



LEGISLATIVE ASSEMBLY OF THE NORTHERN TERRITORY

12th Assembly

Committee on the Northern Territory's Energy Future

Public Briefing Transcript

9.30 am – 11.00 am, Friday, 11 October 2013

Litchfield Room, Level 3, Parliament House

Members: Mr Gary Higgins, MLA, Chair, Member for Daly

Mr Kon Vatskalis, MLA, Deputy Chair, Member for Casuarina

Ms Larisa Lee, MLA, Member for Arnhem

Mr Gerry McCarthy, MLA, Member for Barkly

Mr Gerry Wood, MLA, Member for Nelson

Witnesses: Mr Mike Burgess, Chairman: Power & Water Corporation

Mr John Baskerville, Managing Director: Power & Water Corporation

Mr Jim Bamber, General Manager Remote Operations: Power & Water Corporation

Mr Trevor Horman, Manager Sustainable Energy: Power & Water Corporation

Ms Megan Jolley, Manager Energy & SCADA Strategy: Power & Water Corporation

Ms Anne Tan, Senior Executive Manager Strategic & Business Services: Power and Water Corporation

Ms Djuna Pollard, Executive Manager Economics & Regulation: Power & Water Corporation

Mr Charles Staples, Gas Marketing Manager: Power & Water Corporation

Mr CHAIRMAN: Thanks, everyone, for coming. On behalf of the Committee I welcome you all to this public briefing on the key challenges and opportunities associated with meeting the Northern Territory's energy future needs.

I welcome to the table to give evidence to the Committee Mike Burgess, Chairman; John Baskerville, Managing Director, Jim Bamber, General Manager Remote Operations; Trevor Horman, Manager Sustainable Energy; Ms Megan Jolley, Manager Energy & SCADA Strategy; Ms Anne Tan, Senior Executive Manager Strategic and Business Services; and Ms Djuna Pollard, Executive Manager Economics and Regulation. The Committee appreciate you taking the time and looks forward to hearing from you today.

As you know, this is a full proceeding of the Committee and the protection of parliamentary privilege and obligation not to mislead the Committee apply. While it is a public briefing, it is being webcast through the Assembly's website and transcripts will also be made for use of the Committee and may be put on the Committee's website. If at any time during the hearing you are concerned what you will say should not be made public, you can ask the Committee to go into closed session and take your evidence in private. I also ask each witness to state their name for the record and the capacity in which they appear. I will then ask you to make a brief opening statement before proceeding to the Committee's questions.

If I could go through each person and they could state who they are and in what capacity they appear. If we could start with Mike Burgess.

Mr BURGESS: Mike Burgess, Chairman of the Power and Water Corporation.

Mr BASKERVILLE: John Baskerville, Managing Director, Power and Water Corporation.

Mr BAMBER: Jim Bamber, General Manager Remote Operations.

Mr HORMAN: Trevor Horman, Manager Sustainable Energy.

Ms JOLLEY: Megan Jolley, Manager Energy & SCADA Strategy Remote Operations.

Ms TAN: Anne Tan, Senior Executive Manager Strategic and Business Services.

Ms POLLARD: Djuna Pollard, Executive Manager Economics and Regulation.

Mr McCARTHY: Megan, what does SCADA stand for?

Ms JOLLEY: It stands for Supervisory Control and Data Acquisition. That means the systems we use to remotely monitor and control our essential infrastructure.

Mr CHAIRMAN: Mike, before we ask any questions, would you like to make a statement up-front.

Mr BURGESS: We thought we would get straight into the Committee questions.

Mr CHAIRMAN: The Committee understands that whilst a number of Power and Water Corporation's generation units have dual fuel capacity, natural gas is the main fuel for electricity generation in Darwin, Katherine, Alice Springs and Tennant Creek. Under the terms of its contract with ENI, it is understood the Power and Water Corporation has access to approximately 30 PJ of gas per annum from the Blacktip gas field through to 2034.

How much gas is currently required per annum for power generation across the Northern Territory's main systems?

Mr BURGESS: Across the whole of the Territory Power and Water systems I have figures here which talk about our average daily demand for the last few years if you would like to have those.

Mr CHAIRMAN: Yes.

Mr BURGESS: Average daily demand in 2009-10 was 60.1 terajoules per day.

Mr VATSKALIS: Can you tell us the equivalent of terajoules and petajoules? Let us have one unit so we understand better.

Mr BURGESS: I would need to get someone to convert all this stuff in that case.

Mr VATSKALIS: How many terajoules in a petajoule?

Mr BURGESS: One thousand.

Mr VATSKALIS: A thousand?

Mr McCARTHY: Can I take one step back? A petajoule of gas can you fit it on the tray of a Toyota Landcruiser?

Mr BURGESS: It is a measure of its energy quotient ...

Mr HORMAN: there is a gas man behind us who can answer that.

Mr STAPLES: My name is Charles Staples. I am the gas sales manager for Power and Water. One petajoule of gas is approximately 27 million litres of diesel, if that helps.

Mr VATSKALIS: It is 27 million litres of diesel?

Mr McCARTHY: I will not be putting that on the back of the Landcruiser!

Mr VATSKALIS: One petajoule is one thousand terajoules. So, we use more than one petajoule? Sorry, okay, go on with your figures. I am trying to do a quick conversion.

Mr HIGGINS: Now that we are totally confused.

Mr VATSKALIS: You are doing a good job, mate.

A member: I have to ask the right questions

Mr VATSKALIS: Sorry, can you go back again?

Mr BURGESS: Average daily demand was 60 TJ per day in 2009 10, and that is now about 63.5 TJ per day. What does that convert to on an annual basis? I think we are around about 23 PJ a year.

Mr VATSKALIS: Yes, that is fair enough.

Mr HIGGINS: What would the trend of that be with demand? How fast is it growing?

Mr BURGESS: Long-term gas demand has been increasing by about 2% a year for quite a while.

Mr HIGGINS: Okay. If something happened to that gas supply, what type of contingency arrangements do we have in place to maintain the electricity supply across the Territory?

Mr BURGESS: I will just give an overview answer. If you want some more detail I can ask some others to respond. As you said in the opening of your first question, we have dual fuel capability on some elements of the suite of generators we have, so we can run some of the capacity on liquid fuel. We also have emergency supply arrangement in place with ConocoPhillips. Of course, for

very short outages in supply regime we rely on what is called the line pack, which is the retained pressure in the pipeline. We can operate for a number of days just off line pack.

Mr WOOD: Before we go too far down the track, when we were talking about the total number of petajoules per year, are we including the diesel use from remote services, or are we just talking purely about ...

Mr BURGESS: That was the gas demand?

Mr WOOD: That is right. Do we have a figure of how much diesel is used?

Mr BURGESS: I think we may. Let me refer to some of these notes because they are quite ...

Mr WOOD: That is all right. If you have that figure, is there one figure for remote Indigenous essential services? Is there another figure, because Power and Water itself runs some generators purely on diesel, separate from Indigenous essential services?

Mr BURGESS: I will answer the first question because I have found the answer. The total annual distillate consumption is approximately 31 million litres ...

Ms LEE: Of diesel?

Mr BURGESS: Distillate, yes, diesel.

Mr WOOD: The total?

Mr BURGESS: Yes.

Ms JOLLEY: I do not have the breakdown.

Mr BURGESS: We do not have a breakdown. We could get that.

Mr WOOD: Okay, you do not have the breakdown, but is it true Power and Water has some generators that run on diesel which are not part of Indigenous essential services?

Mr BASKERVILLE: Yes.

Mr WOOD: Where are they?

Mr BASKERVILLE: Tennant Creek.

Mr WOOD: So even though the gas pipeline passes ...

Mr BASKERVILLE: Yes. An old set has been there since the 1960s, and they are called on in anger.

Mr VATSKALIS: They are standby?

Mr BASKERVILLE: They are standby, yes.

Mr WOOD: Oh, they are standby? But Tennant Creek has gas.

Mr VATSKALIS: Gas, yes.

Mr WOOD: Anywhere else?

Ms JOLLEY: Timber Creek.

Mr WOOD: That is a bit further off the track for the gas pipeline.

Ms JOLLEY: Daly Waters.

Mr WOOD: Daly Waters.

Ms JOLLEY: Borroloola.

Mr VATSKALIS: Do you still have the diesel ones in Alice Springs?

Mr BASKERVILLE: They are dual-fuelled in Alice.

Ms JOLLEY: That is four, isn't it?

Mr WOOD: Yes.

Ms JOLLEY: Then Elliott is gas.

Mr BAMBER: There are five townships that are mainstream generation towns, which Megan just listed. We, in operations, run them, but they are actually generation towns, which is what Megan just listed.

Mr WOOD: Yes, that is what I was after. As distinct from what are really Indigenous essential services operations?

Mr BAMBER: Yes.

Mr VATSKALIS: Is Weddell Power Station dual fuel, or is it only gas?

Mr CHAIRMAN: What was that, Kon?

Mr VATSKALIS: Weddell power station.

A witness: Gas.

Mr VATSKALIS: My understanding is it was only gas.

Mr BURGESS: Gas turbines.

Mr McCARTHY: John, was Tennant Creek running on gas at one stage?

Mr VATSKALIS: It still runs on gas.

Mr BASKERVILLE: It still does.

Mr McCARTHY: Still does?

Mr BASKERVILLE: Yes.

Mr McCARTHY: Is there a percentage?

Mr BASKERVILLE: Gas, 100% normally. We have a Taurus there which carries the load for Tennant Creek and a couple of CATs. When we have a problem on our system down there we run the old rustons. They are in the numbers. When we say Tennant Creek has so much capacity, the rustons are included in it.

Ms LEE: What does Katherine run on?

Mr BASKERVILLE: Katherine it is hooked up to Darwin, but Katherine Power Station has gas turbines.

Ms LEE: The communities connected up to Katherine are the same?

Mr BASKERVILLE: Yes, anything connected at Katherine is off gas.

Mr WOOD: Even Larrimah.

Ms LEE: Is that including the communities in Arnhem Land?

Mr WOOD: No.

Ms LEE: Barunga and Beswick are connected up to Katherine?

Mr BASKERVILLE: Yes.

Ms LEE: Barunga, Beswick, Eva Valley, Mataranka and townships around there – Jilkminggan?

Mr BASKERVILLE: If it is fed out of Katherine it is on gas.

Mr VATSKALIS: With the projection of increasing demand for power, will the Blacktip gas supply be enough to provide gas until 2034?

Mr BASKERVILLE: Yes.

Mr VATSKALIS: Is there any potential after 2034 to get more gas from Blacktip? I believe there was a clause in the contract.

Mr BURGESS: Part of the contract element is one of regular reviews of reservoir capacity. As the reservoir is drawn down it is possible to predict how it will behave over a longer period of time. We are very early into that. I understand there have been a whole suite of discussions with ENI about reservoir performance and all the rest of it. They have not officially upgraded capacity estimates, and we are still operating on the estimates we contracted.

Mr VATSKALIS: If we are safe with gas until 2034, why did Power and Water go to 10 PJ a year for the next 10 years?

Mr BASKERVILLE: Sorry?

Mr VATSKALIS: Why did Power and Water recently go to 10 PJ of gas per year for 10 years?

Mr BASKERVILLE: This is Dingo gas for Alice Springs.

Mr VATSKALIS: Where did we buy that from?

Mr BASKERVILLE: From Dingo gas. It is ...

Ms LEE: From Dingo gas?

Mr BASKERVILLE: Magellan is the company we have purchased it from.

Mr VATSKALIS: That is gas coming out of the Tennant Creek area or ...

Mr BASKERVILLE: No, out of Alice Springs. It is 60 km the other side of Alice.

Mr VATSKALIS: What is the price for that?

Mr BURGESS: It is commercial-in-confidence.

Mr VATSKALIS: We have to put in the Statement of Corporate Intent, so how can it be commercial-in-confidence?

Mr BURGESS: No, those numbers do not appear in the statement.

Mr VATSKALIS: Power and Water has to disclose it.

Mr CHAIRMAN: We will leave that locked away at the moment. We will follow up on that.

Mr WOOD: Do we still have a gas pipeline from Alice Springs to Darwin?

Mr BASKERVILLE: Yes.

Mr WOOD: How far down does the gas from Blacktip travel if you are buying gas from Magellan? Is there somewhere along the line the two meet? You will supply Alice Springs power stations with Alice Springs gas, but we have a pipeline going all the way down to Alice Springs that could supply Blacktip gas. How does it all work?

Mr STAPLES: My name is Charles Staples, Gas Supply Manager, Power and Water. Can I go into detail on Dingo?

Mr WOOD: Yes.

Mr STAPLES: Dingo gas will come up from south of Alice Springs about 60 km, and we want to pipe it into Brewer Estate. At Brewer Estate we have about 36 MW of MAN machines dual fuel. They are reciprocating machines and need a very high quality of gas. Things got out Power and Water's control when McArthur River contracted with Santos to buy gas which will feed the expansion of MRM mine. That expansion is starting in December/January and they will start drawing Mereenie gas.

Let me explain about Mereenie gas. Mereenie gas has a much higher content of LPGs. What you like to have for a reciprocating machine is high quality methane with nothing else in it. Mereenie gas has methane and bit of butane and propane in it. That lowers the methane number and it does not make our machines at Brewer Estate work very well.

Mr VATSKALIS: Are these the new machines we bought for Brewer Estate?

Mr STAPLES: These are the new machines we bought for Brewer Estate, yes.

Mr VATSKALIS: I remember that.

Mr STAPLES: I have just said the MRM project is ramping up, and they have contracted gas out of Mereenie. From December this year, and possibly January, you will see a lot more Mereenie gas going into the pipeline system. Because of the pressure differentials in the pipeline, that Mereenie gas will do a U-turn and go straight back into Alice Springs into Owen Springs Power Station under the situation as it is.

We are trying to maximise the efficiency of that power plant by giving it the right type of gas. From the commercial figures we did we believe it was a good deal to buy Dingo gas specifically to ensure we could get a very good quality blend of gas going into Owen Springs.

Mr VATSKALIS: Is Dingo gas going to be supplied to Brewer Estate by a separate pipeline?

Mr STAPLES: By a separate pipeline, indeed.

Ms LEE: How many pipes do you have underground?

Mr STAPLES: We have a pipeline that comes from an old still producing gas field, Palm Valley, and it goes straight to Alice Springs. It is about 145 km or 147 km long and is underground. We will have another pipeline planned to come up from the Dingo field straight to Brewer Estate connecting straight into the Brewer Estate lateral.

The Brewer Estate lateral comes off the Alice Springs to Palm Valley pipeline. It is about 6 km and feeds gas into Brewer Estate. We will join the Dingo pipeline to that lateral so gas can either flow into Ron Goodin or Brewer Estate, and that is all underground pipelines.

From Palm Valley, 1600 km the north is the Amadeus gas pipeline which is all underground. It goes from Palm Valley to Darwin. At Tylers Pass there is another pipeline that goes to the Mereenie fields. I do not remember how long that is, but it brings gas up from Mereenie and joins the Amadeus gas pipeline.

Mr VATSKALIS: Of course you have the Blacktip pipeline.

Mr STAPLES: The next pipeline we have, the newest one, is the Bonaparte Gulf pipeline. This brings gas from Wadeye, which is our main supply. It is about 275 km and joins the Amadeus gas pipeline at a place called Ban Ban Springs near Adelaide River. That is the main supply of gas, and gas enters into the Amadeus gas pipeline and flows both ways - both towards Darwin and south towards Alice Springs.

Mr VATSKALIS: Also, the one that goes to McArthur River?

Mr STAPLES: Yes, and the one that goes to McArthur River, correct.

Going back to McArthur River, we are expecting once Mereenie starts putting a lot of gas into that pipeline some of the Mereenie gas will go north, and will edge north gradually of the years.

Mr VATSKALIS: Have we paid off the McArthur River pipeline cost? That was a loan by Power and Water.

Mr STAPLES: The last payment for McArthur ...

Mr BURGESS: We are currently in negotiations with MRM about updating the current contract. We have a bit of work to do with them to finalise new arrangements going forward -clearing all the liabilities around the pipeline and all the rest of it.

Mr VATSKALIS: We have not paid yet? That was a bank loan Power and Water specifically got to finance the pipeline.

Mr BURGESS: The contracts go for a very long time.

Mr VATSKALIS: Have we finalised the contract with Brewer Estate private power station? Remember there was a private power station on Brewer Estate we used to pay an arm and a leg for and could not finalise the contract. Have we finalised the contract yet or are we renewing it?

Mr BURGESS: I do not have that information with me.

Mr BASKERVILLE: It will finish in December 2016, towards the end of the year.

Mr VATSKALIS: Good.

Mr WOOD: Back on the gas pipeline how does the gas from one end meet up with the other end? Is there a valve in the middle that says they cannot meet, or are they actually mixed? You said one will creep up further up north. What are the guidelines for how gas is dealt with?

Mr CHAIRMAN: Can I have people repeat their name please.

Mr STAPLES: Gas moves from high pressure to low pressure. It depends on the pressure differentials across the pipeline system as to what gas will end up at what outlet. It is a hard question to answer, Mr Wood, but if you are taking a lot more gas off the northern end, then the gas will move up.

Mr WOOD: You were talking about the quality of the gas there for a while. Would you be mixing two different gas ...

Ms LEE: Usually three different qualities, isn't it?

Mr STAPLES: Yes. Going back to the Alice Springs situation, we will be getting gas from Dingo and Palm Valley and from Mereenie, so, yes, that will be blended. More than 50% of the gas we hope will be from Dingo.

Mr WOOD: Will that cause any problems with generating plants?

Mr STAPLES: It will improve our efficiency for generating.

Mr CHAIRMAN: Just back on to the pipelines, is it possible to get a map if you do not have one today – of all the different pipelines? That would be terrific.

Mr WOOD: Would it be possible to get the power line grids that are connected? You have lines down as far as Ali Curung. The member for Arnhem just mentioned Beswick and places like that.

Mr VATSKALIS: Ali Curung is getting power from Tennant Creek.

Mr WOOD: That is right. It would be nice to see. We are talking about pipe lines and the delivery of gas, but where is the delivery of power?

Mr BURGESS: We might have it all on that one.

Mr WOOD: Okay.

Mr CHAIRMAN: I did not mention at the start, anything that is tabled is publicly available unless you tell us. That is fine?

MR BURGESS: We have stuff we think we can table.

Mr VATSKALIS: Mike, you mentioned that there is an increase every year on the demand of gas and power generation. What do you base that increase on? Is it domestic? Domestic and industry?

Mr BURGESS: The just over 2% represents the long-term trend. So, it is a mixture of industry and residential demand increase.

Mr WOOD: Just on the same. We have dealt with gas and diesel. What is the amount of energy produced by renewable sources? Can you break that up into the types of renewable resources, such as wind and solar? Can you give us an indication where we are at, at the present time?

Mr BURGESS: I will give you the short answer, and there will be a very ...

Mr WOOD: Can we get it in petajoules so we know where we are at?

Mr BURGESS: No, I cannot but someone else will. About 1% of our current capacity is via renewables. Megan, are you able to take this answer?

Ms JOLLEY: Yes. By and large, the majority of that is generated by our solar systems, including the solar we purchase from third parties. The wind system that was recently commissioned at Alpururulam at the beginning of the year has been operating at night because we are still in a testing phase for the entire system. We want to make sure when we are running the wind turbine combined with the solar system we do not adversely impact the reliability of the supply to the community. So, there is only ...

Mr WOOD: I am not sure. It was a decision of operations to stay overnight. So, the wind is only operating at night?

Ms JOLLEY: At the moment, yes. Our intention is to operate it full-time, but we are going through a testing phase in the first year of operation of the entire system. We want to ensure we are not going to cause any issues for local community in having them both operating at the same time.

Mr WOOD: At Epenarra there is a wind generating plant which has sat still for a long time. Is that yours?

Ms JOLLEY: Epenarra is one of the communities we provide electricity services to, yes. Trevor Horman has the experience in managing that system; he is probably the best person to ask that question.

Mr HORMAN: Member for Nelson, yes, there is a problem with the wind turbine at Epenarra. We are investigating. We have even had people go to Holland to check out the turbine replacement parts we need. It depends on the cost of that whether we will decide to proceed with the replacement of the turbine.

Mr WOOD: Could we get an indication of how much in petajoules, if that is possible, the renewables are producing so we can get some comparison.

Mr HORMAN: In the urban centres, I can give you a percentage of the production in the centres. In Alice Springs, we are currently running 3% renewables. With the expansion of the Uterne Solar Power Station there we will be up to 6% by the middle of next year. In other centres, it is more like 1%. Obviously, the roll-out of these expensive technologies, are directed by the displacement costs. In diesel power stations there is a very expensive cost, so it makes more sense to do it out there earlier. Alice Springs is another high-cost location, so it is happening in Alice Springs.

Mr WOOD: So I do not get muddled up here. There are people who have put solar panels on their roof. If we just take them out of the equation for the moment. You are putting in solar energy systems in communities, mainly Indigenous areas. Can you give us a petajoule in energy? How much energy is produced by those renewable energy sources, so I can compare? We are producing something like 23 PJ per year through gas, 1 PJ, I gather, through diesel. So I have a comparison, how much are we producing?

Mr HORMAN: I will have to take that one on notice. We will do the conversion and supply the information.

Mr VATSKALIS: Well the petajoule is an energy unit and megawatt is electricity, so you cannot produce so much petajoules as you can say megawatts.

Ms JOLLEY: I have it in gigawatt hours.

Mr VATSKALIS: Yes gigawatt hours.

Mr WOOD: Mr Chairman, could you convert gigawatts to petajoules afterwards? Yes, thanks. We will take the gigawatts.

Ms JOLLEY: It is 0.6 GW hours per annum.

Mr WOOD: That is for solar or the lot?

Ms JOLLEY: That is for solar.

Mr WOOD: Yes.

Ms JOLLEY: Total electricity generated around 115 GW. That is for the IES communities.

Ms LEE: Could I just ask, what is the IES stand for?

Ms JOLLEY: Indigenous Essential Services Pty Ltd.

Mr WOOD: You said 0.6 GW per hour per annum, and then you said 115 GW. What is 115 GW?

Ms JOLLEY: It is 115 GW hours per annum.

Mr WOOD: Is the total?

Ms JOLLEY: Is the total electricity generated, and that includes the solar.

Mr BAMBER: In IES communities.

Mr CHAIRMAN: I remind everyone we have Indigenous Essential Services next. I know it is the same people but I do not want to get confused. Where we can do the two, if we can do the two together, otherwise we will ...

Mr WOOD: What I was trying to get was we are looking at getting some base data about how much energy is produced. It would be good to see what percentage is produced by what source of energy, so we have some base data to work on

Mr VATSKALIS: What we need to know, then, is the total energy production is for a particular unit in the Territory, how much from gas, how much from diesel.

Mr WOOD: That was what I was trying to get at.

Mr BURGESS: Mr Chairman, I might be able to read out some numbers so it will give you a feel for what it is like across the whole of the Territory, not just Power and Water ...

Mr VATSKALIS: Yes.

Mr BURGESS: I have it broken down into natural gas, diesel, and then hybrid gas/diesel, heavy fuel oil, renewables, and kerosene. This is for the whole of the Territory, not just what Power and Water does.

Of the total energy sent out, just on 64% of it is fired by natural gas, 26% by diesel, 6% by a combination of other forms of diesel/gas combinations, heavy fuel oil which is distillate/diesel 3%, renewables are 0.64%, and kerosene Avgas is 0.09%. That give you the spread.

Mr VATSKALIS: From those, you just told us, what is the cheapest means of production of energy per unit? Is it gas, renewable, Avgas, or heavy fuel?

Mr BURGESS: High efficiency combined cycle gas generation is the cheapest.

Mr WOOD: If someone was to ask how much it would cost to produce 1 PJ, could you convert that to every form here? If I asked, 'What is 1 PJ via gas, 1 PJ by diesel, 1 PJ by renewable sources', could we have a figure so we knew what was in ...

Mr VATSKALIS: Petajoules as a unit, or gas? Electricity is measured by kilowatt. It is a different thing.

Mr WOOD: That is right, but is joule not a form of energy?

Mr BURGESS: I might be able to help you and not confuse you. There was quite a bit of work done a couple of years ago by an independent task force which reported to government and there were public reports. That was the Green Energy Task Force and it had many different people on it. They produced two reports, the second of which had an analysis of the total energy demands at

that time and going forward. It had a fairly detailed breakdown of all the sources and how it was all split up. It also produced a way of looking at the relative costs of those things. They came up with a methodology called the 'levelised cost' of energy. They produced a dollar per megawatt hour number for all the different technologies so you could see where they were at. There is a graph in that report.

Mr VATSKALIS: Can you table that please, Mike.

Mr BURGESS: Yes, that is why I brought it. It shows the relative cost now. These things move around all the time and you would not want to say, 'I will build something for that price tomorrow'. There are all types of consistent assumptions built into it to get to that relative level, but it does give you a way of comparing the absolute costs of these technologies so you know it is one tub or the other. I can table that.

Mr VATSKALIS: Yes, thank you.

Mr McCARTHY: Trevor, can I ask about the wind turbine at Epenarra. I was made aware that started as a research project looking at power generation through a wind turbine?

Mr HORMAN: Yes.

Mr McCARTHY: I was also advised that produced way more electricity than the community, at that stage, could handle and had a mechanism where power was dumped underground, is that correct?

Mr HORMAN: It is a way of describing it. It is an 80 kW turbine. The wind resource is fairly modest across the Barkly Tableland there and it is not uncommon for wind turbines to run at about 10% capacity. The wind does blow quite a bit sometimes at Epenarra, but the average - we are monitoring about 8 sites across the Barkly Tableland runs at about 5.2 m a second. All the big wind turbine farms you see down south are running at 8 m a second, which is a big difference and they economic at that rate. Yes, the standard method of control of wind turbines is a dump resistor. There was a dump resistor at Epenarra helping to control any excess. If you get a wind gust and are trying to control the speed of the turbine you dump it into a dump resistor.

Mr McCARTHY: That is on the grid at Epenarra, is it? It is not wired in?

Mr HORMAN: No.

Mr McCARTHY: That is what I thought. In regard to repairs and replacements, that is quite dated technology now?

Mr HORMAN: That is right, it is a two blade turbine. Most turbines nowadays are three blade, but the manufacturers - there are 700 of those turbines around the world and the manufacturers have an upgraded head to put on the turbine. It is quite a bit of investment. We spent \$50 000 on the concrete foundation for that 30 m tower. We are looking at purchasing a new modern head to put on the turbine.

Mr VATSKALIS: Three blades.

Mr HORMAN: It is new blades, yes.

Mr VATSKALIS: Three blades.

Mr HORMAN: It has two. They say they have advanced the two blade technology. We are looking for turbines with low start speed so it is more applicable to that environment.

Mr McCARTHY: The plan is to get that online at Epenarra. Is this a hybrid form like at Alpururulam?

Mr HORMAN: That is right.

Mr McCARTHY: Thank you.

Mr CHAIRMAN: Mike, if I can go back to the 2% or 3% growth, I presume that is in total? Do we have a split between domestic and commercial?

Mr BURGESS: We do not have that here, but I imagine Djuna would be able to interrogate our sales records. We can bring something back to the Committee.

Mr CHAIRMAN: On that growth, to what extent is the Northern Territory's ability to cater for large-scale commercial projects determined by, say, the availability of gas, the capacity of existing power generation, infrastructure, or a combination of those? In other words, if someone came along with a large commercial project, how are we placed?

Mr BURGESS: There are two issues you are asking in that. First, do we have enough gas? As we have seen before, we have reserves out to 2034, so gas should not be a problem. In generating capacity, that is one issue we have looked at pretty closely over the last six months. There has been some independent reporting done with that. The consensus is there is sufficient generating capacity to meet forecast needs out to at least 2020 at the moment. Of course, if you get a single big consumer of generation coming to town and they want more than the residual capacity in the system, then we would have to enter into negotiations with them about whether or not they wanted Power and Water to upgrade its generation capacity, or they would prefer to purchase gas and have their own generation capacity, or whatever. It would be highly unusual for us to build a whole lot of stuff with no one to pay for it.

Mr VATSKALIS: To follow the question from the Chairman. Did McArthur River Mine negotiate their own agreement with Mereenie about supply of gas?

Mr BURGESS: Yes.

Mr VATSKALIS: Yes. So, it was a clear commercial transaction between Santos and Mereenie? We are negotiating now for the pipeline?

Mr BURGESS: We have an existing contract that needs to be ...

Mr VATSKALIS: Renegotiated?

Mr BURGESS: Yes.

Mr VATSKALIS: Is that for the pipeline or for the power generation? We had one for the power generation which was subsidised ...

Mr BURGESS: For the pipeline.

Mr VATSKALIS: For the pipeline. What about the power generation?

Mr BURGESS: I believe they have independent power producer.

Mr VATSKALIS: No, private generation. We were subsidising them.

Mr STAPLES: I was filling out a form. I apologise.

Mr VATSKALIS: Forget the pipeline to McArthur River. Power and Water had a contract for the supply of energy.

Mr BURGESS: Yes.

Mr VATSKALIS: Is this still the case? Do we still subsidise McArthur River in energy production?

Mr BURGESS: Yes.

Mr STAPLES: We have an electricity supply agreement with McArthur River. To supply that electricity, we have an electricity purchase agreement with a company called EDL. Then, we have a pipeline agreement which we have with McArthur River which takes the gas to EDL's power station, and they produce power. They sell it back to us and we on-sell that to McArthur River. That contract goes until March 2015.

Mr VATSKALIS: We pay a particular price per [inaudible] to the private company. Do we have a full cost for McArthur River?

Mr STAPLES: I should like to speak to my authority before I comment on that.

Mr VATSKALIS: I had to answer these questions in estimates so I know them inside out.

Mr BURGESS: I simply to not have that at my fingertips, I would really need to ...

Mr WOOD: Does that powerhouse supply any other place in the area besides McArthur River?

Mr STAPLES: No, it is what we call a bilateral agreement. It only supplies McArthur River Mine at this time.

Mr VATSKALIS: Borroloola has its own power generation?

Mr STAPLES: I beg your pardon?

Mr VATSKALIS: Borroloola, the township, has its own power station?

Mr STAPLES: Borroloola is a diesel-fired power station, not connected to MRM.

Mr WOOD: Who owns the pipeline?

Mr STAPLES: That is an interesting question. For all intents and purposes, Power and Water owns the pipeline.

Mr WOOD: If they wanted to extend the pipeline to Borroloola to get it off diesel, they could?

Mr STAPLES: It would be possible. We have done the economic study. The load at Borroloola does not really support a 70 km pipeline at this stage.

Mr WOOD: Why, if you have a private company generating power for McArthur River, is the government involved at all? Why not just buy from EDL, or whatever it is called? Why is Power and Water involved in that?

Mr VATSKALIS: It is a 1990 contract.

Mr STAPLES: The contract is nearly 20 years old. It is a legacy contract. Good question.

Mr HIGGINS: If I could just go back to the member for Casuarina's question. You want that put on ...

Mr VATSKALIS: Yes, please.

Mr CHAIRMAN: Yes. If you can give us the answer on that? Could you just repeat the question?

Mr VATSKALIS: We are buying the power from the private company that generates it and we resell it to McArthur River. Do we recover the full cost, or do we subsidize it and how much?

Mr BURGESS: We will take that on notice.

Mr VATSKALIS: I have another question. We have 10 PJ a year from Dingo gas which goes to the Brewer Estate.

Ms TAN: It is not 10 PJ per year.

Mr VATSKALIS: How much is it per year?

Ms TAN: It is about 1.2 PJ building to 1.6 PJ.

Mr STAPLES: 1.6 PJ. Yes, it is 1.6 PJ, and it is a total of 15 PJ over 10 years.

Mr VATSKALIS: That is 15 PJ over 10 years, okay. What period is the contract for, how many years? Ten years?

Mr STAPLES: The contract could extend for a lot longer, for 20 years, if there is gas available. Power and Water is not obliged to buy gas unless it is at the price which we agree on.

Mr VATSKALIS: Thank you.

Mr WOOD: I do not want to get too far off the gas generating question if you had new developments occurring. Am I right that ConocoPhillips produces its own power? Is that correct?

Mr STAPLES: That is correct.

Mr WOOD: And that is the intention for INPEX?

Mr STAPLES: That is correct.

Mr WOOD: Were any discussions held that if there was a problem with power those generating plants could come back on line if, say, we had some major failures with our generating plants?

Mr BURGESS: I will try to answer that. We are in the middle of negotiations for an emergency gas supply from INPEX back to our systems at Channel Island.

Mr WOOD: Yes. That is what you have with ConocoPhillips at the moment?

Mr BURGESS: Yes.

Mr WOOD: What happens if we had a major failure with our generating plants? There was that issue some years ago with gas that had some water in it, I think, and upset the Weddell power plant? Are there options that we, in an emergency, could use power generated from INPEX and ConocoPhillips back into the grid?

Mr BURGESS: That is an extremely difficult thing for INPEX to be a party to, simply because they need a steady, stable energy supply to their processing plant.

Mr WOOD: Yes.

Mr BURGESS: It would be very difficult for them, technically, to depower that to supply us in an emergency situation. Normally, in these things, Power and Water takes responsibility for maintaining reliability to its customers.

Mr WOOD: Just one other question on alternative supplies of power. How far has the Clarence Strait development gone? Is the company in discussions with you about whether they could supply power back into the grid?

Mr BURGESS: The answer to that is yes, I understand we have developed an MOU. Trevor might be available to provide more detail.

Mr HORMAN: Yes, we have signed an MOU with Tenax Tidal Energy and they are progressing the project. I have to say they are still at the environmental impact statement stage. We are supporting them in an application to the Australian Renewal Energy Agency for funding for the project. It is still early days, but there is still optimism it will happen. While we walk before we run, we have agreed we will run it at a 2 MW demonstration size to start with, but they think there is immense capacity in the water at Clarence Strait.

The qualifier we must put on it, though, is the tide runs on a lunar cycle. When we need major peak loads in the middle of the day, the tide might be running at zero. We just have to accept it is a fuel substitute and it is not going to help us with maximum demand.

Mr WOOD: I do not know whether this is too far off left field. Regarding geothermal, how far have you advanced with exploration into that area?

Mr HORMAN: Yes. The legislation became effective in December 2009. There were 17 applicants and there are 17 applications out there. There is no drilling started. We are talking holes that are 5 km deep. There are about two rigs in Australia that will do it, none of them in the Territory at the moment.

The initial studies indicate there are strong possibilities of geothermal capacity underneath Arnhem Land, but it is really from research that is taken from temperatures in holes that were drilled for other reasons and they might be 100 m deep. They have extrapolated it to 5 km. It is rubbery data.

The good news this week was Geodynamics have just finished a 160-day trial at Innamincka. However, the last sentence of the paragraph was it lost \$88m in the year and is going overseas. It is a state of flux and we do not see it being a realistic alternative for 10 years.

Mr VATSKALIS: Currently there is no onshore gas supply apart from Mereenie. If major projects come to the Territory, like some of the phosphate mines in Barrow Creek and further out from Tennant Creek, have we the capacity to provide them with power or gas? The phosphate mines are very gas hungry.

Mr BURGESS: I cannot recall what their requirement would be, but for something like that there is gas available. The way the Blacktip contract was constructed there was gas at a take or pay level, and then there was gas above that amount to provide to industrial customers. There was a further tranche of gas that Power and Water would have first rights to if it was proved up.

I believe the short answer is, yes, there probably is gas. Given the size of these things there would be a local generation solution for them, but it would be gas-fired.

Mr CHAIRMAN: If we were doing local power generation for some of these large projects, other than gas and diesel, what potential capacity do we have to use some alternative type of power generation?

Mr BURGESS: I will get Trevor to assist me in a second, but I believe the big issue is not such an issue for companies like Power and Water Corporation, it is an issue for the mining companies, and it is how they treat their investments. They are normally looking for a five-year horizon. They want to get in, mine, produce the cash flow that pays down all their borrowings and debt inside five years and are producing a healthy profit.

That is very difficult to do with long run generation in energy assets. Those things normally take well beyond 10 years and, more generally, 20 years to build sufficient length of time to pay off borrowings and generate profits. Mining companies have been reluctant to get into the area of renewables simply because it takes a long time to pay off the upfront investment because they are capital intensive.

There are probably technology solutions where you could do a combination of renewables plus traditional energy forms, but it is how it is financed that becomes difficult for the companies.

Mr HORMAN: That is a pretty comprehensive answer, Mike. A great deal of energy is consumed in these remote sites and they burn diesel but, because of their investment horizon, they cannot get themselves over the line. We know Tanami Gold, for instance, has studied solar on several occasions and still cannot make it stack up. When you are dealing with a commodity like that where the price varies substantially, you cannot be too sure you will be there in 20 years' time.

Mr CHAIRMAN: I presume from that answer, other than diesel and gas - I do not want to touch on nuclear - but other than nuclear and gas, if you have short-term projects it is not cost-effective to go to any other alternative power generation?

Mr VATSKALIS: On that in particular, apart from gas and diesel, have we ever looked at hydroelectric in the Territory? Has Power and Water done any studies on hydroelectric?

Mr HORMAN: Yes, we have done major studies. Apart from Katherine Gorge, which we cannot talk about, Mount Nancar on the Daly River has been studied intently. We even made approaches at one stage to use the hydro capacity out of Ord Dam, but that created some cross-border discussion.

Mr WOOD: They use our water.

Mr HORMAN: That is right. Beyond that, at the other end of the scale, we are looking at micro hydro with some of the river flows. We have a project in the pipeline at the moment.

Mr WOOD: I go back to pipelines again. I know Gove is a controversial. I am not talking about supply of the gas for the bauxite development. Have you been involved with discussion about whether that pipeline went through what benefits it could bring to communities along the way and to Gove from the point of view of replacing diesel generation with, perhaps, gas?

Mr BURGESS: I have been involved in some discussions. The Department of the Chief Minister is leading all those discussions around Gove, pipelines, and all the rest of it. I understand those considerations are part of the suite of matters the current Cabinet has on its plate. You really need to talk to them, not us.

Mr WOOD: I did not know how much involvement you had. I can see some possible spin-offs, but someone with the figures would have to prove those were real spin-offs and what part Power and Water would have to pay to get gas to those communities off the main line.

Mr McCARTHY: Through the Chair, I have a couple of questions around planning. Charles, you might have to jump back in the saddle for this one. For McArthur River, did Power and Water have an understanding of the amount of gas they used in their operation as a customer?

Mr STAPLES: Yes, we know exactly how much power they need. The power station is about 17 MW in size installed capacity, and it runs an amazing over 90% all the time. It is really run very hard. That is ...

Mr McCARTHY: Do we know their demand for the expansion?

Mr STAPLES: Yes, the demand expansion will go to additional 40 MW, so they will have close to 60 MW installed.

Mr McCARTHY: Okay. They are firm figures, so that is good planning for Power and Water to understand about that project and its expansion and needs.

Let us go to the urban environment and the nature of built form and units and houses. When you are planning for the future energy needs and the demographers say an extra 70 000 people in the greater Darwin area in the next 20 years. Then, you look at where they are going to live and their power needs and all the efficiencies - we will get to that, by the way, when we talk about some more of these questions. That is all factored in. How does that work in your planning?

Mr BURGESS: In the general sense, through all the volatility of all the different planning regimes around housing design about all sorts of things, at the end of the day, that is still coming down to just over that 2% increase. There are all sorts of modelling you can do such as econometric modelling around price elasticity of demand and all this stuff. It would be interesting to see what occurs over the next few years as a result of tariff increases; whether that has an impact on demand. Those things are taken into account.

Our early observations are that, as a trend, domestic consumption is probably increasing per residential unit. Some of that, we believe, is probably related to house design. We would be very keen for the Northern Territory to be able to take a position where it did not need to be aligned to some building codes that, honestly, do not work in our climate, because we think everyone would be better off.

Mr McCARTHY: That is all good for the planning and the future. In the reserve, you explained we have a capacity and that was at a couple of layers to the emergency capacity of pressure in a pipe - from the lay person. I am interested in stimulating the exploration for onshore reserves. When you get to that level of discussion, the capacity, what is the emergency? How do we get these explorers motivated when they know there is going to be an increase in demand? Do you guys play a role in that?

Mr BURGESS: There is a number of things that come into play. In a general sense, explorers will respond (1) to government regulation, and (2) to a fairly clear message from the market. It takes a long time to get gas resources proved up and buoyant to production. You are talking five to 10 years in a normal sense.

In a straight domestic industrial demand Power and Water Authority would normally be supplying, if you put the Gove issues to one side, we are on trajectory to 2034 with guaranteed quantities. We will have to start seriously talking to players at least a decade out from that time to ensure we could have other supplies on the market to meet our emerging market. That is what a company would do.

What might stimulate things prior to that would be a very large customer who comes on board. That could be something as big as someone who wanted to expand additional trade through LNG plant. They would deal directly with an explorer to say, 'We will help support you in your exploration because we are looking for 30 PJ a day, not a year, to put into an LNG plant.' It would be one of those type of things that would accelerate exploration and production development a lot more quickly than we would.

Ms McCARTHY: That is where my thinking is. For me, and where I live in the Territory, the big player, or the new customer is the east coast. Are Power and Water already looking at that as the pipeline concept which would supply us with domestic source, then with their needs as well? Are we in that planning stage?

Mr BURGESS: I understand your committee is meeting with the Department of Mines and Energy this afternoon. Government is recently taken decisions to establish an Energy Policy Unit in the Department of Mines and Energy and they have carriage of precisely those strategies and questions.

We have had discussions with the Chief Executive of that department, and we have been invited to provide technical input to those discussions and strategies. Yes, we are a partner with the NT government in that approach, and we are providing them with all the information we can.

Mr VATSKALIS: Just one more question. Charles, you said the McArthur River would need another 40 MW or it would be total from 17 MW to 40 MW.

Mr STAPLES: The anticipation is because the new 40 MW is a very efficient power station, that will carry the entire load. The entire requirements will be met by the new power station, which is about 40 MW. The 17 MW which is there already will be used for back-up.

Mr VATSKALIS: Okay. Is it going to be the same arrangements that we have now?

Mr STAPLES: Our arrangement ends in March 2015.

Mr VATSKALIS: Okay. There will be a new one, either renegotiated or it will be a commercial arrangement with ...

Mr STAPLES: They have already renegotiated it. EDL has negotiated directly with McArthur River.

Mr VATSKALIS: Okay. With the growth of renewable energy and solar panels and everything else, have we the capacity to take the load from those new installed panels?

Mr BURGESS: We have capacity to take some additional loads, but it is not an uncapped capability because of technical issues, and how those things inter-react with our systems. I will ask Trevor to take you through that.

Mr VATSKALIS: If we are talking about renewables, that is fantastic. If we can take the bloody load, what is the point of talking about renewable?

Mr HORMAN: It is a complex issue and of concern to utilities around the world, not only in Australia. Part of the problem is what is called the intermittency of solar and wind resources. We need to deal with that. Yes, for rooftop customers the technology is advancing and that is the good part of the news. Rooftops have a propensity to give us a problem because, like us, everyone is not at home but the generator is generating during the middle of the day and lifting the voltage in the street. Once it gets over 250 to 300 volts, it has the potential to damage your computer, their

television, and everything else down the street. That is a challenge for a utility to try to control that situation. There was even a Productivity Commission report suggesting those people contributing to the problem should be paying more for it. That is a perverse outcome, but that is the nature of the product.

On a larger scale, we have spoken about the expansion of Uterne solar farm in Alice Springs to 3.6 MW. We have insisted they start to look like any other generator on the system and they must do their reactive power share of the generation. We are pushing for future ones to do the spinning reserve component so they share the total generation task and do not throw some of it on us. It is an issue for utilities. Fortunately technology is coming along and we are developing policies to insist they integrate well.

Mr VATSKALIS: Has Power and Water done anything to explain, in very simple language, to the producers and consumers the problems we currently face? We hear many complaints of, 'You do not pay us much for every kilowatt we are producing for the system', but everybody closed their eyes with the problem with the generator.

Mr HORMAN: We need to do a better job. The offerings we make are very generous. In fact, what we should be offering is a voided cost of production and we are well above that. Sense is finally prevailing down south and offerings there are either zero or 5.2¢ or 8¢ in some states. At the moment we are still one for one and are seriously considering that matter.

Mr WOOD: If everyone put solar voltaic panels on their roof would that make Power and Water less profitable? You have the infrastructure the electricity goes back along the line to, the domestic person is not paying for that – you are still producing power. I am unsure what reduction in gas that would have. Is there a point where, by promoting this, you are making Power and Water less viable?

Mr HORMAN: The impact of one million rooftops down south has been declining in annual consumption over the past 5 years by about 10% in some utilities so it can have an impact. On top of that, there are other factors like industry leaving Australia and going overseas. You need to separate it out but there certainly has been an impact by the million rooftops down south. In the Territory we have about 2500 at the moment. Another part of the education process we need to go through is people still do not understand the sun does not shine at night.

You need your utility there and one of the problems it creates for us is when they lift the voltage during the day we might adjust the system so it drops the voltage during the day and does not create that problem. Then everyone goes home at night, switches on the air conditioner, does the cooking and the whole lot, and you get low voltage in the street. There is potentially a future investment requirement to cover that type of behaviour.

To demonstrate the case, this is a graph of the performance of an average solar system on a rooftop with 30 days of the month of July imposed on each other. You can see the impact of cloud, you can see the bell-shaped characteristic of the form. What you look at when you come to February is this type of behaviour, and the grid has to take up the difference between it. The grid becomes more important than it has ever been just to make these systems work. We need policies and technology to help up deal with that type of behaviour.

Mr WOOD: What Kon said about more education - I have an e-mail from a consumer in my electorate who says the only reason they are not allowed to add 4.5 kW is because Power and Water have a monopoly and are basically running the show. I sent some materials from the last

Estimates Committee where the previous CEO explained some of the reasons why there were some limitations. There seems to be holes out there – and you just showed us something I have never seen before – that needs to go out with the education about promoting solar but, at the same time, telling people there are some limitations on it.

Mr VATSKALIS: With all the processes, where do you see the next efficiencies in Power and Water in order to reduce costs and increase profits?

Mr BURGESS: I am not sure we prepared for a question like that. I thought it was about ...

Mr VATSKALIS: Take it on notice?

Mr BURGESS: Mr Chairman, you would have to rule about whether that is ...

Mr CHAIRMAN: My interpretation of the question was where do we see efficiencies coming in, in Power and Water.

Mr BURGESS: Yes.

Mr CHAIRMAN: Have we identified any efficiencies there or potential?

Mr BURGESS: Efficiencies in our technical systems?

Mr CHAIRMAN: Yes, power production.

Mr BURGESS: Trevor.

Mr HORMAN: There are a number of aspects of that. The technology available in our conventional generating plant is improving all the time, so the plant we have bought recently is far more efficient than plant we bought in 1986. That technology advancement goes on even in diesel engines that have been around for 100 years. The efficiency now of new diesel engine is well over 42%. The improvement in conventional plant is dramatic.

In alternative sources such as solar, the price has dropped by four times since 2004, so it is getting very cheap now. It is to the point where the cost of the technology is a minor component of the project. The cost of finance and concrete, buying the land and legals, and all the rest of it dominates the cost of those projects, but they are coming down.

The next generation of storage we see coming along - storage has been the bane of this industry forever. You probably know your own car battery does not last very long these days, and they have been making them for 150 years. With new lithium iron technology and other chemistries in batteries, dramatic improvements are occurring. We are seriously looking at supplementing the Uterne solar farm with a megawatt of storage just to see if that makes a big difference and gets rid of some intermittency we experience during the day.

If solar becomes more efficient, and the cost per kilowatt hour is lower than our other generating costs, then we will engage with it. We see 10% penetration over the next few years as being quite a challenge to get to that level. In the remote communities, we are looking at 15% over the next few years. Where there is a different inertia characteristic of diesel engines, they can pick up some of the intermittency better than the plant on the major networks.

We have those targets to head for and, with the prices dropping the way they are, it can lead to technology improvements there.

The other side of the argument is the demand side. We are caught in a bind where there can be a drop in actual consumption, therefore, drop in revenue, but the annual peak demand is still there. Peak demand is a major problem nationally, costing a lot of money. We will be making efforts to influence the demand characteristic and the load profiles to move load away from peak periods.

The case study we cite in this is the Charles Darwin University where there is a 13 ML tank of water that is chilled every night down to 1°C that air conditions the university the next day. They have peak electricity consumption during the night, and not much during the day, and that helps with our peak demand issues.

We have been contributing to studies like the Darwin CBD master plan to get some of those concepts incorporated into the thinking.

Mr CHAIRMAN: When we look at some of those demand side things, and there is advertising to cut down your power usage - do all this, talk about solar panels and pumping the power back in and stuff like that. We have this ongoing problem with the peak loads. Are we looking at anything – and I know this is probably a bad example - like off-peak hot water down south? It is not a real good thing up here because we are on solar hot water. Is there any other alternatives in the way we charge power that would push people in different directions to manipulate their power usage?

Mr BURGESS: Yes, there are a number of things that we are looking at as well as going back to government and others around different structures for tariffs. Trevor, I might get you to talk about that.

Mr HORMAN: To influence customer behavior, we have been through a five-year program with other solar cities to explore the propensity of customers to change their behaviour and what would encourage them to do it. We learnt a lot during the process - that customers are very driven by the hip-pocket and will change their behaviour if there is a message there.

Mr CHAIRMAN: Not just for power and water either.

Mr HORMAN: It is quite interesting what was happening during the five-year study. Technology advance - it is now quite possible to program your washing machine and other devices in the home to start at midnight and everyone is happy to have their washing done by the next morning. So if you can shift from daytime use of energy to night time with our current generation profile, it makes a big difference and it is very helpful. We have come out of that trial. The other interesting technology advance was that from July last year, every air conditioner and heat pump that sold in Australia must come equipped with load management terminals on it. For instance, in this building you could interrupt the air conditioning compressor for five minutes but the air handling system would keep going so nobody in this room would notice that major load has been interrupted for five minutes. That would certainly be a big help to mitigate those peak loads that we experience only one or two days per year. The technology is advancing but we need price signals to underpin it.

Mr McCARTHY: Mr Chair, I just have a question in terms of regulation and PV cells on domestic homes. We had a little issue in Tennant Creek where there was an interstate contractor come over the border and fit PV cells and they are not certified, basically, to cut a long story short. By the way, this has just happened, so there are some serious issues going on with the people that have purchased this. How does that regulation happen, and how did it happen? Is it Power and Water or the Department of Infrastructure?

Mr HORMAN: Trevor Horman. There were six systems in Tennant Creek that were switched off because we did not even know they were there. We just found it. The relationship with the customers is excellent. They have understood that the interstate installer just came into town and did a few jobs and did not submit any paperwork, did not tell anyone they were there. So at this stage, it is a paperwork issue. We have no information about the quality of the equipment or whether it is acceptable. But we do have requirements that they seek approval for every installation. These are generators that have been connected into the network so there are safety issues for both the customer and for our linesmen out on the street. We do not want these things to be generating when we think the line is dead. I think the issue is resolvable but the company that came in from interstate really needs to submit the paperwork, so we can see what the equipment is.

Mr WOOD: Can I ask, just getting back to energy, we talk of all of these ways that we might be able to reduce energy but you have got a contract with ENI until the year 2034. Is that contract regardless of how much of that energy you use? Say a government comes in, and says, 'Righto, you have to reduce your greenhouse gas emissions', something we have not discussed today. We have got more people putting solar panels on, etcetera. The expected amount of energy we thought we would use is not going to happen, but do you still have to pay ENI for the contract?

Mr BURGESS: The structure of the current contract is that there is a take or pay base in the contract which is normal for all gas supply contracts. We are committed to meeting a minimum pay for a minimum amount, whether we take it or not.

Mr WOOD: Is it dollars per petajoule, without saying how much it is?

Mr BURGESS: It translates, yes.

Mr WOOD: Does that change year by year or is it a set price to the end of the contract?

Mr BURGESS: It is set with CPI, normal CPI adjustments going forward.

Mr CHAIRMAN: I will ask one more question then we will have a 10 minute break.

What do you see as the main challenges Power and Water have when it comes to maintaining the viability of the existing generation networks and so forth?

Mr BURGESS: In a general sense, our challenges are the ones Power and Water has faced for a long time. The area in which we operate is such a large land mass with a small demographic - the economies of scale. When we benchmark ourselves against other utilities around our technical performance it is pretty good. It is difficult to find areas where we are incredibly deficient, and the bits we know we can improve we are working on. That challenge will remain for a long time.

Gas security is essential because that dictates your price path going forward. Keeping that predictable makes life for everyone much simpler, including governments.

Mr CHAIRMAN: Thank you for that. We will go into the next session in a minute. We will definitely get you back. The picture we are trying to get today is where we stand today and what is our potential. We will look at the others later on.

If we can be back here about 11 am that would be good.

Mr VATSKALIS: Can we get a price for the Dingo gas?

Mr CHAIRMAN: On the Dingo gas, I will write to the Minister to clarify it.