

REPORT OF PROCEEDINGS BEFORE

GENERAL PURPOSE STANDING COMMITTEE No. 5

INQUIRY INTO RURAL WIND FARMS

At Sydney on Monday 2 November 2009

The Committee met at 9.00 a.m.

PRESENT

Mr I. Cohen (Chair)

The Hon. R. L. Brown
The Hon. R. H. Colless
The Hon. K. F. Griffin
The Hon. L. J. Voltz
The Hon. I. W. West

CHAIR: Welcome to the fourth public hearing of the General Purpose Standing Committee No. 5 inquiry into rural wind farms. The inquiry's terms of reference require the Committee to examine the costs and benefits of rural wind farms. As such, this inquiry is an opportunity for all stakeholders and communities to provide input into how New South Wales can ensure wind farm developments equitably balance social, environmental and economic objectives. In addition to the hearing today, public hearings have been held in Sydney, Tamworth and Goulburn, where the Committee visited a number of existing and proposed wind farm sites in the Upper Lachlan area. Today the Committee will hear evidence from academics from the University of New South Wales, a representative of the Wind Prospect Group and a councillor from southern New South Wales.

Before the evidence commences, I will make some comments about certain aspects of the hearing. The Committee has previously resolved to authorise the media to broadcast sound and video excerpts of its public proceedings. Copies of guidelines governing broadcast of the proceedings are available from the table by the door. In accordance with the guidelines, a member of the Committee and witnesses may be filmed or recorded. However, people in the public gallery should not be the primary focus of any filming or photographs. In reporting the proceedings of this Committee, the media must take responsibility for what they publish or what interpretation is placed on anything that is said before the Committee. Witnesses, members and their staff are advised that any messages should be delivered through the attendants or the Committee clerks.

I advise also that, under the standing orders of the Legislative Council, any documents presented to the Committee that have not yet been tabled in Parliament may not, except with the permission of the Committee, be disclosed or published by any member of such Committee or by any other person. Committee hearings are not intended to provide a forum for people to make adverse reflections about others. The protection afforded to Committee witnesses under parliamentary privilege should not be abused during these hearings and I therefore request that witnesses avoid the mention of other individuals unless it is absolutely essential to address the terms of reference. In this regard the Committee does not propose to make public references or case studies in submissions that might identify individuals or families.

If a witness makes serious allegations that the Committee believes reflects adversely upon a specific person or entity, as a matter of procedural fairness the Committee would be obliged to provide that person or entity the opportunity to respond to the criticisms, either by writing or in person. This process may divert the Committee from its deliberations. Finally, could everyone please turn off their mobile phones for the duration of the hearing, including mobile phones on silent, as they still interfere with Hansard's recording of the proceedings. I now welcome our first witnesses, Dr Mark Diesendorf, representing the Institute of Environmental Studies at the University of New South Wales. I ask you to identify your job title and employer and whether you are appearing in a representative capacity.

MARK OLIVER DIESENDORF, Deputy Director, Institute of Environmental Studies, University of New South Wales, Post Office Box 521, Epping, affirmed and examined:

Dr DIESENDORF: I do not speak for the university's hierarchy or policy. I speak as an academic with expertise in the field.

CHAIR: Would you like to make an opening statement to add to your submission before the Committee asks questions.

Dr DIESENDORF: Could I speak for about seven minutes?

CHAIR: Yes.

Dr DIESENDORF: Last year in Europe the energy generating technology that had the biggest growth in generating capacity was wind power; it was not coal, it was not nuclear, it was not gas, it was wind. That is an indication of the maturity of the industry. My written submission has mainly focused on the misinformation that has been circulating about wind power. I have read some of the earlier submissions and I am really concerned that there has been a lot of exaggeration and in some cases untrue statements about wind power. My submission addresses bird kills, noise, land use, efficiency, subsidies, voltage and frequency control, the potential contribution of wind, the alleged production of bushfires and the whole issue of intermittency and backup, and whether we can substitute. I will not go through all of that now, but will be happy to answer questions on that.

In relation to the terms of reference, I will offer some quick one-sentence responses to the terms of reference to get things going. On the first reference, the role of utility scale wind generation, I believe that in Australia it could contribute at least 20 per cent of Australia's electricity and reduce greenhouse gas emissions from the electricity sector by about 20 per cent. For New South Wales it would depend a bit on the policies to give wind power incentives. New South Wales has somewhat lower wind speeds than South Australia and Victoria, so it would be a question of incentives to New South Wales.

On the second point, location, the most suitable sites are exposed to wind, naturally; that is ridges and hills. The least suitable sites, which I think should be avoided, are, of course, national parks, wetlands where birds congregate, and forests. The third reference is impact on property values. I did a study three years ago, and I have not checked the literature since then. Three years ago there was no convincing literature from Australia; but from Europe some studies found no impact on property values and others found that there was a small impact for the first two years after construction and then there was no difference in property values.

On the fourth item, mechanisms for encouraging local ownership and control, I would recommend a slightly reduced rental payment to the farmers who have wind turbines on their properties and for that money to be openly and transparently transferred to the local council to benefit the whole neighbourhood. On the fifth item, potential role in relation to the Australian Government's renewable energy target, which has now gone through Federal Parliament, I will comment on that in more detail later. Now I just say that the way the expanded renewable energy target is designed, there is not much room for wind power. The target will mostly benefit solar hot water, heat pump hot water and residential solar electricity. It will not leave much space for wind power. I am concerned about that.

Really we need policies in New South Wales, if the Government wishes to encourage wind power, which is potentially a highly job creating industry, such as expanding the feed-in tariffs beyond small-scale residential to large-scale renewable energy. I strongly recommend that. It also requires State Governments to cooperate with the Federal Government to put in some new transmission lines, which are really important and needed. That is basically all I need to say. To sum up, wind power is currently the cheapest of the non-hydro sources of renewable energy in the world. It is also the electricity generating technology with one of the lowest environmental impacts.

It is certainly visible, and it has to be. But in terms of physical and chemical impacts, it is extremely low in impacts. And I am happy to defend that. It can substitute for some coal-fired power stations. It can contribute at least 20 per cent of Australia's electricity and it can create thousands of new jobs, not so much in the operation, but in the manufacture of components. I will leave it there and try to answer your questions.

CHAIR: Thank you, Dr Diesendorf. I appreciate your depth of understanding of these issues. You mentioned the little impact on property values. Do you have any information about that? The Committee has found that perhaps Australia is different from the European experience because of a different culture, very low ambient noise levels in areas prior to wind farms being installed and the type of noise generated, sometimes almost sub-infrasound, sub-human perception, but very low levels that are annoying. You mentioned the support of local councils for some of the income. The Committee has heard of the experience of local farmers, and one in particular who was virtually surrounded by wind farms and potential ones. Could you throw any light on that at all?

Dr DIESENDORF: Yes, I will try. There have been extensive noise studies, particularly in Europe. In almost all cases it is impossible to hear wind turbines beyond a range of half a kilometre. With noise propagations there are occasionally exceptional circumstances when the topography of the land or a rogue wind turbine produces more noise. Usually there are noise limits set and my position is that if a turbine, through topographic reasons or through rogue performance, exceeds those levels, it should be shut down or improved, but that is not a good argument for shutting down a whole wind farm or terminating the wind industry.

Noise problems nowadays are extremely rare and I am aware that at one wind farm in Victoria at Waubra, one family has moved out, claiming that they are suffering ill effects. There are measurements being made by the University of Ballarat but those measurements, to my knowledge, have not been published yet. Noise is one area where objective measurements can actually be made, and that includes infrasound, which is inaudible to human ear. There have been, in Europe, extensive studies of infrasound.

What they have generally found is that although it is measurable if you are very close to the wind turbine—within say 10 metres—it is extremely difficult to detect beyond 400 metres and in most cases the infrasound that is detected comes from more distant roads, because one of the biggest sources of infrasound in rural areas is motor vehicles off roads; they generate infrasound and, according to the European studies, in general that infrasound is dominating the infrasound scene. Did that answer your question, Chair?

CHAIR: It did to a great extent. Are you aware of studies of psychological or emotional response to the constant, be it at a very low level, sound? We had the example where a wind farmer stands to get over \$800,000 a year but the neighbours are in much closer proximity to the actual wind generation units.

Dr DIESENDORF: It is hard to know what to classify as a psychological study. There have been studies by a medical doctor called Dr Nina Pierpont and she has made a number of claims, but I have read her article and it does not really qualify as a scientific paper. It is very emotional and does not set out data in a clear way, so I am not aware of any convincing studies. It is an area that deserves investigation because there is a very big campaign in some parts of Australia against wind farms and that can create fears in people even if there is no substance to the concerns. It is the same with property values. The most likely way of reducing property values is for people to assert that wind farms are going to reduce property values and then it becomes a self-fulfilling prophecy.

The Hon. LYNDA VOLTZ: Talking down property.

Dr DIESENDORF: Similarly with sound and infrasound. However, I would be the first to say that people have the right to have objective standards set and if they believe they are suffering ill effects they have a right to have measurements taken by independent bodies like universities and the issue to be discussed and then on those rare occasions when there is a problem, then it has to be addressed either by fixing the offending wind turbine or shutting it down. I certainly do not think that people should be living closer than half a kilometre to a large wind turbine.

CHAIR: We have been shown information of decommissioned turbines. Could you shed some light on longevity? I think it was Hawaii where they showed pictures of turbines without the blades left in situ, where it was not worth actually decommissioning, pulling down or taking them away. Concern has been expressed about that? Can you comment on that?

Dr DIESENDORF: I would also have concern about that. That is just poor practice. It is probably not as bad as, say, the situation in Queensland where open-cut coalmines that are supposed to be remediated have not been remediated, but it is an issue and I think the permission should have requirements either to take down the turbines at the end of their operating lives, which could be 20 or 25 years or to repower the turbines, so putting new blades on old towers to keep them going because the tower lifetime, as your question indicates, can be quite long, longer than the blades.

A common practice now, as the scale of wind turbines has gone up, is to repower them with more modern systems of blades, gear box, if there is a gear box, and in some case, rebuild the tower to a more appropriate design for the current generation of larger turbines. I certainly do not support leaving concrete and steel sticks sticking up in the landscape. I think that can be easily avoided with appropriate contracts and permissions and should not be used as an argument against wind farms.

The Hon. RICK COLLESS: Getting back to this issue of property values, the studies you looked at where you said there was no impact on property values, did that relate to the land on which the turbines were located or adjoining land, and what was the difference between those?

Dr DIESENDORF: There is always a problem in trying to find suitable comparison areas. There is a similar problem with traffic noise where you want to get equivalent locations but either with or without the traffic. So it is with wind turbines. It involves trying to find land in a similar situation that does not have the wind farms. Obviously it cannot be on the same site.

The Hon. RICK COLLESS: I think it can be, because that is the whole point. As the chairman alluded to a minute ago, we inspected a site actually—a 500-acre property, a 200-hectare property was going to be completely surrounded by wind towers on four sides. The owner of that particular property was saying now that it is impossible for him to sell that farm; not that he wants to sell it, mind you, but he is going to have these turbines located within less than two kilometres from the house, in one case 600 metres from the residence on

the property. His argument is that the value of that property has been completely degraded by the presence of the wind farm. The land on which the wind farms are located is a different issue altogether because they are getting paid \$10,000 per turbine per year and that in itself has a very significant value adding to that particular farm.

Dr DIESENDORF: Sure.

The Hon. RICK COLLESS: But the farm next-door that does not have that has all the disadvantages of the wind farm being there in terms of the interruption of the visual amenity, the noise, the flicker, all those things that have been brought before us that are very real impacts, I believe, yet none of the financial gain. Surely that is going to have an impact on those properties that are right next-door to the turbine?

Dr DIESENDORF: With respect, Mr Colless, it is a sort of circular argument. You have said that the farmer believes that he is going to have a loss in property value and it has sort of gone round the circle. In fact, the evidence for that is very thin. I do not know of any Australian studies but from overseas the evidence is thin. Some studies show no effect; some studies show a small effect for the first couple of years, which then disappear.

The Hon. RICK COLLESS: That is why I was asking about whether those studies related to land on which the turbines were located or adjoining land?

Dr DIESENDORF: Well, the problem is finding a suitable comparison piece of land. You cannot make conclusions based on the land alone on which the turbines are located, so you have to look at neighbouring land—and that certainly has been done. You cannot base the study purely on changes in property values with time because property values change with time all the time, so you need a comparison of a control population that you can also track through time, so it is a complicated study.

Certainly I can say with confidence, based on the studies that I looked at up to 2007, that the evidence is very, very thin indeed supporting the notion of loss in property values for turbines for farms neighbouring to wind turbines. The studies just do not support the concern, and similarly with these other things that people talk about like flicker. Flicker occurs only some places for a few days of the year. You have to imagine that the sun moves around seasonally. It is a bit like, say if you were driving to Canberra. There are a few days of the year when you are driving into the sun for a significant part of the time and so it is with the shadow of wind turbines.

So if there is a problem, it occurs usually at sunrise or sunset for a few days of the year when the sun is in that position. It is rare; it is hard to notice. Again, it is hard to see anything of substance there. Noise is extremely rare. In the early days in Europe there were a lot of concerns; a lot of the early wind turbines were really noisy. Then European countries set noise constraints and within a few years all this was cleaned up. They are now facing very rare noise problems where there is a specific turbine that is giving problems or specific topography where the hills or a body of water carries the sound across longer distances.

CHAIR: In terms of noise constraints, how do New South Wales conditions and regulations compare with those in Europe in your experience? You said they had taken action on that.

Dr DIESENDORF: I do not have the details relating to New South Wales so I am not aware of that. I cannot really compare them.

The Hon. RICK COLLESS: Your comments in relation to noise are easy for all of us here to make as we do not live next door to a wind farm. We have been to a couple of wind farms and listened to them and while the noise does not seem to be exceptional, the point that most of the people who live within a couple of kilometres of these towers make is that it is the constant background noise and the type of noise that concerns them. For people who live on the coast it is probably no louder than the sound of the ocean.

Dr DIESENDORF: Much less.

The Hon. RICK COLLESS: I would not agree that it is much less but the sound of the ocean rolling in is of course a very soothing sound whereas these people that live next door to wind farms say that the background noise created by the wind farms is anything but a soothing sound. That is the issue, I think, that these people who live next door to them 365 days a year are facing. It is not something that can necessarily be

measured by a noise meter as registering so many decibels. That is not the issue; it is the type of noise and the constant sound. That is what these people are telling us.

Dr DIESENDORF: I think they have had fear instilled into them by anti-wind campaigners, basically. I have slept much closer to them than 400 metres. I have slept 100 metres from a 2-megawatt turbine. Yes, with the windows open I could hear it faintly, but with the windows shut I could not hear it at all. That is 100 metres. That is very close. I would not recommend that at all.

The Hon. RICK COLLESS: Why would you not recommend it?

Dr DIESENDORF: One hundred metres is within the shadow of the machine. It is too close. But 400 or 500 metres away it should not be a problem. They should not be able to hear it. I would not rubbish objective measurement. We can measure what people's limited hearing is and we can measure the sound, whether it is audible sound or infrasound. We can measure that with our instruments and compare it. Those measurements usually are considerably below the limits of hearing. They are not detectable and these people are complaining about things that do not relate to noise. It cannot be. I am perfectly prepared to accept that in some rare cases there will be noise problems, but it can be measured and determined.

The Hon. RICK COLLESS: In your submission you talk about the potential for wind energy and in section 3.3 you say that for a fossil fuel 1,000-megawatt power station with an average output of 860 megawatts to be substituted, 2,600 megawatts of wind power capacity would have to be installed. That is 1,300 towers.

Dr DIESENDORF: That is correct.

The Hon. RICK COLLESS: Operating at their 2-megawatt rate of output.

Dr DIESENDORF: Yes.

The Hon. RICK COLLESS: And at 30 per cent efficiency, is that correct?

Dr DIESENDORF: No, a 30 per cent capacity factor, which is not a measure of efficiency. A gas turbine used for a peaking plant has a capacity factor of 5 per cent and people do not rubbish it for being inefficient.

The Hon. RICK COLLESS: But when you talk about a 2-megawatt turbine, it does not produce 2 megawatts of electricity at a time.

Dr DIESENDORF: That is correct and that is taken into account in economic calculations.

The Hon. RICK COLLESS: Somebody suggested to me that 2,600 megawatts is what Bayswater is rated at and said that only 1,300 turbines that would have to be set up to produce 2,600 megawatts, but of course that is not correct. When you include the 30 per cent, there would have to be 4,000 turbines to create the same amount of power that Bayswater produces.

Dr DIESENDORF: My calculation was based on a coal-fired power station of 1,000 megawatts. Assuming 850 megawatts is the average output it would be extremely good for New South Wales. Most coal-fired power stations in New South Wales have much lower capacity factors than that.

The Hon. RICK COLLESS: Bayswater is the biggest, at 2,600 megawatts.

Dr DIESENDORF: Yes.

The Hon. RICK COLLESS: Can I get your thoughts on the planning issues and approval processes surrounding this? We have been given quite a number of development control plans by local government bodies around the State that have taken the very responsible attitude, I think, to create these development control plans to give some guidelines to the Department of Planning when it is approving these things. In all cases the Department of Planning, under part 3A of the Planning Act, has not complied with the local councils' development control plans. I see that as a very serious issue in this whole process. What is your view on that issue? What sorts of controls should be in place for the approval processes and what level of input should local councils have in the process?

Dr DIESENDORF: I think local councils should have an advisory role and the State Government should, and does, have an overriding right in this situation because local councils are very open to pressure from anti-wind groups.

The Hon. RICK COLLESS: They are reflecting the views of the community, aren't they?

Dr DIESENDORF: Well, they are reflecting—

The Hon. RICK COLLESS: Should the views of the community be taken into consideration or should they not be taken into consideration in the approval process?

The Hon. LYNDA VOLTZ: Point of order: Mr Colless has asked the question. He should let the witness answer the question.

CHAIR: I think the point is made, Mr Colless.

Dr DIESENDORF: I would like to reply. They are reflecting the views of one segment of the community, often a very well-organised and minority segment, but that does not mean they are reflecting the views of the community. If the wind farm planning process is done well, which means the developer working very closely with the community, then the vast majority of people in the community tend to support the wind farm. We have seen some very good examples from other parts of Australia, particularly Challicum Hills wind farm in Victoria, in which the community was closely involved right from the beginning. To the best of my knowledge there has not been a single objection. The anti-wind group in South Gippsland did not even bother to travel in to try to run a campaign against it as they have done in Scone, in New South Wales.

The wind farm at Albany, in Western Australia, has been extremely successful and when I visited it I could find no indication of any objection in the town. It all depends on how the developer proceeds. Some developers understand this and work very closely with the community to produce a product that is satisfactory to everyone concerned. Other developers, as in the business world generally, do not appear to take any notice of the local community and so people become suspicious and resentful. I cannot really find any way of avoiding that except perhaps State governments can place stronger requirements on community consultation. That might be one way.

Setting up an open and transparent framework would result in some of the revenue from a wind farm going to the whole community. I think \$10,000 a turbine for farmers who have turbines on their land is a ridiculously high rental, considering that the turbines hardly occupy any space and all you need is an access road, a right of access, and 1 per cent to 3 per cent of the land occupied by the turbines, an access road and a substation. I think that \$10,000 for each turbine is a ridiculous amount. I believe it to be far too large an amount. Some of that money should go towards benefiting the whole community in an open and transparent way through the local council. That is my view.

The Hon. ROBERT BROWN: Dr Diesendorf, I wish to ask you a couple of questions about your opening comments.

Dr DIESENDORF: Sure.

The Hon. ROBERT BROWN: You stated—and most of the submissions that we have received support this—that New South Wales is not necessarily a wind-rich State compared to some other locations further south, for example, Victoria, South Australia and Western Australia. Why do you believe we should be trying to develop wind farms in New South Wales if they require a higher subsidy and, therefore, there is less economic efficiency? Why not just saturate the wind-rich areas, as wind farms from Victoria and South Australia all feed into the south-eastern grid and that would still be reasonably efficient?

Dr DIESENDORF: That is a good question. I think I said—and if I did not I meant to say—that generally the wind speeds are lower. New South Wales has huge wind potential but at somewhat lower wind speeds than South Australia and Victoria. A lot of land in elevated areas such as the Southern Tablelands is suitable for wind farms. There is a lot of potential but the highest wind speeds will be in South Australia and Victoria. For an effective wind farm system you need to have them distributed geographically. It would mean that the whole system would become a lot more reliable. If they are all located within a short distance on the South

Australian coast, which currently is the most economic region on the Australian mainland, or they are perpendicular to the prevailing wind, you would tend to have problems with intermittency.

If they were spread out over the south-east of Australia, generally—in South Australia, Victoria, New South Wales and Tasmania—you would get geographical diversity. It would mean that instead of getting sharp fluctuations in output, which is what you would get from a cluster of wind farms in South Australia, you would get much smoother variation. The whole wind system would become much more reliable because generally the wind is always blowing somewhere and you do not get big troughs and peaks. It would mean that it would be much easier to regulate the system. For that reason I would recommend wind farms in all the windy States. I would certainly classify land area in New South Wales as windy, but it is not quite as windy in relation to wind speed. I wish to make one final comment.

Currently, the transmission system is inadequate to truly mix wind power around this region, spanned by the national electricity market. The links from South Australia to Victoria are very weak—at most they can carry only a few hundred megawatts—and they need to be upgraded. I believe that should be done jointly by the three Federal and State governments concerned. New transmission lines need to be built, as they would be if the proposed 1,000-megawatt wind farm were built near Broken Hill, for example. We need an upgrade to the transmission system and new transmission lines. That upgrading would not just benefit wind; it would also enable the huge geothermal potential from north-eastern and south-eastern Australia to be fed into the upgraded network. It would also enable large and concentrated solar power stations to be fed into the grid.

The current grid system has evolved based on the idea that there are a few areas with large, coal-fired power stations, such as the Hunter Valley in New South Wales and the La Trobe Valley in Victoria, and they feed into the main urban centres. We need an electricity grid that is more distributed and that can handle the principal power transmission sources of the future, which are wind, solar and geothermal.

The Hon. ROBERT BROWN: What are your views on nuclear as a future power source?

Dr DIESENDORF: I am trying to think how to answer that in only a few sentences.

The Hon. ROBERT BROWN: Your comments should relate to one particular area—that is, the building of a better network. If you were to build a 1,000-tower wind farm station at Broken Hill, most of the nuclear power would probably come from South Australia, for example, in areas in close proximity to where the uranium is mined.

Dr DIESENDORF: Nuclear power has been promoted as part of a solution to greenhouse problem. However, I would argue that it would take about 15 years to get the first nuclear power station and associated infrastructure built in Australia.

The Hon. ROBERT BROWN: At least.

Dr DIESENDORF: At least 15 years. That is assuming there is no public opposition. It is not a short-term solution to the greenhouse problem and it is also not a long-term solution. Existing nuclear technology is in a situation where high-grade uranium ore, such as the ore in Olympic Dam in South Australia, will be used up within a few decades, even at the current global demand rate. Once you go to low-grade uranium ore the fossil fuel use in mining and milling uranium would become substantial. Let me give you an idea. In order to get a kilogram of yellowcake out of the ground, which is a bit bigger than a full disposable cup, with low-grade uranium you need to mine, mill and chop up 10 tonnes of rock, which takes a lot of fossil fuel.

Even now, Olympic Dam emits one million tonnes of carbon dioxide and if current expansion plans go ahead it will emit up to 5 million tonnes of carbon dioxide a year, which is equivalent to a medium size coal-fired power station. I do not see nuclear power either as a short-term or as a long-term solution to the greenhouse problem. There are proposals for new types of nuclear power stations—so-called generation 4—but they are not ready, they have never been built on a large-scale and they would take a lot longer than 15 years. Good luck to the developers of generation 4 nuclear power stations; I would be interested to see them.

I do not think Australia should waste its money investing in them. That is something for the superpowers, for example, the United States and the European Union. Even ignoring all the hazards and problems of nuclear power, I would say it is not part of the solution. I believe that we should be moving to a

much greater use of renewable sources of energy such as wind, sun, and geothermal. Of those technologies, the one that is most ready and that is the cheapest is wind.

The Hon. ROBERT BROWN: In your paper, when you are talking about land use, for example, you should not be talking about 1,000-tower farms on 65,000 hectares because they use only a small percentage of the land and the infrastructure required for them is minor, for example, a few roads, et cetera. How does that gel with your opening statement that you would not put them in national parks?

Dr DIESENDORF: Basically, I think that national parks should be totally protected against everything other than bushwalkers. As I understand it—and as someone who is also a bushwalker—that is the purpose of a national park. I do not think anything should go into national parks, apart from bushwalking tracks.

The Hon. LYNDA VOLTZ: You referred earlier to upgrading transmission lines across the South Australian border. You referred also to that upgrading being funded by the three Federal and State governments. I might be wrong but I believe that, at the moment, the national energy regulator is responsible for funding the upgrading of transmission lines. Those costs are subsequently reflected in our electricity bills and consumers pay for the upgrading of those transmission lines. Is that correct?

Dr DIESENDORF: That is partially correct. A wind farm developer has to pay for the connection of the wind farm to the grid, which might be a large and expensive thing.

The Hon. LYNDA VOLTZ: I understand that.

Dr DIESENDORF: The other issue is that it is not economically optimal. If a whole set of wind farms were connected to the grid they would not put in the transmission design that would most benefit them all. You require a planning system that benefits a whole set of wind farms in the region rather than requiring individual wind farm developers to do their own connections. This was not the case with coal-fired power stations in the old days. The transmission lines of coal-fired power stations were paid for from electricity rates, where effectively urban electricity consumers subsidised rural consumers as a cross-subsidy in paying for those transmission lines. I would argue that it is now unfair, as well as economically inefficient, to go back to a situation where wind farm developers have to pay for their transmission lines to connect.

The Hon. LYNDA VOLTZ: I was talking about the upgrade across the south-eastern market where electricity is lost over a certain amount of the area so the lines have to be upgraded to come back in. On the point of the operators paying for the transmission lines, is it not true that some sites are now being selected based on where the existing transmission lines are and an investment of Government into transmission infrastructure would mean greater flexibility in the placement of these wind farms, in terms of their impact?

Dr DIESENDORF: Absolutely.

The Hon. LYNDA VOLTZ: When the Committee recently visited Tamworth I put the issue of noise monitoring to one of the councillors. Basically what they are saying is that councils do not have the ability to monitor at this low infrastructure range. I asked the councillor if it would be better for local councils to do the development application and the monitoring or would it be better for the State to do the development application and the monitoring. Would you say it would be a consistent approach if in the approval of the development application that in some way the Department of Environment, Climate Change and Water monitored the noise?

Dr DIESENDORF: Yes, it would. Noise pollution is like any other form of pollution. Under the State Government the Department of Environment, Climate Change and Water has the mandate and the requirement to do pollution monitoring, so that would be the obvious situation. Monitoring does not have to be continuous. So if there is a problem or a complaint then that is the time to monitor and measure the noise.

CHAIR: The Committee has heard conflicting evidence regarding the ability of wind farms to generate baseload and off-peak power. Would you see it as useful to classify wind power as being under these categories and, if so, how? Also, a lot of people are saying that they would be really happy with solar in those areas. How is solar thermal technology and development rating? Because you were very clear in saying that wind power is the cheapest and most effective currently.

Dr DIESENDORF: I will deal with solar first, if I can.

CHAIR: It is solar thermal that I am thinking of.

Dr DIESENDORF: The two technologies are at different stages of development. Wind power is a highly commercial technology now, with mass production around the world. Solar thermal I would classify as at pre-commercial level. We are seeing the first large solar power stations, some of them having thermal storage, being built in Spain and in the United States, although the financial crisis has slowed down the process there and political considerations have slowed down the process in Spain as well. So solar thermal is not ready to make the kind of contribution that wind power can make now.

Wind farms can be developed very quickly—far more quickly than any conventional source. In China, for example, wind power capacity has doubled every year for the past five years, if we count the current year because it looks as if there will be another doubling. There has been 100 per cent growth per year for five years. This has not been achieved as a result of the Chinese Government saying, " You will double your wind power capacity or we will chop your heads off." It has been achieved by giving economic incentives of the same type that could be given in Australia, as are being given in Europe. So wind power is ready. Solar will grow given the right policies, and I would say that sometime in the 2020s large contributions from solar will be seen with the right policies.

Returning to the issue of baseload, there are many definitions of "baseload" but one is simply power that runs in theory 24 hours per day 7 days per week. You can also consider the concept of baseload to be something that is rather an artificial concept that has been created in order to bless coal, because it is such an inflexible form of generation. We cannot vary the output of a coal-fired power station rapidly to follow the peaks in demand. So coal is very inflexible; they make a virtue of that and they call it baseload. Then they have to install this backup for coal. When I hear people talking about backup for wind I say, "Hang on, coal cannot meet the peaks, so we have a whole system of peak load plants, gas turbines and hydro, to deal with the peaks because of the inadequacy of coal"—that is one way of viewing it.

Coal-fired plants have reserve baseload plants, some of it running and kept hot and some of it kept cold. All of that because of the inflexibility of coal and the fact that it does not run 24 hours per day 7 days per week all the time—it breaks down. Unlike the lulls in wind, when a coal-fired power station breaks down it may be down for weeks, whereas the lulls in the wind takes days. So in a sense "baseload" is artificial. But if you want to use the term in a renewable energy generating system that has lots of wind and solar, you will probably see more peak load plant and less conventional baseload plant. You could retire a lot of the coal but you would need some more peak plant, which does not actually have to be operated all the time, to cover the fluctuations in the renewables. The more wind that you put into the grid as a percentage of the total energy output, the more peak load plant you would need to cover those fluctuations. You can think of a peak load plant as a form of storage, if you like.

You can also do it by putting in storage but storing electricity on a large scale is quite expensive storage. So it is probably cheaper to have some additional gas turbines that can be started up really quickly like jumbo jet engines. Yes, wind is less constant in its output than coal but it can be made as reliable as coal with appropriate back up. Appropriate back up is not running a coal-fired power station continuously in the background; it is dealing with the short lulls, which are usually from hours to several days, reflecting the passing of weather fronts. You can do that with more peak load plants and by having a wider geographic distribution of wind farms. It is a different system.

If you want to, you can apply the concepts of baseload and peak load to a system that is predominately renewable, but really it is not that appropriate—you just have a different mix. The key thing is, can you make that system as reliable as the conventional plant? I would say, yes. That is on the basis of modelling that my colleagues and I did when I was in CSIRO and teams in Britain and Holland and elsewhere have done more recent modelling. Yes, you can have a system with lots of wind in it but you need more peak load plant—in the case of Denmark you are interconnected to say hydro in Norway, so that is the form of backup there. You do not need to be interconnected. You can deal with those fluctuations internally if you design your generating system appropriately.

CHAIR: Our deliberations this morning might well result in a few more questions on notice, which the secretariat will send to you. Thank you for your written input and your attendance here before the Committee today; both are very valuable.

(The witness withdrew)

HUGH RONALD OUTHRED, Professor Visiting Fellow, School of Electrical Engineering and Telecommunications, University of New South Wales, affirmed and examined:

CHAIR: In what capacity are you appearing today?

Professor OUTHRED: I am appearing in a personal capacity. I have a visiting position at the University of New South Wales. I did spend a 35 year-career there. My position there now is professorial visiting fellow, but I am not formally employed by the university anymore.

CHAIR: Before the Committee proceeds with questions, if you would like to make an opening statement, please feel free to do so.

Professor OUTHRED: Yes, I will try to make a brief opening statement, but I believe it is probably more useful that we have a conversation. First, I apologise for not putting in a written submission. That is not because I did not think the inquiry was important; it is because, unfortunately, even though I have retired, I still seem to have a very full life. Wind energy, as I am sure you are aware, is a non-storable distributed renewable energy flux. Traditionally we have not tried to utilise such fluxes for electricity generation because of the challenges involved. Quite frankly, it has been easier to use fossil fuels. The real reason we are now moving towards very serious consideration of those energy resources is because of the problems that are emerging with fossil fuels and, of course, there are a number of those; the key ones that usually get discussed are the problem of climate change emissions and liquid fuels potential flow constraints—so-called peak oil problems.

So, renewable energy fluxes are being looked at now because they are a potential substitute for the very convenient fossil fuels. But they do not have the convenience of the fossil fuels in terms of activities like electricity generation or for transport applications and so on. We should not really expect them to be more ideal than fossil fuels. It turns out that all of these resources have their problems and their limitations. What we have to do is balance the strengths and weaknesses of each and try to find an appropriate mix of resources by which we as a society get the most benefits at the lowest costs. Of course, those costs are not just the direct costs that are incurred by organisations in terms of accounting costs; they are the so-called full economic costs, many of which are going to be incurred by future generations rather than us today.

One of the problems we face here is that people alive today are really going to have to give up some convenience for the benefits of future generations. So we need to engage in conversation with that in mind and not expect miracles here. Unfortunately, miracles are few and far between. I think I will probably stop at that point because I am sure at this stage you have plenty of questions you would like to discuss, and that is probably a better way of going forward. But I can make some specific comments against the terms of reference if you would like to do that.

CHAIR: Perhaps we will proceed with the questions and see what is teased out from that. During the inquiry there has been frequent argument against utility scale use of wind power—as you have mentioned, the unpredictability and intermittent source of energy. It has been argued that it cannot be included in what is termed the "day ahead bid-stack" and that when used, very expensive backup is required. Would you comment on that assertion? Is it correct?

Professor OUTHRED: No, it is not correct. Perhaps just as background I should inform the Committee that in terms of what we call the national electricity market in Australia, my research into the question of implementing competition in the electricity industry now goes back 40 years. The principles on which the national electricity market is based are written up in papers that myself and my colleagues published in 1980 for work done in 1979. So I do have a deep understanding of the market design we have. Because at that time I and my colleagues were engaged in working out design principles for such markets, we were already taking into account the question of how you would incorporate non-stored renewable energy fluxes. The design that we have is appropriate and able to accommodate these resources. Just as a general comment, there is no specific problem.

In terms of other evidence to that, we can point to the recent review of energy market frameworks in the light of climate change policies undertaken by the Australian Energy Market Commission on behalf of the Ministerial Council on Energy reporting to COAG. You can read the recently released final report of that inquiry. Basically what it says is that the present market design that we have is capable of accommodating

resources of this kind, and it just points out some important but peripheral further work that should be done to facilitate that to remove some of the remaining obstacles.

CHAIR: Are you including the current supply system?

Professor OUTHRED: Yes. That includes the analysis of what we call the engineering aspects of the supply system. That is really my own formal background. The economic aspects, in other words, the design and purpose of the markets that are used to translate is to translate the technical or engineering risks into commercial risks and then use commercial mechanisms to manage those risks both in terms of short-term operation and in providing similar appropriate investment. Sitting behind that is what we call the security management regime, which is designed with managing the very short-term operation that the commercial regime cannot manage, and also, of course, the background policy setting, which is what we call the governance regime, which is the way governments, both Federal and State, interface with the industry in terms of the policy frameworks and other related issues. Of course, education policies would be one example, but also more specific things like climate change response policies. These are all ways in which the governance regime provides signals to that industry as to how it should evolve in the future. So, that total package is what we are talking about and it is a total package that the AMC review looked at.

CHAIR: We are talking about large-scale wind farm infrastructure. In your studies have you looked at smaller community-based farms starting to supply actual rural communities in small- to medium-size wind farms that then perhaps would lead to greater participation by actual communities and less reliance on the distant grid et cetera? Could you comment on that? Have you looked at that cycle?

Professor OUTHRED: Yes. Certainly I am involved in a whole gamut of issues here from the large-scale continental systems right down to stand-alone systems for community households. One of the research projects I currently lead is for AusAID, looking at the situation of rural communities in Indonesia that do not have access to conventional electricity supply and how we might better facilitate sustainable energy resources for communities of that kind. So, yes, my work encompasses the whole range of activities.

With respect to the role of community wind farms, that certainly is an important issue. Looking forward into the future, we do now have to imagine a future that is quite significantly different or may be very significantly different from what we have been used to for the last 50 to 100 years. That really is because of the implications of climate change and other issues of that type. In the future it is almost certainly the case that communities are going to have to take more responsibility for both their energy supply and use, and community wind farms sit within this sphere of activity. I think it is important as a policy measure that governments do facilitate that type of activity because looking forward we will need a population that is confident in the new world, which does not necessarily flow from recent experience. We need to build that confidence, and one of the ways of doing it is facilitating community engagement in activities of that type.

In my individual work I have been involved in those types of explorations again since 1979 working with communities both in Australia and internationally looking not only at wind energy but other energy forms and looking at the appropriate opportunities for those communities. Having said all that, if the community remains connected to a major electricity grid, like we have in Australia, then the community remains, even if it has its own wind farm, part of the total system. It is not fully autonomous. Therefore, the way in which it operates needs to take account of the total system issues. It needs to become a compatible part of the total system. So we need to have the right interfaces between the large system and the smaller activities going on within that larger system context.

The Hon. ROBERT BROWN: In regard to the national market and the frailty, perhaps, of the market for new technologies, whatever they are, it was reported in the *Australian Financial Review* I think last Friday that the price of certificates was likely to be driven way down by the changes in government policy in regard to its support for domestic-style offset systems such as solar, photovoltaic and insulation. A great deal of the input to this Committee would tend to suggest that the power companies themselves are not the investors initially, the developers are. Do you believe that the Federal structuring of the subsidies broadly will virtually kill off the wind farm market?

Professor OUTHRED: What I say is this, governments everywhere are struggling with policy choices to facilitate the development of new technologies. Really governments need to use a suite of policies rather than look for a major single solution. The Renewable Energy Targets Scheme—and I might say again I have been involved in the design of such schemes both in Australia and internationally—and schemes of that type have a

particular role, a particular purpose in the broad set of policy options. What they do is bring forward technologies that are commercially viable but they do not choose then between the other characteristics that those technologies might have. It is basically a question of eligibility. In the way the Federal Government has developed its proposed expanded Renewable Energy Targets Scheme, it has taken certain policy choices which will bring forward the cheapest set of options amongst those eligible technologies to meet the target that it has set.

It appears that in the way that is set up, as you are suggesting, that solar water heaters and energy efficiency type measures, depending on the eligibilities and how those evolve, may take up a significant fraction of the target. Government then has a couple of options. One is, of course, simply to expand the target because it can say, "This is doing a good thing. Let's bring forward more of this." Another is it can say, "That was fine for bringing forward certain technologies that are currently the lowest commercial cost as perceived by the players but we want to do more than that because we perceive that there is a broader social transition going on here." In that case they would need to supplement the policies with what I would call innovation support policies—policies that help to bring forward other technologies that are not yet fully commercially viable.

It is these types of conversations that unfortunately governments have to have. The challenge for people like yourselves now is that in this complex, rapidly changing world you have to take on new and more complex responsibilities than governments have had to take on, say, in recent years in this area. Policy design itself is becoming more complex and it will need to be reviewed regularly. It will need to be finetuned in terms of what the underlying societal objectives are and how they change through time. You will not be able to have a situation where it is set and forget, where you can decide on a set of policies and then only come back and review that in say 10 years' time. It will have to be more hands on.

But in doing that, governments will have to be very conscious that the actual outcomes depend on the behaviours of the commercial players. We have to be able to give the right kind of incentives to commercial players who are doing the right things while distinguishing between them and commercial players that are perhaps not behaving in the way we would like. We can see this kind of problem at the moment with the residential insulation scheme where the policy that was put forward did not actually contain enough strength in certain aspects of governance to properly distinguish between bringing forward what we wanted and bringing forward what we did not want. There needed to be, for example, training and accreditation type processes and so on.

In terms of innovation just more generally, first of all we need to think of technology in three dimensions. When we think of technology we often just think of the hardware, like the pen. But the pen is no use unless I know how to write in a way that other people can read it. Then we need to have an institutional context in which people have been taught how to write and how to read. The funny thing is we really need to have that teaching first. In other words, we need people to be taught how to write and read before we give them a pen. In the same way, governments had to create what we call the orgware, the correct policy context before the hardware comes forward if we are going to avoid the sort of painful experiences that we are presently seeing with the residential insulation scheme.

The Renewable Energy Targets Scheme sits within that context. The problem I would see with it is that the orgware behind it probably has not been adequately developed to achieve the function that the government wants to achieve and we are now in a sense playing catch up with that and with a number of things like the review of energy market frameworks and the work you are undertaking in this inquiry. All of these are part of the orgware activities to try to ensure that we get the right outcomes.

The Hon. ROBERT BROWN: I want to ask a question on an engineering basis. In your opinion and from your long history of involvement with the design of these types of schemes, technically as we stand today where do you see wind power fitting within the scope of current technologies that are available? In other words, should we be setting a target of, say, 20 per cent of total usage of energy or wind farms and driving policy that way? Is wind technology, the way it is currently used, suitable to be expanded into the overall electricity generating system or is it still not quite able to be managed in the context of large baseload generators and peaking gas turbines and so on? Where does wind power fit, in your view?

Professor OUTHRED: In 2003 the Australian Greenhouse Office asked me that question. I wrote two reports for them, one looking at the Australian electricity industry as a whole, the other specifically at the situation in South Australia where it was anticipated that the most rapid wind energy development would take place. Those reports are publicly available and I can provide them to the Committee. They are still relevant in

terms of the general question that you ask. The general answer, and the advice that I gave, is that there were certain levels of wind energy penetration which, I suggested, could be readily accepted by the existing electricity industry with no great technical or commercial problems. Beyond that there were no actual hard limits to the level of penetration; in other words, we can increase the amount of wind energy in the system to a very high level, if we so wish. However, the incremental benefit declines; in other words, the incremental benefit of going to more and more of this particular type of resource declines over time.

What you really need to do is see wind energy as part of a broader mix of resources. They are both generation resources, they are network resources, but they are also what we call end-use resources; in other words, how flexible can people be with their end-use behaviours and so on. We need a set of resources. One of the interesting things about current policy settings is that we have, under the renewable energy target scheme, a policy to bring forward renewable energy technologies. But what we do not have are clear policy settings to bring forward what I would call the complementary resources that are going to become more and more desirable as the level of wind energy penetration, or any other resource for that matter, increases.

The Hon. ROBERT BROWN: For example, a broader transmission network?

Professor OUTHRED: Yes. In fact, some of those issues are covered in the Australian Ministerial Council [AMC] review that I talked about. We need to be designing the overall industry—what I would like to call the electricity industry—to give the best societal outcomes. In that overall electricity industry, we will have some wind energy, we will have a range of other resources, and it is the totality that we are interested in rather than just the wind per se.

The Hon. ROBERT BROWN: Could you make those reports available to the secretariat, upon request?

Professor OUTHRED: Yes, certainly.

The Hon. RICK COLLESS: In relation to where we are going with the mix, the Hon. Robert Brown specifically to current technologies. Where do you see the next generation will be looking at energy in terms of the other alternatives that are not yet feasible but certainly are in the pipeline?

Professor OUTHRED: That is one of the important challenges because we need to be forward-looking, but we have to be cautious about trying to predetermine the future. In other words, I would not want to be dogmatic at this point in time about what will be the best resource mix in 20 years time. We need to let the future evolve, but what we need to do is create a context in which the possible futures can be explored and, over time, we track whatever seems to be the best available set of resources. In my work I regularly come across what I would call proponents of different energy technologies. One day it might be the folk from the nuclear industry, on another day it is the folk from the coal or the carbon capture and storage groups, and on another day it is the wind energy proponents, the solar proponents, and so on.

We need such champions because it is only with such champions that the technologies are developed. But we have to be conscious that they will have their own particular view of the world, which may be a little bit out of balance with what a more general overall perspective would take. The problem is that from society's point of view as a whole, it does not have the detailed technical knowledge to perform such evaluations. This is why it is important to create a context in which those technologies can compete and we can identify through that process who can run the 100 metres fastest, or whatever. The challenge for governments should not be so much to determine the future as to create a context in which a number of plausible futures can be explored and society can discover what is, over time, the best evolution of the resource mix that satisfies its view of what society wants.

The Hon. RICK COLLESS: It is well known that Australia has considerable geothermal potential.

Professor OUTHRED: Indeed.

The Hon. RICK COLLESS: Although it is reasonably isolated in terms of its location. What potential does that have, particularly in relation to not only geothermal power stations creating electricity but also the conversion of that into hydrogen fuel? A few years ago I had a trip to Iceland and they are leading the world in hydrogen fuel production or with geothermal electricity. What potential is there for that down the track as an energy source of the future?

Professor OUTHRED: They are important questions. I might just say that as well as individual people or companies becoming proponents of certain technologies, countries can as well. As you say, Iceland has taken on for itself the role of championing hydrogen. Personally I would have preferred, or it would have been better, the Government of Iceland to have retained a more open view. Certainly it is an important question to explore, but let us not get ourselves in a situation where governments have become committed to this, that or the other technology. Let us let the proponents come forward and make their case.

Coming back to geothermal, this is a very important resource. It is not entirely clear yet how important this question of remoteness is. For example, there are proponents of the geothermal underlying the Victorian brown coalfields in the Latrobe Valley that believe that the resources underneath those Latrobe Valley coalfields may be important geothermal resources, the reason being not so much because of the rock resources themselves as because of the thermal blanket that the brown coal provides. The real issue about geothermal is retaining a temperature difference between your underground heat source and the surface. The blanket matters as well as the rock.

We are still finding out the right answers to questions like that and we need that exploration to continue. That is a good example where governments need to create a context where they have not said either that geothermal is the answer or it is not the answer; but, rather, they have said, "We will create a context in which such questions can be explored by people who wish to champion particular technologies." That is the way I think government should be thinking. They should be trying to create the policy setting in which these champions can come forward and show us what they can do.

The Hon. RICK COLLESS: From a philosophical perspective, or certainly a future thought process perspective, what discussions have you had in terms of looking at various energy transfer systems? Is it more efficient to transfer energy by transmission lines? Is it more efficient to transfer it by gas pipes, for example, and have gas generators embedded into the system at regular intervals? The obvious one that is being used at the moment is transferral by coal trucks, which as we know is quite inefficient. The third one is the concept of geothermal and production of hydrogen as a fuel and transferring that by gas pipelines rather than by transferring energy through transmission lines.

Professor OUTHRED: Again, that is another excellent question. As always with these excellent questions, there are no easy answers; otherwise we would know that already. What we can do is identify the strengths and weaknesses of each of these energy vectors. With electrical energy, the advantages turn out to be particularly in what we call the distribution network, in spreading the energy out around an urban area like the greater Sydney area and in terms of end use because we can plug virtually any kind of appliance into our power point and it will do the job for us, whether it is a bread maker or a TV set.

Gas into the house does not have that that same versatility at the point of end use, but it turns out that the actual cost of getting the gas distribution, particularly due to its undergrounding and its high material content, tends to be higher than in an electricity distribution network. When you have long distance transmission, the tables tend to be turned. In other words, if we have to transmit energy over long distances and it is presently available as natural gas or coal-seam methane—that is an important "and"—as long as it is available in that form, then it can often be cheaper to transmit that gas by pipeline closer to where the urban areas are and then use electricity generation technology, if you wish to create electrical energy at that point; or, alternatively, you may be creating a transfer of fuel, or whatever.

So gas networks are very important in the Australian context. It is most important that we evolve towards a highly efficient national gas network, and that is also part of this overall resource mix. In other words, it is having resources like a well functioning network and associated gas market that make it easier to accommodate non-storable renewable energy resources like wind. So you can see how this total resource mix needs to be taken into account.

Hydrogen has yet to find a role. That is because it is purely an energy factor. In other words, hydrogen does not exist in nature in significant amounts as does natural gas, petroleum-based or coal seam methane, and therefore if we use hydrogen we have two problems. One is we have got to create the hydrogen from some other energy form to start with and then at the point of end use you see it has the challenge that is similar to natural gas: we have to reconvert it back to something else.

So hydrogen tends to have the disadvantages of natural gas in terms of distribution and it does not have the advantages of natural gas in terms of naturally occurring primary energy resources. As a result it is yet to find a role in the overall energy industry. We should keep a watching brief on it, but we should not see it as playing a near-term role. All the time we have is challenged. We have to evolve from where we are now towards some future that we do not fully understand. So you can see we should be trying to keep our options open but we cannot wait for the miracle. We have to work with what we have while trying to avoid precluding a range of possible outcomes down the track. That is the overall challenge of managing the energy industry.

The Hon. LYNDA VOLTZ: Just following up on that: Basically in New South Wales the reason we have a lot of coal-based power stations is that is our largest resource available to us in New South Wales. That would be correct in terms of our electricity production?

Professor OUTHRED: Yes.

The Hon. LYNDA VOLTZ: Just on geothermal and the idea of hydrogen, we are looking at technology such as wind at the moment because we have limited geothermal supplies in New South Wales and also in terms of natural gas there are currently limits to what is available in New South Wales, is that right?

Professor OUTHRED: Let me answer that in two ways. First of all, my first job was working as an engineer for the Electricity Commission of New South Wales and in that job I was designing and commissioning coal-fired power stations.

The Hon. ROBERT BROWN: Fantastic job.

Professor OUTHRED: I thought so at the time. I enjoyed it. It is certainly the case that at that time this was certainly our belief, that coal was by far and away the best available resource. The only reason things have changed is because of these side effects of coal. Maybe it was a bit like when I was a teenager: like probably many teenagers at the time, I smoked a cigarette. Later of course I discovered that there were side effects that maybe meant this was not a good idea, and I never actually became a serious smoker. With coal our difficulties are not a shortage of coal, our difficulties are with the consequences of burning coal. When we look at it that way there are other resources that, it turns out, our coal seams have in New South Wales, and coal seam methane is an important resource. The funny thing is we have yet to fully explore the size of that resource or the extent to which we can utilise it. The irony is that in Queensland they have done that. New South Wales policy has not really taken up that challenge.

In 1985 and 1986 I was then on secondment to what was then the Energy Authority of New South Wales, for those of you who have older memories, and I worked on the so-called McDonald inquiry—an inquiry into generation planning in New South Wales—as an adviser at that time for the New South Wales Government. One of the issues that came up at the time was what is the role of gas in electricity generation in New South Wales and how can we better answer the question rather than starting with the assumption that coal was basically the only available resource. So this question has been around a long time. We still have not achieved a good answer to it and we should. New South Wales should get better answers to many of these questions.

As far as geothermal is concerned, one of the questions is: What do you want to do with that resource? Where we need the highest temperature is if we want to generate electricity from that resource. But if we are going to use it in different ways, like for industrial heat or for heating buildings in winter and so on, we do not need as high a temperature resource and it is certainly the case that there are geothermal resources in New South Wales. The question is: To what extent are they cost effective in certain applications? At the moment we do not have a good answer to that question either. So you can see that there is a range of energy policy questions in New South Wales that really deserve more attention. This inquiry is very important in what you are doing here, but I would suggest that it should be seen as only part of a broader review of these energy questions, because we do need now to review all of these issues because of the problems we now have with coal.

It is the case that in the future we may have coal seam methane as a way of continuing to use coal. But there has been a recently released international energy agency [IEA] review of coal seam methane, which is essentially confirming the widely held view that in practical terms that resource will not become available for at least 10, probably 20, years still and therefore it is too long to wait for commencing a climate change response. Unfortunately, we no longer have the time to wait. So we have to see that as a resource for the future and we need not to preclude it, we need to continue to develop it, but we cannot afford to wait to see whether or not it will play a significant role.

The Hon. LYNDA VOLTZ: There is a lot of debate around solar and my understanding is that it is actually the silicon that is holding back that industry at the moment, the silicon that is needed to create the solar panels, is that correct? It becomes a very expensive technology?

Professor OUTHRED: It is partly correct. First of all, with solar we need to distinguish between what we call solar photovoltaic, which is direct conversion of sunlight into electricity, and solar thermal. Solar thermal, which is concentrating sunlight to create a heat source, does not require silicon—only to a limited extent; it may be used as part of a mirror system. Where silicon is important is in one class of photovoltaics—silicon solar cells—but there are other technologies as well for solar cells that do not utilise silicon. Again, it is one of the possible technologies amongst a vast set. This comes back to the point that I was making earlier. The challenge for government is to create a context in which the champions for each of these technologies can strut their stuff and demonstrate what they can do, and in some cases it may be sooner or in some cases it may be later.

With the specific issue of silicon availability for what are called crystalline or semicrystalline solar cells based on silicon, you first of all have to create this crystalline form of silicon, and that requires an energy input. The constraint that we are seeing at the moment globally, or that has been seen recently—constraint has largely gone away over the last year or two, partly with the global financial crisis and associated recession—was not to do with the shortage of silicon but with a shortage of the installed factory capacity to create the crystalline or semicrystalline material. That particular flow constraint is largely eliminated at this time, but the question of where silicon solar cells sit amongst the full range of solar technologies is still an open question.

The Hon. LYNDA VOLTZ: For example, Worley Parsons have said that they can build 400-megawatt solar power stations—

Professor OUTHRED: That is solar thermal.

The Hon. LYNDA VOLTZ: —solar thermal for a billion dollars. Why do you think there is this current investment in wind power as opposed to those types of proposals coming forward from business?

Professor OUTHRED: The point about wind is that it is fully commercial. For example, suppose I am just an investment company wanting to invest in wind farm. I can hire advisers to help me do that and I can put out a request for proposals. I will get a number of proposals from commercial wind turbine manufacturers who can point to all of their previous project experience in the commercial fields and give me and my bankers, my financiers, confidence that this is a proven technology and the technological risks are known and understood and, moreover, those companies can carry those technical risks.

In other words, if there is a problem with a particular wind turbine they will fix it and they can be relied upon to do that. If I want to buy a large solar thermal power station at the present time, I do not have a choice of providers. Therefore, the technological risks cannot be fully managed in the commercial sense. When WorleyParsons says that it is willing to build such a thing, it is the engineering entity that would put together the building blocks and create the power station. However, it would buy the building blocks from suppliers. At the moment it is really offering its services to do that. But, to put the whole thing together now as a commercial package, some of the technical risks cannot be managed in a cost-effective way. Therefore, it is not what we call a commercially cost-effective technology. If you wanted to build such an installation at the moment it would need funds from a body that would accept some of the technical risks.

The Hon. RICK COLLESS: Should the Government contribute to that process to encourage that sort of development?

Professor OUTHRED: Yes. It needs to be part of this total strategy to allow technologies to show what they can do. We need to develop these pre-commercial technologies through governments accepting some of the social risks to bring them to the point where this potential investor can do the whole thing in a commercial way and we know whether that is cost effective. We have not reached that point.

The problem for Australia is that these days unfortunately we are always an importer of these technological components. The car industry is a good example. We can assemble cars in Australia, but they will all have at least some components brought in from overseas. For an emerging technology like solar thermal we are reliant on technology development in other countries. Therefore, our governments cannot actually fully buy

down this technical risk on their own. It is a question of timing. We cannot do that with nuclear technology either. We rely on governments in countries that are hosting nuclear-related industries; for example, Asia, Europe and North America. Those governments are willing to take on those risks because companies based in those countries are developing the technologies. They are investing in the future export potential.

The challenge for technology development in Australia is different. We do not have an opportunity to be too far ahead of the game, particularly with large technologies. Small-scale technologies work better for the Australian situation because these individual component risks are not as great. For example, we find it easier to innovate in wind energy because it is a smaller module scale than nuclear power stations. It is a characteristic of the technology. All of those factors come into play.

The Hon. LYNDIA VOLTZ: Dr Diesendorf raised the issue of the availability of uranium as a resource for nuclear power in the Australian market and long-term availability. Would you concur that there is a limited resource that we know at the moment and that that will impose constraints on a nuclear power industry in the future?

Professor OUTHRED: First, Australia has something like 25 per cent the world's known low-cost uranium resource. Australia is clearly a player in that regard. The question of what we do about those resources is obviously social and political, but the resources are there. All materials are finite; it does not matter whether we are talking about iron ore, uranium or coal. If we go on using it, sooner or later we will run out. Resources are developed by players who are looking to make money out of them. So, what are called established or known reserves are established only after people have invested money in defining them and determined the cost of extracting them. There will certainly be a limit with uranium.

How close we are to that limit is a matter of debate—there is no global consensus about that. It is similar to the peak oil problem. Again, there is no global consensus about that. However, the debate on peak oil suggests that within the next 10 years we will see a problem with flow constraints. Sooner or later the same will happen with uranium. However, that is probably at least 30 to 50 years away. What will influence that is future activity in better characterising the resources and the global development of the nuclear power industry. In other words, what we do in Australia in terms of nuclear power stations does not matter very much. Even if we built nuclear power stations, it would be only a very small fraction of the global set. It is the global set that will determine this question of resource depletion over time rather than Australian activity.

The Hon. LYNDIA VOLTZ: So, if the nuclear power plants being built now do turn out to be feasible in Australia, would the uranium resources be available?

Professor OUTHRED: I cannot answer that. These are questions for the future. Again, I come back to my first general point that the task of governments is to allow that discovery process to take place over time. There is no point in many ways our deciding now whether nuclear is or is not the correct option for Australia. All we can say is that it will almost certainly not be an available option in the next 10 years for political reasons, if for no other reason, and also for technological reasons. Even if we were going to build nuclear power stations, we would be better off to wait for the new technology of power stations to become commercially proven rather than build using old technology. From those points of view, it is not an option now. Whether it is in 10 years is for other people to determine in the future, not me.

CHAIR: You briefly mentioned solar photovoltaic technology and certain downsides, but they appear to have been overcome with silicon supply and so on. Are there any foreseeable problems with the solar thermal medium and with the deep extraction potential of geothermal radioactive material? Can you throw some light on those issues?

Professor OUTHRED: As I said, each of these resources and technologies has strengths and weaknesses. In the case of solar and wind we have very low-energy densities. In other words, we have energy fluxes available at the surface that we can utilise. However, they are not very powerful, which is just as well otherwise we would get overheated. As a result, collecting these low-density resources is material intensive. In the case of wind turbines and solar thermal, we need to use, for example, a lot of steel because we have to collect this low-energy flux and turn it into high-energy density. That is what we are doing with the collection technologies. There will always be material questions for those technologies. Because the extraction of iron ore and so on depends on oil, if the price of oil goes up so does the cost of steel. There are correlations there.

Geothermal is a different type of question. As you pointed out, we have geothermal energy, particularly in the Australian context, because of the existence of so-called hot rocks, which are radioactive. If we pass a liquid through them to collect the heat, that liquid may pick up some radioactive material. People are trying to manage that by using closed cycles; in other words, what is brought up goes straight down again and we have a controlled loop and secondary working fluid that does the electricity generation. There is a transfer of heat through a heat exchange. There are ways that these effects can be minimised and with good design it should be possible to avoid the bad consequences associated with that kind of radioactivity. However, this will be fully proven only when all of the work is done. At the moment it looks to me as though that is a manageable problem.

CHAIR: Thank you very much. We may have some further questions on notice for you. The Committee will forward them to you. The secretariat will also organise to get documents from you. Your contribution has been very helpful and we appreciate your attendance.

(The witness withdrew.)

(Short adjournment)

MICHAEL DEAN VAWSER, Director, Wind Prospect CWP Pty Ltd, 11 Hakea Walk Aldinga, South Australia, affirmed and examined:

CHAIR: In what capacity are you appearing today?

Mr VAWSER: I am the managing director of Wind Prospect in Australia, and I am a director of Wind Prospect CWP, which is the New South Wales base of the company.

CHAIR: If you would like to make a short statement prior to the Committee asking you questions, please feel free to go ahead right now.

Mr VAWSER: I did want to explain briefly who Wind Prospect are and a bit of a history of my company. We are a global organisation with roughly 200 engineers, scientists, ecologists, lawyers and accountants across the United Kingdom, Europe, North America, Australia and China. We have been in the business of wind farm development about 15 years and we are 100 per cent owned by our staff and our directors. So, there is no external investment coming into our company. We are certified ISO 14001 and 9001, so we run our company according to solid management practices, and obviously we comply with industry's best practice guidelines.

One last point, we have developed roughly one-third of the wind farms that have been built or are being built in Australia at this stage. One of our company goals is to keep that ratio. I do have particular points to address each of the terms of reference so I could go through those briefly, if you would like?

CHAIR: In addition to written submissions?

Mr VAWSER: It is in addition to written submissions, yes.

CHAIR: If you would like to do it briefly, quicker, then there will be more time for questions and discussion.

Mr VAWSER: Very quickly on the first terms of reference with regard to greenhouse gas emissions, I refer to a report in South Australia by ElectraNet, one of its annual reports, which shows that given that wind power now provides about 17 per cent of the State electricity demand, that the emission levels of the electricity industry now in South Australia is back down to 1990 levels. They attribute that almost entirely to wind farms being built in South Australia. It has gone down. It has dropped roughly by about 20 per cent since its peak in 2004-05. That was my first point.

Secondly, just to give you a bit of context about wind farm development from a development point of view, obviously these developments do not come cheap in the process of developing, let alone building the project. They are quite expensive to develop to the point of building as well. So, as a developer we take a six-stage approach to taking projects through, and each of those stages costs little bit more than the last one. Effectively, at each stage we analyse the value of the site, as in the merits of the site, and decide whether we go to the next one or whether we stop the project entirely. The reason I am mentioning this is there are certain things we need to do before we consult with the community, the local community, in a widespread fashion. Effectively, we need to know the site is going to be windy. There is no point putting it into the community's face that a wind farm is going to be built if we do not even know it is windy enough to be built. So, the first thing we need to do is find sites that are windy, that are not close to large-scale residential areas and are near a transmission line. They are the three main criteria. Obviously, environmental factors are part of that as well.

There has been criticism in the past that communities are not consulted early enough. My point would be that without even knowing the resources are there, there is no point alerting the community or even involving the community at that stage, given that it could be somewhere that we just move on. When we get into stage two and sometimes stage three we go to a wider consultation. We ask all the government agencies and all the relevant bodies, clubs et cetera, whether they have an interest in the site, whether it affects them in any way, and then we have public meetings. We doorknock. Generally between three and five kilometres around a site we will knock on every door and if we do not talk to the people in those houses we will leave information about the wind farm proposal.

So, at that point we know we want to go ahead with the project and that is when we carry out widespread community consultation so that all the issues that could possibly be raised at any time will be raised so we are not struck by a fatal flaw to the project right at the end of the process. Then, stages four, five and six involve creating environmental impact statements for the transmission line and the wind farm and getting planning approvals and then preconstruction efforts such as selling the power, writing contracts to sell the power, signing leases with landowners and getting grid connection approval. That is just a run through of the process that we go through.

I also wanted to discuss local ownership. You have asked a lot of questions about community ownership of projects. Our company in the United Kingdom set up a model in the Fenlands of the United Kingdom where we as a developer developed a project, had an investor build that project and then sell down turbines to the community over time. By now there are nine turbines on that project, and two are owned by the community. The intent is to sell more of those turbines over time as the community can raise the funds. The key point is that I believe that community ownership is extremely important, but at the same time it was the developer and the utility that actually facilitated that process by developing and building a project to begin with. Another point I want to make is about the role of the energy generated to meet the Government's renewable energy target. The industry believes that there will be approximately 8,000 to 10,000 megawatts of wind in Australia, that is certainly what is in my business plan, due to the renewable energy target. Roughly, that correlates to 4,000 or 5,000 wind turbines.

As stated previously, South Australia, Victoria, Tasmania and Western Australia have very high wind resources and will take a lot of that capacity. New South Wales, it is believed, will get about 2,000 to 3,000 megawatts, or 1,000 to 1,500 turbines, right across the State. The point I am making is: to put in 2,000 megawatts of turbines would require something like 20 of the capital wind farms that we see near Canberra. It is not as if there are hundreds of proposed wind farms to be built around the State, we need only 20 of the capital wind farm-sized projects to meet what I believe will be the requirements for the renewable energy target going to 2020.

Referring to the sixth term of reference, any other issues, when we talk to landowners about signing leases with them we offer them funding to go to lawyers to make sure that the documents they are signing are to their benefit. I refer to comments in a previous hearing when someone said that the landowner agreements are dangerous. I fail to see what he meant there. From our point of view, we make sure that the landowners have all the protection that they need and that is fair and reasonable in a two-way agreement of this style. Finally, I refer to the confidentiality agreement. Part of those leases are very obvious, really. We have a lot of intellectual property effectively built up over time on a particular site and with particular documents. It is not commercially viable for us as a company to build up intellectual property and have it dispersed randomly around the wider community. They are the points I wanted to raise.

CHAIR: In your interface with the community some concerns have been raised. You mentioned that you have substantial interaction with the community through doorknocking and communicating. The Committee has had other input into this inquiry from people who are not in the one-to-one relationship with you as the proponent and landowners who are going to have wind farms on their property. They say they have not been consulted although they are affected. Regarding the Golspie area that your organisation is considering building on, they are virtually surrounded on three sides and have not been consulted and have not been listened to. Would you care to comment on that, because there is a concern, not taking away from the validity of the project and the big picture issues, but in property consultation and bringing in those people?

Mr VAWSER: Sure. Going back to my discussion about the stages of development for Golspie, we are in stage one. We are trying to figure out if it is windy enough. If there is no wind there we will not bother going ahead, and will not bother spending the next amount of resource in order to get to stage two or stage three. That is my first point; we are not there yet.

CHAIR: You are saying that you have not gone through the broader community consultation because you are not even sure that you are going ahead with it?

Mr VAWSER: Exactly.

CHAIR: Or that no-one is missing out on being properly conferred with at this time?

Mr VAWSER: That is absolutely right. If the wind resource stacks up, we will do all of that consultation mid-next year, roughly. We need 12 months of wind data to know that that it is windy enough, that is the first step. From that point on we can introduce more consultation into the community. We do not make any decisions about what our planning application will say until we are certain that we have had as much community input as we can.

CHAIR: At this time you do not feel there is a responsibility to communicate with the broader community, even though you are seriously looking at it? Would that not be one of the first things to undertake, essentially a fairly inexpensive operation in your scale of development?

Mr VAWSER: When we select a site we carry out certain constraints mapping anyway. The sites that we select are already what we term as the best sites in the sense that there are not hundreds of houses nearby, there are not serious ecology issues or transmission issues, et cetera. The first thing we do is filter out sites in order to get the ones that seem more appropriate. In fact, we talk to local councils and others to get a sense on how important a particular area is in terms of landscape, and that sort of thing. In that sense we carry out that sort of thing.

Secondly and more importantly is the issue of expectations. We do not want to create expectations, either negative or positive, in a community when the project is nowhere near certain of going ahead. It is a very emotive issue. People get very emotional about it, very distressed, they have done that in the past even if it was only one or two people for a whole site. It is still an unnecessary setting of expectations when the project still has so many variables left.

CHAIR: On the other hand, communities feel that they are being put upon and hear about it only when it is absolutely a go-ahead. How do you resolve that?

Mr VAWSER: Communities are consulted when the wind speed is adequate. It is not about whether the project is a definite or not. We definitely want to go ahead with it, but that does not mean it is a definite, obviously. There are various things that can stop a project going ahead. Community concerns are one of those things that may stop the project going ahead.

CHAIR: Referring to Golspie, in Goulburn we understand that you are testing wind resources. A witness at the public hearing stated that a community group approach is unique to Golspie. Could you explain that?

Mr VAWSER: To be honest, I do not know exactly what that person was referring to. I cannot answer that.

CHAIR: Is there anything in the community approach where your company, at that point at Golspie, used a different model than in approaches to previous wind farm developments? Any difference in the way you have approached it?

Mr VAWSER: No. We generally always do it this way.

CHAIR: So there is no breaking from your general process?

Mr VAWSER: No, but it may be that that particular person has had extensive discussions with us, of course, and I have described what we will do. On that basis he would have had the impression that it is a very community-based development process.

CHAIR: To what extent were the communities surrounding the proposed Boco Rock and the Sapphire wind farms consulted during the initial investigation into these developments and how does Wind Prospects address concerns raised at the development and operation stage of a wind farm? Could you answer that in terms of those particular development areas?

Mr VAWSER: Boco Rock is far more advanced than Sapphire so I would prefer just to answer with the Boco project because we have been through the community process on that, or at least partway through. Again, we door-knock around that site. We have actually had extensive discussions with people that are not very excited about that project—

CHAIR: Interesting.

Mr VAWSER: —and we have compromised the layout dramatically in order to cater for people's concerns. Our view is that one less objector effectively at the planning commission stage is a win for us, effectively. So we try to cater for people's concerns. If they say, "Look, I've got an airstrip, for instance, and I want wind turbines to be a certain distance away on either side of the airstrip", then we will look at that and we will redesign our site, and we have done.

CHAIR: In terms of the latest models of turbines, et cetera—and we know the noise levels are being markedly reduced—would you, as a developer of these products acknowledge an acceptable buffer zone or distance from neighbouring farmers and landowners who are not actually gaining benefit directly from the development? Also, have you looked at any sort of mechanism that might effectively compensate those people—these are affected landowners who are not actually in your commercial relationship; they are not getting benefit—that might make the sound of the generator in the background a little more sweet for them to have to live the rest of their time with?

Mr VAWSER: Sure. On the first question regarding noise, it is improving all the time, so setting a straight buffer effectively is de-incentivising the turbine manufacturers, for instance.

CHAIR: Would a minimum distance be a reasonable thing?

Mr VAWSER: It depends what the minimum is?

CHAIR: I am asking you.

Mr VAWSER: Yes, well, certainly we have our own company ideal as to what the minimum is for neighbouring landowners.

CHAIR: Which is?

Mr VAWSER: It is 750 metres, but effectively until you get the expert noise acoustic engineers to go out there and assess the noise, and model what the wind turbine is going to do on that site or a range of wind turbines, in fact, because each wind turbine has its different noise characteristics. You have some that are very, very quiet and you have some that are not as quiet, so you have got to have the flexibility in the system where if you end up using the turbine that is not as quiet, then the separation between houses needs to be higher and the only thing that can tell you that would be your acoustic studies that need to be carried out. You asked another question about operations concerns.

CHAIR: I actually asked in terms of affected neighbours. Have you, as a developer, looked at compensation, given that you are going to the community, then to the State Government and getting your development through most likely under part 3A, therefore the relationship is perceived to be at quite a high level, and there are people who are affected and are really getting nothing out of it? We have had examples of people who are surrounded on three and even four sides by turbines and their neighbours—and one in particular—are getting up to \$850,000 per annum.

The Hon. RICK COLLESS: They are getting \$10,000 a turbine.

CHAIR: Yes, and the neighbours are gaining nothing but suffering far greater consequences, real or perceived?

Mr VAWSER: Sure.

CHAIR: But nevertheless suffering.

Mr VAWSER: The way we have addressed that—and we have done that for the past 15 years—is we have always had a trust fund set up around the community. For instance, in New South Wales we are offering \$500 per turbine per year that goes into a pot and that pot is governed by local people, local councils, et cetera, in terms of a committee, and that pot can be accessed by local community groups or whatever. The closer the community group or an individual is to the wind farm, the more likely they will be, as long as their own project has merit, to receive a grant under that scheme.

CHAIR: With respect, \$500 a turbine is pretty minuscule, would you not agree? How did you arrive at that amount, compared to the amount that is actually given to the owners of farms?

The Hon. ROBERT BROWN: It is 5 per cent.

CHAIR: We are talking in one case \$10,000 per turbine and you are talking \$500 for community support. I am trying to get a balance, understanding community concern but also understanding the value of all aspects of this type of development; \$500 per turbine is pretty minimalist in terms of placating people in the community who are not directly benefiting from the project, would you not agree?

The Hon. LYNDA VOLTZ: I do not think you can ask him that question.

The Hon. RICK COLLESS: It is a very good question.

Mr VAWSER: It depends on your frame of reference. At the end of the day, it is a negotiation with the community in terms of what that level is. My point would be that for some rural communities, for instance, some council areas, in South Australian in particular, have very small budgets and they cannot do everything that they want to do for their community, so when you bring up those sort of quantities of dollars per year every year for 25 or more years, you suddenly see that there is a long-term ability to fund projects that would otherwise not get funded, so the council is then able to deal with fundamental issues, roading and that sort of thing, and then the community can get their swimming pool fixed; they can get their community hall and those sort of things become possible with this sort of grant funding. The grants are not designed to compensate individuals financially for their own gain. They are designed to benefit communities around the wind farm.

CHAIR: I appreciate that, but do you see any worth in actually having grants that would compensate individuals who are affected—I am not talking about the community but affected neighbours. Have you considered that?

Mr VAWSER: We have considered it and we have not arrived at a conclusion about that.

The Hon. RICK COLLESS: What is your policy on proximity to built-up areas? You said a few minutes ago that you do not locate these things where there are hundreds of houses nearby or to large residential areas. Can you give us a figure on how far, how close, or the population threshold?

Mr VAWSER: Obviously at the beginning stages we use a rule of thumb and obviously there is a plus and minus there in terms of what that distance might be, but for smaller communities we are looking at roughly about five kilometres.

The Hon. RICK COLLESS: Smaller communities being how many people?

Mr VAWSER: I am talking of a town with 20, 30 or 40 houses, that sort of smaller community. If you have a town of maybe 1,000 houses or more, then you start to look at maybe going further away from those sort of towns; so anything up to 10 kilometres you would say, "Right. Well, let's just stay out of that area and go to where there is a lower population density."

The Hon. RICK COLLESS: So in the case of the Sapphire wind farm, have you contacted the neighbours within, I think you mentioned five kilometres?

Mr VAWSER: I could not answer that because I do not actually know.

CHAIR: Perhaps you could take that on notice and get back to the Committee.

The Hon. RICK COLLESS: It is a pretty important question.

Mr VAWSER: Sorry, I am not actually the developer of that project. I run the company and we have a lot of people running around doing these things, so I am not up to speed on that one.

CHAIR: So will you take that on notice?

Mr VAWSER: Yes.

The Hon. RICK COLLESS: That is fine. Again, in relation to that particular development, there is a community, which is currently growing—and it has approval to a maximum of 400 people—and it is about four kilometres from the nearest turbine. I was talking to these people the other day and they certainly had not been contacted by anybody from Wind Prospects yet it is a community of some 400 people living there.

Mr VAWSER: There is or there will be?

The Hon. RICK COLLESS: There is currently a community of about 250 people there and it has an approved maximum of 400 people. It is a church community; it is called Church Communities Australia and they live on a property called Danthonia, the homestead of which, according to the map I have in front of me, is about 4 kilometres from the nearest turbine.

CHAIR: Before you answer that, Mr Vawser, you will get the questions on notice from the staff and we will provide you with a transcript so you can relax about taking notes and trying to keep up and, if you can, just answer freely.

Mr VAWSER: Four kilometres would lie in our buffer range of 5 kilometres-ish, when I talk about rule of thumb, so there is no contravention of my rule of thumb there. If they have not been contacted it is because we are not yet at that stage where we are contacting local communities 3 to 5 kilometres away from the turbines.

The Hon. RICK COLLESS: But when a preliminary environmental assessment [PEA] is available on the Department of Planning website—it is freely available; anybody can pull this off the Internet and have a look at it—and people have not been consulted although this material is available, that is part of the reason, as the Chairman referred to earlier, that people in these communities are really concerned about this. It seems to be happening around them in spite of any opposition they may have to it.

Mr VAWSER: I understand what you are saying. The document you are talking about is a preliminary environmental assessment, which is necessary in order to get any feedback at all from the Department of Planning. How do we get any reference point as to whether a project is a goer or not if we do not have some sort of feedback from the Department of Planning? That is the only way we can get that. Sure, it seems a bit pre-emptive. In South Australia, for instance, we do not do that because there is no such thing as a PEA. We would apply to council once everything was sorted out. Because New South Wales' planning system requires a PEA this is what we need to do, but I still maintain that we are not yet certain that the Sapphire wind farm is going ahead. We do not have 12 months of wind data. We are just not there yet.

The Hon. RICK COLLESS: Both Inverell council and Glen Innes council have development control plans surrounding wind farms. When you are preparing these concept plans, if I can use that term, if this is a concept plan only, do you take into consideration the local council's development control plans?

Mr VAWSER: My understanding is that we do.

The Hon. RICK COLLESS: Then why does the PEA not comply with the development control plan [DCP]?

Mr VAWSER: In what way?

The Hon. RICK COLLESS: In terms of setback areas and a whole suite of things. The development control plan does not comply with the preliminary environmental assessment.

Mr VAWSER: I will have to take that on notice.

The Hon. RICK COLLESS: Every wind farm approval that we have looked at where there has been a DCP in place, none of them comply. That includes ones that have been approved by the Department of Planning. They do not comply. Do you think that is a reasonable way to do business—

The Hon. LYNDIA VOLTZ: Did you say they have been approved by the Department of Planning?

The Hon. RICK COLLESS: Yes, under part 3A. Crookwell 2 has.

The Hon. LYNDA VOLTZ: No, you were saying that the DCP was approved—

CHAIR: Not in this particular case.

The Hon. LYNDA VOLTZ: —by the Department of Planning. That is incorrect, isn't it?

The Hon. RICK COLLESS: No, the Crookwell 2 wind farm has been approved by the Department of Planning and it is outside the Upper Lachlan Shire Council's DCP.

The Hon. LYNDA VOLTZ: I want to clarify that you are not saying that the DCP has been approved by the Department of Planning.

The Hon. RICK COLLESS: No. The DCP is prepared by the council.

The Hon. LYNDA VOLTZ: I know that. The way the question was put implied that the DCP had been approved by the Department of Planning. I am just clarifying that that is not what you are saying.

CHAIR: I did not take it that way. Mr Vawser, you can either answer that as best you can or take it on notice.

Mr VAWSER: I will take that on notice.

The Hon. RICK COLLESS: In relation to the \$500 per turbine per year that is going to communities, when you sell the Sapphire wind farm on to AGL or EIT whoever you sell it to down the track before it is constructed, is the \$500 per turbine guaranteed at the point of sale?

Mr VAWSER: There are two parts to the answer. The first part is that Wind Prospect CWP is the developer in New South Wales. Wind Prospect CWP's shareholders certainly intend to invest, build and own the projects, as opposed to Wind Prospect in South Australia where we were the developer and we have a business model under which we are owned by directors and staff. We do not have hundreds of millions of dollars to access so we get investors such as AGL in. That is our business model in South Australia, but the business model in New South Wales is different. It is a longer term investment model. The intent is not to sell it before it is built.

Secondly, when it reaches planning approval, we fully expect there will conditions attached to the approval that will mandate a community fund and we would have no surprises if that mentioned the figure, and we need to comply with that.

The Hon. LYNDA VOLTZ: In relation to the issue of bonds and a percentage going to councils, do you see that if councils were getting a monetary gain from these wind farms it might set up a conflict between some local residents and the council in that the council can see the benefits that are delivered to the community through the money that comes into the community but some local residents are opposed to wind farms altogether.

Mr VAWSER: Are you referring to the community trust fund?

The Hon. LYNDA VOLTZ: That is right.

Mr VAWSER: Sorry, I thought you said long-term.

The Hon. LYNDA VOLTZ: The 5 per cent, yes.

Mr VAWSER: The money does not go to council. It goes to a committee run by locals, so it is totally up to the local committee. That may be the post office manager or anyone else and they determine what their priorities are. Councils are let off in the sense that they do not have to fund things or they do not have the pressure to fund as many things as they are being requested to fund. It is the local people who decide. My view is that if there are people who are opposed to the wind farm and it still goes ahead they can get involved in the community trust fund and at least they will get projects that they are passionate about up and running. Avoiding

the issue is not going to help them at all. If it goes ahead there will be money available to be used for public good.

The Hon. LYNDIA VOLTZ: In terms of notifying people in surrounding areas, Inverell council's DCP referred to notification by the council itself of residents within 5 kilometres of any wind farm if there is an application before the Department of Planning or local government. Do you see it as appropriate to set up a protocol under which there is a requirement on councils to ensure that local residents are notified of any wind farm planning within a 5-kilometre radius to ensure it is done as part of normal planning processes? There has been a lot of concern about notification and who is notified. Given that local councils have a role in negotiations with wind farm proponents, should they ensure that residents are notified?

Mr VAWSER: I do not have any objections to that at all. The key issue is to have that compulsory notification at the right stage. As I have described, there is no point in setting up expectations, either good or bad, at the beginning of a project, when it may not go ahead. If there is an agreed point at which a project is sufficiently advanced to make it a serious prospect, that sort of requirement is fine by us.

CHAIR: Mr Vawser, you state in your submission that the predefined limits between homes and wind turbines would "severely impede wind farm development in New South Wales". You also state in your submission:

Experience has shown that turbines can be placed well within two kilometres of a residence and have no adverse impact.

There has been a lot of evidence to the contrary from people who believe, or who categorically claim, that their homes will be impacted. Do you have any examples of residents who live within two kilometres of the turbines, who do not lease out their land to wind farm developments, and who state that there is no adverse impact? Could you give us examples of that now, or could you take that question on notice and give us examples later? In the absence of any specific setback limits do have any other comments? What should be done to ensure that there is no adverse impact on surrounding residents?

Mr VAWSER: I will take on notice the first part of your question. As our submission states, a flat limit of two kilometres or more will severely restrict developments. One of the key issues—and New South Wales is particularly affected by this—is that the economies of scale kick in. If you are developing a wind farm that suddenly is three-quarters, two-thirds or half the size of the original proposal, the whole project might end up becoming uneconomical because of imposed limits on distance. From my point of view, as a commercial developer, it might mean the end of the project. As a concept, that is not something to which I am attracted.

CHAIR: When you referred earlier to a flat two kilometres, were you talking about a two-kilometre obligatory standard, or were you talking only about a flat two kilometres?

Mr VAWSER: I was talking about the two-kilometre standard that has been mentioned previously in documents.

CHAIR: I appreciate that there is a commercial imperative. Is there any way in which we can deal with those real or perceived impacts? Again, I am not referring to those who are not commercially involved with you; I am referring to the impact of wind farms on neighbours. Do you have any suggestions that might assist the Committee in its deliberations? Is there any way to facilitate your projects and to minimise community angst and disruption?

Mr VAWSER: Sure. One of the best things we could do would be to take to a wind farm neighbouring people who would be concerned about those sorts of issues. We could then drive 500 metres or 750 metres from the nearest turbine and obtain their impressions of the noise levels. We have done that many times in the past. The feedback we have received from them is, "Wow, they are a lot quieter than I thought ". Generally that is the feedback that we receive. In a sense, the only way to comfort people would be to take them to a real example.

CHAIR: Have you experienced latest generation wind farms in your developments? In the short term is there much difference in noise output, or are you dealing only with the latest models? Do you have any experience with different generation wind farms?

Mr VAWSER: The newer the model, the better the sound quality. Twenty to 25 years ago there was a lot of gearbox noise in wind turbines and a bit of a whine was happening. When you read articles that still refer

to turbines that whine because of their gearboxes, you will find that it is old technology. Generally, that does not happen any more. In fact, because of the way in which the noise guidelines are set up, if there is some sort of tonal element to the noise generated by a wind turbine there are penalties relating to the level of decibels to which that turbine has to comply in order to compensate for that tonality. Technology is getting better. However, it is a rod for our backs because years ago the turbines were not as friendly as they are now.

The Hon. RICK COLLESS: In relation to the noise, are the two-megawatt turbines quieter than the 3.3-megawatt turbines?

Mr VAWSER: The 3.3-megawatt machines have not yet had their warranted noise curbs put out, so I could not comment. That particular turbine has not been fully researched and nothing has been published in relation to it.

CHAIR: Thank you, Mr Vawser, for appearing before the Committee and for giving evidence. You will receive further questions on notice. Thank you for your written and verbal submissions.

(The witness withdrew)

BERNARDUS HENDRICUS VAN DER WIJNGAART, Deputy Mayor, Kiama Council, 39 Tingira Crescent, Kiama, New South Wales, sworn and examined:

CHAIR: Mr Van Der Wijngaart, in what capacity are you appearing before the Committee today?

Mr VAN DER WIJNGAART: I appear in a private capacity, but I will draw on my experience as Deputy Mayor, Kiama Council.

CHAIR: Would you like to make a short opening statement?

Mr VAN DER WIJNGAART: A very brief one, Mr Chairman. I presume that most Committee members have my background curriculum vitae. I spent a long time in the Air Force working on large projects. In addition, my post-graduate studies involved change management, or leadership of change. I also spent eight years as a management consultant on large capital projects and in change management. More recently I have been involved in putting together a concept study on behalf of the Southern Councils Group for the consideration of a community-based wind power scheme for the South Coast and the Wingecarribee area of New South Wales.

The submission that I made is based largely on information that I drew from that as well as other information I have drawn from my experience in lobbying in my community for wind power over the past three years. I believe that wind power is the best option in renewable energy and that there is an urgency to pursue it. In the points that I made in my submission I also said that it is important for us to work on a community model as part of the overall mix. I emphasised the need for an important gross feed-in tariff, as part of the European model showed, as well as a serious Carbon Pollution Reduction Scheme [CPRS]. I overheard some of the evidence just being given on community consultation and I think community engagement, which goes a step beyond that, is a very important issue that needs to be addressed better than it has in many cases in the past.

In conclusion, I would like to emphasise three points. Large-scale renewable energy, particularly wind power in the urgency of climate change that now faces us, presents an ability to deploy renewable energy immediately at a very good cost, a very high efficiency and with a low carbon footprint. Community engagement in that process on many sites, particularly in those I visited in Victoria, showed that it can be done well, extremely well and very poorly. Cooperative involvement is an important part of that and would overcome a lot of the NIMBY problems that wind projects and others have encountered in the past. I urge the Committee to seriously consider the differences between cooperative models such as those in Denmark and Germany, which have been highly successful for the last 30 years.

CHAIR: Your submission to the Committee notes that there is a lack of legislation in Australia to encourage community ownership of wind farms through cooperatives. Could you suggest some changes to the legislation that may assist your vision of this type of development, and what impact do think such legislation would have on facilitating and maintaining those cooperatives? Before answering those questions, when you refer to community development are you focusing on a particular size of project? We have the massive commercial projects and what we might perceive as a community-type project being of a smaller scale. Perhaps you could explain your ideas as to what is possible at that level to the Committee?

Mr VAN DER WIJNGAART: Drawing on the European model, particularly the German and Danish models, a typical cooperative wind farm, the fullest version of a community wind farm, is much smaller than a commercial-based one. You are talking in the vicinity of 6 to 10 turbines or even three turbines in an installation, but they can be larger than that. There are farms in Germany owned by farmers who run turbines the way they run cattle, at the same time, with 30, 40 or 50 turbines on their land, but generally they are smaller than the sorts of models that we are now seeing.

In answer to your first question, Mr Chair, as to the sorts of models in relation to legislation for cooperatives, there are some very good models of encouraging cooperative development in Denmark and Germany, and recently in Scotland, as well as Canada—they would be the better sources. They provide a standard framework within which such enterprises can flourish. They also set community standards and expectations in relation to these, which we do not have in Australia. When I talked about cooperative wind farms in my community they needed to have it fully explained to them—they had no concept of what it was all about. There are no real constraints on what they are. I think some legislation to define the constraints and to

enable these to happen against the larger commercial developments would be extremely advantageous to get these things off the ground.

CHAIR: You used the word "NIMBY", which is fair enough. In your role as an elected representative, rather than a direct commercial project proponent, how do you find the reaction to these types of developments? Are you striking a great deal of concern with people who feel they might be directly affected by that type of project? What do you see to be the best sort of process to not necessarily to get around that but to properly educate the public?

MR VAN DER WIJNGAART: Probably an anecdotal piece would be more instructive. When I first started to talk about community-based and cooperative wind power I addressed a community precinct group, of strong attendance, in Gerringong on the South Coast. The majority sat there at the beginning of my presentation very much as NIMBY's with their arms folded, giving a lot of not necessarily positive body language. They expected to see the sort of large developments that they had seen in the past in their area and they were concerned about their community amenity, and all those things you have undoubtedly heard about. Within 10 minutes of me starting to explain the nature of wind farm cooperatives and community-based wind farms—I am using the Danish term, which I like—I managed to change that NIMBY perception to one of POOL, which stands for 'please on our land', which I rather like. There were a number of farmers there and also a number of residents who said, "How soon can you start this? Can we be part of it?"

I think the nature of the beast is such that it is not so much often for the reasons that people say that they object to wind farms, be they visual, noise, environmental and a whole range of other things, or financial, there is sufficient evidence around the world to indicate that it is more people's reaction; it is the psychology of change and it is people's reaction to not being in control of that change, not being in control of something big that is happening in their community. Once we give them that sense that they are going to be in control, they are going to have the benefits, they will determine how close or how far these pieces of engineering occur, that is a key thing in terms of the minds of many people. That is why I have emphasised the cooperative model so much. It is nothing new; the success is on the ground. They have been doing them for 30 years in Denmark and Germany. We really have not embraced that model, with the possible small exception of Hepburn Wind in Victoria. But I see that as a major issue.

Mr Vawser, the previous speaker, touched on the other issue of getting up close. Human beings are tactile beings; they like to be able to touch, to see and to be close-up. Some of the more successful community engagement efforts, and this is only part of the total effort, was where contractors have provided buses to wind farms and had people up close, where they have trucked in blades to community fetes and let kids and people crawl all over them to get used to the idea. People take time to get used to big change. I think sometimes, particularly with the part 3A process, we plan everything, present the final plans to people and say, "Here it is. What do you think?" They do not really believe that you will be listening to them anyway because you have gone so far down the track. They do not feel in control, they feel threatened, and they will oppose in every case. The community engagement process needs to start early, it needs to involve the people and they need to have some perceived control over the process.

CHAIR: You have made comparisons with the European experiences. If I were to put it to you that there is perhaps not the same sort of background noise issues in Europe, because they are used to a higher level, whereas in the Australian rural context there are people living in very low background noise circumstances. Also there may be special circumstances in New South Wales where people have the joy or privilege of quite spectacular visual amenity in their environment. It creates a different dynamic, if you like, in terms of community opposition. Would you comment on that?

MR VAN DER WIJNGAART: On the first point I could probably speak from experience as a Dutch immigrant on Dutch rural landscape. It is probably one of the most intensely populated small countries in Europe, where such installations also exist in great profusion. If you have been to a Dutch rural landscape you would not know it from an Australian rural landscape other than the fact that the vista is probably not quite so expansive and the sky is not so blue, but the noise levels are not much different in the rural environment there unless you are really close to a main highway. The difference is not all that great in my perception. There will be circumstances, no doubt, where there are European examples you could quote, but I do not think they are stark or particularly that much different.

On visual amenity, people are just as concerned. I have seen evidence presented from German and Danish examples where people are just as concerned about their visual amenity, their mountain backdrop or

their sea backdrop. What they are used to is what they cherish. They have been there for many, many hundreds of years and they are used to that, having grown up in those areas. Visual amenity, amongst all the objections people give, is probably one of the most difficult things because it is totally subjective. But if we look at the statistics in Australia, we see that several surveys done since 2002 indicate that 95 per cent of Australians like the idea of wind farms: 35 per cent think they are graceful and another 45 per cent think they in fact will improve tourist attraction to the area. But I am not dismissing the 5 per cent, do not get me wrong; they need to be listened to as well as the rest of the community.

The Hon. ROBERT BROWN: Hear! Hear!

MR VAN DER WIJNGAART: I suppose as an elected person, if I were to get 95 per cent endorsement on anything I put before council, I reckon I would be home and hosed. A lot of these things can be overcome if people, as I said before, are made familiar also with the alternatives. I am not suggesting that we should put wind farms up just for the sake of putting up wind farms. Wind pumps are put on farms for a damn good reason, to pump water. We need renewable energy engineering as quickly as possible on a significant scale because we are facing an urgent situation. What are the alternatives? Putting in a gas-fired power plant, more coal-fired power plants in these communities? Whenever I have suggested to them to think of the alternatives and think of where we are going, the reaction is invariably a positive one, "Well, yes, they don't look so bad after all." I do not want to be a total proponent and say there are no negatives with wind turbines. Anything you put on the landscape changes the visual amenity for somebody. But there has to be a case of understanding the alternatives as well.

The Hon. RICK COLLESS: In your role as deputy mayor I would like to discuss planning issues. If you were present earlier you probably heard my questions earlier and my concerns about the role of local government and development control plans [DCPs] not being complied with by developers or the Department of Planning.

MR VAN DER WIJNGAART: Yes, I did.

The Hon. RICK COLLESS: What do you see as the logical step forward to allow these things to progress so that communities are comfortable with them? Should they comply with DCPs where they are in place?

MR VAN DER WIJNGAART: I believe the real problem is the part 3A process, which most communities now realise is the antithesis of community consultation. As soon as a part 3A process starts on a project—I know from my own experience—there is enormous community resistance and usually local government resistance as well. The part 3A process does not take into account DCPs, and that is the fundamental problem with it. The DCPs are created certainly by good councils, and I would regard mine as one of the good councils, based on a lot of community consultation and reflection on a very structured charette process and whatever else to determine what the community desires. When the part 3A process overrides that, as it often does, faith is lost in the overall planning process.

What I am suggesting is something that takes the power back to the community and allows it to be involved in the process, yes, in all cases. People are realistic; they do not expect to get 100 per cent of everything they want, but they can make rational judgements once they are given all the information and they do not believe they are being hoodwinked or forced into something. I think that is where the key is. Does that answer the question?

The Hon. RICK COLLESS: Yes, it does. The Committee has received a range of answers on it. Some developers are saying it is a guideline only and "We do not have to comply with it", which to me displays an unfortunate arrogance from some people that they can just go into communities and do what they like.

MR VAN DER WIJNGAART: Regrettably, the part 3A process has given developers that sense of advantage and the community that sense of disadvantage.

CHAIR: In your submission you state "Community resistance can be managed effectively if true transparency of process, due diligence and education is undertaken." Would you like to add anything to your earlier comments on that?

MR VAN DER WIJNGAART: Yes. I think I put in my little submission a rather trite formula about education, education, education: E-cubed plus 3B—busking, blades and buses. Community education really is the key to the whole thing, and community involvement. Also, people need to be aware of the employment potential of wind farms, if you look at it as the most rapidly expanding renewable energy business in Europe where there are now some 160,000 full-time jobs directly related to wind. When I explain to people, for example, that in the 20 years leading up to 2002 in Australia we lost 18,000 jobs in the coal industry while at the same time Denmark, the small country it is, gained 16,000 jobs purely in the wind industry, people start to see renewable energy in quite a different light.

The ripple effect in the community of having such developments in service industries and all sorts of small retail businesses, are things that chambers of commerce take into account and say, "Yes, this is good." The evidence is there from Ararat and a lot of other places in Victoria where this has actually happened: towns have been saved by projects like this. The full-scale of benefits needs to be put in front of people. Yes, transparency is essential, but people need to be given the comparative facts between the alternatives as well. This is particularly relevant for the Illawarra, I might add, where I have been working with Green Jobs Illawarra, the South Coast Labour Council, University of Wollongong, and the business and industry councils to develop renewable energy green jobs in the Illawarra. There is a real groundswell of community feeling, in business, in the union movement and in local government to move on this front. I think honestly that communities and local government are far more advanced in their thinking and wanting to do something than we see as evident from State and Federal Government.

The Hon. ROBERT BROWN: Given that the thrust of your submission is that many of these problems can be fixed by proper community consultation, and although one might argue that the horse has already bolted, do you believe precinct committees could have a role in providing all the information and doing all the community consultation across the broad scale of precincts so that people are better prepared to evaluate some of these proposals when they come along? Is there some other method of doing it? How would you physically do it statewide?

MR VAN DER WIJNGAART: That is a very good question. In fact, my proposal to government in the concept plan suggests some management structures, were we to get funding for the pre-feasibility studies, on how we might achieve that. That is a very important aspect of how we structure all of that. On the issue of having precinct committees—in fact, I am about to put in my application for a renewable energy precinct forum—it depends how they are managed. If they are structured along the vein of the JRPPs [Joint Regional Planning Panels], they will meet an enormous amount of resistance and, in fact, will be negative in their impact because people do not see them as representing, for no other reason than the way the majority are appointed and the broad community that they engage. People want to have their local community—and in that regard I see local government, local business and local precinct organisations being involved more strongly in that process—rather than a government-appointed precinct committee or precinct panel or a JRPP-type structure that embraces everything from Kiama out to almost west Wyalong—well, not quite that far—in communities that really have little to do with each other and members of the panel who have no direct relationship to that community in its particular role.

The Hon. ROBERT BROWN: The second part of the question is this: do you believe anybody who is trying to educate the community should provide a range of genuine expertise to the community? Communities have no clue as to how to assess some of these environmental statements and plans. What is your view on providing expertise to whatever groups they are to provide communities with some input or to help them?

MR VAN DER WIJNGAART: I am sure it would be welcome, but I do not think you should underestimate the expertise that exists, particularly in rural communities with farmers, environmental protection groups and the catchment development people. People certainly in regional areas—and I can speak directly for mine—are very knowledgeable about their environment, biodiversity, what works, what does not, what the issues are. They just feel that they are not listened to. Undoubtedly there are often cases where we do need input. I recall several development issues I have personally been involved in where we have drawn on the expertise of the Department of the Environment, Climate Change and Water and the National Parks and Wildlife Service. But that has not always been listened to.

The Hon. ROBERT BROWN: That is on an ad hoc basis?

MR VAN DER WIJNGAART: On an ad hoc basis, yes.

CHAIR: You stated that an absence of feed-in tariff for wind power in New South Wales is "a major failing in encouraging community-based wind power initiatives". Are you talking gross or net?

MR VAN DER WIJNGAART: Absolutely gross, Mr Chair.

CHAIR: Would you differentiate for the Committee?

MR VAN DER WIJNGAART: I get a net feed-in tariff from my photovoltaic cells on my roof for the \$38,000 I paid for them three or five years ago, which was hardly worth it. It is quite clear from the United Kingdom experience and the German experience—and other European nations I have not checked out—that gross feed-in tariffs where people get paid a specific amount of money per kilowatt for energy they produce rather than their net consumption is a major contributor to investment in and purchase and acceptance of in the community renewable energy, particularly wind. The German example I provided in my submission is an excellent one because it in fact structures a tiered feed-in tariff depending on the technology that needs the most investment and the most encouragement, that is the one that gets the highest rate. I think the example is that utilities are required to buy coal-fired power at 5¢ a kilowatt, wind at 13¢ a kilowatt and I think solar at 34¢ or 38¢ a kilowatt by comparison. A well-structured gross feed-in tariff does work.

One only has to look at the Australian Capital Territory, which is the only government in the Commonwealth that currently has a gross feed-in tariff to see the success of uptake of photovoltaic. Then again that is only at a low scale. I am talking a maximum of a 30 kilowatt cap. But you can already see the examples of how it works once the incentives are provided with MRETS [mandatory renewable energy targets], with feed-in tariffs, with cooperative legislation that encourages communities to look after themselves and become more resilient. All these things together make a real positive.

CHAIR: An article in the *Illawarra Mercury* in, I understand, August 2008 states that Kiama Council voted against council involvement in community wind farms giving various reasons—lack of resource and expertise, potential commercial risks. Although you are not here representing council, could you give a brief history of the council moving from voting against community-owned wind farms to participating in the Southern Councils Group preliminary investigation of community-based wind power generation on the New South Wales South Coast?

MR VAN DER WIJNGAART: Certainly. That was August 2009, to correct the record. The paper that I submitted went to the Southern Councils Group—seven councils from the Illawarra down to the Victorian border. The determination was they were supportive but they felt that each of the individual seven councils needed to consider whether they wished the Southern Councils Group to pursue it. It went to the seven councils. When it went to Kiama council, to my chagrin I must admit, some councillors felt that councils should not be in the business of power generation. Well, we only need to go back a few years to find out about that. Again, the change issue of what we have done is what we have always done, was not quite right.

After that meeting I was able to explain more fully to the councillors that felt it was not appropriate that we were not asking for money and we were not asking for decisions to be made at that point, that was inappropriate, that it was really about agreeing to investigate the potential and still us having control as councils in the community. A rescission motion was agreed to and the decision was essentially reversed and Kiama council signed up with the other six councils, with the proviso, I must add, that they retained in there an extra clause that said, "We haven't got the money." But that is an important point because one of the reasons I can encourage this initiative is that it provides ultimately, if it is done well, an alternative source of income for cash-strapped, cost-shifted councils, as all councils are nowadays, rather than rely entirely on rate rises.

We just had a 6 per cent rate rise—3 per cent over the cap—which we got the community to agree to. We cannot keep doing that. It just brings us from bare bones and stopping us investing in our reserves to getting back to investing in our reserves. What I am suggesting is that councils overseas are in fact using renewable energy cooperative projects as a major source of alternative income from which they can provide community services. We have only really touched on that sort of thing at Ararat and in the examples that have been given by previous speakers.

CHAIR: Does that mean wind farms on council-owned land?

MR VAN DER WIJNGAART: It could be. It could be wind farms on Aboriginal land, for example. Aboriginal communities have been communicating that they are interested in getting some value out of their

land because they consider them to be not as intrusive as, say, solar panels, large solar farms, which of course we must have anyway. They could be on anybody's land.

CHAIR: Are you saying there is consideration that wind turbines would not be as intrusive as a solar-powered development?

MR VAN DER WIJNGAART: From a rural community's perspective it is very important because kilowatt per kilowatt wind has about a third of the footprint to coal-fired power—it is 1.3 as opposed to 3.6.

The Hon. RICK COLLESS: That is if you add up the towers themselves as opposed to the whole area?

MR VAN DER WIJNGAART: Yes, the actual plant plus the holding of the coal, the whole thing.

CHAIR: You say coal. When you add up the entire project—

MR VAN DER WIJNGAART: Kilowatt for kilowatt wind is almost a third of the footprint on land than coal.

CHAIR: Are you talking mining, transport, the whole process?

MR VAN DER WIJNGAART: I am talking purely about the actual plant and the storage facility. I do not know whether that figure incorporates the actual mines themselves, to be quite honest.

CHAIR: Perhaps you could get back to us on that.

MR VAN DER WIJNGAART: I am happy to clarify that. These are figures from the Australian Wind Energy Association. They are readily available on their website. In terms of the impact on the land it is very important because if you have a large solar thermal or solar photovoltaic development, some of the farms that would be more typically appropriate are out west, I would say. In our area where we have high-value agricultural land we need to keep that land for food growing purposes, particularly where we are so close to metropolitan areas. With the demise of the Murray-Darling we are going to be reliant on closer-in, high-value land with good rainfall in the climate change, such as we have in Kiama. To be able to put energy-producing machinery on the same land and still keep that capacity for grazing and food growing potential without any diminution at all—or certainly insignificant, other than the access roads—is a major plus. Farmers see it as such as well. It provides them also with a source of income and, very importantly, although it is not millions of dollars, it is sufficient in many cases for small farmers to recapitalise and start getting into more diverse cropping than they are currently doing.

CHAIR: If a wind farm were built in your local government area, how would you feel about the council being given the responsibility to investigate noise complaints, even if it were not under part 3A the consenting authority? Who do you think should be responsible for monitoring compliance with noise requirements and investigating noise complaints?

MR VAN DER WIJNGAART: I can speak for my own council, which is probably one of the leading councils in community consultation over many years in terms of determining planning provisions and the recent rate rise negotiations. We used several quite sophisticated devices to involve community in the rate rise. To give you an example, we had a steering committee on which there were councillors, myself and another councillor, plus volunteer community representatives to oversight the whole process of the rate rise investigation with the community. So the community had a direct say and a direct audit function in the process. I would see the same for things like this. On the other hand, local government, as we often say, is the government closest to the people and is more responsive to the people. As you know if you have ever been a councillor, if something goes wrong, you will know about it because people will be on your backdoor step telling you about it. To give that responsibility to local councils with a properly structured oversighting committee involving the community is probably the best way to go.

CHAIR: A previous witness, who was a proponent of wind farms, suggested or said that his company involves itself in community support projects with some \$500 per turbine a year. Could you comment on that?

MR VAN DER WIJNGAART: I think that is at the low end of community involvement. While I do not knock the intentions of the developer in doing that, that is not really the sort of community involvement I am talking about. People see that to some extent, I suppose, as a bit of a buy-off. I imagine that amount of money would be regarded by many people as, "Are you going to put those up there for \$500?" I suppose there is a feeling that that is better than nothing, but for them to have the ability in a cooperative structure to have personal investment in the profits of the enterprise and for councils to be able to reduce its rates as a consequence of the profits from the enterprise, and us being able to have better control over our power bills—which is a major issue at the moment, particularly even street lighting let alone community and residential power—these are very powerful arguments that are quite different to a one-time cheque or a relatively small percentage of tithing. The Ararat example of \$30,000 a year is well appreciated by the Ararat council, but I would say there is a relatively small type of community support project.

The Hon. ROBERT BROWN: How would you reconcile those statements against local government's desire or need for developer levies? Are they not the same thing?

MR VAN DER WIJNGAART: The section 94-type levies?

The Hon. ROBERT BROWN: Yes, which are a one-off.

MR VAN DER WIJNGAART: They are controlled by State legislation—very tightly controlled in terms of what councils can do. It is not necessarily saying that this is what councils would like to do. But I know that in applying section 94 levies, it is often very difficult to come to an outcome that achieves what the original purpose was because there are all types of constraints, such as parking and things like that. I think the new legislation possibly provides us with a little bit more flexibility with the voluntary arrangements in place, but I see them as quite different situations where council frequently attempts to undertake costs recovering for its services to individual developers who are in there to make a profit. Which is quite different to the communities who expect to receive services for their rates. It is a different relationship altogether.

CHAIR: In terms of the community-based aspect of wind farm developments, that sort of project would perhaps be a more substantial position to be communicating with the overall community about. I will take this in two phases. First, in relation to the bigger wind turbines and, second, the smaller generally community-based turbines, do you have any thoughts on appropriate distances between wind turbines and neighbouring dwellings that are not necessarily the ones who are getting direct financial benefit from a relationship?

MR VAN DER WIJNGAART: My views are that we tend to rely on legislation and on guidelines. Currently in New South Wales will use the South Australian guidelines, but we are getting some national guidelines coming out. Regrettably with guidelines, the more you try to address all the circumstances, the less you achieve the outcomes and you sometimes make these enterprises commercially not viable. I think it has to take into account all sorts of local factors and the community desires.

In Germany, a lot of those distances vary, depending on what the community wants. The very fact that we allow turbines to be a lot closer to rural residences, because they are on the farmer's property and he is quite happy to have them there, compared to those who do not get any profit benefit out of them, they have to be much further away, and that reflects that. In the Kiama municipality, for example, we have very hilly topography and some of these stipulated distances really would be not appropriate. When you consider that for small enterprises you can place turbines a lot better and have them, for example, in the shadow or on the downside or on the leeward side of the hill rather than on the top of the hill or the face of a hill—because you get better wind on the leeward side—I think it probably has to be taken into account and as well the visual amenity has to be taken into account, and all those sorts of things.

I am not sure that you can stipulate exact distances as minima in all cases. I think they need to be used as guidelines, but the important part is: Ask the community. What do they reckon about having a turbine on that hill or over in that valley? They may say, "Yeah, great place for it", and it may well be within the limits. It may be the other case as well.

The Hon. RICK COLLESS: Those six could all be covered in the development control plan [DCP] to allow that to happen, could they not?

MR VAN DER WIJNGAART: That is absolutely right. That is why councils have DCPs, or they have in the past. It will be more difficult now with the present planning legislation to have DCPs relating to

specific locations in the local government area so that they know, "We can do that sort of thing here", whereas it would not be satisfactory over the other side of the other hill. I think local councils and local people have a good idea of what works and what does not work.

The Hon. RICK COLLESS: Correct.

CHAIR: That concludes our questions. I thank you very much for your appearance today and for your valuable written and verbal input, which will be useful to the Committee's deliberations. Thank you.

The Hon. ROBERT BROWN: Your contribution has been very informative.

MR VAN DER WIJNGAART: It has been my pleasure, Mr Chair.

(The witness withdrew)

The Committee adjourned at 12.16 p.m.
