

REPORT ON PROCEEDINGS BEFORE

**SELECT COMMITTEE ON ELECTRICITY SUPPLY,
DEMAND AND PRICES IN NEW SOUTH WALES**

**ELECTRICITY SUPPLY, DEMAND AND PRICES IN NEW SOUTH
WALES**

At Macquarie Room, Parliament House, Sydney on Tuesday 8 May 2018

The Committee met at 9:30 am

PRESENT

The Hon. Paul Green (Chair)

The Hon. Ben Franklin

The Hon. John Graham

The Hon. Taylor Martin

The Hon. Adam Searle

The CHAIR: Welcome to the fourth hearing of the Select Committee inquiry into electricity supply, demand and prices. Before I commence, I acknowledge the Gadigal people, who are the traditional custodians of this land. I also pay respect to the elders past and present of the Eora nation and extend that respect to other Aboriginals either present or listening online. Today the Committee will hear evidence from the following industry groups and energy experts: Origin Energy, Energy Australia, Professor Thomas Maschmeyer from the University of Sydney, Professor Martin Green from the University of New South Wales, Meridian Energy and Powershop, Enova Energy, the Smart Energy Council, the Australian Wind Alliance, Neoen, the Energy and Water Ombudsman NSW, and the New South Wales Electricity Price Commissioner.

Today's hearing is open to the public and is being broadcast live via the parliamentary website. A transcript of today's hearing will be placed on the Committee's website when it becomes available. In accordance with the broadcasting guidelines, while members of the media may film or record Committee members and witnesses, people in the public gallery should not be the primary focus of any filming or photography. I remind media representatives that you must take responsibility for what you publish about the Committee's proceedings. It is important to remember that parliamentary privilege does not apply to what witnesses may say outside of their evidence at the hearing. I urge witnesses to be very careful about any comments you make to the media or to others after you complete your evidence as such comments would not be protected by parliamentary privilege if another person decided to take an action for defamation. The guidelines for the broadcasting of proceedings are available from the secretariat.

There may be some questions that a witness could only answer if they had more time or with certain documents to hand. In those circumstances witnesses are advised that they can take a question on notice and provide that answer within 21 days. Any messages to witnesses should be delivered through the secretariat staff. I remind Committee members and witnesses to speak into the microphones. Several seats have been reserved near the loud speakers for persons in the public gallery who have hearing difficulties. I encourage everyone to turn their mobile phones off or to silent.

TIM O'GRADY, General Manager, Public Policy and Government Engagement, Origin Energy, affirmed and examined

JONATHAN BRISKIN, Executive General Manager, Retail, Origin Energy, affirmed and examined

MARK COLLETTE, Energy Executive, Energy Australia, affirmed and examined

SIMON DAVEY, Policy and Advocacy Manager, Energy Australia, affirmed and examined

The CHAIR: Does anyone have an opening statement they would like to present?

Mr BRISKIN: Thank you for the opportunity to appear before you this morning. Energy markets in Australia and around the world are undergoing unprecedented change as they grapple with the move to cleaner energy supplies whilst maintaining affordability and reliability for customers. In Australia this transition has not been a smooth one. Customers have been subject to reliability challenges and price rises. As Origin is acutely aware, vulnerable members of our communities are often the least able to cope with either of these.

The main factor in electricity price increases over the past 10 years has been the higher regulated electricity network charges which make up around 50 per cent of an average customer's bill. Green schemes, retail cost and margin together make up 20 per cent of a customer's bill, but these represent more modest increases over the same period. The most recent impact on rising energy prices has been a spike in wholesale cost in 2017 across the eastern States. The closure at very short notice of Northern Power Station in May 2016 and Hazelwood Power Station in March 2017 took significant capacity out of the market and caused the wholesale electricity price to double.

Origin took and continues to take action to minimise the impact of high wholesale prices on customers, particularly the more vulnerable members of our communities. At the last price reset in July 2017, despite the fact the wholesale prices had roughly doubled, we did not pass through the full increase in our customer's retail tariffs. We also froze prices for those in our financial hardship program and those that have subsequently entered into it. They did not pay the price rise. In addition, we ensured these customers were on our best guaranteed offer and could access other advice and assistance under our hardship program.

We knew increased supply into the market was the critical action to cover the gap left by Hazelwood and put downward pressure on prices. We significantly increased output from the Eraring Power Station and are on track to increase generation output further this financial year. We have also been rapidly contracting low-cost renewable energy, recently committing 1,200 megawatts of wind and solar plants which will progressively come on line by 2020. This new low-cost renewable supply is also putting downward pressure on forward wholesale prices. At the same time we have been investing in our customers, making it easier for them to understand and control their energy use, access savings and engage with us. This includes a simple to use online price comparator that immediately tells customers what they could save with Origin. Through this alone we have helped hundreds of thousands of Australians access better deals on their energy. I am pleased to note that the forward curve for wholesale prices has already come down significantly from its peak earlier last year. The market response to boost supply is working and, as the wholesale price is one of the key drivers of household electricity bills, any reduction in the forward curve is likely over time to flow through to lower retail prices for customers.

A final point I would like to make is that it is critical we agree a coordinated and integrated national energy and climate policy for Australia if we are to avoid similar supply and price shocks in the future. To that end we support the objectives of the National Energy Guarantee in integrating emissions reduction and reliability of energy supply and applaud the thorough consultative process undertaken by the Energy Security Board. We believe this policy can provide a framework in which companies like Origin can invest in future energy supply with certainty. There is more to do, and Origin will play our part. We encourage governments and all of industry to stay the course and deliver the National Energy Guarantee and other reforms recommended in the Finkel review so that we can get back to an energy system that provides affordable, reliable and cleaner energy to customers.

Mr COLLETTE: Thank you for the invitation to appear before the inquiry. I have a short opening statement. A bit of brief context: Energy Australia is one of Australia's leading energy retailers. We are an experienced participant in Australia's national electricity market. We serve 2.6 million customer accounts with half here in New South Wales. Our energy portfolio has a mix of coal, gas, solar and wind energy representing about 5,000 megawatts of capacity, enough to power four million households per year. In New South Wales we operate the Mount Piper and Tallawarra power stations. In this State alone we have contracted the output of 600

megawatts of large scale wind and solar projects. Every day we have around 10,000 dealings with our customers. We feel we can speak to what is important to them. Overwhelmingly, our customers want cleaner power, but they are just as clear that cleaner energy should not cost more. Power must be affordable.

System reliability—the lights turning on every time the switch is flicked—is important but it is a basic expectation. We know these elements, reliability, affordable and cleaner power, as the trilemma. It is a challenge that cannot be solved by one part of the energy chain in isolation. It is a challenge we share, industry and Government are in this together. Industry's role is to make the billions of dollars of investment needed to create a modern cleaner energy system. Government's role is to provide durable policy and regulatory settings which encourage, or at least support, long-term investment. For too long uncertainty in climate and energy policy has challenged the structure of the electricity market and investment has suffered.

We have a national interconnected electricity system spanning multiple State government jurisdictions from Cape York to Tasmania and Port Lincoln in the west. New South Wales is one part of a system that cannot be considered in geographic isolation. Changes in electricity supply, demand and price are influenced by factors outside of the State. I might start by making a couple of observations relating to the terms of reference: 2017 was extremely difficult for families and businesses. Cost of living pressures were felt acutely by those on low incomes. Electricity price increases in New South Wales were up by 20 per cent largely because of the closure of Hazelwood.

A large slab of base load generation exited the market at short notice with the retirements of the Northern power station by Alinta in South Australia in May 2016 and then the retirement by ENGIE of the Hazelwood power station in March 2017 with little notice. Those shocks were felt across the national electricity market [NEM]. Movements in retail electricity prices in New South Wales during 2017 were examined by the Independent Pricing and Regulatory Tribunal [IPART], the body that provides independent regulatory advice to consumers and government. IPART published clear findings on the performance and competitiveness of the State's retail electricity market in October 2017. It is healthy and it is working. I refer the Committee to that report.

Likewise, the Australian Energy Market Commission, the national lawmaker, did a retail energy competition review in 2017, again identifying the retail price rises were due to the impact of closing Hazelwood and Northern power stations and the lack of investment because of Federal energy policy failures and increases in gas prices. For good measure, the Federal Minister for Energy and Climate Change instructed the Australian Energy Regulator [AER] to monitor the New South Wales electricity market for features or behaviours that may be detrimental to effective competition. He asked the AER to provide advice to the Council of Australian Governments [COAG] Energy Council on any factors affecting the efficient functioning of the market. Again, the AER found fuel supply issues and fuel prices had impacted retail electricity prices. It noted other market factors including inter-regional flows of electricity following the retirement of Hazelwood.

The AER found no evidence of opportunistic bidding or false or misleading bidding. Looking forward, we are hopeful the wholesale market is stabilising. Forward prices are softening as more supply is introduced, largely in the form of wind and solar power. This will ease the pressure on household electricity bills. As this occurs EnergyAustralia is committed to supporting vulnerable customers. Our industry-leading hardship program, EnergyAssist, is available to all our customers experiencing hardship. We provide energy audits, appliance swaps, debt waivers and co-payments to help people get back on their feet. Approaches are tailored to our customers to make sure they are on the most appropriate arrangements for them. Last year we announced an additional \$10 million funding boost to the program.

More broadly, we have launched two retail products providing price certainty for our customers: Secure Saver fixes prices for two years, yet allows any price reductions during that time to be passed through to our customers; Anytime Saver has guaranteed discounts that are not conditional on a customer settling their bill on time. These are examples of the product innovation essential to a competitive market which provides customers with choice and the ability to manage their energy costs. The New South Wales energy retail market is highly competitive and evolving. The two years following price deregulation saw prices falling. It was only in 2017 that we saw a completely unacceptable price outcome with a 20 per cent rise in retail prices. To emphasise, a 20 per cent price rise is not acceptable.

We cannot see major parts of our system close without notice. The closure of the Hazelwood power station by ENGIE was the single biggest contributor to that 20 per cent price rise and we strongly support changes to the market to give years of notice to the retirement of large power stations, coupled with climate policy which can come in the national energy guarantee that supports further investments. Closures are inevitable but we must plan for closures and replace their capacity in advance. EnergyAustralia has consistently

argued for retail energy market reforms that deliver reliable, affordable and cleaner power at least cost for our customers and will continue to do so. Thank you for the opportunity to speak and very happy to take questions.

The CHAIR: I will make a statement before questions from the Opposition. I declare I am an Origin client. I am extremely disappointed—I think it is all but slack and contemptuous and I do not know whether the rest of the Committee members share this view—but no submission has been made by you. For us to be measured in our questioning and to have an opportunity to prosecute the case on behalf of consumers and the people of New South Wales, to have no submission in front of us is deplorable. I know you have major work that you are sending to the national energy market and we appreciate that. I think for us to go off the cuff is pretty shameful.

The Hon. ADAM SEARLE: It is unfortunate we do not have a submission to guide us. We will continue. You indicated that the 20 per cent price rises that customers in New South Wales experienced last year was not acceptable and it was largely due to a doubling of the wholesale price. Do I understand that is a common position of the energy companies here today?

Mr COLLETTE: Yes.

Mr BRISKIN: Yes.

The Hon. ADAM SEARLE: You are vertically integrated, which means you are not only retailers selling to the community but also generators; that is, you generate your own electricity. Is that correct?

Mr COLLETTE: From EnergyAustralia's perspective we generate around nine terawatt hours of electricity in New South Wales and we buy around 11. We are a net buyer.

Mr BRISKIN: For Origin Energy, we generate about half the energy that our customers demand nationally.

The Hon. ADAM SEARLE: How do you price the electricity that you buy from yourselves?

Mr COLLETTE: From an EnergyAustralia perspective we price based on the wholesale market. We are very disciplined in looking at the market to ensure that when we are buying for our customers, whether from our own generation or from someone else, we are buying at the cheapest price. We use the market as the discipline around that process.

The Hon. ADAM SEARLE: How does that work in a practical sense? Do you have a separate entity that is your generator and you have arms-length management so there is no padding?

Mr COLLETTE: From an EnergyAustralia perspective we run what we call books, and a book is an activity. So we have a generator and we have a retail business and we buy and sell between the two at market prices.

The Hon. ADAM SEARLE: What sort of visibility of that can we have to make sure that is what is happening as opposed to simply passing on costs?

Mr COLLETTE: I would refer the Committee to the Australian Competition and Consumer Commission [ACCC] investigation that is currently underway. It has visibility of just about every part of our business and I am sure it will comment on all those operations.

The Hon. ADAM SEARLE: I am sure it will, but I am asking what visibility we have in this Committee and what visibility the general public has?

Mr COLLETTE: As I have said, the approach we undertake is to buy from the marketplace. It is a complicated process. We are happy to outline the way it works in more detail.

The Hon. ADAM SEARLE: I am happy for you to take that on notice. There is an apprehension—perhaps right, perhaps not—that because the vertically integrated companies are their own generators, at least to a large degree, the claim that an increase in wholesale costs is driving power prices rings hollow, given that you are doing business with yourself. There is a lack of transparency, at least in the community, about that. The other issue you identified as driving prices up was the closure of Hazelwood and Northern, is that correct?

Mr COLLETTE: Correct.

The Hon. ADAM SEARLE: Hazelwood generated a maximum capacity of 1,600 megawatts and Northern had a maximum output of 520 megawatts. That is less than 2,000 megawatts. It is not an inconsiderable amount of money, but the closure of those two in short succession in no way explains the

staggering leap in prices that your companies have been charging households and businesses. I am pretty sure that I read reports that the gap in the electricity generated has been filled from other sources coming online. Is it not the case that your generators have simply used this opportunity and the uncertainty to gouge prices out of your customers and the general community?

Mr COLLETTE: From my perspective, the closure of Hazelwood drove up wholesale prices, which flow through to retail prices. In May 2016, the New South Wales year ahead price for electricity—the price that customers ultimately pay—was around \$48 per megawatt hour. By May 2017 it was \$116 per megawatt hour. That directly related to the Hazelwood closure during that time frame. The reason prices rose so quickly was because of the lack of notice that Hazelwood provided. As you say, there were almost 2,000 megawatts that came out of the system. That cannot be replaced cheaply with five months or six months notice. In respect of the energy that was generated in the system, yes, Hazelwood was replaced, but given it was taken out, it was replaced by peaking generators and those peaking generators are much more expensive to operate than the base load generation that Hazelwood provided.

As an example, peaking generators at a prevailing cost of gas, which last year was around \$10 per gigajoule, can cost in the hundreds of dollars per megawatt hour to generate. They were being used quite regularly during last year. According to the analysis done within EnergyAustralia, around half of Hazelwood's energy was replaced by black coal but the other half was gas. With more time I would have expected the market to arrange for more black coal to be available, which would have been a cheaper fuel to gas. With years of notice I would have expected the market to arrange for more renewables to be put in place, but with six months notice there are no additional generators that could be built or added to the system that would in any way provide costs similar to Hazelwood.

The Hon. BEN FRANKLIN: Can I ask one quick question to follow up? You agree that base load demand is going down and peak demand is going up?

Mr COLLETTE: Peak demand is being relatively flat; it might be growing a little. Base load demand is definitely going down. It is more changing to a need to balance the grid as more renewables come in and renewables generate when they are on. When they are off, we need to balance that. That is more the role that is now needed to be provided by thermal generation instead of base load.

The Hon. BEN FRANKLIN: My point is that dealing with peak supply is going to be more an important issue for your companies. I will follow up on the timing issue later on, but I do not think it is acceptable to say, "This is a problem and it is going to cost us lots of money." I am interested in what both your solutions are to providing more peak demand when it is required, which I suspect is going to go up substantially.

Mr COLLETTE: I can speak from an EnergyAustralia perspective. We recognise that the nature of the energy system is changing. We also recognise that it is not clear exactly which option will be the cheapest option to provide the role of which I spoke. In that light, we are exploring a number of opportunities. By exploring, I mean putting real money on the ground to test these things out. For example, we have 55 megawatts of batteries in Victoria that we have committed to and our revenue underpins those contracts. We will test how effectively those batteries are able to perform an energy storage role in the State of Victoria. If that is effective, we will use them in New South Wales. We have a seawater pumped hydro project in South Australia. We are attracted by that technology because it provides a durable piece of kit that will last 50 years. We also like the idea that it can run on seawater. Australia is not flush with freshwater. If we can make that technology work in South Australia, we can bring it to the coasts of Victoria, New South Wales and Queensland. We are putting money into that to work out exactly how much it costs and the role that it can play going forward.

We were one of the biggest participants in the Australian Energy Market Operator [AEMO] and ARENA demand response trial. This trial was entered into before last summer, under which we worked with a number of our customers, be they large industrial customers, small commercial and residential customers. We provided technology and behavioural tools to help them do things like cycle their air-conditioners at times of peak demand or for companies for whom they can interrupt their processes without too many consequences, we gave them money to turn off at times of peak demand. Some of those have worked extremely well and we expect to grow from the 50 megawatts we had in that trial to hundreds of megawatts going forward.

The Hon. BEN FRANKLIN: I will let Mr Briskin answer, but to confirm, if that battery trial and pump hydro trial worked effectively, are you committing that you will expand both of those in your company?

Mr COLLETTE: We are a power retailer and generator. Our business is to invest in those sorts of technologies. If we see an economic case for those technologies along with the gas-fired generator projects we have in New South Wales, and we have 1,000 megawatts of gas-fired generation under development—if we can

make them work economically and see that they meet the role in the market, we will certainly recommend them to the board for approval, and we have built things like Tallawarra in New South Wales.

The Hon. BEN FRANKLIN: I will go to Mr Briskin quickly.

Mr BRISKIN: To help frame, as I said, we are a net purchaser of energy, which means that we are looking at where we can increase our capacity in the market. What you have seen recently is the Eraring Power Station increase supply. We have committed to 1,200 megawatts of renewable energy and just yesterday announced a feasibility study in Shoalhaven for a pumped hydro of 240 megawatts, which we are looking to put in place.

The Hon. ADAM SEARLE: Getting back to the price rises, essentially what you are saying is that because of the exit of those two generators, your wholesaler could charge more, simply because you could, and that is what you did. There was no actual shortage—the lights did not go out across the nation. There was not a complete lack of energy in the system, you just took advantage of the uncertainty to charge more. That is the case, is it not?

Mr COLLETTE: If I can jump in and give a little more context from the EnergyAustralia position, I mentioned—

The Hon. ADAM SEARLE: I would like to hear from Origin from time to time.

Mr BRISKIN: I would correct that by saying that what we have experienced over that period is increased input costs into sourcing and purchasing that energy. For example, running Eraring with increased output has resulted in us needing to purchase coal at much higher prices and needing to transport that coal. Equally, we are a net purchaser, which means that we need to run our generation at potentially higher costs; for example our gas-fire peaking generation plants. Finally, we have had to also purchase from the market at that higher price as well.

Mr COLLETTE: I would add from an EnergyAustralia perspective that our power station, Mount Piper, last year faced significant coal supply challenges. We have one source of coal, the Springvale coalmine. In August there was a court appeal upheld by a group called 4Nature, which impaired the planning approval of that coalmine. In that case, we were not even sure we had coal. It was not a situation in which we had available generation we could rely on; we were not even sure we would have a power station by the end of the year.

The Hon. ADAM SEARLE: Yes, but the department addressed that pretty quickly.

Mr COLLETTE: It was addressed in October of that year. That was a considerable period of time because we had the ongoing court case during the year and the outcome of that court case was very difficult to predict. We had an outcome in August that was addressed in October, so we spent most of the year not knowing what our fuel supply position would be to that power station.

The Hon. ADAM SEARLE: That may be so. Again, I go back to my point: you took advantage of the certainty to charge more from your customers? That is the nuts and bolts of it. It was not like there was a complete shortfall of energy in the system?

Mr COLLETTE: The price of energy in the system increased substantially. Coal and gas prices for EnergyAustralia were up 25 per cent, 30 per cent from the prior year. The cost of producing energy went up a lot with the closure of Hazelwood, that is why the wholesale price went up and we are a buyer of energy for our customers, and that is what drove the retail prices up.

The Hon. ADAM SEARLE: The price of electricity in this country has gone up over 100 per cent in the last decade. One report that said it was 183 per cent. The Australia Institute assesses the cost of gas as 3 per cent of the final bill, and the price of coal is approximately 5 per cent. Nothing you have said today explains the staggering price rises your companies individually and collectively have been visiting on the community.

Mr BRISKIN: Maybe let me address that with two points. One is that the ACCC has undertaken a review and in its preliminary findings it has identified that the increase in the prices over the past decade have been primarily attributed to the network cost of the poles and wires.

The Hon. ADAM SEARLE: Just on that, the network companies have been very clear in their submissions to this inquiry that although they claim they have reduced their network costs they say your companies have basically trousered the savings?

Mr BRISKIN: If I could correct that? The second component of that goes to the cost of green and retail costs in both retail costs and margin, and that was a much smaller component of the change in the energy

bills. The third one, which is the one we have just addressed, is the sudden increase in the wholesale cost. That is the real cost that businesses face and that we face; it clearly has had an impact in the most recent price rises.

The Hon. ADAM SEARLE: The Grattan Institute "Price Shock" report, and indeed the work by respected economist Bruce Mountain, said that the electricity retail sector has some of the highest retail margins of any business in Australia. What exactly is the retail margin in this State?

Mr BRISKIN: If I could also recognise that the Independent Pricing and Regulatory Tribunal [IPART], as Mr Collette mentioned earlier, produced a report in October 2017. That reviewed the sort of two key points. First, that price rises since deregulation have been approximately 2 per cent. When you look at the benefit that customers have been getting through lower competitive deals—

The Hon. ADAM SEARLE: No-one in this room or in the community believes that real prices have only increased by that amount of money. Everybody, including businesses that we all talk to and consumers, talk not just about 20 per cent price rises but I have been hearing 160 per cent from businesses in the Hunter that have to get energy brokers to acquire their energy. It does you no credit to refer to that IPART report. So please just attend to the questions.

Mr BRISKIN: The second aspect is that in the review across other like industries or like companies in Canada, the United States of America and the United Kingdom, as well as Australia, the margins earned by retail businesses were considered in line.

The Hon. ADAM SEARLE: Mr Mountain's report stated that within less than a year of deregulation you had put your prices up by nearly 15 per cent and that you are charging something like triple the amount for electricity that customers in regulated markets are paying. What do you say about that?

Mr BRISKIN: I would probably correct that to say that the year after deregulation New South Wales prices from Origin went down 6 per cent.

The Hon. ADAM SEARLE: So what your customers were paying actually went down?

Mr BRISKIN: We reduced our tariffs by 6 per cent in the first—

The Hon. JOHN GRAHAM: Let us talk about the question you were asked before and you did not answer: What has happened to your retail margins since deregulation? You have talked about retail prices.

Mr BRISKIN: Since deregulation what we have seen is 26 competitors enter the market and we are getting prices now in the market that are upwards of 20 per cent discount on tariffs. What has effectively happened is that those discounts and those rebates that have occurred on customer bills have—

The Hon. JOHN GRAHAM: With respect, you are avoiding the question: What has happened to your retail margins since deregulation in New South Wales?

Mr BRISKIN: Our margins since deregulation—

The Hon. JOHN GRAHAM: Are they up or down?

Mr BRISKIN: They are broadly discounted away to make them relatively flat to slightly—I think they have slightly grown but that would just reflect what is the cost of capital into our business.

The Hon. ADAM SEARLE: Let us just cut to the chase: What was your reported profit last year compared to the year before?

Mr BRISKIN: I have gotten last year's—the half year figure we have was a \$420 million profit. I think the year before would have been. I do not actually have the figure with me.

The Hon. ADAM SEARLE: And for your company?

Mr COLLETTE: From a bottom line perspective as we report it, last year's profit after tax was \$476 million.

The Hon. JOHN GRAHAM: I note that the ACCC indicates that since price deregulation in New South Wales they have increased year on year—namely, 2013-14 to 2015-16. That backs up the statement you have made but it is quite a dramatic increase once the shackles are off the retail margins in New South Wales.

Mr COLLETTE: If I could just append that? The ACCC investigation also looked at the commercial and industrial margins and commercial and industrial is two-thirds of the market. It said they were zero.

The Hon. JOHN GRAHAM: You have characterised the ACCC report—it is the most comprehensive look at some of these issues—and you skipped over the key findings, which was the significant concerns it had about concentration in the New South Wales market. What do you say to those concerns?

Mr BRISKIN: As I mentioned earlier, we are competing with 26 other retailers in the New South Wales market. I think that the level of activity has grown, the level of churn has grown, and the offers have absolutely proliferated. What we are seeing there is new innovations as well in different offers that have come—

The Hon. JOHN GRAHAM: The ACCC has been pretty clear on this point. It said, "This market dominance has led to non-vertically integrated retailers having limited access to risk-management products, and outcomes for consumers and businesses are being driven by pricing practices that are not consistent with vigorous competition." What do you say to that pretty direct criticism of your business model and the impact it is having on customers in New South Wales?

Mr BRISKIN: We would not see 26 retailers in the market if that was the case.

The Hon. ADAM SEARLE: Your two companies, plus AGL, have 90 per cent of the retail market in this State and something like 70 per cent of the generators. That sounds like pretty heavy market competition. The Grattan Institute says that competition is failing and the Energy and Water Ombudsman NSW [EWON] says that despite the number of retailers there is no real competition. This seems to be gelling with the experience that businesses and individual households are telling us is their lived experience. I have to be frank with you, nothing you are telling the Committee today has the ring of accuracy about it.

Mr COLLETTE: In the mass market we see over 20 retailers and when I look at some of the offers I do not understand how they make any money as a retailer. I think at the moment mass market retail is being driven by: Make an offer and take a bet that you can reduce your operating costs sufficient to earn a return. That said, I completely accept it is a difficult thing to accept competition is effective when you have 20 per cent price rises but the reality is the closure of Hazelwood and energy policy inaction have levied a 20 per cent charge on all retail customers.

The Hon. ADAM SEARLE: Just going back to your profitability. I have been reading some work by journalist Michael West who said, in relation to Energy Australia, from 2014 to 2016 you had nearly \$24 billion in revenue but you made no tax in this country. Is that correct?

Mr COLLETTE: We had accumulated tax losses so we did not pay cash tax at that stage.

The Hon. ADAM SEARLE: I am happy for you to take this question on notice. From 2014 to 2016 what has been your revenue, what has been your taxable income and what tax have you actually paid in this country?

Mr COLLETTE: I am happy to take that on notice.

The Hon. ADAM SEARLE: The same for Origin. I think in the same period you earned something like \$37 billion in revenue and paid \$108 million in tax. I am interested to know just what good corporate citizens you have been during that time and since.

The Hon. BEN FRANKLIN: To make it clear, that is from 2014 up until the most recent information that you have.

The CHAIR: The power bill of the Manildra Group in the Shoalhaven has gone from about \$50 million to \$70 million. They have the capacity to pay because of their product but it puts a lot of jobs at risk if other businesses and commercial industries are facing that sort of increase. It is also a very good business in a regional area and people need those jobs. But something is not right when we see increases that do not match the sort of rhetoric statistics you are putting up now. I want to also ask you about something else. I want to know about your hardship numbers for the past three years. If you do not have them you can take the question on notice. Can you indicate for the past two years particularly what your hardship numbers were—how many people have applied for hardship provisions?

Mr BRISKIN: I will have to take the numbers on notice, but what I would say is that just over 10,000 customers are in our hardship program. As I said earlier—

The CHAIR: Sorry—can I just clarify: is that 10,000 customers for this financial year?

Mr BRISKIN: Currently on our hardship program—correct. Those customers are not paying any of the increase that we saw. We did not pass that through to them. Equally, those customers are able to access energy audits. We have access to financial advisers. We pause their payments and also provide contributing

payments or debt relief to those customers as well, and energy appliance replacements. They get individual support. They are looked after to make sure the lights stay on.

The CHAIR: I am a father of six. When I get my power bill and it is about \$1,200, but if I sign up to some program that I have to initiate—Origin do not initiate it—I get a percentage drop which can drop my bill by \$150 on some sort of system over 12 months, how is it that a company can take a hit of \$150 off a customer's bill if I pay before a particular date?

Mr BRISKIN: Our position is that a well-functioning competitive market does three things. The first is that it is simply able to provide transparent, clear information to our customers; the second is that it is able to innovate in our products and service and continue to deliver value that can reduce customers' bills; and the third is that it supports the most vulnerable in our society. It has always been our position that we will do that and we will commit to doing that, and we will invest a proportion of our profits to do that.

The CHAIR: It is a lot of profit you are giving. I do not know too many businesses that can give away \$150 a quarter to a customer, never mind those who are not able to be on top of their bills and that day flicks over and they suddenly owe \$150 more than they would have if they had paid it the day before. Most people have the capacity to think through that and do that, but normally for those people facing hardship for various reasons, \$150 the day after is a big whack, is it not?

Mr BRISKIN: That would be a big whack, but we provide them with a guaranteed discount, so they do not have to pay on time to still be entitled to that benefit and that discount.

The Hon. BEN FRANKLIN: I will follow up on a couple of issues already raised. The first is with you, Mr Briskin. You said that your company, Origin, did not pass through the full price rise because of the increase in wholesale costs and so forth. What was the rise and what specifically did you pass on as a percentage of the bill?

Mr BRISKIN: What we passed on was a 16 per cent increase for residential customers. It would have been approximately a 20 per cent increase if we had applied that.

The Hon. BEN FRANKLIN: Are you saying you passed on 80 per cent of the increase?

Mr BRISKIN: It would be thereabouts.

The Hon. BEN FRANKLIN: Secondly, both of you made quite a deal about the fact that more notice needed to be given before the retirements. Specifically how many years of notice do you think should be given by generators—or in fact must be given by generators—before these resources are retired?

Mr COLLETTE: We supported five years in the Finkel review for all major generators going forward. Where the market has landed is three years. The Australian Energy Market Commission [AEMC] is now undertaking a piece of work to work out how to make that into a rule.

Mr BRISKIN: And Origin's position was to support three years notice.

The Hon. BEN FRANKLIN: Mr Collette, is it the position of Energy Australia that you will give at least five years of notice before you retire any of your generators?

Mr COLLETTE: We will certainly endeavour to do so. Our plan is to give five years of notice but we need to work through and understand better the issues that the AEMC will throw up. It does rely on having energy and climate policy in a direction that allows us to plan. As long as we can plan, we should be providing five years notice.

The Hon. BEN FRANKLIN: Let us move to the National Energy Guarantee [NEG] then. What specific concerns do both of you have regarding the design of the NEG as it is currently described—I know it has not 100 per cent landed yet, but as it is currently described—particularly, ideally, in its impact on New South Wales?

Mr COLLETTE: Noting that the design is not fully formed, generally I expect the NEG, if implemented, to be a positive thing for New South Wales. The reason I say that is because it should provide a trajectory forward on emissions for the country which allows us to plan and understand what the future of coal-fired generators will be, which allows us then to build in advance of their closure. Secondly it provides a reliability safety net to ensure that as we get higher levels of renewable energy penetration there are incentives and mechanisms to ensure we have enough megawatts to meet demand under foreseeable circumstances.

The Hon. BEN FRANKLIN: Okay. That did not really answer the question about what concerns you have. I agree with you. I take it you are comfortable with where it is travelling at the moment.

Mr COLLETTE: There is still a way to go. There are another couple of months until August. It is an unusual process in the sense that normally the way policy works is you get the policy, you examine it and you look for holes. This way you start with the holes and you try to build something around it. I am confident in the Energy Security Board in the approach that they are undertaking. They do have AEMO, the Australian Energy Market Commission and the Australian Energy Regulator, all the right people, there. I personally believe they can make something that works.

The Hon. BEN FRANKLIN: Mr Briskin?

Mr BRISKIN: As I said earlier, we actually are very supportive of the NEG. Right now it is working through details; it is filling those holes. We think the Energy Security Board is doing an excellent job. We are confident this is going to be much-needed policy certainty for both industry and customers.

The Hon. BEN FRANKLIN: On a different issue, I think it is great that you are doing reasonable work on renewable projects and particularly pumped hydro and storage projects. My question is more a macro one as to whether you have views about investor sentiment for new generation in New South Wales and whether you have any comments you would like to make about that.

Mr COLLETTE: From my investors' perspective—CLP is a Hong Kong listed utility that owns Energy Australia—from CLP's perspective and that of other investors we talk to, the number one concern is around integration of energy in climate policy and having a durable landscape going forward. The thought of having energy policy that comes in for a couple of years, is taken out and then comes in again scares investors. The attraction of the National Energy Guarantee is not just that it is Federal activity but that it is one that brings in States and is a compromise that has bipartisan support.

Mr BRISKIN: I could not agree more. The durability of policy is critical right now. Origin is committed to more investment into supply. We are looking forward to getting that policy certainty.

The Hon. BEN FRANKLIN: So are we.

The Hon. TAYLOR MARTIN: From what I can gather, because as the Chair noted there have been no written submissions, Origin Energy last year had 732 megawatts in owned and contracted renewable capacity. That is supposedly growing to almost 2,000 megawatts by 2020. Is that correct?

Mr BRISKIN: That is correct. We are investing an additional 1,200 in both solar and wind projects. As I mentioned earlier, it is great to see us kick off the feasibility study for Shoalhaven pumped hydro. That is an excellent opportunity for us to pursue.

The Hon. TAYLOR MARTIN: What is stopping that being higher than 2,000 megawatts or do you have a plan for it to be higher in the next few years after 2020? Is it because of cost or is it because it cannot supply a base load and you are looking at other forms of generation as well?

Mr BRISKIN: We make these decisions on the basis of what the macro impacts in the market are and the generation capacity that is there as well as the return on investment. I am hoping that we can continue to find very positive returns on investment and therefore we will just continue to invest more and more.

The Hon. TAYLOR MARTIN: From a nameplate capacity of 2,000 megawatts, what would you expect the average output to be?

Mr O'GRADY: I will take that question. Most of that investment in is renewables and is a combination of wind and solar—proportionally more solar than wind—so the average capacity factor would be in the 25 per cent to 30 per cent range.

The Hon. TAYLOR MARTIN: How many people are currently employed at Eraring power station?

Mr O'GRADY: Currently at Eraring power station, there are around 400 employees.

The Hon. TAYLOR MARTIN: What role do you see for Eraring following the closure of Liddell in 2022?

Mr BRISKIN: Eraring is making an enormous contribution to New South Wales. It is a key asset and will continue. We see our ability to continue to run that and continue to maximise output over that period.

The Hon. TAYLOR MARTIN: Eraring is expected to close in the early 2030s; is that correct?

Mr BRISKIN: That is right. Our intention is that we would close it at the end of its useful life.

The Hon. TAYLOR MARTIN: It is early days, but do you have any plans for generation capacity in the Lake Macquarie area?

Mr BRISKIN: It is probably too early and I may have to take that on notice.

The Hon. TAYLOR MARTIN: To both companies represented here this morning, what do you believe is the single biggest change needed to drive prices down in the short term?

Mr COLLETTE: I would say that in the short term we are already seeing prices coming down. I mentioned that prices in May 2017 were around \$116; they are now down to \$74. So there has been a 36 per cent decrease during that time. That is continuing with more renewables entering the system. What we need to do is make sure that that transformation of the system—the turbocharging of more renewables and balancing coming in to replace coal—continues, and that is where the National Energy Guarantee is incredibly important.

Mr BRISKIN: I will not repeat what Mr Collette has just said. I will just add that what we would like to see is innovation at the customer side. I think what we would like to see to bring down energy prices is us continuing to invest in new technologies that can actually start to help customers with both demand management, how they use solar on their roof, how to actually be alerted to what the costs of their energy are, and then how to control their appliances and make better decisions. I think that transparency of information at a customer end will go a long way to reduce the energy prices.

The Hon. TAYLOR MARTIN: The costs that consumers pay are made up of three components: generation, network, and the retail side. What do each of your companies have in mind to try to reduce the cost on the retail side of things?

Mr BRISKIN: On the retail side we would like to think that we will reduce costs by improving the digitisation of our business. I always go back to the view that in the world before the internet, computers were fantastic, but once you connected them all together they delivered an enormous amount of opportunity and new products. Think about the same within the household: there are enormous opportunities there for us to be able to automate different things in the household to be able to improve how and where and when energy is consumed. I think that that is going to have quite a substantial impact on reducing retail costs and also on reducing retail pricing.

Mr COLLETTE: I would add that I certainly agree that digitisation and chasing down our cost base will give lower prices to customers. The other piece of the puzzle is networks. At the moment, networks and retail are broadly dissimilar activities. The way the system is evolving, it is moving from a one-way generation-to-retail system to an interconnected network with things moving all over the place. In that context, we see ourselves as critical to working with networks to change the way that they invest. And if customers are going to have solar or batteries or controllable load, there is no need to build for peak demand in the way that we did in the past. So we see some real prospect of taking some cost out of network investments going forward, which can reduce retail bills.

The CHAIR: I would like to see EnergyAustralia's figures for hardship over the past three years, as well as something from Origin on the Shoalhaven
The Hon. ADAM SEARLE: You have agreed that your companies have enjoyed significant revenues from your energy portfolios—in the tens of billions of dollars—and that you have paid little to no tax. You still have not answered my questions about what are your retail margins since price deregulation in this State. Are you not going to answer my question?

Mr COLLETTE: We can take that on notice.

The Hon. JOHN GRAHAM: For each financial year; that would be helpful. I welcome the statement that 20 per cent price rises are not acceptable. I think it is helpful to put that on the record here. In New South Wales, 20 per cent is a significant price increase. The Australian Competition and Consumer Commission [ACCC] figures on standing offers in New South Wales showed that the change in one year was \$325 to \$450. You would acknowledge that that is a massive impact on households.

Mr COLLETTE: Absolutely. As I said, 20 per cent price rises or \$300 to \$400 is not what the system should be delivering.

The Hon. JOHN GRAHAM: I thank EnergyAustralia for those comments.

Mr BRISKIN: I think I would only agree with that. It is not acceptable, that level of price increases.

The Hon. JOHN GRAHAM: You agree that 20 per cent increases are not acceptable? You are happy to put that on the record?

Mr BRISKIN: It is 16 per cent, from Origin's perspective. But that is correct.

The Hon. JOHN GRAHAM: Understood. One thing that is making your jobs harder as these prices go up is what the Government had put on the record as it privatised electricity. I quote what the Government mailed out to almost every household, that as a result of power privatisation "prices will not rise as a result of this plan". One reason you are copping a lot of public anger is because of statements like that. Prices have gone up. Statements like that make your job harder, do they not?

Mr COLLETTE: I think if I go to the root cause of the recent price rises, as I have said, I see that as Hazelwood and an energy and climate policy charge on the consumer. Those statements were made in the context of the time. We saw prices come down the first two years after privatisation. I do not think anyone anticipated that we would have continuing, ongoing energy policy uncertainty and closure of a major facility with only six months notice.

Mr BRISKIN: Correct. It was not foreseeable to see that level of capacity exit the market in such a quick timeframe.

The Hon. JOHN GRAHAM: It is a strong guarantee to give; there were no qualifications. Does that not make your job harder?

Mr BRISKIN: Yes. I would say clearly, as we have said, we would rather those prices have come down. We would rather see that we would not pass through those 20 per cent increases and we would rather see those reductions that we saw in the first couple of years after deregulation.

The Hon. ADAM SEARLE: If you do not have an immediate answer to this, you can take it on notice: in finding possible solutions and innovations for customers, one idea has been that energy companies should have to offer or provide a basic service offer [BSO] to all customers. What is your response to that idea?

Mr BRISKIN: I think what you are referring to is in Victoria, where we have seen a report that had, I think, 11 different recommendations. In fact, what we are very supportive of is, I think, 3 to 11 of those recommendations, which all go to transparency in the market, giving customers dollar-led information. We think there is a lot of fantastic work in there that, in fact, we are actually working with the Australian Energy Regulator [AER] at the moment on how that gets implemented across New South Wales, Queensland, Victoria and South Australia. In regard to the BSO, we believe that competition is the best way to get prices down. As Mr Collette mentioned, we have seen in the market right now some of the offers that are out there are at very, very little margin, if at all. So our firm belief is you encourage the competition, you will get the innovation and you also get the prices come down.

The Hon. ADAM SEARLE: Is that your position as well?

Mr COLLETTE: We believe regulated prices give a false comfort. Regulated prices give the appearance of, "These prices are as low as they should be." Competition actually drives the prices lower. What we have seen over the past year—

The Hon. ADAM SEARLE: Except that it has not.

Mr COLLETTE: —is frenetic competition that has driven the prices and the discount levels versus the prices lower. The issue—

The Hon. JOHN GRAHAM: It is driving your retail margins higher. That is the clear evidence of the ACCC in New South Wales.

Mr COLLETTE: We have taken the question on notice and I will come back on that. But if I look at the size of the discounts that are in the market, they are growing. We see more and more competition driving prices down. Where we see the opportunity for improvement in the retail market is around the complexity of engaging with the market.

The Hon. ADAM SEARLE: Companies, including yours, offer discounts off standing offers which are highly misleading to customers. Why should your advertised discounts not be the actual discounts based on what customers are currently paying rather than a discount off your inflated standing offers?

Mr COLLETTE: We are happy to produce rates based on what people pay. If you go to our website you will see the cents for a kilowatt hour and the dollar rates. They are a much better way of depicting what

people will pay but it is not standard in the market. We are working closely with DAR and others on how to better take the industry in a direction where it is easier to engage with.

The Hon. ADAM SEARLE: So you will agree that there should be readily comparable offers between different companies. Customers should be able to compare offers between different companies?

Mr COLLETTE: I think it is in the best interests of the customer and I agree with you.

Mr BRISKIN: Origin's position is to support that as well. We have been advocating for comparative rates for quite a while now.

The Hon. JOHN GRAHAM: Which is quite helpful, by the way.

The Hon. BEN FRANKLIN: I have a question about smart meters. Nationwide we have installed about 3.3 million or so out of 13.6 million metres but we lag internationally. In my role as Parliamentary Secretary for Renewable Energy, I have numerous complaints regularly about delays from retailers in providing smart meters. My question is twofold: First, do you accept the importance of rolling them out as quickly as possible to households that want them; and, secondly, what are you doing to ensure that that happens?

Mr BRISKIN: The delays that you are referring to follow a significant change in the industry called Power of Choice that went live in December. As an industry, this probably would be the most significant change that we have seen since retail contestability many years ago. All processes and all systems have changed. As a result of that, what we are seeing industry-wide is that there are delays in the logistics of putting meters up.

The Hon. BEN FRANKLIN: Since December last year?

Mr BRISKIN: Yes, that has been going on since December last year.

The Hon. BEN FRANKLIN: Are you saying that the delays have been a problem only in the past six months?

Mr BRISKIN: The other delay was due to the solar bonus scheme ending—and ending very quickly. We as an industry tried to respond to that by putting meters into customers' houses that had solar. Very little notice was given as to when that scheme ended and the time frames were quite compressed for us to be able to put meters in. That caused delays as well.

The Hon. BEN FRANKLIN: You have had six months. Are you on top of it now?

Mr BRISKIN: We are feeling much more confident now. There is still a lot more to go. For example, we have increased the resourcing within our teams by more than double, so we are feeling more confident.

The Hon. BEN FRANKLIN: That is good. Mr Collette?

Mr COLLETTE: I absolutely agree that smart meter installation, getting it in quickly, is important to customers and to us. Similarly, we have had challenges in ramping up our activities. We are putting more resources in place and we will continue to do that until we get to levels that are acceptable to customers.

The CHAIR: Unfortunately, we have run out of time. Some questions were put on notice and in light of your evidence you will be sent some supplementary questions. You will have 21 days to answer them and our team would be glad to help you with that. Thank you for your evidence this morning.

(The witnesses withdrew)

(Short adjournment)

THOMAS MASCHMEYER, Professor of Chemistry, University of Sydney, sworn and examined

MARTIN GREEN, Scientia Professor, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales, affirmed and examined

The CHAIR: Do either of you have an opening statement that you would like to present?

Professor GREEN: I have prepared a brief handout which covers the points that I am interested in. I am mainly involved in solar photovoltaic energy. The costs of that have been coming down quite dramatically largely as a result—at least as we claim it—of the efforts of our group in that we, former students and some of our technical people established manufacturing in China in 2003. The reason that we have seen this sudden dramatic reduction in costs has been the take-up of the manufacturing and the transferal of that to China. Also we have held the world record for the highest silicon cell efficiency for 30 of the last 35 years and the technology we developed there called the PERC cell is now becoming the commercial standard. At present about 30 per cent of the international capacity is PERC technology but it is quickly taking over from the other stuff. That is higher efficiency than the standard cells and that is helping to further reduce the cost.

The first graph on the handout just shows the commercial experience. It is international bids that have been received for installing electricity generation supplies in various countries. Many countries are now handling these by calling for power purchase agreements and seeking international bids for the supply of the electricity. The thing I wanted to stress there was how quickly solar has come down. Just two or three years ago it was quite expensive. In fact, I have shown several technologies there and it was the most expensive. If you are reading anything from more than two years ago it is way out of date. There just needs to be a bit of caution in reading stuff. It has come down quite dramatically since then. Some of that is due to cost reductions of the cell technology. The cells themselves have been decreasing close to 20 per cent a year over the last five years. But you can see that the cost being bid for these systems has come down even more quickly than that.

The other contributor to that is the cost of financing. Back four years ago people wanting to install systems had to pay higher interest rates because no-one really believed the systems were going to work as well as claimed and so on. Since then the systems have proven themselves, so you are getting lower interest rates from established lending sources. Now several companies such as Enel, the big Italian gas and electricity supplier and distributor, are issuing green bonds and they are getting oversubscribed at very low coupon or interest rates, a 1 per cent sort of figure. The companies that are bidding here are getting access to very low interest rate capital. So the situation has sort of reversed. Before solar was paying high interest rates for their money, higher than the traditional suppliers, but now they are paying lower because more people are willing to invest in green bonds than in financing something like a coal or nuclear plant. That is the first point.

The second slide shows that the industry is growing very quickly. It is quite remarkable but over the last 20-odd years the industry has grown at a compounded rate of 40 per cent per year. That is in terms of the amount of solar that is installed each year. That means every two years the amount doubles, and it goes up 10 times every seven years. That has not only been for a couple of years, it has been for 20-odd years that it has been occurring.

The Hon. ADAM SEARLE: This is not a new trend. It is pretty sustained?

Professor GREEN: Yes, this has been sustained since the late 1990s when Germany introduced the feed-in tariff programs there and clear really kickstarted the industry. The industry has grown at that type of speed over that period. That has been one of the things that has been contributing to the reduced cost and the more rapid take-up of new technology like the PERC cell. Last year 100 gigawatts of solar was installed worldwide. That is a tenth of a terawatt and a terawatt is where you are getting to a really serious level where you are really starting to make an impact on global energy supply and carbon dioxide emission reduction.

All those wiggly little lines going out to the right on those graphs are International Energy Agency [IEA] figures that were used in their projections about the uptake of solar. There has been some sort of vested influence at work there in that they have imagined that this industry that has been growing 40 per cent a year each year is going to just suddenly cap out at what it was last year. In terms of giving a fair representation of what the future might like look, I think the IEA has been way off mark.

The third slide shows a very recent estimate from Shell. This is more like my picture of what is going to happen. Shell are imagining peak oil in 2025, that is from an oil company, but the red line is the solar uptake that Shell imagines. If you can read the figures there, you are sort of rapidly getting to a region of installing one

terawatt a year of solar to take up the supply of energy that is going to be required because of the reduction in the use of oil, coal and gas that are anticipated there.

I have underlined the words "primary energy" because I noted in some of the earlier evidence given there was some confusion between primary energy and actual energy. Primary energy is the energy content of the fuels that are used for energy production. You can see nuclear looking like it is giving quite a healthy contribution to total energy supply, but this year for the first time solar and wind combined will exceed nuclear in the amount of electricity produced. It does not seem like that on this graph because included in the nuclear is all the heat that is wasted in the nuclear electricity production. It is something that you have to read into these figures when you read them. With solar and wind, instead of nuclear and other sources counting energy wasted in the conversion, only the energy is produced in the figures that you see there. You have to multiply it by three or more to get a comparable reference.

Carbon Dioxide [CO₂] Reduction shows what one terawatt a year of photovoltaics can do. This is plotting the type of trajectory that many propose is needed to keep global temperature rise below two degrees centigrade. There was a huge problem. No-one had any idea how to address it a few years ago in that the four biggest emitters were quickly going to use up the whole budget despite their best efforts to keep things under control. Photovoltaics can supply a solution in that if it can keep growing rapidly it can knock down the CO₂ emissions of the amount per year indicated by the arrows at the required rate to keep CO₂ under control. That is what is reflected in that Shell scenario. This is a silver bullet—a way of keeping CO₂ emissions under control when a few years ago there did not seem to be a possibility of doing that.

The fifth slide shows that contributors to CO₂ emission and electricity production is a disproportionate source of CO₂ reduction. Electricity accounts for 2 per cent of gross domestic product [GDP]. You have been hearing plenty of evidence about the hardships that the rise in electricity prices are creating. I just looked at recent figures from the Australian Bureau of Statistics and found that 2.2 per cent of global household expenditure goes on the supply of electricity. For most households it is an insignificant amount of expenditure compared to things like tobacco and alcohol that are three times higher. Transport, petrol and running cars is four or five times higher.

Transport is another one. Of particular interest is whether electric vehicles take off. Having solar on the vehicles is sensible. That is something that people don't realise but the amount of solar you can stick on a car can do enough to provide for the average distance that most people commute. The final figure is about the grid network. The grid network has supplied storage for conventional electricity supplied traditionally in the form of off-peak hot water. This is just New South Wales households, but you can see the huge contribution to the left that off-peak hot water heating makes to maintaining the demand for electricity through the night so the coal generators can keep ticking over. It is sort of like a storage to suit the mode of operation of the coal generators. There are business opportunities for moving all those loads around. I have highlighted some other loads there, mainly heating and cooling loads. You can store heat and coolness more easily than electricity, so they seem like easy targets for companies that know how to accumulate and control the loads. There are huge business opportunities there.

The final slide I have not heard talked about in the local context. What is happening in Germany is a lot of the coal stations are being converted to more a flexible operation to accommodate the fact that the grid is going to require them to be more flexible than they have been in the past. A number of power stations in Germany are being upgraded—the upgrades cost a fraction of the capital cost of the installation—to allow them to ramp up and down more quickly. That allows them to respond to variable load more quickly. Importantly, it allows them to operate at lower operating levels. You do not have to turn them off if you have to drop below 50 per cent of rating, as is quite common here. Some of them are operating at 12.5 per cent of their rating before they have to be switched off and they can be reasonably efficient at those low levels of operation. Those are the types of things I am interested in. I hope that has been useful.

Professor MASCHMEYER: I have not prepared a set of slides. I will keep it minimal. I am a professor of chemistry but also a serial entrepreneur. I have set up a series of companies, four of which are quite successful now. One of them is a battery company; that is probably why I am here. My work is at the interface, a little like Professor Green's work at the interface of academia and industry and commercialisation. When I looked at the terms of reference for this Committee I thought it was really important to keep a holistic view of the whole thing of power generation, power distribution and power usage to address that problem.

Different stakeholders will spin different numbers. A lot of information is out there that I am not saying is not truthful but it is spun in a certain way to suit certain purposes. Electricity distribution costs are very high. That is not necessarily what the public understands. They think it is the electricity generation. People point

towards alternative sources of power generation as a culprit for the high costs when, in fact, that is not the case. Keeping a level-headed fact-based view of where the costs are is really important.

Also the way in which these complex systems will evolve is an important question to consider in the future. In my view, batteries will be a key component in that to stabilise grids. We are requested increasingly to accept different kinds of power generation modes, whether it is from intermittent sources or more additional ways with gas coming in, but then you have coal. They have different characteristics, et cetera. We need buffers, and in your terms of reference you talk about a number of buffers. Maybe we can explore them a little later, but batteries have a big role to play. One of the issues about batteries is that they are currently still on the expensive side and operational issues make them, at times, constrained because of the temperature they can run at. I set up a company which I think has solutions for that, so if ever you want to know about this I am happy to talk about it. I think that is where my statement concludes.

The Hon. ADAM SEARLE: In respect of storage technology, batteries and the like have an important interface with solar and wind. The criticism of solar and wind is that they are intermittent and do not always produce as and when customers need the energy they produce. The information we have about where batteries are at is a bit sketchy. I know you can get batteries for households. How effective are they and how much energy can they store?

Professor MASCHMEYER: To qualify batteries is quite complicated because there are two types of batteries. They both store electricity, which makes it a bit confusing. One kind of battery is what I call a power battery. That battery is able to be charged quickly and discharged quickly, so you can get a lot of power out. Those batteries have chemistries that are not suitable to be cycled fully daily. They will break very quickly. The Tesla batteries in South Australia, for example, if they were to be cycled fully—100 per cent charged and then discharged to almost zero per cent every day—they would not last longer than a year and they would break.

The Hon. ADAM SEARLE: That is what you mean by fully cycled—so discharging the complete charge?

Professor MASCHMEYER: That is right. That is inherent to lithium iron chemistry. I can explain why, but we can maybe leave that. You know if you constantly fully discharge your phone and then charge it, it does not last very long.

The Hon. ADAM SEARLE: My phone is starting to do that.

Professor MASCHMEYER: That is what you see. If everyone keeps it between 60 per cent and 80 per cent charge, it will last for a very long time. They are power batteries. In some cases they can work very well. In South Australia they are not used for daily full cycling. They are used to help support the grid in respect of peak loads and that works very well; I am not having a go at them. The other kind of battery is an energy battery which is slower and more robust. It will last longer and it should be cheaper. There are no technologies at the moment that are pursuing that market because people are excited about electric vehicles and consumer electronics, so they are largely adopting batteries for the power market rather than the energy market. That is sometimes not a very good marriage. The question was, "How much energy can we store?" If we take the whole world's electrical energy use for one year and look at the full energy battery production of the whole world, you will find that you can store 46 seconds of the world's electricity use with that one year production. If we wanted to make Tesla gigafactories do the job, we would need to build 1,800 gigafactories a day. If I say the batteries will last 10 years, we still need to build 180 gigafactories a day to do the job. There is a huge opportunity.

The Hon. ADAM SEARLE: Battery storage has a way to go?

Professor MASCHMEYER: It is the way to go, yes.

The Hon. BEN FRANKLIN: To back you up, that assumes that all power sources stop for that 46 seconds when, in fact, surely the best use for batteries down the line would be to top up and to add when we need to add that extra bit of capacity?

Professor MASCHMEYER: Batteries are well used to reimagine how we are going to do things. Obviously if we have sunken costs in infrastructure, we want to make as good a use of that as possible. As we start to expand grids and electricity supply, as we have to refurbish—and I think this inquiry is possibly looking at refurbishment costs quite a lot—the question is: How do we want to do it? Do we want to keep doing what we have been doing or do we want to do something a different way—look at microgrids, look at a more resilient network. I think batteries can organically naturally grow into that.

The Hon. ADAM SEARLE: I want to understand batteries at the household level. I have spoken to a number of people and some are on grid but they are saying that their batteries have brought their net energy consumption reliance on the grid right down. I have spoken to a couple of people who are not connected to the grid and they have said that a combination of their solar array and batteries have meant that in five years they have had to use their diesel generator only once. I am interested in establishing where the technology is at now in respect of how useable it is at an individual household level.

Professor MASCHMEYER: Right now you can go fully off grid without a problem, assuming everyone has sufficient space in respect of solar panels on their roof.

The Hon. ADAM SEARLE: How much solar would you need to be able safely to do that?

Professor MASCHMEYER: You are the solar expert.

The Hon. ADAM SEARLE: Yes, feel free to butt in. It is like hot tubbing experts.

Professor GREEN: A typical house like the size of the systems that are going in now are five or six kilowatts and that is enough to supply the average energy requirements of the home, so that and a battery and a bit of care in the way you use electricity should be enough in the home.

Professor MASCHMEYER: To bring it to a point, we currently have fully developed turnkey solutions to do the job. It is a matter of bringing the cost down even further to make it a no-brainer because it is going to be fundamentally cheaper. In some remote areas that is already the case, but in areas where there is a very good connection to the grid, highly optimised with a lot of sunken costs, the coal-fired electron is still the cheapest way to go. There are many areas in Australia where that is not the case and it is fully competitive. The technology is there off the shelf.

The Hon. ADAM SEARLE: You make the point about the sunken costs of coal-fired power. We are talking about sweating existing coal-fired power assets; you are not talking about the levelised costs of electricity in a new build?

Professor MASCHMEYER: That is right.

The Hon. ADAM SEARLE: In respect of that metric, wind and solar are well ahead of new coal, is that correct?

Professor MASCHMEYER: Absolutely.

The Hon. BEN FRANKLIN: Even when they are firmed up with gas to despatch it, it is still cheaper than building a new coal-fired power station?

Professor MASCHMEYER: Yes, that is what I understand to be levelised costs. Greenfield, brownfield is situation dependent, but it looks like we are talking around 10¢ per kilowatt hour plus or minus a little, depending on your assumptions on the specifics of the site. Conservatively speaking I would say that we are at least even, and in many cases better, including the back-up needs.

The Hon. BEN FRANKLIN: What are your thoughts on that Professor Green?

Professor GREEN: Some of the prices that have been bid for the international supply of electricity with the benefit of bonds financing the system—very low interest rates for the system—are much lower than buying the coal before you even burn it, just the opportunity cost of the coal. In that first slide I had a bar that represented the opportunity cost of coal. You are getting to that type of level. Some countries are paying that now for the supply of—

The Hon. JOHN GRAHAM: Explain that idea of the cost of the input into the coal plant specifically because that is quite interesting.

Professor GREEN: We are not reaching those costs here. There are some green bonds here, but they have much higher interest rates than the bonds overseas are attracting. That means that if you can reach that level there would be no point in burning the coal in your power station because you would be saving money by putting in solar instead. That is a crucial point once you get to that level. Then in respect of storage, the other way of addressing it is by shifting the loads around. That is what I was hinting at in that last one. There are some loads, particularly thermal loads, that can be used as effective storage by shifting them around and it is a much cheaper option than going to batteries. The other option is pumped hydro storage, which has been the traditional way of storing large amounts of electrical energy. One of my colleagues at the Australian National University has done a lot of work on looking for sites that are suitable for pumped hydro storage around Australia.

The Hon. ADAM SEARLE: Professor Blakers.

Professor GREEN: Yes.

The Hon. BEN FRANKLIN: Would you agree that as more and more renewable resources get developed across the country, both solar and particularly wind, that storage will become less important, assuming that it is all connected, because when the wind is blowing in Queensland it might not be blowing in Victoria and vice versa?

Professor GREEN: There have been several studies done of that, and I think Professor Blakers has been involved in a recent one as well. He has sort of shown in looking at weather data and so on over prolonged periods that you can balance it all.

The Hon. BEN FRANKLIN: Which is how they have effectively done it in Texas?

Professor GREEN: There have been studies done in many countries like that which have shown it is possible to balance it all. The geographical diversity, having the wind and the solar, a limited amount of storage and interconnection of all these regions, that combination has been shown by several studies to be effective in supplying reliable electricity.

Professor MASCHMEYER: One aspect, of course, is if one goes across very long distances you do not get a free lunch, there are transmission losses. Then there is the question of balancing the costs of those transmission losses with the costs of building the transmission lines versus something a little bit more local. So there is no one size fits all. That is what I tried to say at the beginning—to have a holistic view. There are specific solutions for specific scenarios and therefore making statements such as: "It should be like this for everything" by definition are wrong. It has to be, unfortunately, looked at in sort of geographical detail. I am fully agreeing with Professor Green about the ability to balance.

The Hon. ADAM SEARLE: Just getting back to the costs at a household level. What is the sort of rough current cost of putting in place a solar array with battery firming to provide energy security for a typical suburban home? Do we have visibility of that?

Professor GREEN: I can give you a rough figure. For a six-kilowatt system, which is the sort of size that is going in quite frequently, you should be able to get that installed for certainly less than \$10,000 for the solar, and some suppliers will do it for a lot less than that. For a 10 kilowatt-hour battery it is something similar, something around \$10,000 for a Tesla battery or something of roughly that rating.

The CHAIR: Different brands and different types of systems can be imported. Are there any brands to stay away from as opposed to credible opportunities?

Professor GREEN: I would not have the data for that.

The CHAIR: How does one identify a good system?

Professor MASCHMEYER: Many batteries are made by companies like LG and Panasonic. I think they are very well respected companies. If you open up a Tesla battery it is full of LG and Panasonic batteries because they are not making any of them themselves yet. If you stay with the big brands that is a good way to go. There are lots of batteries obviously made in China, largely for the internal use of that huge market, and there is not yet enough evidence external to China to make a judgement.

The Hon. ADAM SEARLE: Solar is coming down about 20 per cent in cost per year.

Professor GREEN: Yes.

The Hon. ADAM SEARLE: It has come down about 80 per cent in the last decade. From what you know are we likely to see the same kind of price reductions in battery technologies?

Professor MASCHMEYER: The issue with a battery is at the end of the day it is a chemical storage medium so you end up having to use a certain amount of chemicals to hold the energy. Whereas with solar, and Professor Green may correct me, if I have a thinner and thinner film in my light-absorbing material I can push down the cost. The film will still do the job and make it more efficient. I think there will be a continuous decrease in the cost of batteries but maybe not quite as dramatic as it was for solar. The market expectation is that the cost of production will come down for lithium at around \$150 a kilowatt-hour—that is what General Electrics will achieve by 2025. From memory, they are targeting a \$100 kilowatt-hour by 2030.

The Hon. JOHN GRAHAM: Just sticking with solar for the moment, do you expect that the photovoltaic market [PV] will continue to increase at the remarkable rate it has been?

Professor GREEN: I guess most market analysts would predict a more conservative growth rate, but they have for the past 20 years. Every time the market grows 40 per cent, the next year it has got to grow 10 per cent. That has been what has happened. Then it has sort of delivered on the 40 per cent. I am quite optimistic that it will grow quite aggressively. These Shell figures I showed indicate a 20 per cent market growth rate over the next decade or so.

Professor MASCHMEYER: I would expect in the battery side of things—it is 2018 now and four or five years from now, at the latest, we will have batteries available to the average household for 10 kilowatt-hours not at \$10,000 but something like \$4,000. That will change the whole equation dramatically.

The Hon. JOHN GRAHAM: From looking at your figure on the second table about the growth, it is growing 10 times every seven years. If that rate keeps up, it would take us to that terawatt growth every year.

Professor GREEN: By 2024.

The Hon. JOHN GRAHAM: That makes your graph about the 2 per cent trajectory look pretty interesting in 2024?

Professor GREEN: Yes. I think we now have like a technical solution in the wind for addressing the CO₂ emission, whereas three or four years ago before the industry had grown to this sort of size and the costs had dropped—we have seen these very low prices for some of these international bids. They are a bit of insight into the future. At the moment in Australia the cost of a large PV system costs about US\$50 a megawatt-hour to produce the electricity from it, but we are going to see that cost come down. The large systems here are relatively new. It is only this year that we are installing them in any real volume. There is a lot of learning to be done. I think you will see the costs of electricity from solar come down quite rapidly locally, more to the types of figures that we are seeing internationally.

The Hon. JOHN GRAHAM: Given both of your lengthy backgrounds in commercialisation, what is your view about the Clean Energy Finance Corporation? Where are we at on its impact on the sorts of commercialisation problems that you would have seen over your careers in Australia with our trouble in accessing capital for the sorts of commercialisations that need to happen in this space? What is working and what is not working as it has been set up?

Professor GREEN: I think they have been quite effective in promoting the idea of local green energy bonds. I think it has been one of their major achievements in getting these green bonds launched and, as I have mentioned, they are proving to be a very effective way internationally of financing these solar systems. They are now attracting lower interest rates than traditional sources of energy, whereas in the past they had higher rates associated with them.

Professor MASCHMEYER: In my experience, for example, in setting up the battery company we had the Australian Renewable Energy Agency [ARENA]. Could I talk about them first?

The Hon. JOHN GRAHAM: Yes.

Professor MASCHMEYER: I have another company called Licella that used to get quite a few million dollars of ARENA grants, they are now doing very well. We have got very large projects in Canada and in the United Kingdom to take plastics into chemicals and fuels, and biowaste and chemical and fuels, world-scale plants—200,000 tonnes, 600,000 tonnes a year. ARENA helped us. Then there was a change in the ARENA mandate and that really hurt us. I have been talking to ARENA a couple of times now. They are trying to address that a little bit but they are constrained by what they can do. They flicked us then on to the Clean Energy Finance Corporation, which for a start-up interaction is very commercial. They are very close to venture capitalist investors, which is not so helpful.

They have a clean energy investment fund to whom we are talking next week. There are opportunities there. Last time I talked to them they said to me, "We are interested in uptake of battery storage in Australia, but not really in developing new battery technology," which meant they are basically saying, "All that intellectual property [IP] you've been developing with Australian Research Council grants, with Australian investor money et cetera, we are quite happy for that to go overseas and we re-import it." I thought that was somewhat dispiriting, so that did not work, but hopefully we can come up with something still.

The Hon. JOHN GRAHAM: It seems they are still interested in investing too late in the commercialisation cycle for your projects.

Professor MASCHMEYER: Yes. They are very keen to use existing technology and then package it up and see how it goes. They will buy batteries made in Japan and South Korea and integrate them and see what

the experience of usage is. That seems to be within their mandate. But to say, "Here is a possibility for creating high-tech jobs, manufacturing in Australia et cetera," did not seem to be playing very well with them, which I was surprised about. I have created 220 jobs in the past, so it is not that I have not done it before.

The Hon. BEN FRANKLIN: Going back to the point about dispersing the energy sources across the State, I do not know if you are familiar with the New South Wales Government's submission to AEMO which suggested the creation of three energy zones around the State. One of the reasons would be to do this and to focus on those areas where we have the maximum amount of potential solar and wind energy and utilise those three energy zones, obviously then dispersed across different regions. That would go to the heart of the very long transmission costs as well. Is that the sort of model you would both support?

Professor GREEN: Yes. Diversification geographically is the key to getting a reliable supply from renewables, so that sounds like a good idea. Of course if the infrastructure is there to transmit it to the load centres, that is an important consideration as well. I imagine they have selected these regions based on the transmission possibilities.

The Hon. BEN FRANKLIN: They have. Would you agree with that?

Professor MASCHMEYER: I agree with that as a general concept but then it needs to be balanced against the losses in transmission and the cost of the transmission lines.

The Hon. BEN FRANKLIN: And upgrading the transmission lines.

Professor MASCHMEYER: At some stage there will be areas maybe even within, say, the solar area or the wind area that you have identified where it would be better to have a microgrid rather than pushing it up and down. I am German so I am familiar with the German Energiewende, energy change, and pushing electricity all the way down from the North Sea to the Alps and back, with a lot of transmission losses and a lot of costs. That is not necessarily always the way to go. Australia, not having a number of the constraints and these very large distances, is well served not to necessarily model itself completely on the big European interconnected grid and to think about regional hub solutions as well or in parallel.

The Hon. BEN FRANKLIN: I agree. Professor Green, Professor Maschmeyer suggested that within five years it is likely that the price of a 10-kilowatt battery will fall from \$10,000 to around \$4,000. You suggested, if I remember correctly, that a 5-kilowatt or 6-kilowatt solar installation on the roof costs about \$10,000 now. Do you have a gentle prediction that we will not hold you to about what the price of that is likely to be in four or five years?

Professor GREEN: Yes. This figure of roughly 20 per cent a year reduction has held for a long period. I think you can rely on the costs coming down to probably something like half over that type of period, I would guess.

The Hon. BEN FRANKLIN: I want to go back to the idea that has come up repeatedly in this debate about base load and the whole definition of a base load. To me it seems a bit of a misnomer, because what people are talking about when they say "base load" is just a straight line, but you can just as easily have base load with renewable energy—it is just that it is a bit more of a wavy line in that sometimes the sun is shining, sometimes the wind is blowing, and sometimes it is not, but there is still always going to be that power generated. Do you agree with that?

Professor GREEN: Yes. You do not really want a constant generator. There is the problem I showed in the last slide: You had to install off-peak hot water heating just so you had a load for the power stations at night. For example, in Japan they installed a lot of nuclear. Pre-Fukushima they had a huge supply of electricity from nuclear. There they had to keep the nuclear running constant output—that was a legal requirement for the nuclear plant—so they had to install a lot of hydro storage so that the nuclear plant would run through the night, pumping water uphill. They had more storage capability than any other country in the world because of this requirement. You do not really want a constant base load output. You want to be able to reduce the output at night and you want more demand during the daytime in the hours in which household are using it most, which is in the mornings and the evenings.

The Hon. BEN FRANKLIN: Exactly. And that issue is going to become even more profound as the demand for base load continues to decrease.

Professor GREEN: I guess it has just been a way of thinking about how you stack the different generators within the network. So you had the slow, sluggish base loads and then you had the more nimble ones that could respond to the peaks. But I think you have to start thinking about things a little differently. Base load

is probably the worst form of energy to have in the energy mix of the future because by definition it implies it is not flexible. As I was showing in that last slide, you need to increase the flexibility of our existing coal generators to make them useful in the grid of the future.

The Hon. ADAM SEARLE: As you said, base load is quite inflexible. It is really a question of having power available on demand, not necessarily having it running 24/7 with all of the fixed costs and overheads, just because that is the way it was done in the past.

Professor GREEN: Yes. Base load does not quite cover that power on demand aspect, so it is probably not the right term to be used for the power on demand, but I agree with your point: You want power when you need to use it. One way of addressing that is by removing loads that are non-critical. With the advent of computer control of household loads, for example, you will be able to switch off your demand for electricity for your refrigerator or your hot water system or whatever during the time when someone else needs a huge amount of electricity.

The Hon. ADAM SEARLE: That is true, although households are a difficult example, particularly, I guess, if you have young children. You have to cook dinner at a certain time of the night. Yes, you can run your dryer or your washing machine very late at night or in the early hours of the morning—maybe you could do that with computers in the future—but there is only so much of their household load that most people can shift around. Is that really where you can get most bang for your buck in terms of moving loads around or is it more at the industrial and commercial end of the market?

Professor GREEN: There are opportunities everywhere. I have the figures with me of what the different loads are in a house and a lot of them are non-critical heating and cooling loads. It does not matter if your refrigerator goes for half an hour without electricity—your food is going to stay safe.

Professor MASCHMEYER: The point about these new, in a way, clever grids is that it is not a single household which has to shut down for a long time. It can be five minutes along the street and that has the same effect as if there was a big shutdown of individuals. One can massage the grid if it is fully interconnected in such a way that the individual user experience, including factories, is not so disruptive.

The CHAIR: There is a view that it takes just as much energy and materials to make a solar panel or batteries and stuff like that—that the energy or the materials used will outweigh the savings in emissions in the long term. Do you have any evidence of what energy use and products it takes to make this product and what that means in real terms in impact on the climate as opposed to reduction in impact on the climate?

Professor GREEN: There have been some quite extensive studies of that area done of the solar photovoltaics. At the moment for a standard silicon panel it takes about a year to pay back the energy invested in creating the panel, installing it and decommissioning it—the whole life cycle energy content. The panels are warranted for 25 years, so you are generating energy. The other point is that the main cost of the panels now as the cost has come down is moving towards the standard components like the aluminium frames, the support structures and all that kind of thing that is used on quite a large scale, so there is less potential for cost reduction in those types of elements.

I have just given a talk in Hong Kong about the benefits for the Australian resources industry arising from the increased demand for those types of products if we reach these terawatt levels that Shell and I have been talking about this morning. There will be a huge demand for steel for support structures and that kind of thing, because that is where the main cost of the systems ultimately will get displaced to.

Professor MASCHMEYER: In terms of batteries, the sector is basically—and certain technologies are better than others at that—moving towards almost 100 per cent recyclability of components. So in that sense, upfront costs in terms of the CO₂ you emit by making the bits and pieces maybe has a payback time of a few years. But then, as you keep recycling it, it diminishes and it is not becoming an issue.

The Hon. ADAM SEARLE: It is less than a coal-fired power station.

Professor MASCHMEYER: Yes, yes. If we measure the new technology as harshly as the old technologies, and if we had not decided for the old technologies to come on board, they would never be allowed. Internal combustion engine—no way. Coal-fired power station—no way. But we just have them as legacy technologies. We also have to be careful of not overrestricting some new technology, because we are allowing the old technologies to be there.

The CHAIR: I think there have been more than 20 million deaths in cars since they were invented. I do not think we would have accepted cars had we known the price.

The Hon. TAYLOR MARTIN: Professor Green, you mentioned that steel was the biggest component of investment in new solar. Can you clarify?

Professor GREEN: Yes. To install one terawatt of photovoltaics, you require about 56 megatonnes of steel, so it is a huge fraction of the total steel market. Large-scale adoption of solar will be great for the Australian resources industry, particularly steel, aluminium, and copper. Then, of course, if batteries take off, you have got all the battery minerals as Australia is well provided with resources.

The Hon. TAYLOR MARTIN: Is there an environmental issue with the rare earth minerals and heavy metals that are used, particularly with photovoltaic and battery technologies?

Professor GREEN: With photovoltaics, it is only silicon and glass and silver, copper—all the standard materials, at least in the mainstream silicon technologies. Some of the more exotic fringe technologies sometimes involve elements that are not as readily available. But the silicon technology has the virtue of just using readily available materials.

Professor MASCHMEYER: That is due to Professor Green, by the way.

The Hon. TAYLOR MARTIN: Spain has around 2,300 megawatts of concentrated solar capacity. It comes up in the news every now and then, with big arrays of mirrors concentrated on one spot. Is that technology up there with photovoltaics, or is it a pipe dream?

Professor GREEN: It was the cheapest way of generating solar electricity back in the 1980s. The story was that it was ready to go back then, because you just need mirrors and all these readily available components, whereas photovoltaics needed evolution in the technology and scaling up to reach the types of cost levels we are now seeing. But I think the big disadvantage is it is like a custom design is required. Photovoltaics have been able to scale up production volumes because the same panel suits all purposes and becomes more like a commodity. You have been able to scale up production of the identical product, whereas with the solar thermal approaches, each design tends to be a custom one and you have not got the same engineering economies from installing one system. You do not get the same flow-on to the next system that you get with solar photovoltaics. The main interest in those systems at the moment is because it is easier to store thermal energy than it is to store electrical energy, so they have an advantage that they can provide storage thermally and then convert that to electrical energy using the generators that are already on site.

The Hon. ADAM SEARLE: Is concentrated solar an option on a large production scale, with very large amounts of solar generation?

The Hon. BEN FRANKLIN: Surely the price is the issue.

Professor GREEN: Yes. I think now that solar photovoltaics have become so cheap and there is a clear path to further cost reduction. I do not think the large solar thermal approach, regardless of scale, is ever going to be competitive on cost. It is only the storage option that makes it look attractive and why there has been some recent increase in interest in it after photovoltaics clearly became lower in cost. But I think there are other ways of providing storage, like pumped hydro, that are probably more useful than relying on the whole solar thermal system to provide your storage.

The Hon. ADAM SEARLE: And cheaper?

Professor GREEN: Yes, and cheaper. Having photovoltaics with pumped hydro storage, I think, would be a better option than solar thermal with thermal storage, in my view.

The CHAIR: Unfortunately, we have run out of time. We have put some questions to you; there may be some supplementary questions, given the evidence you have given today. You will have 21 days to answer those and the team will be glad to assist you with that. Thank you very much for giving evidence today. It has been very enlightening, so thank you.

Professor GREEN: Thank you.

Professor MASCHMEYER: Thank you.

(The witnesses withdrew)

ED McMANUS, Chief Executive, Meridian Energy and Powershop, affirmed and examined

TONY PFEIFFER, Managing Director, Enova Community Energy, sworn and examined

The CHAIR: Do either of you have an opening statement you would like to present?

Mr PFEIFFER: I have one prepared; stop me if you wish as we go through. I would initially like to say that Enova Community Energy thanks the committee for providing me the opportunity to participate in the inquiry today. Enova Community Energy is Australia's first and only community-owned energy retailer. It is a social enterprise formed to assist communities to take control of their own power and drive regional development. As a start-up company, capitalised from August to December 2015 and established in the Northern Rivers in the first half of 2016 and commencing taking on customers since June 2016, we are now growing our customer base. Our retail license covers the national electricity market, although we presently only operate in the essential energy distribution area. We know we have successfully introduced competition into the market because when Enova was initially founded and we introduced a 10¢ solar feed-in tariff prior to the Independent Pricing and Regulatory Tribunal [IPART] recommending that the feed-in tariffs needed to increase, Origin responded by raising its feed-in tariff above 6¢.

As a social enterprise, 50 per cent of our profits will flow back to the not-for-profit arm, Enova Community, for community benefit projects. The not-for-profit arm has a charitable status and is currently seeking deductible gift recipient status. The not-for-profit arm is already working to lower energy costs to vulnerable households and other consumers through energy efficiency programs provided by trained volunteer auditors—we call them our Enova Energy coaches—and, with the New South Wales Government, enabling solar photovoltaic [PV] on community housing. We are rolling out plans to make solar PV available for social housing, low-income households and renters through community solar gardens and virtual power plants, and we are working with our distributor on a microgrid for an industrial estate to lower costs for small businesses.

Enova Energy believes that the large increases in the price of electricity that occurred in July 2017 were primarily driven by a more than doubling of the wholesale cost of energy. As a small retailer, we are more exposed to the variability in the wholesale market and have not been able to take a long-term risk managed position in the wholesale market due to the limited number of counterparties willing to deal in appropriate risk products for small quantities. The increased prices on the wholesale side, however, allowed the large vertically integrated gentailers to effectively increase retail prices while at the same time making large profits with their generation assets. For price deregulation to be successful there needs to be a viable competitive market to ensure that prices are set at the economically efficient level. The host retailers are obliged to publish their standing offers 10 days prior to the start of each financial year. The current practice of discounting on that standing price allows the large incumbent retailers the opportunity to discount to specific customers as a retention or an acquisition mechanism, while offering standard prices and discounts to most of their customers. The impact is that the large incumbent retailers become the price setters, particularly in their host area, and small retailers become price followers or innovators with alternative customer value propositions.

The industry structure that has evolved sees the small, independent retail-only businesses supposed to be providing the competition for large, integrated players, to benefit consumers. While this is fine in theory, what this structure fails to accommodate is the potential for profits to be shifted along the value chain. That is exactly what has happened over the past 12 months. The disruption and uncertainty within the wholesale markets brought about by the planned closure of old generators and the blackout in South Australia have resulted in a significant risk premium in wholesale energy prices. This has seen the wholesale price rise from around \$45 per megawatt hour to over \$100 per megawatt hour. This brings windfall gain profits to the generators whose costs of production remain virtually unaffected. Wholesale prices are now recovering, but somewhat slowly, and continue to be inflated in our assessment.

Integrated players under a watchful regulatory eye and political pressure can happily shave the retail margin to appease the policymakers and the public while continuing to pocket the windfall gains. The problem for small pure retailing companies like Enova in competing with integrated players is that we are caught in a squeeze between the higher wholesale price and the declining retail margin. In short, when a risk premium from market uncertainties is priced into the wholesale rate, it becomes a source of greater profits for integrated players but for pure retail businesses it brings enormous difficulties. These conditions are sufficient to bankrupt the retail-only players, leaving the integrated players the prospect of returning to their comfortable oligopoly with associated poor retail practices such as bait-and-switch discount deals. Failure of these smaller retail businesses would come as a huge disappointment to many consumers who favour the attacker brands and

distrust the major players. It would stifle innovation, stifle competition and leave the current oligopoly-driven high prices effectively unchallenged.

Enova acknowledges that the Government at all levels is committed to trying to achieve increased energy security and future reliability; lower and more affordable energy costs for all consumers, particularly for vulnerable households; and lower carbon emissions—commonly called the energy trilemma. It should also be acknowledged that the costs of energy represent a huge drain on regional economies and hence on the country. For example, each year over \$300 million leaves the Northern Rivers region of New South Wales in domestic energy bills with over \$80 million of that in operating expenses and profits alone. We believe this is no longer necessary, and that good planning should aim to address this issue in addition to meeting future demand and the other trilemma requirements.

However, planning and action to date, including that envisaged under the Finkel report and the National Energy Guarantee, in our view remains essentially based on a twentieth century worldview of what is possible. Planning to transition to the future has been limited to tweaking what is already in place, delivering a large-scale, top-down, centralised view of how the shift to renewables should take place. Such development only involves changing the sources of power to large scale renewables—plus adding firming, using any combination of batteries, pumped hydro, solar thermal, or contracts for gas—while strengthening and building additional transmission and distribution systems. The result of the continuing emphasis on large-scale, top-down and centralised approaches is that costs to consumers remain high since transmission and distribution already account for 50 per cent of the costs. These plans involve adding to such infrastructure potentially in major ways. There continue to be significant losses of energy in transmission over long distances, so no savings are eventuating in that area.

Under the old model, security and reliability come at the cost of very expensive infrastructure and are only as good as the weakest link. Additionally, while there has been increasing investment in large-scale renewables, it is either owned by the existing large players or by small numbers of new investors, many offshore, who need to see good returns on their investments. There is no lowering of costs to the consumers for the foreseeable future. A major outcome which is already starting to be evidenced is that those who can will step off the grid as storage costs come down, leaving those who cannot afford to do so to share the expensive network costs between them. Potentially then, hypothetically governments respond by seeking to regulate to enable compulsory network access costs for residences past which the network runs. The overall result is that costs to consumers continue to escalate, demand is met only through increasing network costs, and the very significant transfer of money out of regional areas to the cities and offshore via energy bills continues—that is, there is little opportunity for regional development.

By planning for a system of systems it is possible, we believe, to deliver lower cost, greater security and reliability, and lower carbon emissions. It is already possible for each region to be largely self-sufficient, with most renewable energy used in a region generated right there, and retailed by community-owned retailers. Distributors and retailers know that this is now possible to change and timely to change. Recent developments in rapid improvements and declining costs in renewable technologies, including battery storage technologies, grid balancing, demand management and energy sharing and trading technologies, make a new approach feasible. A regional model could be applied to suburbs in cities, with large-scale renewable investment planning focused mainly on supporting growth industries and being located as close as possible to industry growth areas to maximise security and lower energy costs.

We need to ensure that the regulatory framework can support this approach. At each level, when thinking regulatory approaches, there is a need to maximise incentives for efficiency, cooperation and self-sufficiency, and ensure that the regulatory framework enables sharing at that level and with the next level up, to deliver overall security and reliability. There is also a need to ensure that the regulatory framework can enable the progressive change of asset values relative to the value they provide, not relative to their cost, in a grid which has changed into a system of systems. Finally, Enova acknowledges that the New South Wales Government has a number of valuable programs in place to assist low income earners, pensioners and seniors cardholders, but in our view there are potentially more effective ways to assist such groups. Through our not-for-profit arm, Enova Community, we have already worked in cooperation with the Office of Environment and Heritage and North Coast Community Housing to arrange for North Coast community houses to have solar panels installed at no cost to the tenants, and to provide energy efficiency education via our well-trained volunteer energy coaches.

We have also submitted for consideration two programs that we have developed that we consider could be more beneficial. The details of these have been provided in a written submission to the Committee. Thank you very much for your time and I am happy to take questions when it is time.

The CHAIR: Mr McManus, do you have something you would like to present?

Mr McMANUS: Yes, I will make a few short comments, introduce who we are and then take questions. I run a business called Meridian Energy Australia. We have a wind farm in Victoria and another wind farm in South Australia. About four years ago we decided to launch a retail business called Powershop. Powershop has tried to bring a different approach to the market by launching a phone app so that consumers can see how much energy they are using and how much it is costing. I know that may not sound like a great innovation.

The Hon. ADAM SEARLE: It is.

The CHAIR: We all agree it is.

Mr McMANUS: There are a number of other things: a fairer pricing approach which we can go into—Mr Pfeiffer has alluded to it—things like demand response and virtual power plants, which are mechanisms for consumers to participate and add value into the wholesale market; and a number of other innovations. All those things have meant that we have managed to grow the Powershop retail business to about 100,000 customers now in Victoria, New South Wales and Queensland. As a result of that growth we recently found ourselves in a position where the amount of energy we were selling to our customers was close to the amount of energy we were generating through the two wind farms, so we did two things. Firstly, we recently entered an agreement to buy three hydropower stations in New South Wales.

Those are the power stations at the Hume Dam, the Burrinjuck Dam and the Keepit Dam that were formerly owned by the New South Wales Government and sold in 2014. We bought them from the organisation that bought them at that time. Those three dams are operated by Water NSW and the water is released primarily for irrigation needs downstream. Because irrigation needs downstream occur in the summer, these hydropower stations generally generate electricity in the summer and that is where traditionally we have seen higher power prices. For us as an organisation in terms of organising our energy demand and risk they are quite valuable. In addition, we have signed three long-term power purchase agreements to support the development of two new wind farms and one new solar farm. One of those wind farms in the Crudine Ridge Wind Farm here in New South Wales about 40 kilometres from Mudgee. We are quite excited about that in terms of our expansion in generation and we hope to continue to grow Powershop. I will leave it there. I am happy to take your questions

The Hon. ADAM SEARLE: This question is to each of you because I know that apart from your recent acquisition you have mostly been a retail-only outfit. What changes to the market would correct the imbalances being experienced by retail-only power providers should the gentailers be broken up?

Mr McMANUS: A question for the Committee to consider is what would the impact of breaking the gentailers up be? Bear in mind, we are a gentailer.

The Hon. ADAM SEARLE: Now you are.

Mr McMANUS: Just a small one. We have been one for a while because we have had the two wind farms. Now we have expanded through the three hydropower stations, two more wind farms and one more solar farm. The thing about whether it is right or wrong to break them up, let me make this statement: Being in electricity generation only is quite a risky business because you tend to be a price taker. Whether it is coal, hydro, wind or solar, these are all long-term, 20 year plus assets. So you are investing a large amount of capital and as a generation-only business you are facing uncertain returns because the wholesale market can vary. Some of that is obviously in control of the generator and some is not.

The Hon. ADAM SEARLE: We had two of the big three here this morning who, if I understand their evidence correctly, were putting the contrary proposition. Essentially, they are blaming their staggering 20 per cent price hikes on the increase in the generation aspect of the business. In that sense they are saying the retailers are the price taker, not the price setter.

Mr McMANUS: Both are true. It depends what sort of generation you have. If you own a wind farm you are completely a price taker. If you own a solar farm you are completely a price taker. Gas is obviously a little bit different, but to some extent you can only afford to turn gas on if prices are high. There are nuances to this, but the point I am trying to make is it is a long-term investment and you face a risk of market prices that are uncertain in the future. Likewise if you are a retail-only business, as Mr Pfeiffer has outlined in his opening

statement, you again are a price taker and that is a risky business to be in, particularly at scale. The way that has traditionally been managed in the industry is to own retail and generation because the risks can be offset. The question is if those businesses split apart how is risk managed and—this is the critical point—would the risk of those two entities being separate on a total basis be more or less than it is today? If it is more, that will add cost and the cost will be borne by the consumers.

The Hon. ADAM SEARLE: If we go back, my original question was what changes need to be made to the market to correct the imbalance being experienced then by companies that are predominantly at the retail end? You might have some generation capacity to offset risk, but essentially, as I understand the submissions I have heard today and on other occasions, the three big gentailers have a massive market advantage. That puts businesses at the retail end in difficulty.

Mr PFEIFFER: In our submission we have highlighted a couple of opportunities in relation to how this could work. I guess our views come from the point of fact that we are very small in market terms. Even in comparison to Powershop, we are a very small player. Yes, for us to remain competitive we have to look at ways to potentially effectively vertically integrate. As a small organisation that is very small on capital we are not going to be out investing in our own generation. We do not have the financial capability to do so. So we have got to look at other means of doing that. We have suggested several mechanisms that we think could work as incubators for small businesses and that would have to be set on the basis that the Government said that for businesses under a certain threshold level it would be prepared to create regulatory or market arrangements that allow those businesses to continue to incubate and provide the sort of competition that I referred to earlier.

They are that potentially the large players could be obliged to provide a portion of capacity at potentially the long levelised cost of energy value rather than at a market risk premium price in accordance with the current market prices. There is a global precedent for this. It does occur in New York where both Niagara and the New York Power Authority are required by regulation to provide preferential power to some of the municipalities, the smaller groups. It is seen that it provides lower electricity rates for older people, younger people and people with disabilities and allows people to age in place in their own homes. This is off their website. It says that it provides local employment and opportunities to support community sustainability through that municipal arrangement and efficiencies through the integration of all utility operations helping sustain the communities over time.

That is one opportunity that we see could occur. We think that is something that is possible. Again, I think anything like that could be on the basis that it should be set at a threshold level. Once you get above that threshold you should be big enough to start to play in the market with the big guys. We are not necessarily saying we need a handout but I think that, as I said before, in some of the market structures we get caught in that retail margin squeeze between the wholesale end and the retail end. It makes it a challenge. As one of your previous witnesses mentioned, they had a price increase nominally of 20 per cent but only increased prices 16 per cent. Our costs of supply had that same increase on them on the wholesale side and from a market perspective we were squeezed on our retail margins to do that. I know it provides competition but it makes it very difficult for small players to remain viable.

The Hon. JOHN GRAHAM: You have given quite strong evidence in the Enova submission about some of the challenges that have just been referred to and have used some pretty strong language about just how hard it is for a very small firm. Without commenting on your individual companies' futures, do you see that we could lose some of these smaller firms out of the system if there are not changes to the way the market is operating?

Mr PFEIFFER: We have already seen it. There have been small companies that have disappeared out of the market in the market's operation already. It is a business that really relies on scale under its current market structures. For those small players it is very, very difficult. I think there is a misconception that small players have a very low cost to serve. In fact, because it is a volume-based business there is effectively a fixed cost to deliver those services. There is quite a heavy regulatory burden, there are systems costs and the like. Our cost to serve is at least three times that of the big players. The only way to solve that is to reduce your costs, which is difficult because there is a base cost you need to have to be able to operate in the market or increase your customer numbers. To do that you need to be able to provide a value proposition that customers do value. We believe we have one certainly in our local area because of who we are, because of bringing the community engagement in, but that is going to have limited potential in our local area unless we can take that value proposition to other areas and continue to create that community value proposition, which is what we hope to do.

The Hon. JOHN GRAHAM: Mr McManus, do you share that view about the way the market might evolve in the future?

Mr McMANUS: I think some of the small players that Mr Pfeiffer mentioned have ceased to be in business. At least in some cases they ceased to be in business because they have taken too much risk. We are risk management businesses and they have been shut down by the operator. In some cases that is a slightly separate matter. Long term if you look at the market share of the big players it has defined over the past five or six years. New South Wales deregulated retail prices in 2014 and that is the reason Powershop entered the market here. You are seeing other new entry retailers. It is difficult, but it is business. To make a return we take risk.

The Hon. JOHN GRAHAM: That is one of the things we are grappling with. We have had two of the big three companies saying, "We have 26 competitors in New South Wales. Competition is lively." That is not the view you have put in your submission. That is not really how this market is working. They are still massively dominant and they are increasing their retail margins as a result. Do you agree with the caricature of the view that was put this morning that competition is working well?

Mr McMANUS: Competition is lively. Could it be working better? Of course. Are there things that could be considered to improve competition? Of course. In any of those things you have to be extremely careful about the potential unintended consequences that none of us sitting here today will understand.

The Hon. JOHN GRAHAM: You would essentially agree with the ACCC which puts both those views—"Be careful about the unintended consequences, but there is a real market concentration in New South Wales."

Mr McMANUS: Of course there is a market concentration in most States, but it is diminishing slowly over time. What Mr Pfeiffer has said is also true. In New South Wales in the past 12 months retail margins have contracted. The ACCC report is going to come out. I do not know what is in it, but you will see. I think it is a generally widely held view in the industry that retail margins have contracted, for the reason Mr Pfeiffer outlined. Wholesale costs have gone up. We have not passed all that through to our customers, which is the right thing to do. Perhaps I am not being as specific as you would like. Has the market got problems? Yes. Is it completely broken? I do not think so. Is competition working? Yes. Could it be working slightly better? Of course. That is the same in any industry. I have not read all the submissions, but there are certainly some things that could be done to slightly improve competition but there are downsides.

The Hon. JOHN GRAHAM: I do not agree that it is the same in every market. The ACCC preliminary report uses pretty strong language.

Mr McMANUS: Sure.

The Hon. JOHN GRAHAM: It is pretty strong language in relation to New South Wales.

Mr McMANUS: I understand that. I am sorry; I was not trying to compare electricity to every other market. But if you pick other markets, in general could competition be improved? Probably in most markets you could point to things. That was the general point I was making.

The Hon. BEN FRANKLIN: We have heard today and in other evidence that we are going through a substantial take-up in solar and a substantial dropping of solar prices, which is fantastic. We know that one in six households have solar panels on their roof and that that number is increasing. One of the reasons this inquiry was established is because of high power prices. My question to Mr Pfeiffer is: What are you doing to support those people who do not have access to putting solar panels on their roof such as renters, pensioners and those who do not have the means and so forth? Could you tell us what you are doing to support those people? Secondly, and probably more importantly, what can the Government do to further assist in that issue? Mr McManus, if you have any comments on that I would like to hear them too.

Mr PFEIFFER: Mr Franklin, I appreciate the question. As I outlined, we established as a social enterprise with a not-for-profit arm. Fifty per cent of the dividends will flow into that not-for-profit arm for reinvestment into community projects. We are also as an organisation socially oriented towards the people who are challenged in our society. As already indicated, we have worked with North Coast Community Housing and the Office of Environment and Heritage to provide solar onto community housing. We proposed an opportunity for government in a couple of the appendices in the attached submission relating to how that might be rolled out further to lower income people.

We are looking at developing and working collaboratively with an Australian Renewable Energy Agency [ARENA] project as well at the moment. Currently some market research is occurring back in our office—last night and today as we speak—in relation to establishing solar gardens which allow renters to access the opportunity for solar. We have worked very hard on a slightly different economic model for a solar garden that allows those people who participate in that to effectively make a return on that investment—somewhat similar to investing in solar on your own rooftop. What we have proposed to government though is that we think there is an opportunity for government to participate in those sorts of initiatives. At the moment government is offering a lot of those lower socio-economic people energy rebates. Some of that money could be put into providing access to facilities through solar gardens for people who are renting or on community housing as we have alluded to.

The other project we are looking at is a virtual power plant. Listening to the conversation prior to this, we believe we could do a five kilowatt system with a nine kilowatt hour battery for under \$12,000 installed. We are working at the moment through the prototyping of that with the software developing company and the hardware suppliers to roll that out to normal clients where they will not have to pay. This will be an investor owned model where clients will not necessarily pay for that. They get a guaranteed rate of energy supply through that but we get the ability to access the battery which gives us somewhat of a vertical integration into the marketplace. There is an opportunity for government to say, "We are currently providing energy rebates to a whole range of our constituents." If those energy rebates could be net present value for cashflow, looked at in relation to the ongoing cost of that versus whether we invested a portion of this into that for lower socio-economic customers, they would have the ability to access solar and battery and hence cheaper prices through those sorts of products.

Mr McMANUS: Just briefly, we are involved in some of the same programs, including the solar garden program funded by ARENA. We are doing virtual power plants, et cetera. The two things I would encourage you to look at would be as follows. Today part of our retail obligation is to buy energy efficiency certificates. People in New South Wales—it is common to the other States too—pay for those certificates in their bills and those certificates come from things such as the installation of LED lighting. In Victoria those programs are not in any way targeted to low income housing or renters. We know, as you do, that in some low income housing or rental accommodation it is draughty and there is no solar on the roof. There are various different things that could be done pretty cheaply.

The Hon. BEN FRANKLIN: Often older.

Mr McMANUS: Often older, exactly. I have given this example a few times. I live in Victoria. I came home recently and there was a digital box sitting on the doorstep. Someone had plugged a little thing into the smart meter and this digital box was giving me a readout as to how much power was being drawn from the house. My wife said, "Look, isn't this good. I got this. I thought you would be interested. It was free." I said, "Well, it's not free. Everyone else is paying for that in their bills." I think there is something fundamentally wrong for a CEO of a power company to get a free thingy that shows how much power I am going to use. It is cheap, right, but someone else is paying for that. Those programs are in no way targeted. That is the first thing I would look at. I think that is low-hanging fruit.

The Hon. ADAM SEARLE: I am happy for you to take this question on notice. Who runs those programs and how are the costs levied?

Mr McMANUS: I will take that on notice and I will send you the details. That would be the first thing I would look at. The second thing I would look at is some pretty innovative thinking out of South Australia by the former Labor Government in the Tesla partnered virtual power plant, which looks like it will go ahead to some extent under the new Liberal Government. The Liberal Government has its own virtual power plant program.

Those things do two things. For the recipients of the program it means lower power bills and particularly the Labor proposal was driven to South Australia housing consumers and the Liberal proposal will be means tested, so driven to consumers perhaps who are struggling with power bills. That would be solar and a battery. The second very valuable thing in a market is that those batteries are linked together digitally, hence a virtual power plant. They become a competitor to peaking gas and have the potential to bring down wholesale power prices. I would encourage you to look at what is happening in South Australia. That is very innovative. We are involved in virtual power plants at a smaller scale, as is Mr Pfeiffer, as he mentioned.

The Hon. TAYLOR MARTIN: They are also building an interconnector to New South Wales.

Mr McMANUS: In my opinion, subject to the analysis and the cost, that would be a very good idea.

The Hon. TAYLOR MARTIN: We spoke earlier this morning about generation and whatnot. Given that both entities represented here are focused heavily on the retail side, in your view, what is some of the low-hanging fruit, so to speak? What are some of the ways that the market can move towards reducing the retail cost?

Mr McMANUS: There is a cost to competition, and the Australian Competition and Consumer Commission [ACCC] have highlighted this. You are probably aware of the bipartisan Thwaites review that occurred in Victoria. That review highlighted cost in the industry as an issue. Removing the cost of competition would benefit small players. As to what to do about it, for us at Powershop, one of the more important things would be—for example, the regulated website Energy Made Easy, which is where you can go to get a comparison, today shows you the price of a retail offer for the next 12 months. What it does not say to you is what happens on day 367. At Powershop, we do not differentiate your price on day 367. Your price may change, but it changes based on what the market is doing at that time. It does not change because we removed a discount. The current practice is that a retailer can have what looks like a very attractive offer. By contrast, because we do not operate this loyalty mechanism, a Powershop offer may not look as attractive but over the long term it may well be that the Powershop offer is cheaper. Doing some things around that would to level the playing field be beneficial to consumers in terms of transparency about what the real costs are.

The Hon. ADAM SEARLE: If a retailer is offering a discount, in law, should that not be an actual and real discount off what a customer is paying, not a discount off some notional price—say a standing officer—that no-one is actually paying?

Mr McMANUS: To be fair, the way those websites work, they will say the cost for you is \$1,200 for the next year, the Powershop cost is \$1,200 and the Enova cost is \$1,150, but the other retailer costs might be \$1,000.

The Hon. ADAM SEARLE: That is not the way it is marketed. The big gentailers say, "Sign up to us and get 20 per cent off", or combine gas and electricity and get X per cent off. It sounds very attractive.

Mr McMANUS: There is no doubt that removing percentages as the mechanism by which discounts are marketed would be a tremendously good idea. We do not have an issue with the concept of a discount in of itself.

The Hon. ADAM SEARLE: Discounts are good.

Mr McMANUS: Absolutely, but it is the use of percentages. By the way, this is on the radar of the ACCC as well. I do not think there would be any industry disagreement on removing percentages as the mechanism by which discounts are described. The question is what do you go to? There are numerous solutions and they all have issues. It would require some thought.

The Hon. ADAM SEARLE: Time after time people tell me they cannot compare an offer made by company A versus company B versus company C. It is incomprehensible to them and largely they give up. This is why policy-makers say people do not shop around. It is made very hard. Should the offers not have to be readily comparable?

Mr McMANUS: I absolutely agree with you. For the record, I think the industry should move away from percentages, I am not avoiding that. I am saying as we think through what are the options, there are numerous issues with the various options that I am happy to go into.

The Hon. ADAM SEARLE: I am not talking about the discounting. I am a consumer and I have just moved house. I want to see who is going to give me the best deal. I cannot understand the different offers. Should there not be so many cents per kilowatt hour basic comparator?

Mr McMANUS: It could be, but remember it will be different depending on where you live and what network zone you are in.

The Hon. ADAM SEARLE: On that, if I have been in my current house for a decade, there will be an established pattern of usage. It does not change; it is the same distributor. Should I not be able to get that data and give that to each of the retailers and say, "Assuming I do not change my pattern or quantum of usage, what can you do for me?" But I do not have access to all that information. You get a basic readout. There does not seem to be the facility for customers to be able to say, "This is what my usage profile price is. What price can you charge me going forward?" The companies know, but they choose not to share that with you.

Mr McMANUS: It should be shared. You can get yours.

The Hon. ADAM SEARLE: Yes, I can.

Mr McMANUS: Absolutely. If you talk to Energy Consumers Australia—they may well have been here—access to data is paramount. It should be freely available that I can push one button and there it is from Powershop, push another button and there it is from Enova. Enova can say this is how much cheaper it is if you switch from Powershop and vice versa. That should be a very easy process.

The Hon. ADAM SEARLE: My last question is about solar feed-in tariffs. A lot of the companies have basically said that they cannot give full credit for solar until people have smart meters. I know that is not how you work. You do effectively give full net billing, if you like. Should not all retail companies be required to net bill?

Mr McMANUS: How do you define "net bill"?

The Hon. ADAM SEARLE: In a billing period, your energy company knows how much you consume and how much you generate. Should they not only charge you for the net drawdown?

Mr McMANUS: No.

The Hon. ADAM SEARLE: Why not?

Mr McMANUS: If you feed into the grid at 12 o'clock in the day, because you are not there, you get home at 8 o'clock at night and you use a kilowatt hour, Ausgrid—choosing that as an example—charge a fee for that kilowatt hour to travel through the network. So if you net bill, who is taking care of the Ausgrid fee?

The Hon. BEN FRANKLIN: Who is paying for the poles and wires?

The Hon. ADAM SEARLE: You still get that in your bill.

Mr McMANUS: That is fine. In effect, that is what the feed-in tariff does. If a feed-in tariff is set properly, it reflects the wholesale market. In effect, that is what we are doing.

Mr PFEIFFER: Can I respond to your question about the smart meter. From a smart meter perspective, if you are going to change and put a solar panel on and you do not have the ability to net meter, in theory you need to have a different meter. Even prior to December last year when they brought in the Power of Choice—Metering Changes, meters still needed to be changed. In the current circumstances, meters still need to be changed when solar is installed to allow that net billing arrangement, but under Power of Choice it is now required that it is a smart meter.

The Hon. ADAM SEARLE: Taking Powershop, you get your bill every month. If you do not do a meter reading, I can manually input my meter reading from my solar inverter and my regular meter, and my bill gets adjusted automatically.

Mr McMANUS: You get a feed-in tariff, which is a rate that we believe reflects the market value.

The Hon. ADAM SEARLE: You set the feed-in tariff.

Mr McMANUS: Yes, but it is not a one for one.

The Hon. ADAM SEARLE: I understand that.

Mr McMANUS: I wanted to check that we understand each other.

The Hon. ADAM SEARLE: It is the regularity of squaring up what you contribute versus what you draw down that the other energy companies seem to be slow to adopt. Why would that be?

Mr McMANUS: I have no idea. In theory, a feed-in tariff for an energy retailer is like having a generator.

The Hon. ADAM SEARLE: Yes.

Mr McMANUS: Our belief is that you pay what you believe is a fair market rate for that energy based on wholesale market, plus some additional because it is being produced at the site that it is being used, so there are not loss factors, there are not anymore fees. There are a couple of additional things that add up in value, so it is more than the wholesale market rate.

The CHAIR: We are out of time. I have one question to put on notice: What is your view of IPART and their systems? There may be some further questions in light of your evidence today. Thank you for your evidence. It has been very helpful. Hopefully it will be helpful in the outcome of the report.

(The witnesses withdrew)

(Luncheon adjournment)

ANDREW BRAY, National Coordinator, Australian Wind Alliance, affirmed and examined

STEVE BLUME, President, Smart Energy Council, affirmed and examined

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

Mr BRAY: We both do.

The CHAIR: Mr Blume, would you like to go first?

Mr BLUME: Thank you. First of all I acknowledge the Gadigal people, the traditional custodians of this land, and pay my respects to elders past and present of the Eora nation. I extend that respect to other First Peoples present and those who may be listening or viewing online today. I begin with a little background about the Smart Energy Council. We have a strong and diverse industry membership of more than 1,000 members, comprising companies delivering residential, commercial and large-scale solar storage, smart energy management products and services. Our members include Australian and global manufacturers, distributors, retailers, installers, trainers, financiers, project developers and a few individuals. The Smart Energy Council was previously known as the Australian Solar Council and Energy Storage Council and traces its history back more than 60 years.

The Smart Energy Council supports smart energy, smart national and State energy policy and will continue to work with all governments to act in good faith and ensure the implementation of a nationally consistent policy that delivers at least 50 per cent renewable energy by 2030. The basis of the policy must be the science of climate change caused by global warming, but the economics are the drivers of what is happening right now. The economics and financial drivers now place solar and wind as central technologies to lowering emissions. They are the lowest cost of generation, even in the absence of a price on pollution. Perhaps most critically for New South Wales residents who are currently off-grid or at the end of a long, thin transmission distribution line, smart and clean energy solutions offer significant increases in security, quality and reliability of supply. Regional and rural centres in New South Wales are increasingly supplied using clean micro grids because the cost and capability of solar and storage are the least cost, best technological solution for country communities and towns, and farmers, graziers and others who have had to compromise because of their distance from generators and power lines. These same cost drivers also mean that remote communities of all types, whether Indigenous or not, can now be given power supply services equivalent to their urban cousins and at competitive costs.

The same economic and financial technical advantages mean that renewables deployment is the most cost-effective way to deliver energy to those in developing countries with poor supply systems or with no access to electricity at all. It is a simple economic truth that New South Wales faces the closure of large fossil fuel generation facilities by 2030—the biggest problem facing anyone on the National Electricity Market [NEM] just after 2030. Given the seven- to 10-year plan in the construction timelines for large project decisions, they must be made in the next two years. AGL gave a seven-year notice to Liddell and accompanied that with a solid and sensible plan on what would replace that service. The same notice and diligence needs to be done for all generators across the NEM. Funnily enough, the Smart Energy Council is not too far from the views of the AGL in its submission to the Committee, although we would argue that the probable outcomes AGL describes can be achieved with zero emission technologies, clean not just cleaner, and those with lowest emissions not simply lower emissions. We argue that increasing reliance on natural gas is more costly for consumers and does not accord with climate science. With those caveats, the broad thrust and general direction that AGL discusses will take it to the same place and matches the 100 per cent renewable scenarios of a range of studies and reports, such as those from the Climate Council, ClimateWorks, CSIRO and Energy Networks Australia, amongst many others.

I have provided the Committee with a copy of this opening statement. I will not go into the great detail and read the rest of it, but I would like to raise the issue of the need because it will have a massive impact on New South Wales if it proceeds as it is currently structured. I will also provide the Committee, if required, with a copy of our submission to the Energy Security Board. In summary, our view is that the proposed National Energy Guarantee (NEG) will curtail investment in renewable energy, fail to tackle climate change emissions, decrease competition in the electricity market and increase costs for all consumers. The NEG proposes a cap on renewable energy between 28 per cent to 36 per cent in 2030; a figure that would stifle investment and jobs and stop the much-needed modernisation of the Australian and New South Wales economy. The existing renewable energy technology [RET] will deliver more than 23 per cent of needed reductions by 2022, with just a further 3 per cent to 5 per cent from the electricity sector out to 2030. The cheapest, fastest reductions other than energy

efficiency and conservation come from renewables being deployed in the electricity sector, which could comfortably reduce its emissions by 60 per cent by 2030 at the lowest cost.

The low emissions target will continue the regulatory uncertainty and government interference, making the market almost impossible for investment. We keep investing in the old network because the regulatory system is stopping investment in the new. The sad irony is that we are constraining further private investment that has built a seven gigawatt national solar photovoltaic [PV] power station on rooftops, using more than 60 per cent private investment by householders, and we are putting a similar brake on private investment energy storage systems. The fact is there is no business case for storage as the regulators do not now reward storage and dispatchability and are not considering proposals to do so.

Curiously, the Smart Energy Council has been painted by some as extreme, green or being hysterical, when what we are seeking are transparent and competitive market-based solutions to get the electricity and energy system transformation we need. The counterfactual is that there are plenty of projects and private sector options to replace Liddell, as AGL has already identified, and the other ageing dirty plants in New South Wales which would provide the same quality, reliability and security of supply as we now enjoy and bring better services for New South Wales communities west of the Great Dividing Range and to the north. Yet the Commonwealth Government has intervened into the market on the Liddell closure, interfering and placing in jeopardy private sector replacement planning and investment plans.

There are assertions of a shortage of capacity and threats to supply when there are in fact none—unless we do nothing, but nobody is proposing we do nothing. There are threats also to nationalise assets, and the Commonwealth has already done so through the purchase of Snowy Hydro. Again a better solution would be to indicate that there is a need for two gigawatts of firm supply in the National Electricity Market [NEM] and then seek solutions from the private sector on how that should be done and at what cost. It is unlikely, but Snowy Hydro might be the most cost-effective answer. However, since there has been no market contestability we can never know whether that is the case.

The intention of the NEG is to delay and prevent change by relying on the difficulty of agreement through the Council of Australian Governments [COAG] process. If the States sign up to this now, getting future COAG agreements will be nigh on impossible within the 10-year time line needed to change and transform the electricity market. The targets will be locked in and these targets come with no compliance costs and no price on pollution. Thank you again for the opportunity to be here. I am happy to answer any questions beyond what I have covered in this statement and to take on notice any questions I cannot answer or which need further information.

The CHAIR: Thank you, Mr Blume. We will table your opening statement.

Mr BLUME: That is fine. That is great, thank you.

The Hon. ADAM SEARLE: And a copy of your submission that you flagged would be very useful.

Mr BLUME: Okay, no worries.

The CHAIR: Mr Bray.

Mr BRAY: Good afternoon and thank you for the opportunity to speak with you today. The Australian Wind Alliance is a community organisation. Our 800 members and many other supporters want to see a strong take-up of wind power for two reasons: to help regional communities thrive and to clean up the power sector. Many of our wind power supporters live in regional New South Wales, from where I have made the trip in today. We are independent of the wind industry and argue consistently for a higher bar around community engagement and benefit sharing from wind companies.

I would like to address my opening remarks to two of the Committee's terms of reference: (a) the reasons for recent increases in the price of electricity and (f) the adequacy of planning to meet future electricity demand. I have tabled some information graphs to the Committee. As graph 1 on the first page, from the Australian Energy Market Commission [AEMC], shows, wholesale price rises were the primary driver of electricity price rises, rising \$120 for the average bill from 2016-17 through to 2017-18, while all other components of the bill remained essentially flat. As the graph on page 2 shows, this wholesale price spike occurred across all National Energy Market [NEM] States in 2017-18, following the announcement of the closure of Hazelwood Power Station in Victoria.

The AEMC graph shows that prices are expected to decrease this year and the next, following the introduction of 4,000 megawatts of new wind and solar capacity under the Federal Renewable Energy Target

[RET]. So the key to stopping these price rises and the key thing to note here is that this new RET-driven capacity essentially arrived two years too late to stop those price rises happening. This was a direct result of the Abbott Government's effective suspension of the RET scheme from 2014 through to basically 2016. That is, the Federal failure on energy policy was the primary driver of those power price rises for New South Wales consumers. So our primary question for this Committee must be what New South Wales can do to insulate itself from ongoing Federal failure in energy policy.

On term (f) around meeting future energy demand, as Mr Blume has already alluded to, a full 60 per cent of New South Wales coal generation fleet or nearly six gigawatts of capacity will be closing in the next 15 years, quite possibly earlier. Without proper planning there is a very real chance of Hazelwood-type price hikes and sustained higher wholesale prices through that period. Unless you are willing to bet New South Wales consumer bills on the Feds suddenly getting their act together, my suggestion would be that New South Wales needs to be proactive and take your own measures to ensure that you have enough renewable energy supply before these plants close. We would like to see New South Wales act on its Climate Change Fund Strategic Plan. If you go back and have a look at it and take the dust off it, you will see Mike Baird the Premier and Mark Speakman the environment Minister, and it says 2017-22. To my knowledge it has not actually been formally instituted yet.

The Hon. ADAM SEARLE: It is still in draft form, I think you will find.

Mr BRAY: It is still in draft form.

The Hon. ADAM SEARLE: Consultations are ongoing.

Mr BRAY: There is some great stuff in there.

The Hon. BEN FRANKLIN: There is indeed.

Mr BRAY: But it is a matter of walking the talk. Using innovative market mechanisms to drive development and construction of wind projects in New South Wales wind regions is something from that report that we would like to see. One measure that is in there is around successful reverse options for new wind and solar plants. They have been shown to deliver power price reductions in the Australian Capital Territory. I am happy to elaborate further on how a renewables dominated grid can supply secure and reliable electricity 24/7 and also why high emissions low emissions [HELE] coal plants, which are mentioned in the terms of reference, are not going to be a great solution for New South Wales. There is also a role for the New South Wales Government in partnership with bodies such as the Australian Renewable Energy Agency [ARENA] to kickstart projects in New South Wales that provide dispatchable support to renewables and demand management to improve the statewide grid. I look forward to answering any questions you have.

The CHAIR: Thank you very much. Mr Blume, in your submission you talk about supporting Snowy 2.0. Do you want to make any comments about that?

Mr BLUME: The comment is more one of—not the technical capability of putting in a two-gigawatt pumped hydro support into the network. The question is more: Is that the best and most opportunistic way of doing it? Have you got the best options for lowering the price and actually delivering the power where you need it and when you need it? I would suggest there are a lot of technical reasons why that is not going to be the case.

The CHAIR: Can you discuss some of those?

Mr BLUME: Yes, sure. The first one is that it is a large-scale project which has already been estimated at around \$4 billion—doubled from the first announcement that was made. It does not include the transmission upgrades requirement to get the energy out of that area. The estimates that have been floated around for that are somewhere between \$4 billion and \$6 billion. The Federal Government has already spent \$6 billion to buy the two shares back, so \$6 billion. We are up to about \$15 billion or \$16 billion expenditure for two-gigawatt capacity into the market. I have to tell you, that buys an awful lot of capacity in the commercial market for those sorts of services right now. The world is going to distributed resources to supply the quality and renewable energy equality and reliability that renewable energy brings.

Having a single big, central provision of resource, whatever that resource is, is probably not the smartest way to do things. It may well be, but if it were me running the policy, then I would say, "We have a need. Here is the need: it is two gigawatts, say. Tell us what you think you need to provide that and where you would provide it and how much it would cost." Just as a secondary comment on that, one of the things that is happening is the sort of helicopter view that has been taken by the Australian Energy Market Operator in its Integrated System Plan consultation process that it is undergoing now—I suspect and hope that out of that, there

will be a broader view of what the market could provide and what that network should look like to provide the equivalence of a power supply that we have now everywhere across the network.

The CHAIR: Do you know how much energy will need to be received for that to pump the water up to get the electricity from there?

Mr BLUME: It is sort of the wrong question, in a way. It is the right thought but the wrong question. The reason is almost anybody, when talking about energy, forgets about the time value of energy. That is what is critical; that is what causes high prices across our network. We pay \$14,000 a megawatt hour for sometimes 25 hours a year, about, and about a quarter of the price of electricity out of the year is for that small period. The value that you have—if you have got a bunch of water and you let it down the river to go through turbines, you do it for the rest of the network—and, in this case with the renewable energy network, you would have that during the middle of the day because you have a massive peak because of solar; maybe in the middle of the night because often wind is higher at night, depending on where you are and what part of the network. The value of that in the market is zero or close to zero. It might be negative sometimes, so it costs you nothing to pump that water back up.

They are doing that at the Snowy now. They do not utilise it anything like as much as they should. They have got a small capacity—I think it is about 400 megawatts, but I cannot remember what it is—to do that now. Tasmania did that through the whole of the carbon pricing period. Of course, one of the things you have to do is manage your water. They did a lot of that during the carbon pricing period and let the water run down the river and got some money. But then, of course, they had a drought shortly afterwards and ended up having to buy—so like all these things, you have to plan long-term. The time value of energy is minutes, hours, days, weeks, months, seasonal, years. You have to take that whole-system approach and the values change across all those. We are very good at doing that in Australia. We have historically done it very well and we are still doing it very well. The challenge for us is to make sure we continue that excellence when we change it to clean energy.

Mr BRAY: Could I perhaps chime in on that? In regard to the Snowy Hydro being a very large solution to the problem of variability in the network, it is quite possible that a number of smaller projects throughout the State—or indeed throughout the country—will be the way that it actually works. Even this morning, some of you will have seen that Origin Energy announced that they were doubling the capacity of the Shoalhaven pumped hydro to 275 megawatts. This, in fact, is a good example of the one I mentioned at the end—that it may be that there is a role for the State to be partnering with groups like the Australian Renewable Energy Agency [ARENA] to fund feasibility studies into this. In terms of added security around the network, rather than having one very large plant in the Snowy, you will have one at Shoalhaven; you may have one up in, say, Walcha; you may have other ones throughout the State.

The Hon. ADAM SEARLE: AGL says they are looking at one in the Hunter Valley. You say a number of decentralised pumped hydro facilities for storage and dispatch ability may be more effective in terms of cost and security than one big institution such as the Snowy Hydro?

Mr BRAY: Indeed.

The Hon. ADAM SEARLE: Mr Bray, you provided a document on the energy that is likely to be lost as a result of coal-fired power stations closing. You have got new wind farms under construction and those with planning approval. There is a big shortfall. In relation to the 14 wind farms with planning approval, how likely is it that they will move into the production or construction phase? On what does that depend?

Mr BRAY: The primary considerations are around the finances. Once you get your project approval, in general they are working towards grid connection and financing. It is the availability of power purchase agreements. To date, that has largely been driven by the Renewable Energy Target [RET], and they have been offtake agreements for, say, 10 years or 15 years at a certain price. As the RET gets towards 2020 and the large-scale generation certificate price for that scheme starts to trend towards zero, which I think is basically where projects are now basing their numbers, you will start to see projects enter into the market on a merchant basis. There are other things like group power purchases; Telstra and a bunch of other companies have recently contracted with the Murra Warra Wind Farm in Victoria. You are seeing a number of different paths to market, if you like. They are going to be the main issues. But there are things like grid connection—it is a very long and complicated process, so the more resourcing can be put towards making them happen more quickly, it is probably better.

The Hon. ADAM SEARLE: What are the barriers to grid connection, as you see it?

Mr BRAY: Essentially, it is around capacity, and localised capacity. There are some areas of the State where there is quite a lot of grid capacity; in other ones, less so. There are certainly some high-wind areas. At the moment, the north-east New England tablelands are actually quite well resourced, grid-wise. They have got quite a large one going through there. I understand there is an upgrade going in around Yass at the moment, which may increase the amount of wind that can be connected in that area. They would be the main capacity issues.

The Hon. ADAM SEARLE: Mr Blume, in relation to your opening statement and submission, you have a number of concerns about the National Energy Guarantee [NEG]. How do you say the NEG will put a cap on renewable energy development?

Mr BLUME: Again, it is just down to the finances as much as anything, and the low target. It is an unambitious target. At face value, the logic says, "We have got a national target of 26 per cent to 28 per cent by 2030—the Paris agreement. We should just smear that across all sectors." That is fine, except we know that in the energy sector and the electricity sector particularly, you could go 50 per cent to 60 per cent comfortably—and this is being done around the world—at the lowest cost. When you start trying to get that 26 per cent to 28 per cent in other sectors—so transport or in industry, heavy industry or other places—the cost goes up dramatically. The question there is: Why would you not set a target for the sector where there are commercial, well understood deployable alternatives that are clean when you have that opportunity?

The second thing is that if you have a look at those numbers we have already, we will be sitting at 23 per cent reductions on 1990 by 2022, which is rolling straight out of the Renewable Energy Target. That only leaves 3 to 5 per cent to be achieved to meet the target that has been set for the electricity sector by 2030. That is about 1.5 to 2 gigawatts of total renewable energy. We are currently putting in more than a gigawatt a year on rooftop solar across the NEM. About a third of that is going into New South Wales and that is likely to increase.

Rooftop investment is not government money. The RET has a reducing component that finishes for small-scale people in 2030. Private investors are spending that money at no risk to government. They are building a network of solar power generation. The numbers are also looking highly positive to put in storage in association with that. We need to be able to identify where that storage is and the solar. At the moment the regulators do not see that. It is not translated in the market rules to allow us to get the community benefits of that investment—or the network benefits, for that matter. A lot of things are not monetised and they are not visible. I am hoping some of the Integrated System Plan stuff that I talked about from AEMO will identify some of that and help with it.

You end up with this unambitious target. The proposal for the National Energy Guarantee says you are only going to set targets every five years and you can only review them every five years. That means we only have one review until 2030, effectively. Even if things change you then need COAG to agree on what the new targets are. I know everybody means their best when they go to COAG, but I have sat in some of those rooms in historical times and it is really hard and really difficult. Everybody has reasonably held views about why they are taking their position but if you lock something in that way then that is what it is going to be. That is not a sensible way to do policy. For New South Wales I echo Mr Bray's comment. All the States at the moment need to be taking actions that are at least complementary to what the Commonwealth might do but be very aware of their own circumstance in terms of their energy needs.

The other thing which I add to that which I think is disappointing with all this is that there is no compliance cost in the NEG. It is clear. None of this is secret. It is all in the Energy Security Board reports and all the documents that come out. What is going to happen is that existing generators will just increase the operations they have and they have already got amortised costs and do not need to really do stuff. That is fine, but that is called business as usual. There is no compliance for them not to do anything more cleanly or to do it faster. There is no mechanism for gracefully removing that 60 per cent of generators from the network and making sure that before they are removed you have got a replacement alternative, whether that is generation or demand response or energy savings or whatever.

The Hon. ADAM SEARLE: I understand that you say the targets are inflexible across all sectors, but that is not quite the same as saying that you cannot have more renewable energy than 28 per cent to 36 per cent. There is no proposal to stop people investing in renewable energy or building new capacity.

Mr BLUME: But you are only going to invest if you can make money out of it. It is all about the finances; it is nothing more. The issue with that is if you cannot see where the return on your investment is going to come from you are not going to invest.

The Hon. ADAM SEARLE: Assuming these targets became the approach and all of these coal-fired power stations close, and if you are right about putting the brakes on the development of renewable energy, would we have a big energy shortfall, or what would happen under the NEG arrangements as you understand it in that situation?

Mr BLUME: I think you would find that the agreement would be breached because no government is going to allow the lights to go out. It is just not going to happen. If the process is that in their own State the threat of that capacity reduction is not being met by timely replacement by an alternative—it is not just generation. Demand response and a whole bunch of technologies can give you the same outcome without just building more generators. The proposal from AGL has been derided but it is actually a very good tactical proposal. They are using gas. I would not use gas but that is their business. Why would you not if it is your business? They are having demand response and a whole lot of other alternatives that give you the cheapest outcome to get that replacement for what you are getting from your coal-fired power stations.

The Hon. ADAM SEARLE: What measures should the State Government take to ensure that adequate new build electricity generation is constructed and also meet our energy security needs? What is the suite of measures you think this jurisdiction should take, particularly if the NEG goes the way you are considering that it may?

Mr BRAY: As I mentioned earlier, I think the reverse auction scheme to bring forward some of the new generation, whether it is wind or solar, would make them competitive options. You would find that the prices that you would get in the immediate term would be well below what the current wholesale prices are. It is likely that the Victorian program that is being instituted at the moment will actually not only reduce the power prices but probably also make a return to the Government given that in the way it is arranged it is basically a contract for difference. That helps you to get some of those and make sure that you have got the new generation you need. It may be that as a Government you can say, "We want to see it in this part of the State," or, "It needs to support this part of the network in the State." You can make those kinds of specific requirements in your tender.

Beyond that I would look to be kickstarting projects, but this is a less urgent one. The more urgent one is having enough supply, and you get that through the new projects. But as you start to increase the proportion of renewables you will need to also be working on dispatchability. There are things like getting demand response programs up and going in the State. The sort of virtual power plants that we have seen in South Australia where you network together a bunch of home or possibly larger batteries would be another one. Again the pumped hydro thing, if there are small ones in particular strategic parts of the network that you want to incentivise then you might put some money into those ones. It is really those two sides: enough supply plus some dispatchable support for that variable supply.

Mr BLUME: I agree with what Mr Bray is saying. The reverse auction is back to what I was talking about. You have got to have a market for selling your energy because that is the way you pay back whatever the finance is. Electricity from renewables has a single factor that is different to everybody else—that is, you are buying your electricity up-front. There are virtually no contingencies. There are no fuel costs. You are talking about a small operation maintenance cost and everything else is capital. As long as you have got rid of the capital and you can get that return, to do that you need a contract to sell your power at the time you are producing it. You already have AEMO and that is a COAG body, effectively. I would be using not just State-based powers because you have got some regulatory powers in the State but you have also got people like AEMO to help you deliver that sort of stuff as well.

There is another thing which I think is really important in doing that. I agree with Mr Bray and I think others have talked about it. Mr Franklin has talked about this before; I have heard his speeches. One of the things that is really important with renewables and this transformation—and I said this in part of my opening statement—is the delivery of jobs to rural and regional communities. And that is persistent. It is not just in the construction phase but also in the operations phase. That is unlike almost any other technology really. You can be targeted on that. You can go to areas like the Hunter or outside Wollongong or other places in the State where you are going to have a transitional problem for the workers that are involved in the extraction or generation industries, and that is really critical. You have got time to do that. We should not think it is a surprise that this is going to happen. This is going to happen. Unlike Hazelwood, where you basically had 18 months, you do not want any of that repeated. You have seven years with Liddell, so you have got time. With the other ones we have got, we know there is going to be enough time to do this.

To me there are a whole bunch of State decisions to be made. There are planning decisions. There might be some incentives, but most of them are really regulatory and encouragement decisions. These things do

not require subsidies. On that point, the certificates under the RET scheme, for example, are not subsidies. They are a price on the reduced emissions from the general grid that are offset by having to buy those certificates or build plant. Again, you have got a choice. I can give you a more detailed response and provide that later if you would prefer, because I think there are some direct things that we could do.

The Hon. ADAM SEARLE: You can take it on notice.

The Hon. BEN FRANKLIN: I will start with Mr Bray. We have discussed this in person. This Government put out new wind guidelines—a new framework—in December 2016. How is that going? What is the community sentiment and what are the views about the planning process?

Mr BRAY: It is a question close to my heart. In general the fact there is now a guideline in place is a positive thing and that has cemented the goal posts into the ground after a long period of delay. The proof is going to be in the pudding. We are starting to see some projects apply for their Secretary's Environmental Assessment Requirements [SEARs] or the initial part of the planning under the new guidelines for the first time now. The wind farm project in Nundle that is being proposed at the moment, they have started to apply the new approach essentially. If anything, they are going out to the public a bit earlier and really consulting on what the visual guidelines are a bit earlier than they otherwise would have. I do not think that is a bad thing.

It is giving people a chance to have their views. There are views on both sides, so we will see how that project goes along. One thing I am concerned about is potentially in the category of unforeseen circumstances. One of the things that the new guidelines do is promote the idea of benefit sharing. It does not cement them in but it suggests that is the way they go. That is translating into offers of neighbour agreements and that kind of thing, which we support and for which we have argued. There are a couple of instances I have seen where that gives some of the neighbours, depending on what their motives are, something approaching a veto particularly around modification applications. That is something we are keeping a close eye on. I hope that will not head off in that direction.

The Hon. BEN FRANKLIN: Mr Blume, did you want to add anything?

Mr BLUME: I think it is something that is relatively new and might not be understood. In the same sort of vein we are starting to have larger scale arrays in rural areas and farmland and things like that. Historically in our industry you do the surveys and people love solar and they bung it on their roof and see their neighbours and think it is a wonderful thing. They can have the warm and fuzzy of, "I am saving money as well as saving the planet" and that sort of thing, which is fine. We are starting to see some of these larger things in areas where people are concerned. Basically a lot of it is education. The social licence approach that has not been seen as necessary for solar farms particularly—the larger scale farms—I think we will have to pay attention to that.

The Hon. BEN FRANKLIN: That was why the visual amenity was included in the guidelines in the first place.

Mr BLUME: Absolutely, and they are very useful. One of the roles we have is to try to get people to understand that there are guidelines and they ought to be looking at them. The people doing the stuff are either financiers or engineers. Their notion of community involvement is, "We have this thing. We are going to deliver it and build it." There are genuine concerns and we need to be able to make sure that that is settled early.

The Hon. BEN FRANKLIN: Do you believe that those concerns have eased, increased or stayed the same in the past decade or so?

Mr BLUME: I have been involved with a couple around the Australian Capital Territory and in southern New South Wales. I think it is probably much the same, to be honest. I think what is going to happen is they were very new and early so the awareness of them happening is higher now. Before it was very localised so the immediate neighbours knew. For solar often it is an educational issue. People worry about heat or glare. They put them on rooftops of airport buildings. There are a whole bunch of answers to these things but you have to engage with people and treat the concerns seriously. The volume is going to be ramping up so there will be more of these things. A lot of them are not near regional communities but there will be individuals and adjacent farms. The conversion of turning productive farmland into electricity generation is an issue for some people depending on the size of some of them. Some of them are pretty big in the number of hectares.

The Hon. BEN FRANKLIN: And getting bigger.

Mr BLUME: And getting bigger.

The Hon. BEN FRANKLIN: Did you see our submission to the Australian Energy Market Operator [AEMO] about the three new energy zones in New South Wales? What are your thoughts about that?

Mr BRAY: I will address your previous question first. My sense is that communities are becoming more accustomed to renewable energy plants in their backyard. I think a lot of the scare campaigns around wind farms in particular beforehand were leveraged on the fact that people did not know what it was going to be like when it went up. In any of the major places where you are going to find wind farms there are now operating wind farms in New England and there have been operating wind farms where I am in the Southern Tablelands for quite a while. In the Central Tablelands, if you have questions, you can drive a few hours north or south and you will get answers to them. That is lowering the temperature on that kind of thing.

The second part is that I think industry is improving. The key factor is community engagement. If you find a developer who goes in and communicates openly and transparently, and they are trustworthy and they deliver on what they say they will do, you build the trust in the community. Then you are talking about whether or not the project is delivering for the community. That is the discussion you want to be having. By and large we have seen industry improve. That is something we have communicated to them to try to get them to improve. I think that is improving.

The Hon. BEN FRANKLIN: I expect the community development enhancement funds help as well.

Mr BRAY: Yes. I might table, after the hearing, our recently released report on Building Stronger Communities, which lists all the community enhancement funds across the country that we are aware of and it talks about the ways that local communities can benefit from wind farms.

The Hon. BEN FRANKLIN: Are there any comments you want to make about our submission to AEMO in particular about the three energy zones?

Mr BRAY: I have to admit that I looked at it a month or two ago when it came out, so it is not at the front of my mind. In general, the concept of renewable energy zones is a promising one. I was pleased to see the New South Wales Government get behind it. For instance, in Texas, up in the northern part of the State, that is a textbook example of how to make this stuff work. You find the windiest spot you can, preferably with as few people around as you can, and you build the infrastructure to take it to where it is needed.

Mr BLUME: I agree. For my sins I read all the submissions to all these sorts of things. It is very useful because it explains intent. You have to be careful not to let a symbol get in front of the reality of what you are trying to deliver. One of the things I think is funny is the parallel with the way we created our electricity and gas systems historically. Historically we built power stations in the city and we had railway lines, so we shifted the coal to the city. Then the coal got too dirty and noisy and they did not like the trains coming in. In the meantime we worked out how to transmit electricity, so we bunged the power stations next to the coal plants and we shipped the electricity. We now know that we can do high voltage of various types—DC or AC; it does not matter.

We now need to build the new lines and the new traffic pipelines to get the energy from where the energy is best placed to be done. The zones are fine so that matches. The real issue is having the conversation with the NEM and the regulators about augmenting and updating those transmission distribution lines. I throw away another thing which I think we need to be careful with. A lot of assumptions are being made about electronic vehicles [EV] and the impact of EVs. I think we are underestimating how fast that is going to happen. I also do not want to overstate the impact on the grid because it is the time value we are talking about of the energy.

If we have everybody coming home and plugging in an EV onto the new network that we have built at the same time, clearly there will be a problem and they would all want to do it at peak hour in the evening. There is no reason for that. We call ourselves the Smart Energy Council because there is intelligence around that will allow you to do that. None of that is existing right now. One of the things that States can do with the influence they have on the people who are doing distribution and transmission networks in the State is to increase the intelligence of the network. You probably do not know this—maybe you do know it, effectively for networks in Australia, on the NEM especially, they are blind to the low voltage distribution networks.

They have only limited visibility to the sub-station itself. Beyond the sub-station they have almost no visibility. You need that because you are having a whole bunch of people at home putting generators and what look like generators all demand storage, or generators to the network in the form of batteries and storage all around the country and that is going to increase dramatically. You need the smarts to be able to do that. That

does not mean smart meters. The intelligence, the mandate of a particular device to do this stuff is last century technology. You do not need to do it that way, you just need the data and the intelligence.

The CHAIR: Thank you for your evidence. That concludes your session. We could keep going. You talked about tabling some information from that report. You will have 21 days to do that. In light of your evidence, you might have further questions from the Committee. The secretariat will help you with that. Thank you for your evidence today. It has been very helpful.

Mr BRAY: Thank you for the opportunity.

(The witnesses withdrew)

TOM GEISER, Senior Market Manager, Neoen, affirmed and examined

The CHAIR: Do you have an opening statement you would like to present?

Mr GEISER: I do. It is longer than three minutes.

The CHAIR: That is fine. We will make a discretion if we need to.

Mr GEISER: A little bit about Neoen. Neoen is a French-owned clean power producer with a presence in Europe, Africa, the Americas and Australia. Australia is our largest market with almost 1,000 megawatts operating or under construction. Our Australian assets include the largest battery in the world, the world's largest off-grid solar and storage plant for a mine and the first Australian wind farm to provide frequency control. In New South Wales we have five large-scale solar farms generating or under construction. Our customers include the Australian Capital Territory, New South Wales and Victorian governments; major retailers; a copper mine; and soon a major agricultural user in Victoria. Our Victorian customer will be almost completely powered by wind. I am Neoen's senior market manager. My role is to support our operations, development and revenue teams with respect to energy markets.

I will initially cover a few topics related to batteries, renewable contracts, customer participation and transmission before your questions. First, the big battery. Hornsdale Power Reserve [HPR] is the largest battery in the world with a rating of 100 megawatts and 129 megawatt hours. The battery is made up of about 12 million individually monitored lithium cells. Neoen won a tender from South Australia to deliver the project before the start of last summer. The intention of the tender was to ensure that South Australia had security services in place before the summer peak demand when the risk associated with a generator or transmission trip is the highest. HPR is contracted to provide 70 megawatts of reserve for power system liability purposes. This takes the form of two different services. The first is the System Integrity Protection Scheme [SIPS] which is intended to protect the Heywood interconnector from overloading. Overload of Heywood and its subsequent trip was the final event leading to the South Australia blackout. ElectraNet developed a signal which detects overload conditions and directs HPR to discharge as hard and as fast as possible. The fibre communications and rapid response capability of the battery are key to getting a response in time. This response has been successfully tested but has not been required yet.

The second service is contingency FCAS, or frequency control ancillary services. This service kicks in when frequency is more than 0.2 hertz of the standard 50 hertz. This happens when a large generator or load trips. The reserve battery capacity responds to push frequency back within normal operating bounds during such a contingency. This service has been required more than anticipated due to an unprecedented number of coal-powered plant trips over summer. In conjunction with multiple other generators, the battery increased its output in response to such a trip. Compared to conventional generators, the battery responds much faster—within milliseconds not seconds. This is a more valuable response because the frequency deviation can be arrested earlier. Under the current market arrangements, this additional benefit is not valued. Indeed, the battery is not paid for the full magnitude of the response let alone a faster one.

Thirty megawatts of capacity is not reserved and can freely participate in the energy and FCAS markets. An algorithm determines the most profitable operating strategy and bids accordingly. This market capacity has access to two sources of income—energy arbitrage and regulation FCAS. Regulation FCAS is a reserve capacity that is constantly correcting grid frequency, not only in emergencies. South Australia has had huge increases in the cost of regulation FCAS in recent years. This has been brought back in line with other States due to the battery and the neighbouring Hornsdale 2 Wind Farm. Hornsdale 2 is the first wind farm in Australia to provide these services. With both of these assets, Neoen has underbid the gas generators to limit otherwise extreme prices. This behaviour saved South Australia approximately \$3 million on 14 January.

I will talk about power purchase agreements [PPAs]. Most of Neoen's capacity is contracted under power purchase agreements to governments or retailers. The benefit of entering into a PPA for us is revenue certainty for 10 to 20 years. The benefit for the offtake partner is a lower cost compared to the value of the product. For example, if a retailer signs a PPA for a wind farm at \$60 per megawatt hour, they receive energy worth \$80 and also a large generating certificate [LGC] worth \$80. The customers pay the market rate for energy and for LGCs, although the retailer has procured them for a cheaper price. To be fair, few customers are willing to sign a long-term agreement and the retailer is taking the risk that prices fall or that customers leave them. More industrial consumers are realising they can get a better deal for themselves by entering into PPAs, but it is not always straightforward. Even relatively large industrials may not be able to contract enough of a

renewable project to get the plant to completion. Some aggregations of consumers exist in Australia but we are not particularly mature in this space compared with other places like the United States of America.

I turn now to tariffs and customer incentives. In a normal market both supply and demand are elastic. However, almost all Australian energy consumers have no exposure to actual energy price. This means that there is no incentive to reduce demand at critical times. Giving consumers the option to take on some risk and the commensurate reward would unlock unutilised capacity. Far cheaper than gas turbines or batteries, switching off a load for a few hours per year can save companies millions and Australia billions. Some sophisticated industrial consumers already participate in such a way. Some purchase contracts for their must-run loads and switch off their less critical loads when prices are extreme. The effect of a small amount of market participation can be dramatic. Another alternative is to enter into a renewable PPA as a partial hedge and only respond to price if there is not enough wind or sun. One Australian smelter has upgraded its facility to be more flexible, so it can more nimbly avoid high price and mop-up cheap energy at other times.

Our partner Nectar Farms is combining the demand response and PPA concepts at their site next to Neoen's Bulgana wind farm. The flexibility of their load, combined with a 20 megawatt battery, allows them to maximise consumption directly from the wind farm. The incentive to do so is a price of energy almost half that of a normal industrial load. They will be almost completely powered by Bulgana wind farm and battery. For smaller industrials, there has been a huge uptake in rooftop solar and increasingly batteries. The higher retail charges these customers face, as well as the coincidence of their consumption with solar production, makes the economics attractive. Due to many network companies banning the export of solar power it is sometimes economic to install batteries to absorb otherwise wasted energy for use later.

In terms of transmission planning, New South Wales is the State with the largest demand and borders the second and third largest demand States. This puts it in a strategic position for future transmission development. Australian States are generally poorly interconnected compared with many other nations, which limits opportunities for interstate trade. New South Wales would benefit from increasing energy trade with increased revenues and lower, less volatile prices. New transmission infrastructure would also open up development opportunities for new wind and solar facilities. The Australian Energy Market Operator [AEMO] Integrated System Plan highlights that the current regulatory structure only assesses piecemeal transmission investment. This often results in underinvestment and missed opportunities. AEMO suggest stringing together multiple upgrades to maximise bang for buck. I would go a step further: Let us assess the grandest upgrade scheme possible and trim back uneconomic sections until the project makes economic sense. To that end, why not investigate massive interconnection from Queensland to Victoria via New South Wales' renewable resources?

The Hon. ADAM SEARLE: In relation to investment and transmission, how do you see State jurisdictions facilitating that in the context of, for example, our transmission system is now no longer in government hands?

Mr GEISER: That is a very good question and I am not sure how to answer it.

The Hon. ADAM SEARLE: I am happy for you to take the question on notice or at least to have a think about it. When governments owned different parts of the system it was much easier to say, "This is the need. This is what should be done." Now it is in the hands of a private owner and they have spent a lot of money acquiring it. Where are the incentives to ensure that they facilitate the interstate transmission improvements? Are you able to tell us how much the South Australian 100 megawatt battery cost to build or is that commercially sensitive?

Mr GEISER: That is commercially sensitive.

The Hon. ADAM SEARLE: Are you able to provide that to the Committee confidentially, not for publication?

Mr GEISER: Possibly.

The Hon. ADAM SEARLE: I am happy for you to take that on notice. I am not going to put you on the spot. If you can, the Committee can keep information confidential. Are you able to tell us anything about the arrangements? For example, you are the operator. You won the tender to construct it. Did the State Government ultimately bear the cost of construction?

Mr GEISER: No. They do not bear any of the costs.

The Hon. ADAM SEARLE: They facilitated it?

Mr GEISER: They facilitated the installation of it and their expectation is essentially there is a benefit to the State in terms of increased security.

The Hon. ADAM SEARLE: And frequency control services?

Mr GEISER: Right, and they are already getting those benefits. They got a good deal in my opinion.

The Hon. ADAM SEARLE: Particularly if they are not paying any money for it. Are they paying—

Mr GEISER: No, they are paying the money for it.

The Hon. ADAM SEARLE: Is that the \$50 million I have seen printed in the newspapers?

Mr GEISER: That is not the correct amount but they paid us.

The Hon. BEN FRANKLIN: In your opening statement you suggest—if you will pardon me putting words in your mouth, and you can tell me that this is entirely not what you are suggesting—basically a second energy backbone running from Queensland down to Victoria and potentially over to South Australia, not going along the coast but going inland to take advantage of all the renewable resources, from which then I presume power can be dispatched more easily to all of those inland areas in a cheaper and more sensible way. Is that correct?

Mr GEISER: That is the idea.

The Hon. BEN FRANKLIN: Any ideas about how we can do that?

Mr GEISER: No, sorry. I am not a transmission person.

The Hon. BEN FRANKLIN: Do you have any views about what would make New South Wales a more attractive place potentially for investors in new projects or are we doing what we need to do?

Mr GEISER: New South Wales is a bit of a lagger in energy investment compared with a lot of the other States, but it is sort of starting to pick up again. A lot of the other States are on the way to meeting their renewable energy targets. New South Wales has not had very much renewable energy investment. Generally all new energy investment is renewable energy, so more and more people are looking to New South Wales as an open playing field to build new wind and solar farms. There is already some market incentive without the Government's help. If you wanted to do that faster you could have similar incentives to Queensland, Victoria or South Australia.

The Hon. BEN FRANKLIN: We do have the three largest solar farms in the country in this State.

Mr GEISER: And soon that is going to be—

The Hon. BEN FRANKLIN: It is going to be overtaken but then, on the other hand, not that we are having a debate here, we have just approved a one gigawatt wind farm for the Hunter and we are pushing through. There is a lot in the pipeline. What do you think is the biggest challenge facing New South Wales in the energy area? Specifically, apart from what you have just addressed, what specific challenges face New South Wales more than the rest of the country?

Mr GEISER: Maybe the resource is not as excellent as other places. There are a lot of good wind resources in New South Wales but they tend to be in national parks. So a lot of the focus on wind development has been in the south of Australia and south of New South Wales as well. The solar resource is better than Victoria or South Australia but not as good as Queensland. It is kind of this good middle ground. I think maybe the challenge is it is not going to be the very cheapest wind and solar projects compared with some of the other States but the maximum potential is yet the highest because the demand centre is the largest.

The Hon. TAYLOR MARTIN: You said in your opening statement that the company you represent was heavily involved in the battery project in South Australia. Are there any other projects on the horizon or are there any that your company believes would be perfectly located anywhere on the eastern seaboard?

Mr GEISER: We are pretty much expecting that we should have the option for batteries on all of our new projects. we could potentially retrofit batteries to the New South Wales solar farms and our new developments in new south wales. we have pretty much built out a lot of our development pipeline on the solar front. we are looking to expand that significantly in both wind and solar. it is pretty much expected that we should have the option to install batteries even when that makes sense for all the offtaker.

The Hon. TAYLOR MARTIN: Is the NEG helping that become a reality?

Mr GEISER: No.

The Hon. TAYLOR MARTIN: Is that affecting the outlook of your business?

Mr GEISER: Not really.

The CHAIR: Are you accessing renewable energy schemes in terms of a government initiative? Are you subsidising your investment?

Mr GEISER: In what way? Our offtakers are generally getting the benefit of those schemes. Almost all of our generation is sold as a bundle. For whatever unit of energy we produce, we give the energy value and the renewable certificates to our offtaker. We have a few certificates that are on the margins, but not very many.

The CHAIR: As there are no further questions, thank you for giving evidence. In light of your evidence today we may have some supplementary questions for you. You will have 21 days to answer those. The Committee's secretariat will help you do that. We appreciate you taking the time today to shine a light on this. It will be very helpful in incorporating all the energy sectors that we will be looking at. Thank you very much.

Mr GEISER: Thank you.

(The witness withdrew)

(Short adjournment)

JANINE YOUNG, Ombudsman, Energy and Water Ombudsman NSW, sworn and examined

RORY CAMPBELL, Manager, Policy and Research, Energy and Water Ombudsman New South Wales, affirmed and examined

The CHAIR: I welcome Mr Campbell and Ms Young. Do either of you have an opening presentation you would like to make?

Ms YOUNG: I have one, thank you. Good afternoon and thank you for the opportunity to share with you the experiences which New South Wales energy customers bring to my office every day. I am Janine Young, and with me is Rory Campbell, the Energy and Water Ombudsman NSW's [EWON's] Manager, Policy and Research. EWON is not a government body; we are an industry ombudsman whose membership consists of 53 energy and water providers who are required by New South Wales legislation or Australian Energy Regulator [AER] regulation to join and fund EWON as a condition of operating in New South Wales. We are independent. We provide a free advice and dispute resolution for customers who have not been able to resolve a complaint with their provider. This year we will resolve over 26,000 complaints, mostly energy, and mostly relating to affordability in some way.

In our written submission to this review, we examined recent trends in customer complaints about affordability and high bills; we recommended that an increased focus on multi-channel customer engagement by retailers and other stakeholders be undertaken; we discussed the adequacy of current social programs and recommended that the Government move to a percentage based concession regime; we recommended that New South Wales regulations also prohibit late payment to include customers receiving the Gas Rebate; we emphasised the need for promotion of ombudsman services by energy companies; we focused on the complexity of energy contracts, which is under the Australian Competition and Consumer Commission [ACCC] review; we highlighted the barriers customers with a poor credit history face in trying to enter into retail contracts, leaving these customers paying more for energy than other customers; and we stressed the importance that energy efficiency measures, tools to manage energy consumption, and access to solar generation and storage be accessible to vulnerable customers, rather than only to those consumers who can afford to opt in to new technology and the benefits they provide.

I note you have received many high quality submissions to consider, some with recommendations which I too support: introducing a "basic service offer" which retailers could offer to customers who would understand that it is value for money with no bells and whistles attached; calling for retailers to provide clear, standardised information about market offers to aid effective comparison, rather than customers ending up on higher prices, which is what we experience; ensuring that costs incurred for failing to meet contract conditions, such as pay on time discounts, do not exceed the costs of late payment to the retailer; and requiring minimum efficiency standards of rental properties, and social and community housing—it is so strongly linked to high energy consumption.

During past hearings I note you have also discussed with witnesses the possibility of expanding EWON's role and powers. EWON is here as part of the safety net for consumers when things go wrong. I urge the Committee to focus on changes which prevent consumer detriment in the first place for all consumers rather than beefing up my powers for the ones who come our way. I would welcome an exploration of that after my opening statement. There are three other things I would like the Committee to consider. All retailers are required to offer hardship programs to customers. First tier retailers AGL, Origin and Energy Australia through their size and market share have strong and diverse hardship programs—much stronger than second tier retailers and the new entrants that are joining the market nowadays.

When things go wrong for customers of second tier retailers and new entrants less support is thus available to them. In some cases these customers then switch back to a first tier retailer, sometimes perhaps encouraged by their current retailer, and then they are chased for debt, which impacts their ability to pay their current bill. While I support competition, I oppose customer acquisition which is not in the best interest of consumers, and this is a clear example, especially when it coupled with a high percentage discount off inflated prices. Accordingly, market practices—especially to consumers experiencing or at risk of experiencing vulnerability—should be reviewed.

The second one is about rural and remote customers. Life is very different for them. They pay more for food, clothing, petrol and electricity. They are likely to be earning less, experience greater weather extremes, and living in poorer housing stock, all of which further increases their bills. This leaves these customers more vulnerable and often with greater health problems. I hope the inquiry does not overlook that. Finally, retailers

operate across different jurisdictions. Changes in billing systems to accommodate State-based rules can, in my experience, lead to things going wrong for many customers. Recommendations arising from this inquiry should include retailers transparently deciding how they will be delivered and implemented to the benefit of all of their customers. Thank you.

The CHAIR: Do you have any comment to add, Mr Campbell?

Mr CAMPBELL: No.

The CHAIR: Thank you for appearing before the Committee today. How many complaints do you get about the phone calls people are getting around dinnertime, particularly the elderly who are being encouraged by these people who sound like they are from a legit business who may be from a smaller retailer trying to get them to come across? Are you receiving many complaints in that area? Secondly, what are you doing to address that? I know the elderly can get confused and caught up about exactly what is happening and tend to say yes more often than not as they do not want to offend. The next minute their energy plan has been changed over to another provider. Do you have any comments on that?

Ms YOUNG: We put out a quarterly report around four months ago focusing on marketing both through door-to-door sales and on some telesales, and coupled without that transfer with explicit informed consent, which is when customers think they may have responded to a survey or a phone call and said no but actually got transferred then. I do not have the statistics with me. We can certainly provide them to you.

The CHAIR: Yes. That would be helpful.

Ms YOUNG: It is not as prevalent as it was some years back. A lot of work has happened in that space. Door-to-door sales were stopped by the big three. But it is still an issue. The reason we put out that report was because it was on the increase, so we would like to follow that up with some data.

The CHAIR: Are there complaints received about fraud, either identity theft where that identity is used on other utilities or anything like that, coming through?

Ms YOUNG: No.

Mr CAMPBELL: I have not come across those either.

Ms YOUNG: Thank goodness.

The CHAIR: We will get a comment on the comparative standard offers. Do you think it is possible, if the Committee were to get to a place where we could make a recommendation, that we could get the providers to put a bill forward that compares apples with apples so consumers know what they are really getting per unit of electricity use?

Ms YOUNG: One of the key items that needs to come through is preventing consumer detriment. I think it was my office that first used the term "confusology" in one of our submissions, because that is what consumers experience when they see what is going on there. Currently people cannot compare. With discount rates—and we know there is a rule change happening with that—it is certainly something on which there must be some change, and I understand Energy Consumers Australia has an initiative working with consumers on that aspect. Is there anything you would add, Mr Campbell?

Mr CAMPBELL: Yes. The AER is currently doing a review of what they call their energy pricing fact sheets. They proposed in the last month or so to split up the energy pricing fact sheets into two separate documents, the first of which will enable customers to more accurately compare between offers from different retailers. The second document gets into the finer detail.

The CHAIR: Mr Searle might add further on that.

The Hon. ADAM SEARLE: Yes. I think you indicated your general support for transparency and comparability in different energy company offers. How do you think that might be best achieved in terms of requiring them to propose offers in a way that enables customers to readily compare?

Ms YOUNG: I think the retailers have got the ability. They have certainly got the data that should enable them to do that. I guess a first step could be that if they are making an offer to a customer, requiring them to actually compare what the customer's current rates are—and the billing information is there—then show why their offer is an improvement on what the customer has currently got. We experience so many complaints when a customer has switched. We all know that it is difficult to engage many customers, and I guess that is because perhaps they are confused or they are just not engaged in energy.

The Hon. ADAM SEARLE: Or not necessarily literate enough about the different moving parts to be able to decide what is the best outcome for them.

Ms YOUNG: That is certainly an element too. But then, once they do switch, they get their first or their second bill and they realise that they are paying more than what they were paying. I think being able to say, "We are putting you on this contract. It is going to offer you savings—not 17 per cent or 37 per cent that nobody knows what it is off, but actually compared to what you are paying now."

The Hon. ADAM SEARLE: A number of customers have provided me with feedback on the offering of discounts for signing up or combining gas and electricity bills: They felt it was misleading, that they were told it was 20 per cent off but not what it was off, and that they were not better off having signed up—sometimes significantly worse off. Should there be changes that would give requirements of truth in advertising or discounts that are actually a discount for an individual customer? Is that the sort of discipline that the retailers need to have imposed on them?

Ms YOUNG: I guess it looks at what the standing rate is, what the starting cost is, and having customers understand what that might be and whether that is comparable across all retailers. Currently it is not comparable, and so you might be getting a 37 per cent discount; it might only be off usage. You might currently have a contract where it is off usage and your service-to-property charge, so you do not know how to even compare that. You might not know and understand the difference in the distribution rate as well. Having all of that explained clearly—and I think the only way for that to happen for a customer is: "On your most recent bill, you pay this. Under our contract, you would pay this." That would be the only way that it really shows transparently what the value is.

The Hon. ADAM SEARLE: Retailers can do that now and they have chosen not to. Should we make them?

Ms YOUNG: I think they should be strongly encouraged. Encouragement is better than a stick, in my view. But we are here today, so I guess the Committee needs to decide about the approach that it would take.

The Hon. ADAM SEARLE: We agree that encouragement would work best, but we have a situation where it appears, in some respects, not to be working. You said that there are a number of retailers but there is very little effective competition in the New South Wales market. The Grattan Institute has provided a report, "Price Shock", which makes similar findings. What do you think we could do in New South Wales that would make competition work better for customers? More transparency and more information only works with engaged customers.

Ms YOUNG: It does, yes.

The Hon. ADAM SEARLE: A lot of your clients would not be engaged customers, for one reason or another.

Ms YOUNG: We should question whether customers have to be engaged. Electricity is a product that people want reliably—people want to go home, put the lights on, put the heater on, read a book to the kids at night. Do you have to be engaged? Do you have to choose? Shouldn't it be easy to just pay a price that is affordable if you do not want bells or whistles? I guess that is the first thing.

The Hon. ADAM SEARLE: Basic Service Offer.

Ms YOUNG: A Basic Service Offer that, whether you are vulnerable or not vulnerable, you can just say, "That is what I want to do." If, on the other hand, I am fully engaged and I want solar and I want storage and I want to do this and that then there is something else that I can work through and choose. That is what competition is; that is what choice is about. I can go to a supermarket and buy a no-name article, know what I am paying, know what I am getting; or I can choose to pay for what I might perceive to be higher quality item, better suited for me. But it should be my choice and it should be as transparent as that.

The Hon. ADAM SEARLE: You said most of your complaints relate to energy and affordability. Can you unpack some of that so we can get a better insight into the lived experience of your customers?

Ms YOUNG: About 60 per cent of our complaints are about billing, and a high percentage of those are about high bills. That might be people who have received a higher bill than expected, and that might be through usage or it might be a meter read issue. But it is about billing. For customers who are complaining about high bills, often it is, "I cannot afford to pay this. It is high," rather than "It is higher than I expected it to be." It is just that the cost has gone up. Twenty per cent is about credit, so that is when we are talking about people who have been disconnected, have received perhaps a disconnection warning notice, might be default listed—the

whole range of "It is past the billing time but this is the situation I am in now." They constitute a great percentage of what we do. That is what is behind it.

The Hon. ADAM SEARLE: Prevention is better than cure, but obviously you do have a significant clientele for your services. What matters are within the scope of your dispute resolution service? What matters can you decide and what matters can you only conciliate?

Ms YOUNG: My office, my role, is to get a fair and reasonable outcome for both parties—to have a look at what has gone on, having regard to the laws, industries and codes, that cover the gamut of electricity energy codes and guidelines. I can make a binding decision if we cannot conciliate the outcome, if we cannot resolve the complaint. Quite often, when a customer comes to us, it may be that they have not engaged with their energy provider or they may have minimally engaged. They might be on the point of disconnection. That is the point where we are actually connecting them to the retailer and we can negotiate that outcome. Many times, those customers have not been offered a hardship program, and we can get that for them. Sometimes I wonder why that has not been offered in the past. It may be that they failed past hardship programs or payment plans. But depending on what your debt is and what your bill is, you might not be able to pay. What you are offered as far as payment plan—it might not be affordable. We look at something that the Australian Energy Regulator [AER] has introduced: the Sustainable Payment Plans Framework. That is voluntary. It came in—

Mr CAMPBELL: Roughly a year ago.

Ms YOUNG: Yes. We actually look at, as part of our dispute resolution, whether the retailer has signed up to that voluntary program and whether it is then providing that sustainable payment plan. Sometimes they are not, so we have to remind them that they have signed up to that and that they need to do that. But if that was a mandatory program rather than a voluntary program, that certainly would be a good step forward.

The Hon. ADAM SEARLE: Are there disputes coming across your desk where the dispute resolution service you currently have is not broad enough to resolve those difficulties?

Ms YOUNG: We can resolve, and we do resolve, every complaint that comes our way. In some cases, we will not further investigate a complaint, but that is generally because the retailer, the provider has put a fair offer on the table and the customer might still be disputing that. We are independent, so that is proof of our independence. But I guess when you are dealing with some of the same things over and over, that can be frustrating. When you see new retailers come in, perhaps be on a high customer acquisition program, they might not then have the systems to support that—particularly the hardship programs to support that. Then we are doing similar work that we have done for the nearly 20 years that we have been in existence. I guess it is really having the retailers take that really proactive approach. I think we are seeing it more nowadays than perhaps five years ago—a bit longer—that some customers cannot afford their electricity, their gas at current prices. They need to be helped because they need the connection. It is quality of life; it is what all Australians should have access to. We need those hardship programs and affordability initiatives to be on the table for them.

The Hon. ADAM SEARLE: The State Government spends something like over a quarter of a billion dollars on assistance for vulnerable customers—various forms of rebates and other forms of support. But as I understand it, there is no reciprocal obligation on the energy companies—the retailers who receive the benefit of these rebates for customers—to make sure that those customers are on the best market deal that those retailers have available. Should that not be a reciprocal obligation, if they are receiving public money to assist vulnerable customers, to make sure that money goes as far as or is as effective as it can be? Should those energy companies not have to make sure that the vulnerable customers are on the best deal that they have available?

Ms YOUNG: Certainly through our dispute resolution, we make sure we ask retailers to check the contract that the customer is on. If a customer who is facing vulnerability, who is not guaranteed of that pay cheque coming in next week—if they are on a mandatory direct debit pay-or on an on-time discount then chances are they are not going to get that. Therefore it could be looked as, really, it is a late payment penalty rather than the discount for them. It would be better and in the interest of the retailers to make sure that those customers are on the best contract for them and to make sure that they have a good market offer for them because some retailers might not have a good market offer for them. Going back to that basic service offer that might be the answer for it.

The Hon. JOHN GRAHAM: As you point out in your submission, it is even more extreme than that. Often they are on the worst offer; they are on the standing offer. You spell out exactly what that might mean. It is often a significant viewpoint to a difference of nearly \$1,000 in one of the examples you referred to.

The Hon. BEN FRANKLIN: It is not even in the energy company's interest.

Ms YOUNG: No, it is not. It is not in the interest of anybody.

The Hon. BEN FRANKLIN: It makes it less likely that they are going to be able to pay.

Ms YOUNG: A part of what retailers would say is that these people are not engaging with us. At the same time, I guess the retailer is engaging with those customers every three months by sending a bill and saying to them, "We have a better product." It is the challenge between customers not taking the phone call from an energy retailer because they are worried that it is a debt collector rather than someone offering a good contract. But I think someone has to broach that. We see some good examples of that happening. Over the past six months, we have had Origin Energy come out with us to western New South Wales as part of our Aboriginal outreach work. It was a risk we took but they have most of the customers out there. We wanted to extend to them the opportunity of meeting one-on-one with their customers who often have the highest debt or risk of disconnection or they are not getting the rebates they might be able to receive.

Origin Energy took that up, worked with us, did some cultural training with us to be able to work with our Aboriginal outreach officer and with me originally, to meet with these customers. They now have data which shows the commitment of those customers do now engage with them. The majority of them have stuck to payment plans. Those customers were offered affordable payment plans. Those customers were moved to the right contracts that would give them a lower price. Some of those customers have even rung to say, "I can't pay this month", and Origin has dealt with that very proactively. We have a really good example of how that can work and we are encouraging other retailers to take that initiative as well.

The Hon. JOHN GRAHAM: But without breaking down those walls, you are really ending up in this perverse example. The people who can least afford to pay are being pushed into the worst of these contracts.

Ms YOUNG: And paying the most, that is right. Turning that around and making that offer the most affordable would reach those customers.

The Hon. JOHN GRAHAM: It would make a huge difference to those customers.

The Hon. BEN FRANKLIN: I appreciate your carrot plan but do you think there is something we can do with the stick effectively?

Ms YOUNG: While growing up, I experienced both.

The Hon. BEN FRANKLIN: It is obviously bad for government, it is bad for society and it is bad for the company. It is not helping anybody for this to happen.

Ms YOUNG: It is not. I think an initiative for all of us—retailers, ourselves, community groups and government—is that we have to rebuild consumer confidence in the sector because we rely on it. In Victoria there is compensation for disconnected customers through the wrongful disconnection payment regime. I have worked at the Energy and Water Ombudsman Victoria when that was introduced and I strongly recommend that you do not go down that path. But at the same time we do not want customers disconnected. Any other means of asking what retailers can do to prevent that—whether it is the carrot, whether it is the stick or whether there is a penalty associated with it but you would have to work through a really good program to establish that regime—may achieve that and stop some customers getting down that far. I talked about the sustainable payment plan framework before and having that as mandatory. You talked before about complexity of contracts. There is also complexity of bills. The eyes of many customers just glaze over. Whether or not you are vulnerable, I think all of us just look at the amount.

The CHAIR: And faint.

Ms YOUNG: And faint. For those of us who understand how it is structured, we might try to see where it is structured. But otherwise many people do not understand that it is made up of retail, wholesale, network, whatever. It is just too much. Reducing bill complexity would certainly be good work, and so would mandatory advance notice of price increases. We have customers who have switched who have come to us. They may have engaged, they may have researched, they may have picked a better contract, but by the time they get the first bill they have a price increase to deal with. They say to us, "How can that happen?" Currently, with all contracts, you can increase the price after that.

The Hon. ADAM SEARLE: During the life of the contract?

Ms YOUNG: Yes.

The Hon. ADAM SEARLE: It seems a bit odd.

The Hon. BEN FRANKLIN: Surely the contracts should be locked in for a year or two years or some amount of time. It is ludicrous for people to sign a contract and then their first bill is higher.

Ms YOUNG: Over a number of years there used to be fixed-term contracts. I am not sure that they ever had a fixed rate, though; I think they have always had a variable rate.

Mr CAMPBELL: Fixed rates have never been popular with retailers because, understandably, they always want to be able to pass through costs that they may incur from the other side.

Ms YOUNG: At the same time, most retailers now do not offer fixed-term contracts, so there might not be any exit fees. But therefore, if it is not fixed term, price increases are more readily going to be applied to that. Speaking of that element, I talked about hardship programs. Retailers have them but network companies do not have hardship programs. So even when a retailer is perhaps discounting or waiving some debt, they are still paying the network charges that are going through the network company. That is a good portion of the bill as well. It is a challenge but maybe it is an element that could be looked at.

The Hon. JOHN GRAHAM: I return to your advocacy for the basic service offer. I make the observation with the supermarket comparison but it is even more compelling than that. You might get a basic product at a supermarket but it might be slightly different. In this instance, these are the same electrons; it is the same product, so it is even more compelling. There might be other unintended consequences on some of the smaller retailers and there might be competition concerns. From a consumer point of view, can you see any reason why a basic service offer, which has been unpopular with some of the earlier witnesses today, would not really help cut through the complexity?

Ms YOUNG: I support that recommendation. I do not use the term "advocate" or "advocacy" because I am an Ombudsman, so I look into both sides.

The Hon. JOHN GRAHAM: Yes, sure.

Ms YOUNG: I know that there have been some concerns about whether it is a social tariff and whether, by that, it could make some consumers feel that it is impacting from a respect or a dignity perspective. It would need to be transparent in how it is put forward. If it is put forward as the basic service offer you would expect that it would be the least expensive, without the bells and whistles. At the same time, they could be told, "It is the cheapest, therefore you have to have an email account and receive a paperless bill", or something like that. For many vulnerable consumers and many non-vulnerable consumers—those in remote and regional New South Wales—they cannot rely on the internet. But if it was just a basic electricity offer and people can say, "That is what I am getting", I think that would certainly assist combined with other things such as quality of housing, insulation, curtains, drapes and all those things that get usage down.

The Hon. BEN FRANKLIN: I wish to refer to two issues in your submission. The first is the promotion of the Ombudsman by the retailers. I have a few questions on that. You put in your submission in October 2017 and it is now May 2018. You said you would be monitoring member responses to this call to action. I am wondering how they have gone.

Ms YOUNG: We have a project internally to look at that. I have been working in the Energy Ombudsman space since 2003. In fact the Energy and Water Ombudsman NSW is nearly 20 years old this month. There have been a lot of changes with executives and staff in that space and with providers and members of the scheme. We had eight back then and now we have 53. I think many of them have overlooked or not realised as they have come into the industry that we are part of the consumer protection framework and we are there independently for their benefit. I do not see that they promote us as often as they should and say to customers, "If you are not happy with the outcome of how we look after your complaint, you can go to the Ombudsman." That is what they should be doing, recognising that if customers engage with us first that is an opportunity for them to engage with those customers. We will refer those customers and have the retailers ring those customers directly or contact them to resolve their complaint. Often those complaints come back to us with the customer saying, "They still didn't ring me." We have really got to fix some of those things up and work closer together on that.

The Hon. BEN FRANKLIN: Have you seen any positive movement since your advocacy and correspondence to the CEOs?

Ms YOUNG: We have got commitments from them that they are reinforcing that throughout their contact centres and their dispute resolution services. I think it could be more proactive for some of them still.

The Hon. BEN FRANKLIN: I think you do a wonderful job. It is a wonderful position and it is critically important, particularly nowadays. Is there a role for government to do more in the promotion of this position and, if so, how could that be done?

Ms YOUNG: I guess it is everyone we work with that we are looking to remind people that the Ombudsman is there. I guess there is probably not a week or two when I do not get a couple of letters from members of Parliament who are writing to us on behalf of their constituents. I think that is a really good reflection on both their office and on my office as well. Thank you for the compliment, but we are there. We have to oversight the industry for this. We do not always get it right. We certainly attempt to and we work at that continually, but I think it is joint promotion from all parties.

The Hon. BEN FRANKLIN: I appreciate your comment about welcoming the \$50 increase in the Low Income Household Rebate. I think it is terrific. However, I am quite alarmed by the disparity between regional customers and city customers. It makes intuitive sense, of course, but I had not thought it through. It is alarming; it is over 50 per cent. Could you talk to that a little and could you give us any ideas about what else could be done? Obviously your suggestion is that government look at a tiered system depending on the price differential. That is appropriate to be considered. Is there anything else that you can suggest that can address this disparity?

Ms YOUNG: I think we have mostly just focused on the percentage-based offer because it is the easiest to work out and people cannot challenge it. Wherever you may be living, it is based on that percentage. Every time I go out wherever it be in regional and remote New South Wales, I always take a note of the petrol pricing and the other things that are around. It has an influence. If you are spending money there and you have to travel more distances then you might not be paying your energy bill. Whatever help they can get there is going to support their quality of life right across their life.

The Hon. BEN FRANKLIN: I guess the downside is the potentially significantly increased administration cost and how much money that sucks up from the overall pie.

Ms YOUNG: Yes. I look at it holistically too. Even if you look at community and social housing, government housing, and the rebates that you provide for a consumer for that, if it is poor quality housing the consumer might be using more electricity, in which case the benefit you are giving them for rental assistance is actually what they are giving to the energy company. It is a holistic view. A whole-of-government approach needs to be looked at. The other point that we made in our submission is the value of Energy Accounts Payment Assistance [EAPA] vouchers. While we say that percentage based would be a good way forward, even though it is online now the EAPA does bring people into community agencies. So it breaks down social isolation. It brings them into other services as well. For someone experiencing financial hardship perhaps just on a short-term basis it gets them back on track. If employment happens again they have got no debt to go forward. I would really encourage you, if there is a change, that you remember that it is important to have the emergency relief as well.

The Hon. BEN FRANKLIN: Again noting that the submission was put in last year, do you have any anecdotal evidence of the complaints from 2017 to 2018? Have you seen a substantial spike or has it stayed relatively steady?

Ms YOUNG: From July to October and November last year we had a budget for 26,000 complaints. By October and November we were heading towards 29,000 to 30,000 complaints. There was a lot of media interest and there was a lot of political spotlight on energy, so it did not surprise me that complaints had gone up. I looked at it very positively. I did not look at it as if it was poor retail or network behaviour. It was the fact that it was in the news and customers were reaching out for help. I saw that very positively. It dropped off a little bit, it always does over Christmas and New Year, but currently we are taking around 110 to 112 complaints a day. That equates to about 28,000 complaints for the year, which is what our forecast is for 2018-19. It has gone up from 23,000 in 2016-17, heading towards what we think will be 28,000. People often ask me what is the right level of complaint. Knowing that there are so many consumers now that are experiencing bill shock and higher bills, I think getting complaints to my office so that we can engage retailers is a very positive thing. It should not be looked at as a bad thing.

The CHAIR: It is good that the Government is trying to knock over old housing and put up good housing with good lighting and efficient energy and water use. It sounds like it is a good thing that the Government is getting rid of the old stock. It will ease a bit of the pressure on families.

Ms YOUNG: Absolutely. As long as it is fit for where it is. We saw some housing when we were out in Bourke that would work really well in Sydney, but it was not so good for Bourke's climate. With that it is important that people have regard to where they are putting particular styles of housing and how it works.

The CHAIR: What is the average turnaround on a complaint to you?

Ms YOUNG: As I mentioned before, we investigate some. We refer back where the customer has not engaged with the retailer, and in most of those we have the retailer contact the consumer to make sure that actually happens. We resolve about 95 per cent of cases within 30 days, and that includes all of those. Investigations can take longer, particularly complex investigations, but the majority, once again, are resolved within 45 to 90 days. While that customer complaint is with us they cannot be disconnected. They can be billed and we encourage them to pay any undisputed amounts, but they cannot receive any disconnection warning notices or action against them. Obviously, the outcome of the complaint may address those, may get some debt waiver or may get some account adjustments for errors and therefore it is not appropriate that that would occur.

The Hon. JOHN GRAHAM: The Chair was asking about direct contact, particularly with older citizens. I know you said that this is less of an issue than it had been although it is now on the increase again. Have you seen a change in the pattern of door to door versus telemarketing contact for some of these issue in your work?

Ms YOUNG: The quarterly report that we put out that covered the period 1 July to 30 September last year picked up on that and we will provide some more data about that because we saw an upward trend in that area. If good door-to-door sales works then that is good, but it has got to be that consumers know that they do not have to open the door and they can close the door and they can hang up. Many consumers, as mentioned before, particularly those that may have language difficulties, are not comfortable in doing that.

The CHAIR: Are the providers able to send you a letter threatening disconnection if you do not sign up to the smart meters?

Mr CAMPBELL: The short answer is no.

Ms YOUNG: It is a slow approach that we are seeing. As we understand it, retailers are taking a measured approach to the rollout of smart metres. It is outside the terms of this inquiry but we have seen some delays in the rollout of those, particularly for new connections or where an older meter has failed. We are keeping a close eye on that as well.

The CHAIR: Are you able to enlighten us on what is happening with business complaints?

Ms YOUNG: We take complaints from small business. It is a small part of what we do. I think there are a couple of reasons. Many of them do not realise that we are there for them. We work closely with the Small Business Commissioner to publicise both of our services. I think the language barrier is another issue. Non-English speaking is part of many small businesses. That is a big challenge for all of us—retailers and my office as well. I think we all need to do more in that space, to be honest. It is hard to engage people around complex language particularly when either language difficulties or literacy are a problem.

The CHAIR: The Committee may have some supplementary questions on notice. The secretariat will help you address those. Thank you for your evidence today. It is an important part of this energy inquiry and some of your work will be contributing to the final report.

(The witnesses withdrew)

(Short adjournment)

ALLAN FELS, NSW Electricity Price Commissioner, sworn and examined

The CHAIR: Professor Fels, do you have an opening statement?

Professor FELS: Yes. Thank you for having me. I will describe my role as Electricity Price Commissioner which will take five or six minutes. My role as Commissioner is set out in the same legislation which authorised the Government to proceed with the 99-year lease of 49 per cent of the New South Wales electricity network businesses. As you know there have been transactions in relation to TransGrid, Ausgrid and Endeavour Energy. I have two roles under that law. The first deals with some issues prior to the transactions and the second some issues following the transactions. I am independent under the law.

My first assignment, the first of the two, was to advise the Treasurer before the completion of the transactions on whether or not those transactions were likely to cause an increase in network charges. The Government had said that the transactions would not go ahead unless I confirmed that the transactions were unlikely to cause network charges to increase. I signed off on each transaction and in doing so I had regard, as I had to, to both the amount of the bid and also the costs incurred by the bidders as part of the bidding process, which is consistent with the requirements of the legislation as to what I should look at.

For each transaction I found that the costs were not likely to result in an increase in network charges. There are two reasons for that. The first is that network charges are set by the Australian Energy Regulator [AER]. They are regulated prices; they are set in advance for the regulatory period for a period ahead. Having a look at what the AER does, it does not take into account the amount that was paid for any assets. It does not take into account whether there is an inflated bid or a low bid. It has its own entirely separate process for determining what is an allowable cost to go into its prices and all of that.

The second reason, which is also a very strong reason, is that this is not a case where, as is often the case, someone bids a lot of money for something and then goes to the regulator and says, "My costs are very high, prices must go up." It is the opposite. In this case, they all knew what the price would be. They knew it in advance. It is set normally for periods of four or five years ahead. Knowing the price, they then did their bids. To put it in simple terms, supposing the price was 100, then they might have bid 90. Supposing the price, however, would have been 200, they probably would have bid 190. In this case, the price set by the regulator determined how much they bid. It is not the other way around.

Also on a detail of that, there is a question in the legislation—these bids cost them a fair bit of money; they cost a few million, typically—did the amount that they bid inflate the price? Again, the answer is similar. First, the regulator does not allow that as a cost. Secondly, it is pretty obvious that the cost of making the bid could be factored into how much they bid. For example, let us say, as I said in that first example, the price was 100 and they were thinking of bidding 90 but they realised that the cost of preparing a bid would be five, they would be likely to bid 85, not 90. In other words, they would factor in the cost of making a bid. For both those reasons, I concluded that the size of the bids and the cost of bidding would not cause any rise in the network price. There are various technical complications and details we could pursue and one of them, for example, is that there has been some legal challenges to the prices that the regulator set. There was appeal to the tribunal then to the court, and so on and so forth. That does not seem to me to affect the price. It does not mean that the fact that there was bidding has generated any price rises. That really is the first role I have.

The second role is, after the transaction I have to do a couple of things. One of them is to annually assess whether each transacted business has complied with certain obligations under the electricity price guarantee. I will get to the price guarantee in a minute, but there are a couple of other obligations along the way. The basic guarantee on price or network charge is that the charges for 2018-19 will be lower than for 2013-14. The second requirement—and these words are a copy of the Federal regulation—is that the operators will promote efficient investment in and efficient operation and use of electricity services for the long-term interests of consumers of electricity with regard to price, quality, safety, reliability and security of supply of electricity, and they will comply with any applicable efficiency benefit sharing scheme developed by the Australian Energy Regulator for the sharing of efficiency gains and losses between network operators and their customers. (b) and (c) are about efficient investment and so on and about sharing efficiency gains. They link very closely to the national regulatory framework for these electricity network businesses. Part (b) that I read out mirrors an excerpt of the national electricity objective, which is set out in the National Electricity Law. The National Electricity Rules require the Australian Energy Regulator to ensure that it contributes to the achievement of the National Electricity Objective to the greatest degree when carrying out its economic regulatory functions and powers.

In short, that happens because the Australian Energy Regulator makes it happen and also the other bit of the guarantee about sharing efficiency gains is also done by the Australian Energy Regulator. By spelling that out, part (c) of the guarantee relates to a scheme developed by the Australian Energy Regulator to provide a continuous incentive for the businesses to pursue efficiency improvements in their operating costs. It provides a mechanism to share efficiency gains with customers. The Australian Energy Regulator makes its decisions on the application of the scheme and the relevant carryover amounts in its revenue determinations and it assesses business compliance through the same process. It basically does the part. The first bit is the price guarantee. It is an additional control to anything that may be imposed federally on the energy businesses. It requires the businesses to ensure that their total network charges—their prices, if you like—for 2018-19 are lower than the network charges for 2013-14. We have not got to the time yet when we will know the definitive answer. I will be reporting on compliance with that part of the guarantee in my annual reports for 2018-19 when the relevant information is available.

I will stick my neck out slightly and say that all the signs are that the companies will come in well below the amount that they are required to. That reflects the fact that there have been quite big cuts in their prices imposed by the regulator, and notwithstanding some complications arising from the appeals and everything, one would be very surprised if they came in above it. Of course, I am there to make sure and check at the end of the year that they have complied with the guarantee.

The CHAIR: Thank you. That was very comprehensive. Professor, how do you see improving pricing transparency for the consumer?

Professor FELS: Of course I am only dealing with the network charge aspect of things. The process at the end of the day, after the submissions and everything, is fairly transparent for the experts. There are somewhat detailed reports by the Australian Energy Regulator about exactly how much the charges are. If a member of the public walked in, they would find the details are more complex—there are revenue calculations and all that sort of thing. If they, however, worked their way through it, then after a certain period of study they would broadly understand what is happening. Technically the rules about networks are about not quite prices but revenue collected and what is clear is, first of all, it is a regulated price that is looked at pretty carefully by the regulator and if there is any deviation from the regulation—that is inconceivable—we would hear all about it.

The regulator would point it out. It has got to be a very open, transparent formula for setting the network prices. Technically complex though it is in some ways, people can feel fairly relaxed that there is quite a tight regulatory regime. Some of it is based on assumptions about the future—you have to set a price now making some assumptions about the future. In broad terms, there are correction mechanisms if the forecasts go wrong. In particular, there is the efficiency guarantee that I have mentioned. Supposing you put in a price then the regulator assumes that the costs will be X and they are not X, then that could be for a number of reasons. One of them may be that the operator may be more efficient and even deserves some reward but there are many explanations. There is a formula that they have to distribute those efficiency gains or efficiency losses if their costs come in higher. There is a correction mechanism there.

The Hon. ADAM SEARLE: Your role is in relation to network costs only?

Professor FELS: Yes.

The Hon. ADAM SEARLE: And not to do with other parts of the complicated energy system?

Professor FELS: Correct.

The Hon. ADAM SEARLE: Overall you would accept that the price being paid for electricity by customers, households and businesses has gone up rather than down as a general proposition, leaving aside the network costs?

Professor FELS: It has gone up lately a lot, yes. One point perhaps worth noting is that in broad terms—and I am almost at a discussion level rather than giving the Committee really tight evidence—if you compare electricity prices with about five years ago there has not been that much variation; they went down sharply at the network level because the regulator cut the price. We are still living off that as an offset to the recent jump. If you cared to take me back 10 years then, although I have not really got the numbers, there were quite big jumps as everyone knows before 2013-14.

The Hon. ADAM SEARLE: In relation to the regulated price, you mentioned the complications that arose from the challenge to the energy regulator's decision.

Professor FELS: Correct.

The Hon. ADAM SEARLE: With all the toing and froing that followed there is not a final regulated determination for 2014 to 2019, is there?

Professor FELS: Correct.

The Hon. ADAM SEARLE: Do you have any sense of when that will be finalised? That would impact your reporting mechanism, would it not?

Professor FELS: Yes. I have this sense that some of it will come out soon—in the next couple of months—and that will give us a bit of a feel for how it will affect everyone.

The Hon. ADAM SEARLE: You mentioned a little while ago about deviations from the regulator's determination.

Professor FELS: Yes.

The Hon. ADAM SEARLE: You might recall there was some media attention given to the fact that there was a document from Essential Energy which indicated that it did not need to challenge the energy regulator's determination, although it did participate and benefit from that. Were you aware of that?

Professor FELS: Generally.

The Hon. ADAM SEARLE: That is not best practice by a participant in this sort of regulated scheme to unnecessarily challenge a determination?

Professor FELS: To challenge a determination?

The Hon. ADAM SEARLE: Yes.

Professor FELS: I guess they are within their rights and, as you probably know, those rights have been cut back lately.

The Hon. ADAM SEARLE: Yes, they have.

Professor FELS: There has been a general view that the appeal process unduly favoured the electricity companies cherry-picking and so on.

The Hon. ADAM SEARLE: Notwithstanding that Essential Energy, as part of this process, has been found to have overrecovered from the regulator's original determination something like \$100 million from its customers, which they are proposing to return in the next regulated period rather than just refunding the overcharging. That approach seems to be very beneficial to the company rather than to its customers. Would you not agree with that?

Professor FELS: On the face of it. I do not, to be honest, know if there is some interest penalty or something like that.

The Hon. ADAM SEARLE: I am not sure.

Professor FELS: I am not sure either.

The Hon. ADAM SEARLE: We will ask them when they come before the Committee.

Professor FELS: One hesitates to reach conclusions about their motives or the reasons that gave rise to this. It is not uncommon for there to be deviations of that sort.

The Hon. ADAM SEARLE: Perhaps not. We have got a sort of a pattern here where they did not like the regulator's determination—they said it did not give them enough revenue. Internally they acknowledged that was not correct, although it was not their public position. They said they would live with the original determination but still it looks they have overrecovered. It is all sort of heading in the energy company's direction rather than in the direction of the interests of its customers.

Professor FELS: In general, and I am not here to defend the regulator and certainly not the energy companies, I think it is worth asking why this has come about. It is probably just as a general personal attitude. I think that 10 years ago there were very big regulated price rises, and there is a whole history to that as you no doubt know. Putting it at its nicest, there were misunderstandings by everyone about what the amount of demand would be in the future. Then the regulator more recently—about four or five years ago—has got tough and has really cut quite heavily, based on the regulator's view that the costs of these businesses were less than the basis that had previously been used, and also taking into account the fall in interest rates, which is a big

factor in the costs. The interest rate has gone down and that has been a factor in bringing about those 20 per cent, 30 per cent price cuts that the regulator imposed.

The Hon. ADAM SEARLE: But, at least in the case of Essential Energy, we have a couple of clear examples where it has overrecovered compared to what it ought to have and there does not seem to have been any sort of mechanism to stop that from happening.

Professor FELS: In midstream as it were.

The Hon. ADAM SEARLE: Or to have an effective, corrective mechanism. If you overcharge somebody something you should probably give it back. The way in which the company is proposing to do that through notionally offsetting in the next regulatory period does not seem to be very satisfactory, from my perspective.

Professor FELS: That is a good question to put to the regulator.

The Hon. ADAM SEARLE: Ausgrid in its pricing proposal for the financial year ending June 2019, which is a document they have got to publish every year as to how they are tracking against the regulated determination, it looks like Ausgrid—if I am reading that document correctly—may have overrecovered from its customers to the tune of nearly \$420 million compared to the regulated determination. So you have Essential Energy taking an extra \$100 million off its customers and Ausgrid is trousering nearly an extra \$420 million at the expense of its customers, and again no sign of a corrective mechanism other than potentially in the next period it will be reduced. Again that is not very satisfactory for customers. And the recent suggestion that Ausgrid proposed about how it is going to have lower network costs going forward without revealing that if you added the overrecovery, and perhaps the underspending on capital investment of nearly \$500 million, you have got a bigger amount than they are proposing to reduce off their network prices, sounds a bit deceptive.

Professor FELS: Is the principal stated reason for the fall the reason you are adverting to or is it other things—reduced cost?

The Hon. ADAM SEARLE: I do not know. We have not had Ausgrid appear to give evidence to us yet.

Professor FELS: I just saw it in the press and I wondered what the cause of it was.

The Hon. ADAM SEARLE: That is the other thing: Ausgrid went to court saying they needed the higher revenues to invest in new plant and equipment and infrastructure. Now, if the reports are correct, they have underspent that by nearly half a billion dollars. So they have kept that money, as it were. If I am right about the overrecovery of revenue from its customers, if you add those two things together, that is actually a much bigger amount of money that they have got compared to the reductions they are proposing for the next regulated period. Effectively they cancel each other out. The price reductions they are supposedly offering have been bought and paid for by their customers already. That is not how the regulatory system should work, is it?

Professor FELS: Inevitably it is a forward looking regulatory system, making guesses about the future.

The Hon. ADAM SEARLE: Of course.

Professor FELS: And there have been mistakes in the past of a considerable magnitude. Trying to almost slightly deepen the discussion—it is a pretentious word, but to take this stuff a little bit further—on the costs side, if their costs turn out to be more or less than forecast, there is a kind of established process. You can immediately see there is a bit of a dilemma because they may have been more efficient or they may have somehow stated their price that only comes out in the event. So the general approach has been to give them some of the benefit of reduced costs but pass on other bits to the consumer. Likewise if their costs are higher then they get some extra for it but not all.

I think the origin of that was in the early days of the CPI minus x price setting when in the United Kingdom the price was set by the regulator—they used to just have cost plus mechanisms and it brought bad effects on people wanting to save costs and in fact gave them an incentive to put up costs because they got a better price. So they set an advance mechanism: "This is your price for the next five years. If you can beat it or be more efficient, you will get a benefit." Unfortunately it turned out that the electricity companies got a huge benefit. Even the founder of the CPI minus x idea had to accept and adjust that they had to have error correction mechanisms. That is not quite answering your question, because you are more on about the demand misforecast element of it—or the revenue.

The Hon. ADAM SEARLE: It is more the deviation. Even though there is not a final regulatory determination, the determination was made, the companies have said they will live with it or at least comply with the spirit, and we have Essential and Ausgrid, it appears, overrecovering quite considerably, and there does not seem to be any corrective mechanism to return the money to customers. It seems to be completely contrary to the spirit if not the actual letter of what should be the effective regulatory system here.

Professor FELS: Do they not return it in the next regulatory period? Is that not—

The Hon. BEN FRANKLIN: That is what you said before.

The Hon. ADAM SEARLE: I do not know if that is the stated basis. I do not think they have been that transparent. Certainly they are proposing to have a lower regulated price in the next period, but I do not know that they have disclosed that it is returning overrecoveries, if my reading of the report is correct.

Professor FELS: When I read it in the press I assumed they were not cutting prices out of benevolence. I had rather thought they must have read enough of the regulatory situation to see that they had to cut anyway. That may or may not be. It could be the issues you have raised or it could be that they can see there will have to be another cut because of low interest rates, cost savings or something like that. I am just slightly surprised if the regulator does not have a mechanism for making up for misforecasting on the demand side. On the cost side of it that I was talking about, I meant to say but I forgot to that it is important that there is that correction mechanism, but it is also obvious that it is going to be really hard to calculate exactly what the error is and whether it is due to efficiency or other things. Therefore I can buy the proposition that there is going to be a bit of arbitrariness about this passing on the benefits of efficiencies to the firm as opposed to the customer. On the demand side, there is no good reason why a firm should benefit from a misestimation of demand.

The Hon. ADAM SEARLE: I can understand that being the case if a company is spending less than it forecast it might for whatever reason, but overrecovering from customers compared to what you are supposed to recover is a different thing, is it not?

Professor FELS: In each case there can be an overrecovery or an underrecovery. I was just saying it is a little bit arbitrary how you handle that when the recoveries relate to the costs. But on the demand side there is not an efficiency story or a merit story or anything like that, so I would have thought the regulator would be more concerned when there is an overrecovery. Actually, it is an overrecovery against the set price, so the revenue is an overrecovery against the set price. That can happen, and it is important there is a correction mechanism.

The Hon. ADAM SEARLE: But your role does not extend to these issues.

Professor FELS: No.

The Hon. ADAM SEARLE: That is just in the hands of the AER.

Professor FELS: Yes.

The Hon. JOHN GRAHAM: You talked about your first electricity price guarantee compliance report, which was released on 18 October last year. I take it your second report will be around the same time of the year but you will deal with the other two companies in that report.

Professor FELS: Yes.

The Hon. JOHN GRAHAM: You have been very careful in your wording today. I want to return to where my colleague started to talk about the guarantee being about network charges and prices—that is the price guarantee. Your report is very specific about the network prices and the legislation is very restrictive to that question of all of those network charges or prices.

Professor FELS: Correct.

The Hon. JOHN GRAHAM: You would agree with all those statements and you have been very specific in your wording today.

Professor FELS: Yes.

The Hon. BEN FRANKLIN: He is a professional man.

Professor FELS: Not involved in the wholesale or the retail.

The Hon. JOHN GRAHAM: Indeed. I want to quote to you the commitment that was given by the Government to citizens of New South Wales across the State in relation to the power privatisation deal. It said,

"Prices will not rise as a result of the plan." It was not specific about network prices. That is a much broader guarantee.

The Hon. BEN FRANKLIN: What is that from?

The Hon. JOHN GRAHAM: This is from the written electoral material under Mike Baird's signature that was mailed out to New South Wales households. I would be happy to produce a copy of it if I was given the opportunity.

The Hon. BEN FRANKLIN: I would love to see it.

The Hon. ADAM SEARLE: We have an A3 version.

The Hon. JOHN GRAHAM: But that is a much broader guarantee than anything you have talked about today.

Professor FELS: If that is what he said, it is broader.

The Hon. JOHN GRAHAM: Assuming that is accurate: "Prices will not rise as a result of this plan." That is much broader than the reports you have given and the legislation you have been given—that is correct, is it not?

Professor FELS: Yes, that is right.

The Hon. BEN FRANKLIN: But surely there is another way to look at this, would you not agree, Professor Fels? It is all about emphasis. Prices will not rise as a result of this transaction—and the emphasis is on the word "this". Therefore if you consider it just under those terms it is appropriate that you look at the network cost, because that is where the cost rise would come. He potentially could be saying at this point not that prices will not rise but rather that prices will not rise as a result of this transaction, which is why you then were destined to take on the salubrious role that you have taken and done so with such efficiency and professionalism, if you do not mind my saying so.

Professor FELS: Thank you. I would have thought that is not a bad line of reasoning. If you take my "narrow" focus as being correct and its conclusions, you would have to then mount an argument that somehow, even though the transaction was about that, it had an effect on prices outside that area.

The Hon. JOHN GRAHAM: I only wanted to observe that you have been very careful in what you have reported on and in your conclusions. It is possible in the political process we have been less careful, or the Government has been less careful in the commitment it has given. That is certainly not your fault though. I am interested in your views about the ACCC's findings about the market concentration in New South Wales. This was discussed earlier today with two of the three key companies in New South Wales. The ACCC was quite critical of the potential market concentration between the retail and generation elements of some of these firms, indicating that it was driving pricing practices that are not consistent with vigorous competition. Do you have any views about that?

Professor FELS: Obviously not as the New South Wales Electricity Price Commissioner because you know the area I work in. Personally, I feel there is some substance in what the ACCC said. I cannot say that I am giving you a very expert view because I have not really studied it in depth, but just on the surface it looks somewhat concentrated and therefore in the circumstances able to extract some prices. But that is just a personal impression.

The Hon. JOHN GRAHAM: I will then draw your attention to one other aspect of that report to see if you have any other general views. I agree with your general characterisation about the path of not just network charges and prices but prices generally in this sector although, when it comes to the question of whether prices have risen in New South Wales, that report suggests that 10 years ago in 2007-08 the estimated average residential bill per customer was \$1,184 and it is now \$1,720 in real terms. I agree with your characterisation of the general trajectory over that time, but you would agree that is quite a significant increase in real terms if that ACCC analysis is correct.

Professor FELS: Yes.

The Hon. JOHN GRAHAM: It certainly appears to be the best analysis that has been able to be done. There are many reviews and reports here, but the ACCC has been able to get further behind the curtain than many other reviews. Do you agree with that?

Professor FELS: How could I speak ill of that organisation?

The Hon. JOHN GRAHAM: I will leave it there.

The Hon. BEN FRANKLIN: First I want to reinforce how delighted I am that it appears that if tracking continues the way it is going network charges will indeed be lower. We appreciate all the work that you have done. My first question is about what you think the medium term outlook is likely to be if you are prepared to make any comments in terms of network charges and prices? If you are not prepared to, that is fine.

Professor FELS: I find that pretty difficult. My feel is that the cuts by the regulator essentially will persist notwithstanding the appeal process and everything. I would be surprised if there were sharp network rises in the next few years beyond 2018-19, but there has been a history of misforecasting on that very point by many people, so I say it with some hesitation. I do not really have a very deep view on it.

The Hon. BEN FRANKLIN: My other question was about whether you are prepared to give any views about the likely impact of the NEG in New South Wales either within the very narrow agreement that you have or if you wanted to comment more broadly.

Professor FELS: I am afraid I do not really have a very informed view on it. I think I would prefer to not get into that one. I am afraid I am a carbon tax advocate but rather in a general sense.

The CHAIR: I wonder if you have a comment on the Government's rebate programs and whether they are effectively helping those that need it most?

Professor FELS: I have not assessed them. I think it is very important to be doing things like that for disadvantaged people. People at the bottom really have a terrible struggle. I strongly support the idea of rebates for disadvantaged people. Whether they do enough, I do not know.

The CHAIR: On top of housing affordability and everything else, there are probably a lot more disadvantaged people than there were when housing was quite achievable.

Professor FELS: Yes.

The CHAIR: Thank you for attending today. Your measured approach was brilliant, as per usual. In light of your evidence we may have some further questions to put to you on notice. You will have 21 days to answer those questions. The secretariat will help you with that. You have been very helpful today. Thank you very much.

(The witness withdrew)

(The Committee adjourned at 4.26 p.m.)