clearly this needs to include network regulation.

It's important, as David set out, that networks are incentivised either positively or perhaps through regulatory obligations to genuinely engage with options like distributed generation and other alternatives to the long-lived poles and wire assets. As policy makers and regulators, we should not try to anticipate technological developments or be playing catch-up with those developments. We should aim for a regulatory framework which can accommodate all technologies, both current technologies and any and all future technologies which perhaps some of us haven't even thought of yet. We will not have a regulatory framework which is neutral to all present and future technologies until we have prices which provide correct signals for electricity usage and investment.

Customers should have access to competition and innovation wherever possible. We should challenge traditional models of service delivery in the sector, not necessarily reject them but question whether they continue to be appropriate or at least the only way. We need to be conscious that the decisions we make now about how and who delivers services may affect development of competition and innovation into the future. What we are finding increasingly is that services that are provided by network businesses and have traditionally been seen as part of the regulatory framework are becoming increasingly contestable or potential contestable and the current regulatory framework does allow for these services to be treated differently. I suspect this aspect of the framework will become increasingly important as more of the networks' core services become contestable going forward.

I would put forward that the competition principles on which the framework is founded will be extremely relevant going forward. Those competition principles have proven their worth in the past and can continue to provide a guide in the future. Competition is the marker in the ground that should orientate us. It's just as important to separate potentially competitive functions from and enable access to monopoly infrastructure now as it was when we first embarked on this path of energy market reform 20 years ago. The vision then was to separate competitive activities from those that

needed to be regulated with what at that time seemed an almost futile hope that the regulated proportion would decrease over time. We were so wrong. It's a pillar of our national competition policy. We should tread warily into policies that would see this unwound without adequate consideration of the costs and benefits. We need to be careful that the problems that we're identifying to be fixed are not transitional ones that would have worked their own way through anyway before we make major changes to regulation and competition policy.

The paper argues that regulatory barriers to networks investing in embedded generation should be removed. I'm not completely convinced that the case has been made out for that in the way that the paper sets out at this stage. As I said, the market reforms have been built on a central pillar of structural separation between the contestable and non-contestable segments. To now be encouraging network businesses to own generation might be seen as unravelling some parts of these reforms. If we get the price signals right we should be able to rely on private entrepreneurs to choose where, when and how much embedded generation needs to be installed, which is pretty much what we try to do now at the transmission level. We need to consider what the longer term consequences might be of allowing regulated monopolies also to engage in competitive activities that may rely on access to monopoly services. I'm not saying that there would be cases where you don't want to go down this path, but these need to be very carefully considered questions.

Customers need to be empowered and engaged. We need to stop doing things *to* customers and start doing things *with* customers. An example of this I would propose perhaps we might see is in the concept of customer demand. As a sector we use language all the time like "demand management" as though demand was a creature that the networks and the industry can own, control, contain and can do things to. I think it's timely for us to remember that demand is actually made up of consumers, choices and preferences. They should be incentivised, empowered and enabled to offer, sell, manage their own demand rather than have this done to them by network businesses or other policy proponents. Proper pricing is essential in this. If customers can understand and see the value of their demand at particular times then they can make decisions to allow them to monetise that demand. It's a very valuable product that customers own.

As we've all said, tariff reform is absolutely vital, but so is customers' understanding of tariffs and the roles that they will play, the signals that they need to send. So, customers will need to be able to access retail products that make it simple for them to choose the right tariff structure for them based on their own preferences. Access to data about their own consumption will be very important. They may not need more information, in fact we know that consumers don't necessarily want just more information; they want better information; they want clear, honest and trusted information. Adequate consumer protection is also an absolutely vital part of the foundation, consumers will need to be able to confidently engage with energy markets and get good consumer outcomes. We need to be mindful of the changing market and ensure that consumer protection measures keep up with market developments and consumer experience. Like all other parts of the regulatory framework, it needs to be adaptive and driven by consumers.

There have been a range of changes through the rules over the past two years. The AMC has done a tremendous amount of work in regards to tariff reform, contestability and metering, and access to metering information. Many of these reforms are still to be seen the product of the work, but I think

what we can say is all of these changes are aimed at creating a more adaptive sustainable framework to support genuine consumer involvement in energy markets. Thank you very much.

TRISTAN EDIS: Sorry Michelle for calling you an organisation. Our next speaker is Kiera Poustie, she works for United Energy and also Multinet Gas and these are the ephemeral bodies that you never talk to because you have to go and talk to your retailer first. I remember having this experience myself where I was about to be disconnected from my electricity supply and I was talking to someone who then said to me, "Look, I can't talk to you because I work for a different business, you need to go and talk to your retailer" and I was sort of like, "Well, the retailer hasn't identified that I'm not paying bill".

So she's the person that sits behind that, but they are actually really the electricity company that you used to be familiar with, the SECV, that took are of those physical assets that kept the lights on and when you had trouble and the lights went out they were the people that came to the rescue. At the same time, these are organisations that are facing a real conflict because they have traditionally been a monopoly piece of infrastructure, their customer or the person that they needed to worry about was really the AER and persuading them that they needed to build new assets to meet customers' needs. But now customers have alternative options to just simply relying on the grid and there's a real question mark about those services or those pieces of equipment don't necessarily be provided by United Energy or by Multinet gas.

The other issue is I can swap between gas and electricity, maybe I don't need my gas connection anymore, maybe I have other choices, and she's in an interesting situation where she's got to deal with the policy and regulatory issues for the company about how do we negotiate this change, should we be the owner of these assets, does that make sense, or how do we make informed decisions about what we do and don't build in light of the fact that these other technologies are coming through. But hey, we can't own them or we can't control them, so how are we supposed to take that into account? It's a very difficult situation. So she's the one that's got to deal with those difficult challenges and also how to manage that, given there's a policy environment that really sets the rules around what they can and can't do.

So if you could please welcome Kiera to the stage.

KIERA POUSTIE: Thanks Tristan. Tonight we've heard about the impact of solar policy and some of the policy recommendations that the Grattan Institute has come up with in their recent report, and we've also heard a lot about customers, tariff reform and regulation from Michelle. Now I want to talk to you what this all means for a network. As Tristan said, we're the ones who own the poles and the wires, the boring stuff right at the end, but we are actually the ones who supply the physical electricity to your property. I also want to talk to you about what we're doing to deliver the best outcomes for all our stakeholders. So I'm going to talk about the network of the future, today's challenges, and some of the reforms that we think might be needed out there for the future.

Before I get into a lot of detail I want to talk about what our vision is for the future and the network of the future. In the past we had this very stable, pretty boring linear industry where generators produced the electricity, it was supplied to transmission companies, high voltage, that was supplied along to distributors and then we delivered it to customers and there was a retailer over the top there. Energy flowed in one direction and everything was really stable and predictable, growth was the same amount each year, year on year on year, and to a large extent everything was centrally planned, to

some extent because it was centrally owned. Now we're in a world that's very different from that and it's changing quickly.

We've got a whole lot of new technology out on the network that means that it's being used differently. We've got increasing distributed generation, so this is the solar we talk about, we've got storage on the horizon, and we've got a whole pile of new potential energy users out there, we talk about EVs and different ways that people might use energy in the future. And with the technology getting cheaper and a lot more innovation in this space the pace of change is really only going to accelerate over time. So in the future, while we still see centralised generation playing a significant role in the network, we really see a very different type of network where we're dealing with a whole pile of different services, two-way flows, and a number of things that the networks weren't really designed in the first place to deal with, and we have a role as a network in connecting all of these different users together and also facilitating trade between these different users.

So I want to take you through a little bit more detail about what the challenge for network businesses is at the moment. Today we build and historically we've built about 25% of our network to supply energy for less than 1% of the time. That's because what we have to supply is for that very peak day in summer when everybody's turned their air conditioners on when they've come home. And it doesn't matter if it wasn't hot last year, we still need to make sure that we have that capacity available for when it is hot and, as you can see from the chart up there, our peak demand hasn't actually moved particularly much over the last five or so years, it's been relatively consistent, but what we have seen is the average load from a residential customer has been declining. That's no surprise, they're looking at other technologies and we've got energy efficiency, but when we look at what our peak-to-average ratio is it's actually going in the opposite direction, so more peak, less consumption. That's the challenge we face as a network business.

So what's the solution to deal with these sorts of problems? How do we facilitate an efficient future? It's not a one simple step solution. We see that there's a whole manner of things that come into this. We've obviously talked about technological change, so that's all the new things that are coming, and there's customer behaviour change. So customers may choose to react to new signals, technologies and prices and behave in different manners, but only if we give them the right incentives to do so and efficient incentives to do so. The three things that I wanted to talk primarily about today were tariff reform, demand management and competition frameworks. So if we start with tariff reform, what we see tariff reform as is something that better matches the network cost to the tariffs that customers see. This is about signalling costs and facilitating efficient investment in networks and by customers.

I should also talk about what tariff reform and where we've come from. It might sound big and scary, but really it's just about changing the parameters on which we charge customers. Historically we charged everybody based on how much they used, it was really simple, and when the engineers came up with the electricity systems 100+ years ago they kind of had a choice between charging everybody on what they use and charging everybody on what their peak was. Given that the variable costs in these integrated systems were really related to the fuel costs and the generation it made a lot of sense to charge them based on consumption. And when things were simple and predictable that worked well, but that's not the world that we're in today and we also have new technology that allows us to more efficiently price that.

So we've discussed what it is that drives network spend. It's peak demand, it's not consumption. It's that need to build for the peak and that's what we need to be able to price based on. But I should also talk as we're going through this about what network tariff reform is not about. It's not a system set up to penalise people for the past investments that they've made and it's definitely not a way of networks going about earning more money. This is just allocating efficiently and sending the right signals to customers about what it costs to build and maintain the grid, and only by doing this can we facilitate efficiently the next wave of technological investment that we see coming and also facilitate demand management at the same time. From our perspective, it's actually really important that we don't spend more than we need to to build and maintain the network.

So how do we think the tariffs should change? This is not just a conceptual debate for us, we actually have an optional demand tariff available to customers from the 1st of July this year - and it's on our website if anyone's really interested in how it works or what the details are – but it has three key elements. We have a demand element which is a maximum monthly demand in the peak window in each month. In our tariff we have different rates in summer and in winter. Obviously what's of most concern to us at the moment is the peak demand in summer but, as Tristan's pointed out, there are changes that can occur in the future around how networks might be used that could shift that demand to different times of the year. We also have a minimum capacity charge each month for customers who might not be occupying a premises or have very low rates of consumption. We also have an anytime energy rate which is a single flat rate for consumption at any time and a fixed charge that covers some specified elements, like metering and other things that we have to pass through for customers.

So I just wanted to take you through a really simple example of what tariff reform might look like and what it looks like in terms of incentivising batteries and other technologies. This is a relatively large customer on a peak day in summer and this is what happens when we add solar, so the grey line there is actually their consumption from the grid and you can see that what's happened in this particular case is that the total consumption has reduced, but the peak consumption remains the same. Now, if we add a battery there are a number of different things that can happen. If we add a battery under the current tariff structures and we don't give customers any incentive about the cost of drawing down that battery at different times it might be perfectly rational for a customer to start drawing down on their battery as soon as their consumption exceeds their supply from the solar panels and just ramp that down. That way they ensure that they've used anything that they've stored in their battery and they're minimising their consumption from the grid.

That's perfectly logical under that example. But what we might see is that you do that and you still don't see any impact on peak demand and you might even see customers changing the way they behave, and we've seen this in various circumstances in the past, where they say, "Well actually, I've used less so I can use a little bit more now. It's okay". That's not the situation that we want to be in. So what does it look like with a demand tariff? With a demand tariff we give the customer an incentive to move that to the peak period and to actually flatten their load. That's in our interests because it means that we don't have to build and maintain as much network capacity to deal with that customer's peak load, but under a demand tariff it's also in the customer's interest because the will see a reduced tariff by flattening that peak demand.

Tariff reform we think goes hand-in-hand with demand management and there are a number of elements to demand management. I've obviously talked about batteries, we think they're a really important way to be able to do that and that's why we're trialling them on our network at the moment and we're looking at how we might use them into the future as an alternative. We're also looking at things like our summer saver trial that I've got on here which is rather than being a critical peak tariff where customers are charged extra for using energy at peak times, it's an option for customers to opt into getting a rebate if they reduce their consumption at specific peaks times and it allows certain customers who are active consumers to play a role without imposing a significant price signal on all customers. The other sorts of things that we're looking at or trialling on our network are things around load management, so potentially for air conditioners or pool pumps to shift the load from those from peak times, and also load control services that might be of interest to some certain types of customers.

The last thing I wanted to talk a little bit about was competition. If we go back to this network of the future and we look at the parts here, the customer of the future might be the one who's sitting there with solar panels on their roof, with an electric vehicle, with a demand management or energy management system and battery storage. So they've got a whole pile of different services that they're trying to operate and the question that we're looking at today is who will come up with the solution that bests operate that for the customer and for all of the stakeholders? We don't know who it will be, it might be a retailer, it might be a new energy provider, it might be Google, it might be a distributor, and it might be someone we've never thought of before. But our perspective is simply that before we've seen these things develop we should ensure that we have open frameworks that we allow competition to develop and we allow systems, processes and structures to develop that will deliver solutions to consumers.

In summary, I just wanted to say that the world is changing. This is a good thing, we need to be part of that change, and the role of the grid is also changing as part of this as well. In the future we'll hopefully have smart, cost-reflective tariffs, we'll have more flexible infrastructure and a true platform for trade, but to get there we need to get the policy and regulatory settings right and we need to do it now. Thanks.

TRISTAN EDIS: I might kick it off. My role is to stir things up; I see that as my professional role in life, it's to ask the difficult questions of people. So we've heard that Grattan Institute has put out a report saying the current structure for how we do pricing is not working, it's leading to cross-subsidies and they're going to create problems down the track. We've also heard that from Kiera talking about the challenges and the fact that that businesses needs to build for when our demand is highest, not necessarily our average consumption. But from a consumer perspective they sit there and think, "Far out, electricity prices went up an absolute incredible amount and I didn't do anything and I'm really struggling with why they went up by so much".

A number of those people in response to electricity prices going up by so much went out and, in good faith, went and bought better equipment to reduce their electricity consumption. They also went out and spent money on solar systems on the understanding that that was the right thing to do for the environment, but also for their own electricity bill. And there was also I think a sense of powerlessness amongst a number of those consumers that they could see their bills going up and they didn't feel like they had any kind of degree of choice or control over that. Now what we're hearing is, even though

overall demand for network capacity hasn't increased very much but power prices have gone up, now those consumers are being told, "Oh by the way, we want to change the tariff structure. We want to change it around so that even though you've changed your arrangements to be able to reduce your consumption we think you still need to pay the same amount that we want to charge you, even though your consumption has gone down".

Can you understand why perhaps consumers might react in a difficult way to that proposal? I suppose it's also a challenge though for you Michelle, you've got to steer a process where that might mean that other people are bearing higher costs than what they need to and we need to manage a process of change there in perhaps coming to a new paradigm that you face. I might open that to David first of all, how would you respond to that consumer frustration?

DAVID BLOWERS: I think, firstly, I understand that frustration, but I think the second thing is we've got to remember why we're bringing in these new tariffs. The main reason that we're bringing them in is not because of behaviour that people have made or that they've got solar or they use an air conditioner; it's about making sure that there is fairer pricing for everyone. The way in which it exists at the moment means that yes, there are some people who benefit from the current pricing structure; there are also some people that lose out from that pricing structure and to maintain that pricing structure at the moment means that those people will persist in losing out. Yes, it will be hard. Yes, I agree that some people will be annoyed. But what we want to ensure is that everyone pays a fair price for the power that they use.

MICHELLE GROVES: I guess I probably also would come at it from a slightly different dimension which is it's really important that we introduce this because the new technologies that people want to embrace and continue embracing mean that if we don't get pricing right we're going to end up with some very potentially inefficient investment in the network.

Kiera's talked around there are a range of drivers for network businesses, one is around the reliability standards they need to meet and pretty consistently they're very high around the country. We have exceptionally high levels, and appropriately so, of reliability standards in Australia for our energy supply. It's what we're used to, but that's something that they need to be conscious of. And we have the same expectations on the third or the fifth day of the heatwave and the way that we have pricing structured at the moment is that people can't really see the impact that their consumption has on that. And that's irrespective of the other sorts of technologies that you've invested in, but for those who've invested in air conditioning that has a really big impact on the efficiency of the network and we've seen that, we've seen the impact of that particularly through the very big uptake of air conditioning which led the peak demand issues that we faced about five years ago.

Cognisant of some of the potential of the other new technologies, particularly around things like electric vehicles (EVs) which could be an absolute boon to consumers, but if people don't connect them in a way that leads to efficient network investment they could also end up really expensive and everyone pays for that as well.

TRISTAN EDIS: Could you just explain how that might work out, how it could be affordable or extremely expensive?

MICHELLE GROVES: So I guess if we see a bigger uptake of EVs, if people don't face good information about the costs that those EVs have you might be tempted to come home, drive into the garage at five or six o'clock at night, plug it into your EV plugging-in station, go upstairs, turn your air conditioners on, kids have all got their computers on, the TV's on, dinners being cooked, you're washing your clothes and the dryer's on, and this is all happening at the same time. And electric vehicles, I'm not an expert on them, but I guess will probably have quite a drain to be able to charge them through those times. So you could see suddenly the peaks are going up quite significantly.

Contrast that, if you as a consumer knew if you came home you plugged it in, you had some sort of timing device that allowed you to pick a time in the day potentially late at night/early morning that allowed the three hours or four hours or eight hours charging it needs during that time, you actually have an ability to assist Kiera with her network utilisation problem and you should have that benefit that you bring to the system being able to be captured by you, and the way you would do that is by getting cheaper prices. So I think that's how just by having exposure to appropriate pricing you can see a really significant benefit for customers, for asset utilisation, so for efficiency, versus not having access to that sort of information and basically just plugging in. You, of course, then pay more than you otherwise would have because everyone's costs have ramped up, but you are also, picking up David's point, perhaps having a disproportionate effect that you may not be paying for completely either.

TRISTAN EDIS: Kiera, you're going to be devising these new-fangled tariffs that customers are going to potentially see in the future. We saw with the smart meter rollout that people got these new smart meters, they received a very large charge on their bill and they didn't understand what that meter was going to do for them or it wasn't actually capable of doing anything for them, even though it had the functionality no-one had really thought about how to supply that to the customer. How can we make sure that we don't end up with a sudden shock to consumers that they aren't ready for, especially give you don't really have the customer interface?

KIERA POUSTIE: No, you're right. I'll probably make a couple of points on that, particularly around the price rises. We do have to remember that here in Victoria, networks aren't the major component of the bill, it's about 30%, and network components haven't risen like they have in other states because we haven't invested to meet some of those things.

TRISTAN EDIS: I suppose they rose for other reasons though, didn't they?

KIERA POUSTIE: They may well have, but I'm not a retailer.

TRISTAN EDIS: You're not to blame, right, okay.

KIERA POUSTIE: And we do recognise that customers have made significant investments in the technologies that they've got in their properties and that they don't want significant shocks. We have done analysis on 200,000+ of our customers looking at what would be the impact of fully cost-reflective network tariffs if they were put in place tomorrow with no transition mechanism and nothing else. When you look at that, there's a wide variety of outcomes and it is not correct to say that all the customers who've invested in solar will be worse off. There are significant numbers and a significant proportion of customers who've invested in that who are actually better off on demand tariffs. It really comes down to a customer's individual profile.

To your question about what we're doing to communicate or to mitigate the potential bill shocks, as networks we're working really hard on what the appropriate transition mechanisms should be to move customers across to more cost-reflective tariffs. I don't think there's anyone out there proposing that every customer from day one should be on a different tariff and the rules are definitely structured to allow us to consider those customer impacts as we go through this process, and that's what we're doing.

TRISTAN EDIS: Okay. David, you sit there in the Grattan Institute and you're pontificating away and I remember it's got some quite nice couches there for you to do that, and some bookshelves and things like that. You're sitting there and you're saying, "Oh look, what are we doing here? We've got to change these tariffs around" and at the same time we see maybe some piecemeal changes going through. I noticed in your report you said, "Jeez, these price reforms aren't going fast enough, hard enough to really correct this". Can you reassure a politician who's got to open maybe the Herald Sun or the Daily Telegraph the next day why that is something that they might be able to manage and not end up getting booted out of office?

DAVID BLOWERS: I'm going to come back to your previous example of smart meters as an example of how not to sell a policy to a population. Smart meters are something which would generally deliver large-scale benefits, but really politicians didn't do it in quite a good way.

Yes, it is going to be difficult for politicians to do this but, again, coming back to my previous point, politicians really need to focus on what the positives are going to be about introducing new demand tariffs, where the positives are going to be, understand that we've got a proper process in place for bringing these demand tariffs in, and making sure that there is a proper transition. I think we've suggested they be mandated by 2020, that's a five year process to go through to be able to do that. I think if politicians manage to do that and manage to sell that there will be benefits and that there will be things that you can do to help reduce the cost of this, then I think that they can do it.

TRISTAN EDIS: Sure. I've spoken far too much so I'm going to open it up to the audience. I think we've got everyone warmed up, feeling like you've put your consumer hat on and you're indignant and want to learn a little bit more. But obviously it's not just about that, also a lot of people are excited about the technology that's out there as well.

AUDIENCE: A question for the panel, with the Victorian networks being privatised and the rest of Australia struggling a bit, what's the difference in terms of the transition to a market that's transparent and delivering some sort of signal? All of these things we've been talking about, the Victorian market has got much more chance given the private ownership of the networks so I'm very interested in Victoria versus the rest of the system.

DAVID BLOWERS: If we go back to tariff reform again, I think that there is a far greater chance with Victoria because to an extent Victoria for quite a few years was at the forefront of reform. One thing that Victoria has going for it in terms of tariff reform over others is that it has the advanced meters that you need to be able to bring them into place. Because of that, when we say that Victoria can actually transition to that quickly it can transition to it quickly because the technology is there. Because that technology is there as well a range of different solutions can come about that consumers can take part in themselves. The ability to see what your data is doing across the day allows that demand

management and allows you to see when your electricity is going to be cheaper and what your air conditioner is doing to your electricity use.

So in many ways Victoria has a great opportunity to bring these through and so consumers can see the benefit in the long run.

TRISTAN EDIS: Do we have any understanding of the extent to which customers are actually using these information portals and looking at them? Do we actually know the extent to which that functionality is being employed at all so that they are informed about what their demand patterns are?

KIERA POUSTIE: We have an information portal than anyone within our network can log into and see their historic demand. We have a number of very regular users and we have a number of people who log in once. It's by no means everyone on our network and it's a small proportion of customers. That's potentially reflective of the customers who are interested in that and who know it's there. We've tried to make it clear to our customers that we do have those facilities available, but we are not the face to the customer.

TRISTAN EDIS: I suppose the problem there is you could introduce these new demand tariffs and people have got no idea about what their profile is. I suppose we have to wait until we hit them with that first bill so we shock them out of it and get them –

KIERA POUSTIE: No. I've spent my day talking with retailers and other DBs about this issue and everyone's talking about how do we actually work together to introduce these things in such a way that does not have a big impact on customers? That's not in anyone's interest to do that and to have a big bang and everyone get a massive shock. So we're talking about sensible transitions and the idea is not to penalise people or to do this straightaway. Our incentive is much more about by 2020 or around that timeframe having those signals to customers so this next wave of technology is appropriately incentivised.

AUDIENCE: I just wanted to ask whether the existing technology in the smart meters that have been rolled out recently is adequate to allow the customer to manage their own demand. Will it in fact give real-time information to the customer to enable them to adjust their demand during the day?

KIERA POUSTIE: I probably can't talk for anyone else's network and systems, but the meters do record 30 minute data and there will be a need for systems to allow customers to access that and manage that as it goes through. At the moment I don't think we give customers or retailers give customers that day-to-day data, but there is functionality there that allows customers to do that and when we ran our demand management trials, which was about incentivising customers to reduce their consumption within a specified peak period on hot days, we did have that very specific information available for them at that time.

DAVID BLOWERS: Just to add, there are devices that you can get called in-home displays that you can use which will take the information remotely from your smart meter and you can actually then see that information as it comes through on the day that it happens. So yes, there are devices that you can actually use to look at it. In terms of going forward and using that technology then to adjust it, I know that there are technologies being developed out there but they might not be there quite yet.

MICHELLE GROVES: Yes, there are apps being developed, if they aren't already there, so that you don't even need the in-house display anymore, your meter will actually send the data to your smart device and you can have a look at it as you're coming home on the tram. And I know some people with some of their smart appliances also have the capacity from their smart devices to turn them on and off. So I think a lot of the technology is already there, certainly it's going to get better and easier to use I think as well.

AUDIENCE: [inaudible question]

MICHELLE GROVES: It does and it needs to have the right signals, so the algorithms that set that up deliver that for you as a customer.

TRISTAN EDIS: It may not necessarily have to communicate with the meter is actually part of the answer. Sorry, I'm intervening as an expert here, I promised not to do that. If you had a separate arrangement with your retailer and your retailer basically takes all the risk of their exposure to whatever the network wants to throw at them – and it depends on how these get rolled out – then conceivably that retailer or that technology provider might set up all of the kit for you and they communicate with those devices directly via some kind of internet platform of some kind. That might involve the meter, it might not.

AUDIENCE: Grattan's proposal for tariff reform – and it's pretty consistent with what United Energy is offering up – is that you average five periods each month and then come up with a demand charge and differentiating between winter and summer, averaging the five peaks of each month and actually pricing 50 weeks a year when the driver of new network investment is actually happening in 20 hours a year on about, say, one or two weeks. But you're actually pricing and penalising people to go through a whole lot of behaviours in March, in June, in July, in August, in September, when they actually don't need to be. So everyone will be sitting there not using their toaster and turning their heater down in August when the grid is just sitting there with 30% headroom.

Now that's the proposal that Grattan and United Energy is giving us. We should be able to go maximum crazy all year round and then be told tomorrow is a red day, that's the day when there's going to be big demand and we should get charged if we do things on the red day. But that's not the proposal from United, which I've studied in detail, or Grattan.

TRISTAN EDIS: Yes, so obviously that's the alternative contention for how we might structure it. Why is United taking the approach that they're taking?

KIERA POUSTIE: As in why are we looking at peak demand rather than critical peak tariffs, which is what you're advocating?

TRISTAN EDIS: No, so to clarify, there are five days in the year where it's the critical peak, is the terminology and the language, when it's a hot day. They're the days we really need to worry about, but the demand tariff that United's and some other networks are proposing actually involves us needing to worry about our demand throughout the entire year, rather than perhaps just those five days a year.

KIERA POUSTIE: Yes, I'm happy to talk about that. There are a number of reasons why we're not at critical demand and one of them is part of what we've talked about before, is customer impact and the acceptance of these sorts of things for various customers. And there are some customers and customer groups who are really happy with that idea, and there are others and governments who are very concerned about the impact of these things on vulnerable customers and their ability to react to them. I'm talking to my stakeholders every day.

The other thing that we're talking about is actually incentivising changes in behaviour. One-off changes in behaviour on a particular day don't necessary translate to changes in behaviour on the next day or the next year or the year after that. We, as networks, need to build for that peak one and so we're talking about putting incentives in place that drive efficient investment and looking at peak demand is the basis, that's how we do it. It needs to be something that customers can deal with. The reason that we've got it in winter as well, we've got a much lower charge on our tariff structure in winter and that's so we've got a consistent structure over the year and we're not charging significantly more. It is more in summer, but it's not ten times more in summer, which generally our stakeholders are not happy with those types of structures.

The other point I'll make is we're not averaging five periods. We're charging on the peak period within the month, the one peak day.

TRISTAN EDIS: Would it be possible for you to consider creating an option there where you had that tariff that you're currently proposing, but also another one that perhaps represents a shorter period in which people need to worry about their peak demand and might have a greater capacity to engage on.

KIERA POUSTIE: Yes and the way that we've thought about that is an optional tariff and in areas where there are constraints on the network, so these are the ones where we actually have a concern, is looking at critical peak rebates and so giving customers a rebate from their base tariff who choose to opt into a program and reduce their demand on those critical four or five days of the year. We've run that as a trial over the last two summers and it's been a really successful way of engaging with those engaged customers who want to be part of this, but not penalising those other customers who do want to choose to consume.

TRISTAN EDIS: Okay, so you will make that option available in some areas, so why not make it available in other areas such that people perhaps have an enhanced capacity to reduce their demand charge? Because I suppose that's the issue isn't it, that it's very hard for someone to manage their demand over a very extended period and keep watch on it whereas the fundamental issue and, I suppose, when we're talking about a fair charge is well, I want to get charge if I genuinely put a solid load on the network and if I make efforts to not do that why should I have to pay?

KIERA POUSTIE: You're talking about having multiple tariffs and multiple tariff structures?

TRISTAN EDIS: What I'm presenting is that you've made that option available in some areas.

KIERA POUSTIE: And they're the areas where we have a particular constraint today.

TRISTAN EDIS: Yes, but the way a customer looks at it is, like every other product, I pay for it if I want it and I need it, but in this situation you're creating a system of charging which would enable me to perhaps very easily reduce my peak demand because I only need to worry about five days, and you're not making that available to me.

KIERA POUSTIE: We have to make this as simple as possible for all our customers and for our retailers to pass it through to customers. We are extensively consulting with all our stakeholders on the various options around this. It's a valid option, but the feedback from various stakeholders isn't consistent with that.

AUDIENCE: I've got a question probably directed to Michelle more than everyone else. You said that you wanted to get it right for consumers and you were going to do that by providing reliability, safety and the right price. Is there any reason why you don't consider energy security in that mix? And to follow-up to that, you're aiming for a regulatory framework that captures all technologies. What are you doing to capture all technologies? Will that include wave power, geothermal, nuclear or interconnection with overseas countries?

MICHELLE GROVES: Thanks for those questions. Maybe I'll start with the second one first. This evening we've actually been focusing more on the impact of the distribution networks and that more direct customer interface and ensuring that customers will have the ability to meaningfully choose the sorts of technologies they want to be able to use and to have the framework and the grid act as the platform to enable to them to do that, so that's been the focus. What you're raising is really more around wholesale supply-side effects.

We have a market design that is essentially technology neutral or, as you've described it, the way it's more often described in the wholesale market is fuel source neutral in that generators have a right to connect into the transmission network normally, to be able to price their product into the market, to bid their product into the market in a competitive sense, and to compete against other generators. The energy market and its framework itself doesn't have restrictions, I don't think, around fuel source. Of course it has safe security technical regulatory frameworks around generators, but it doesn't prescribe the types of generation that can connect into the system. So in that sense the wholesale market and the market structures we have do have a framework that I would argue is, as you've described it, technology neutral.

Energy security, reliability and safety are all very important components. I shorthanded the NEO when I was talking about that and while I apologised for it in advance, clearly I didn't quite pick up everything. It is one of the core platforms of the energy market, so I certainly would see security of supply, which in Australia we have very high levels of security of supply, as one of those issues that continues to be very important for customers and the market needs to be able to support.

TRISTAN EDIS: I might interject with another question then. On the technology neutrality side, we've seen SA Power Networks, the South Australian distributor –

MICHELLE GROVES: I'm not going to answer it.

TRISTAN EDIS: Aren't you?

MICHELLE GROVES: No. But go ahead Tristan.

TRISTAN EDIS: No, wait a second, there's a principle here. So maybe you can answer the principle which is that a distributor proposes a price structure which is based not on an individual customer's actual behaviour, but is based around a technology that they may have had installed. Is that something that would be consistent with this whole technology neutrality principle?

MICHELLE GROVES: So what Tristan's referring to is SA Power Networks in their recent tariff proposals, which all of the businesses are going through, we need new prices for 1st July, have put up a range of new tariffs, one of them is around a tariff for solar PV. The reason I can't comment on that at the moment is because we're actually in the process of considering that application, we got that last week, there is a process, there is a framework, and we're currently in the process of examining that. And that's under the current framework as well, so we've been through a bit of a space of reform and Kiera was talking today about the work that distributors and retailers have been doing thinking around these issues of network pricing.

They're doing that in preparation of a new rules framework which requires the network businesses to offer tariffs that are more cost-reflective and also involves much greater engagement with the businesses and their customers going forward. So we're in a space of change to this new framework, which is why the discussion is around issues of transition, what sort of tariff structures we should be able to offer. I think theoretically I would argue that you still have a technology neutral framework if when you're identifying costs that might be driven by particular types of technology you take those into account. The question is whether or not you're accurately reflecting those costs.

TRISTAN EDIS: Let's just get to the point, so someone installs solar or already has solar and someone creates a special pricing structure for people that do that or install batteries that would effectively act potentially to penalise them or they would face a higher charge, irrespective of what the actual demand or load might be on the network of that particular individual. They come up with a collective rule, everyone who has that technology, irrespective of what you might do and how it might apply on the network, we'll pay a higher charge. At the moment you can't say, is probably the answer?

MICHELLE GROVES: No, I can't say. So stay tuned.

AUDIENCE: The promotion of this was about "Is it cost effective to go off-grid?" Now, David, your costings were based on I guess the average consumption for an average household in Australia?

DAVID BLOWERS: No. Our costings were based on specific but typical households in different geographic locations.

AUDIENCE: Okay. Bearing that in mind, with energy use ramping down not going up, did you do any costings based on, say, a 25% reduced consumption and maybe even the 53% that Beyond Zero Emissions have suggested in their buildings plan is possible for households, and whether those costings will in fact make it very, very reasonable for people to go off-grid?

DAVID BLOWERS: We actually looked at the economics of going off-grid now and we looked at the economics for what would happen when people continue to use consumption today. It is undeniable if

people change the way in which they use consumption and manage their demand better that the cost of going off-grid will be less. However, the key point that we were trying to take out of today is currently, given the level of reliability that you want, the cost is quite prohibitive. Even with sufficient demand reduction and consumption, you still have a prohibitive cost and even with that again, if the second point that I made on the slide which was around if you have battery technology, even if the costs come down and you change your consumption, that little thin connection to the grid makes strong economic sense.

AUDIENCE: I was involved with the microeconomic reform with COAG on the gas side back in '95 at the time the electricity market was being changed here and I was sort of fascinated because I spent some time working with United Energy and, with the greatest respect Michelle, much of what you saw up there was something that we saw around 20 years ago; and I don't mean that in a bad sense. It's taken 20 years when demand management and tariffing was very much a focal point of discussion 20 years ago and we don't seem to have moved on very far really from that point.

My question is, is this because we have a policy vacuum in terms of government driving and that we're too reliant on the competitive market to do everything, when actually it needs some policy driving?

DAVID BLOWERS: I think that certainly all the big reforms that have taken place in the electricity sector have really required some sort of government drive to be able to do that, so of course you do need that. We come back to the state in Victoria, you wouldn't have had smart meters and you wouldn't have had retail competition without the drive of a particular government. I guess at the moment, I don't know whether people are aware, they're currently doing a review into the governance structures that surround the development of electricity property and there really is a question about whether or not some of those governance structures right at the top are fit for purpose and can effectively drive through the reforms that we need to make some of the changes that you're talking about.

END OF RECORDING