LEGISLATIVE ASSEMBLY FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON CLIMATE CHANGE, ENVIRONMENT AND WATER

(Reference: ACT greenhouse gas reduction targets)

Members:

MS M HUNTER (The Chair)
MS M PORTER (The Deputy Chair)
MR Z SESELJA

TRANSCRIPT OF EVIDENCE

CANBERRA

WEDNESDAY, 22 APRIL 2009

Secretary to the committee:
Dr H Jaireth (Ph: 6205 0137)

By authority of the Legislative Assembly for the Australian Capital Territory

Submissions, answers to questions on notice and other documents relevant to this inquiry that have been authorised for publication by the committee may be obtained from the Committee Office of the Legislative Assembly (Ph: 6205 0127).

WITNESSES

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Amended 21 January 2009

The committee met at 1.59 pm.

COX, DR KEVIN ROSS

THE CHAIR: I declare open this hearing of the committee's inquiry into ACT greenhouse reduction targets. I would like to note that Ms Mary Porter sends her apologies; she is unable to attend our hearing today.

This afternoon we will be hearing from Dr Kevin Cox in a personal capacity, Dr Andrew Glikson from the ANU and Ms Catherine Carter from the Property Council of Australia. We have very tight time constraints and have allocated times so I will be keeping to those times.

Dr Cox, I understand that the secretary sent you our privilege statement. Would you please read the card on the table if you have not read the statement previously.

Dr Cox: I have read it.

THE CHAIR: And you understand the content of the statement?

Dr Cox: Yes.

THE CHAIR: Before we proceed to questions from the committee, Dr Cox, I understand that you want to make an opening statement and that we have a presentation.

Dr Cox: Yes. I am appearing in a personal capacity. First of all, let me express my appreciation to the committee for giving me this opportunity and setting up what I think is a very important committee. The ideas that I am going to present to you today will maybe come as a bit of a surprise but they do come from a lifetime of experience in systems design and implementation.

My first job was to model and try to optimise the output of the Tasmanian hydro-electricity system by finding the most efficient way to utilise water in Tasmania to produce renewable energy. We did not think of it at that time—we thought of it as damming rivers—but we really were producing renewable energy. My later working experience has built on that early experience and has provided me with the tools to design and implement efficient systems, one of the objectives of which can be to reduce greenhouse gas concentrations in the atmosphere.

This is an inquiry into ACT greenhouse gas reduction targets. The approach I am proposing is for the ACT to initially set a zero emissions target by 2020, while at the same time reducing the cost of energy, encouraging sustainability and increasing the wealth of the ACT community. In doing so, the ACT will pave the way for the rest of Australia and the rest of the world to address climate change and build a sustainable society.

A couple of weeks ago, I heard Richard Denniss before this committee saying that this is not an economic problem—that it is a scientific problem and it is a problem that we have to solve. It is not a question of whether we are going to do it or not. That is, the

target as set by the science is the aim; the economics should come later and is to serve the scientific goal, not the other way around. The system I propose addresses the scientific goal. It sets easily adjusted and achievable targets, including negative targets, using an investment approach.

In my opinion, the science is already telling us that we have to reverse and start to reduce greenhouse gas concentrations—not just reduce emissions. The system I propose will enable us to adjust to whatever target the science says we must achieve. I have taken the nominal position of zero net emissions by 2020 with the understanding that we may have to do better.

As I say, the approach is a direct investment approach. That is, we invest in infrastructure to achieve our targets. In order to work out how to do this, we start by estimating the amount of money we are going to need to invest to solve the actual problem; we work out ways to invest it wisely and efficiently; and then we work out how to obtain the funds for investment. We measure the effect of our investment and we adjust the investment amounts to achieve the results required. Measured outputs drive investment, which drives reductions, which feeds back into investments. The approach I am going to suggest is 100 per cent under our control and is guaranteed to work. What I am going to tell you today will work. There are no ifs or buts about it.

Let us start with how much investment is needed. To estimate this, I took the amount of energy Australians are likely to consume in 2020 and assumed a worst-case scenario—that we would need to produce all this energy as electricity from non-polluting sources. I then estimated the amount of investment to achieve this goal, starting with today's known renewable technologies. This is a worst-case scenario, but one we should aim for because it is probably easier to reduce investment than to increase it. The amount of money for all Australia to achieve zero emissions is estimated at $30 billion a year for 10 years. On a population basis, that is $600 million for the ACT every year for 10 years. So we know the scale of the problem.

I do not pretend to know in detail how all the reductions are going to be achieved, but they will come from saving energy, from generating pollution-free energy and from the commercial harvesting of greenhouse gases in the atmosphere.

The critical part of investing is working out how to invest in the most efficient manner. We do not know what the best investment strategy is because we do not know all the possibilities. We do know that markets are an excellent way of allocating resources because well-designed markets allow innovation to flourish, and it is innovation that drives good investments. We need to include other criteria in our markets that reflect the amount of greenhouse gas reductions per dollar spent.

We can build a market to achieve these dual goals. We set the market up by inviting suppliers of greenhouse reducing infrastructure to sell their goods and services in the marketplace. We give individuals and businesses rewards to be spent in the marketplace. The rewards are given to them in inverse proportion to the amount of energy they currently consume. So you pay people not to consume. We require rewards to be spent in this marketplace and we do not pay interest on rewards. When we remove the restrictions on rewards money—some people like to call it vouchers—we can give more rewards to investments that achieve the greatest reduction in

greenhouse gas concentrations for the least cost. So we double our effect.

The big issue, of course, is where to get the funds. There are a lot of ways in which we could get the funds, and until the recent financial crisis I was thinking of different ways. I was thinking of the sale of emission permits, carbon taxes, loans or a surcharge on energy. They would all be ways of getting the money.

But the best way is to get it from the investments themselves—the future investments. This is a simpler way of doing things. The money we invest through rewards will be returned to the community from the income generated from the investments. This is really critical: the money we invest through rewards—the money we invest in, say, renewable power plants—will be returned to the community from the income that is generated from those power plants. You do not have to have the money to begin with, as it were; you can get the money from investments. That is what investors do all the time. When you invest in a company, you do not expect to be paid interest on the money you give to the company; you expect to get your return from the returns that the investment produces.

The simplest way for this to actually happen is for the Reserve Bank to issue restricted rewards, money or vouchers. In other words, the Reserve Bank can print vouchers. There is nothing to say that the Reserve Bank cannot print vouchers. These rewards, if you like, would be made available at zero interest, so there would be no drain on the economy, but they would carry the condition that you can only spend them on new infrastructure that will reduce greenhouse gas concentrations and you have to spend it in the marketplace to make sure that it is spent efficiently.

It turns out, quite amazingly, that you can do this without causing inflation. In fact, if we do it properly we can get rid of inflation entirely. And we can do it without creating loans. The investments will generate the money to pay for the infrastructure. It means, for example, that renewable energy will be produced and will be very profitable immediately because there are zero finance charges. The major cost of renewable energies is the finance costs on the capital you have to invest. If you get rid of the finance costs, it is very profitable. That is because renewable energy will cost 1c to produce—the running cost of the solar plant or the geothermal plant is 1c per kilowatt hour—but you can sell it on the wholesale market today in Australia for 6c. So you can make 5c. That is where the money comes from. The money comes from the profits you get on the investments you make.

What can the ACT Legislative Assembly do? It does not have to do too much. What it can do is support—this is a pretty radical proposal. If I go along to the Reserve Bank, they will probably laugh at me, but if it is not just me but a community group who goes with the backing of the Assembly or even just of this committee then we have a bit more credibility. A system like this does not have to be run by the government. In fact, it is probably better if it is not run by the government. It is probably better for it to be run by a community group that controls the issue of rewards and looks after the governance associated with it. Of course, the government would want to have a representative on any board and so forth, but that could be well accommodated.

We could start to do this tomorrow. We could start tomorrow on this sort of thing. Immediately it was accepted that this was going to happen in terms of there being a

place out there where, for example, renewable energy systems like solar systems could get funds to be built, to be financed, lots of people would appear out of the woodwork saying, "I've got a great idea." If they knew that they were going to get rewards for consuming less energy, people would start to consume less energy. You would automatically start to do that because you would know that you were going to get something out of it.

Finally, here is what I would suggest. The ACT government sets a zero emissions target for 2020, supports a community group in its discussions with the Reserve Bank and helps it organise a marketplace and create the infrastructure to distribute and spend rewards. The thing is self-financing, because the way in which you can finance it is that it can be one of the approved products, if you like, that are sold through the marketplace. So the rewards could be spent on building the infrastructure needed to build the system itself. In other words, the community could own the infrastructure—I love these recursive things—that would actually solve the problem here. Thank you.

THE CHAIR: Thank you, Dr Cox. I might start with a question. How does your energy reward proposal differ from an energy efficiency loan fund where lenders can access low interest or interest-free loans to make energy savings and then you pay the loan with the savings flowing from the investment? We have got a fund like this for ACT government agencies at the moment. Where does it differ?

Dr Cox: One is that it is a loan. Rewards are not a loan. Rewards are money in your hand. You do not have to pay it back. That is a really important point. The money gets paid back through the investment. Loans are really about ownership. Loans are not economics, if you like. Loans are really about who owns what. With rewards, the ownership of the infrastructure goes to the people who contribute least to the problem. That is a really important point. Loans at the moment go to people who already have assets. That is the first important difference.

The second important difference is the way in which it is spent. You could do the same thing with your loans thing, but a really crucial part of this whole process is setting up a marketplace where the marketplace regulates itself and says, "This marketplace is only for this purpose and the money that you have got has to be spent in that marketplace." In giving loans and money, it is very difficult to keep track of what people do and you spend a lot of money trying to make sure that people have spent loan money on the things that they said they were going to spend it on.

This way is a much more efficient way, because everything is sort of automated. You know exactly where it has been spent so compliance becomes a much easier problem to tackle. The way in which you address the compliance problem is that, if you do not play the game, either as a supplier or as a person who has rewards, you are dismissed; you are not allowed to play any more.

THE CHAIR: But you would have to have some monitoring mechanism.

Dr Cox: The market does that. That is built into the way in which you actually construct it. That is what we have been spending a lot of time designing. What you do is build the rules. Then it is just saying, "I'm going to sell something and it is going to do this." If you sell something and it does not do this, the buyer will tell you. You do

not have to have external monitoring systems that do this; you can use common contract law to control the whole thing.

THE CHAIR: In your submission, you did mention that there are marketplaces out there at the moment—say eBay or whatever—where there are feedback forms and so on.

Dr Cox: Yes.

THE CHAIR: So buyers and sellers keep an eye on each other, if you like.

Dr Cox: Exactly right. That is the way things are going. But it is more than just keeping an eye on each other. Because it is a marketplace, and because it is an open marketplace, you can actually get people to tell how well this thing is working.

THE CHAIR: Feedback.

Dr Cox: People will be able to do a much better job at working out how to do things.

MR SESELJA: Dr Cox, I might get you to expand a bit more on this rewards concept and how it works. I am trying to get my head around where the money comes from. You say it is not money, but does an individual or a group get these rewards which are then invested in renewable infrastructure? A voucher is essentially a replacement for cash. Who pays? Does the Reserve Bank then pay for the infrastructure?

Dr Cox: You have to understand where money comes from. You have to understand the way in which the money supply is currently increased. What we have at the moment, and the way in which the system is set up, is this: let us imagine that you have a fixed amount of money. What happens is that banks loan out that money. That is the way the system was designed. The system was designed to have a fixed amount of money that the banks loan out.

But of course you need more money as the economy expands, so somehow or other you have to create extra money. You have to print more money, effectively. The way in which we set up the system 100 years ago was that you increase the money by using the loans process. What banks do is literally this. Believe it or not, this is exactly what happens. In order to increase the total amount of money supply, banks lend money they do not have. That is how you increase it. They say they have it and they invent it—literally; that is exactly how it works. Banks, including the Reserve Bank, lend money they do not have. That increases the money supply. It is that increase in the money supply that I am talking about. That is where the money comes from.

The other way in which you can increase the money supply, which is the one I am suggesting, is that you create some stuff that is not really money yet, though you know that it will turn into money. But you only create it when you have created an asset that backs the money.

MR SESELJA: Let me take a wind farm. If there is a proposed wind farm that costs $1 billion to build, how is that financed under this scheme? Can you briefly talk us

through how the rewards process would help that?

Dr Cox: Maybe I can tell you how I would suggest that it is done via the example of the national broadband network. You can use the same thing for any infrastructure. With the national broadband network, I would suggest that we give everyone shares in the company; we just give people shares. When the national broadband network wants some money, they use the shares, turn them into real money and buy the bits of the broadband network that they need.

MR SESELJA: How do they turn it into real money?

Dr Cox: They just remove the restrictions on the shares. They say, "I've got some shares; these shares are now money." Remember that we are trying to increase the money supply. The Reserve Bank is the one that allows the money supply to be increased. At the moment, the Reserve Bank allows banks—certain banks, not all banks—to lend money they do not have. What we now do is we say that we have created some money, and it has now turned into money because you have actually built an asset. It is really the same as what is going on at the moment, except you delay the time at which you invent the money from before the asset is built to after the asset is built.

MR SESELJA: How is the asset built? That is what I am not quite—

Dr Cox: What happens now is that, in all situations with suppliers, if I have got a shop, I finance the shop and I build the infrastructure et cetera. So I do the financing of it. The people who are building the infrastructure finance the infrastructure itself and then they build the finance costs into the actual cost.

MR SESELJA: The rewards are realised once the asset is built; they are there essentially as an asset for whoever is seeking finance from other sources in order to build. Is that broadly—

Dr Cox: Yes. Essentially, you have got an asset and you can now create some money that represents that asset. Money really is a representation of assets—something that has got value. If you build an asset, you can now say, "Here's some money that represents it."

MR SESELJA: How does a proponent get access to these particular rewards? Is it individuals who all have a certain amount of rewards which they can then invest or—

Dr Cox: That is essentially a political problem, because it is the way in which you distribute wealth, and that is decided by the system, if you like. My suggestion is that you give the rewards to the people who are contributing least to the problem, and the people who are contributing least to the problem are those who are using the least energy.

MR SESELJA: You talked about inflation and how this avoids the inflationary problems. Wouldn't it lead to inflation in renewables, potentially, because you are having far more money aimed at them?

Dr Cox: What it will lead to is inflation—if you print too many rewards, rewards will inflate in value. In other words, if you get $1,000 worth of rewards, if you sell those rewards on the open market, you will probably only get $500. But that does not matter. It does not matter if rewards inflate in value because you got them for nothing anyway. You consume less energy but essentially you were given them, so it does not matter that they reduce in value. But it actually isolates the real currency from printing too much currency.

You do not get inflation if you have got enough goods to buy with the money you produce. You get inflation when you produce too much money for those particular goods. So we will get inflation of the rewards money, not inflation of the infrastructure things; that will sort itself out. You will certainly get a lot of competition out there with respect to people wanting to build these things and to sell them and so forth.

MR RATTENBURY: I come back to the line of questioning that Mr Seselja was putting. You gave the example of a national broadband network. Can we come back to how additional wind farms or solar thermal plants or whatever would be financed. Could you explain the driver of why we would end up with more of them under this system?

Dr Cox: Remember what we have produced. We have produced rewards. Rewards have to be spent on infrastructure to reduce greenhouse gas emissions. We issue $600 million worth of rewards to ACT citizens. It is there. They have to spend it if they want to get any benefit from it, and they can only spend it on ways of reducing greenhouse gas emissions. Believe me, the people who build infrastructure to do these things will appear from everywhere. You will not have to worry about how you are going to do it. Lots of people will suddenly find all sorts of ways in which you can do it. That is why you have to have a market, because people will go to the ones that are the best investments.

MR RATTENBURY: I apologise for being late and missing the start of your evidence, Dr Cox. If you have already covered this, I will read the *Hansard* later. I am interested that you talk about a target of zero net emissions.

Dr Cox: Yes.

MR RATTENBURY: What do you mean by "net emissions" in the context of the ACT?

Dr Cox: We are always going to emit some carbon dioxide. We breathe, and we have to do it. So we are always going to emit some, but we should be thinking about extracting gases out of the atmosphere. Biochar or making hydrocarbons out of the atmosphere and water would be things that would be fundable under this sort of thing. In fact, I think we should be aiming for negative emissions, not zero emissions. Maybe in two or three years time when we come back, we can say, "We're doing so well now, let's go for negative emissions."

THE CHAIR: Dr Cox, how do you anticipate that the ACT would implement a system like this that would be independent of the federal government? How do those

things interface—or wouldn't they?

Dr Cox: You have to have the Reserve Bank on side. But you can do it by charging extra for energy and then distributing the extra energy back to the people. The problem is too big for that. The problem is too big for carbon taxes and what have you. You have to get a lot of money, and the only way in which we can do that, I believe, is through a scheme such as I am suggesting. That has to be the way. The amounts of money involved are very large. With doing it this way, think about it for a moment: if what I am saying is right—zero finance costs—that means that your energy can be sold at a profit for 2c a kilowatt hour. You can still make a profit on 2c a kilowatt hour.

MR SESELJA: Sorry, you're losing me again there. How are you making a profit on 2c a kilowatt hour under this model? Isn't it reliant on them realising the rewards at some point, whoever builds the infrastructure, which is, I suppose, the asset base that allows them to build it, and isn't that reliant on the value of these rewards then being able to be sold?

Dr Cox: No. The cost of renewables is mainly capital costs, because there are not fuel costs. So it is maintenance costs. If you build something, you can put your solar cells up there and you write it off, as it were, and it is all profit. If you do not have to pay interest and make repayments then you can sell it for a very low price.

MR SESELJA: But the finance still has to come from somewhere, doesn't it?

Dr Cox: That is what I am saying. The finance comes from the extra money that we need to produce. We have to print extra money to expand the economy. At the moment that extra money goes to people who already have lots of assets. That extra money does not actually exist. There is no asset backing it initially. That is the extra money. That is where the money comes from. We are so conditioned to thinking in terms of money being created through loans that we think there is no other way of doing it. But you can create money that is not a loan. If you print the money, it does not cost very much to print money. And if you do not have to repay it and you do not have to pay interest on it, the finance costs are zero. The trick is to be able to get some money that has no finance costs on it.

THE CHAIR: There being no further questions, Dr Cox, thank you very much for coming along this afternoon, and thank you for the presentation. You will be receiving a copy of the transcript shortly. Please make any corrections and send it back to the secretary; that would be appreciated.

Dr Cox: Thank you very much.

GLIKSON, DR ANDREW, Visiting Fellow (Earth and paleoclimate science), Australian National University

THE CHAIR: Welcome, Dr Glikson. Have you had a chance to read the privilege card?

Dr Glikson: I have.

THE CHAIR: And do you understand the contents?

Dr Glikson: I do, yes.

THE CHAIR: Would you like to make an opening statement?

Dr Glikson: Yes, thank you. I wish to present evidence based on my 45 years of experience in studies of the earth's system, with an emphasis on the serious nature of the climate change that we are looking at, in particular the time dimension, the urgency dimension.

While I will be talking about some of the scientific basis, I would like to add that I have read the submission by the ACT conservation council and I agree in principle with most of their recommendations. I would also like to add that, even though in-depth scientific studies have been conducted for the last 10 or more years into current climate change, the observation that most climate scientists and climate science organisations are coming up with—and this includes the CSIRO, the Bureau of Meteorology, NASA, Hadley, Met, Potsdam Oceanographic Institute and as published or collated by the IPCC and by the Garnaut and Stern reports and published in thousands of peer-reviewed scientific papers—points to an issue which I worry society still underestimates.

The main points that I would like to make are as given to you on the sheet. One is that the sensitivity of the atmosphere to greenhouse gas forcings, that is energy rise, has been underestimated. The atmosphere is tracking towards critical tipping points. It is a process manifested not through linear curves but through the variability of the climate. We have seen in Australia, in the last couple of months and before, manifestations of these extreme weather events in the form of tragic fires in Victoria and extreme floods in the north-east and so on.

The second point is that we are dealing with a global issue, but the answers always have to start from some point. There have been some past leaders; for example, the Scandinavians are very rapidly converting to alternative non-polluting energy. Canberra is one of those cities where there is enough knowledge, intellect and skill to possibly make an example.

I want to cite Ross Garnaut's famous corollary of the prisoner's dilemma. The prisoners in the *Titanic*, if you like, are heading towards an iceberg. Someone has to break out first but, as long as every one of the prisoners relies on the others to take the risk, nothing will happen, except for the iceberg.

Canberra is one of the cities that is highly carbon dioxide emission intensive, similar

to the average of the OECD. It is less than in Australia generally. In Canberra it is 13.5 tonnes per capita per year; Australia is about 24 or 25; the United States is similar. The reason that Canberra is lower is quite clear: it does not have heavy industry. So, if you compare it with Newcastle or Wollongong, obviously their emissions will be higher.

The way to go—people have been talking about it before—is with a fast-track transition. I do not believe we have time, and I would like to dedicate much of the time I have to give the scientific basis for why I do not believe there is time. But I like to put the positive side and say that there are ways. We have the technology, we have the tools—electric train systems, solar operated, solar energised; riding bicycles to electric trains so that people would be fitter; encouraging solar thermal electricity. Now some 20 per cent of grid-based energy in California is solar thermal.

I come to a point that perhaps has not been done before. I am afraid, but I hope I am wrong, that the scale of the issue and the urgency are such that people will have to start growing their own food, and this needs to be encouraged by governments. I mean growing vegetables, raising chooks and all the rest of it. It is pretty clear what I mean. What I am saying is that it is not too early to start thinking in terms of local food production.

The second-last point in the introduction is that the human financial cost of inaction will exceed the cost of action by orders of magnitude. Not to decide is to decide, it has been said.

I now want to give the scientific basis for what I have said, which I think was not particularly original. This is a complex diagram and I am not going to bore you with the details too much. But I want to make one or two points based on it. You see the red line here. It is labelled as a no-go zone line because that is where the atmosphere reaches carbon dioxide levels of approximately 500 parts per million, plus or minus perhaps 30 or 40. But it is now well established that this is a limit to the energy state, to the temperature state, of the atmosphere at which the big ice sheets, including east Antarctica, are starting to melt, are melting.

We cannot give the precise timetable of projections. A lot of people ask me as a scientist: when will the ice disappear? In the North Pole and Arctic Circle it is disappearing; it is now forecast that it will disappear by 2013. It could be earlier; it could be later. But this is occurring before our eyes. The west Antarctic is in trouble. We have just read about the weakened large ice shelves breaking down. It has been warming at the rate of about 0.4 to 0.5 degrees per 10 years and this is fast. On the whole, the poles are heating far faster—three to four times faster—than lower latitudes, because of the ice melt feedback process: ice melts, the water melts more ice, ice reflects the spectrum, when it goes the spectrum is absorbed into the water.

What are the implications of the pole to us at lower latitudes? The implications are huge, because, once the ice poles melt, the earth is no longer in the physical condition at which mammals have appeared and grown up to larger size on land. Mammals appeared on land—this is the second point I want to make to you—at the end of the Eocene, 34 million years ago, a bit before my time. The greenhouse stage of the earth, the preceding greenhouse stage—when dinosaurs and so on lived, until an asteroid

hit—was when the greenhouse earth conditions, super tropical, five, six or seven degrees warmer, have given way to a new set of cycles, the Milankovic cycles, called the glacial age. The glacial age oscillates between glacial-interglacial, but this is where mammals have gone on land. This is when we appeared, 4½ million years ago.

Climate scientists worry that we are now already at 387 parts per million; we are moving up in terms of additional methane. We are at 440 or 450. We are truly worried that we are now migrating out of the ice age, with enormous implications. I could bore you for the next 48 hours with the implications, but I will not. I am giving a public lecture about it later on at the ANU. We are in trouble, because it is not understood, from the point of view of the history of the atmosphere, what the implications are of particular levels of carbon dioxide. The Garnaut report and other reports talk about choices between 450 and 550. With respect to 450, it is already late; at 550 it is over.

I hope that this science is not correct, but to the best of my knowledge, based on my 45 years of studies of the earth's system, the evidence is there. And we see the evidence directly. We do not even need to look at the theory. The theory only explains it. But we can look on a scale at the frequency of extreme weather events around the earth. With respect to the Munich Institute, the number is not very clear to read, but from about 30 or 40 years ago, you get a high-factor rise in natural disasters and in the insurance costs which go with them. So the data speaks for itself. It is an expression of extreme weather events inherently associated with or aggravated by climate change.

With respect to the evidence, there is still enormous confusion because there are forces which are trying to deny the scientific evidence, by always saying that the earth is cooling—I wish it was true. This diagram demonstrates how, from about 1975-76, there has been a tipping point, it appears, and you get a strong deflection and a sharp temperature rise by about 0.5 to 0.6 degrees, to the present. In fact, the temperature rise is almost twice as high, because a large part of it is concealed by the aerosol effect emitted as sulfur dioxide from industry. So these are the temperature curves taken from space, from satellites, and the evidence cannot be refuted.

The part in which some people will say there is a cooling is this part, but there is not a cooling. The average, the mean, is still rising on a decadal scale. At the moment we are in the La Nina phase, which means there is cooling from 2007. The oscillations are only getting stronger. That is inherent in climate change. You see the oscillation for 1998 and a huge El Nino effect here. You see the strong cooling here, which the so-called sceptics talk about. Again, it is this huge oscillation. But you have to look at the mean, and, more than that, you have to look at the consequences around the globe.

The IPCC reports essentially some correct science, but it has been criticised, and now the criticism can only come from the other side, saying that they have underestimated their trends. Here is a carbon dioxide trend from emissions, which is rising up from forecast projections. Here are the temperature rise curves, at 0.03 degrees Celsius per year. Also, at the top of that you see scenario projections. Sea levels are at the top, at the bottom, and ice melt is at the top as well. So, if the IPCC was not correct, it is in terms of an underestimate, not the other way round.

I have been talking about the poles. That is something that not everyone appreciates. If the globe is on a reasonable mean, at 0.6, 0.7 or 0.8, it does not sound like much,

and people think: “Four hundred or 500 parts per million doesn’t sound like much. It’s parts per million; what effect can it have?” But when we look here at the dark red area, the poles, we start to understand why they are melting so fast. The poles have warmed up, on the annual mean, at three, four and even more degrees over the last several years, and here are the examples from NASA.

The correlation between carbon dioxide and temperature has been established, both experimentally and in nature. And here is more or less the boundary between the glacial-interglacial age, in which we have evolved and in which we still live, and a greenhouse earth. It is around 500 parts per million. I will not go into detail because there is not much time.

About three million years ago, the earth was in similar conditions to the ones it is tracking towards at the present time—mid-Pliocene. Temperatures warmed by two to three degrees. That is now officially acceptable to world governments. But two to three degrees means a 25-metre sea level rise. We do not know exactly when; there is always a lag effect. But that is a natural observation, not just through the Pliocene but right through earlier periods.

If what I have already shown is not worrying enough—and I apologise; it is a thankless task to present climate change evidence to people, I must say—I refer to the studies of the ice cores in Greenland and the Antarctic that are proceeding. These are year by year studies, which means they can measure the temperature, the carbon dioxide and all the other issues. If you look at this diagram, you see these major breaks between climate states. These are shifts within climate states. This shift is up; it is warming by two or three degrees. This shift is going down; it is a cooling. It is also happening within one year in this case.

Why is it happening so extremely fast? It’s the feedbacks. Once you start a process, as in the carbon cycle or in the ice water melt cycle, it is going through in no time. And this has not been appreciated, even by scientists, until about 2000, when American scientists like Wallace Broecker, Alley and so on came across it. Now it is refined, and we are looking at tipping points, and in there, that is about 11,000 or 14,000 years ago.

This experiment which *Homo sapiens* are conducting is the first one, a novel and original one that has never been done before, except perhaps on some other planets. It has not been done before, so we are in a fog. We are driving in a fog. John Holdren, the American science adviser, has said: “We are in a vehicle driving towards a cliff in the fog and we do not know where the cliff is but we have to start pressing on the brakes before it’s too late.” This is a tipping point par excellence, and it is very hard to come to terms with such a possibility, I agree.

While there have been projections for Australia, the interesting point is that, while the southern tablelands and the ACT are now drying in connection with the southward migration of the climate zones, in the longer term, later in the century, they will become wet again, but not in the Mediterranean type of beneficial rain, more in the form of the cyclones which have already been moving south along the Queensland and northern New South Wales coast.

If you look at this map, it is in the green. Rainfall will be increasing in the ACT, but not in a very beneficial way. There will be cyclones. I hope not. Projections for northern and southern Australia by the IPCC get to levels which you can look at here. For Northern Australia, there is a range of scenarios, depending on carbon emissions—four degrees. For southern Australia, it is perhaps a little bit less.

I mentioned the ACT. It is close to the OECD average, but Australia is at the top of the world emission figures. With respect to emissions in the ACT, the biggest increase was in natural gas, replacing wood burn. But transport also increased quite a bit, and it is increasing at 1.6 on the whole. The global carbon dioxide emission increased by 1.6 or so, and previously by two parts per million per year, tracking fast towards the point which we need to avoid.

I do not apologise for showing this picture, because it is in every airport. So every time you fly interstate you will see it. That is when the Antarctic goes. The ACT will be here; we are in the highlands, but possibly Australia will become two different continents—a new eastern New Zealand.

I will finish, to give you a chance to ask a few questions. In summary, the rate and magnitude of climate change, to the best that I can read the science, and based on my experience, have been grossly underestimated. If there is anything to be done, it has to start very, very soon. Thank you.

THE CHAIR: Thank you, Dr Glikson. The ACT is a small jurisdiction, but of course Australia is a high emitter. It is quite clear from the urgency and tone of your submission that we need to make cuts, and deep cuts, sooner rather than later. Have you given any consideration to how the ACT might calculate an emissions target that accurately reflects the science that you have been talking about this afternoon?

Dr Glikson: I think the great promise that a city like Canberra has is in providing an example, because it is obviously a very small part of Australia and the globe. The point that I need to make in this respect is that, even if emissions are cut by the very maximum that people are asking for, as long as they continue, because carbon dioxide is cumulative, it will not make the difference; it might not be able to prevent the critical crossing of tipping points and climate thresholds.

There is one point that I did not make in this regard. My own hope is that, because of the nature of our civilisation, the "powers to be" normally prefer to work in terms of technological fixes rather than a reduction in the standard of living. A technological fix in theory is possible, in the way that we have a lot of ideas on the table. I am talking about reducing the present levels of carbon dioxide. They need to be reduced by at least 50 parts per million to prevent us from crossing the critical threshold.

There are ideas. Some of them have been proven in principle but not on a large scale, such as with respect to sodium combined with sodium carbonates. It has been estimated that, at $300 per tonne, it will cost $5 trillion to $10 trillion to bring the atmosphere down by 50 parts per million. It is technically possible, but I do not know whether the "powers to be" will put the funds behind it. That represents the funds that are being put behind the military, space exploration—or even sport or casinos. Funds of this scale, if they are put into effective mitigation, might work. Why? Because

humans have split the atom and humans have placed men on the moon. Humans have done marvellous things.

A reduction in emissions is certainly needed most urgently, but I do not believe it is going to make the difference. I believe it is too late. I think that what is needed is a combination of fast, urgent reduction, as has been recommended by the Conservation Council, combined with every possible technological means, and the funds behind it, to reduce the present level. It is like a patient whose body temperature goes to 41: you cannot live for very long at 41 degrees; your brain cells would just be destroyed. We have to bring the level down. I do not know whether that answers your question.

MR SESELJA: Dr Glikson, I might just get you to comment on this. There were some reports in the paper at the weekend about the melting of Antarctic ice. The head of the Australian Antarctic Division glaciology program, Ian Allison, was commenting about the fact that in west Antarctica it has been decreasing but there have been increases in east Antarctica. Are you aware of those reports?

Dr Glikson: Yes.

MR SESELJA: Can you make any comment on them.

Dr Glikson: I am aware of the report. Climate is extremely complex. In the case of Antarctica, the variability increases. It is not a smooth curve. In Antarctica, because of the southward or polar-ward migration of the climate zones, the Antarctic wind vortex is shrinking. We have all seen dancers on the stage: when they shrink, when they put their arms around themselves, they also rotate faster. The Antarctic wind vortex is rotating faster, which means that parts of Antarctica, especially the east coast and so on, are actually cooling.

I have here maps of the Antarctic which show which areas are warming and which areas are cooling. It is a complex picture but the overall assessment, an assessment by NASA and others, is that west Antarctica has been warming by 0.4 or 0.5 degrees in 10 years over the last 50 years and east Antarctica has been warming—again, it is a mean—by 0.2 or 0.3 degrees. That means that as soon as you look at local variations or temporal variations, there will always be hopeful people who say, "This curve is going up"—or "This curve is going down"—"so we have some hope."

But you have to look at this issue from the point of view of science. It is the variability which is increasing, so you will always find some hope over a year or two. It depends which part of the curve you pick. You can have your warming or you can have your cooling. Some people are playing games with it, but these are very dangerous games.

MR SESELJA: It is not clear from this report, one way or the other—you mentioned temperature, but in terms of ice loss in Antarctica over the last five, 10 or 30 years, has there been significant ice loss overall or has it stayed stable? What is the overall picture? As you say, you get these variables where in one part it is increasing and in another part it is decreasing. What is the overall picture for ice loss?

Dr Glikson: Major loss in west Antarctica. In east Antarctica, the sea ice grows in

some parts and shrinks in other parts. It is not only the extent; it is also the thickness. The thickness is harder to measure. East Antarctica is still the last bastion, so to speak, of perhaps the mammals. It needs to stay. Otherwise—look at this picture. East Antarctica has warmed.

When you get overall warming, you get two things. First, you get melting of ice, but you get more snow. But, when you look at the Antarctic temperature map, which I can show you at some stage or other—I can send you the material—you see that right around the periphery of east Antarctica there is the strongest warming. This is where the glaciers are going out into the oceans. This is where the warming occurs. In the interior, you get patches of warms and colds. It is the overall trend we worry about.

MR RATTENBURY: You have spoken in broad terms about potential climate impacts. Do you have any evidence on specific impacts for the ACT and region in terms of changed rainfall patterns or other variations we might expect?

Dr Glikson: You were here in 2003, perhaps. I was here in 2003. These were not bushfires; these were firestorms, like in Victoria. There is a difference. The eucalypt bush which has developed in temperate climate conditions can dry to an extent, but when you get the oil in the eucalypt and the loss of moisture, then, when you get a fire, the atmosphere—the oxygen was virtually burning on top of Mount Stromlo. You could see the fireballs on Mount Stromlo from where I was in Rivett. It was shooting up and down into the ACT right, left and centre. You can only get a firestorm when the climate dries up to a certain level, when it loses moisture to a certain level. That is a danger, and I would say that it remains a danger for the ACT.

As for water, we know about the water. We know that it is really struggling. We know about the drought right around.

Does this answer your question?

MR RATTENBURY: Thank you, yes.

Dr Glikson: I think lack of water and fire. But as a city, because the ACT derives its economic resources Australia wide, being essentially a government city—the concern is, as agricultural regions like the Murray-Darling Basin dry up and as the export of minerals, which was the foundation of the Australian boom, declines, what resources will the government have to keep Canberra at anything like the present scale? Yet we have 300,000 people here. In the slightly longer term, how are we going to feed them? That is why I am talking about developing something that is more self-sustaining here. Of course, as you know, a lot of communities and groups right around Australia are thinking about similar reports on a local scale.

MR RATTENBURY: I might return to the question that Ms Hunter posed. She asked you about what a suitable target might be for reductions for the ACT. You spoke about the need to reduce and also potentially remove carbon dioxide from the atmosphere. One of the things the inquiry specifically wants to ascertain is what targets might be possible in Canberra. Do you have a specific numerical suggestion?

Dr Glikson: I agree with zero emissions, but of course carbon dioxide will always be

expelled. I would say that, to the extent that it is humanly possible, Canberra can decide to become a model city, a pioneer—one example, which I hope it is in a position to do. It takes political will. That is where the technology, engineering and economics come into it. I have to admit that I do not understand economics. I apologise.

Canberra itself cannot solve it, but if Canberra decides to become a model city in the way Scandinavia, or some parts of it, has become a model for the rest of Europe, then, hopefully, the rest of the country and the world might lead if we keep our fingers crossed.

MR SESELJA: This north-south water pipeline that you have suggested—has there been any modelling done that you are aware of on costs and the scale of the pipeline?

Dr Glikson: Yes. You might remember that some years ago—maybe 10 or more—a group of wealthy Australians suggested that this ought to be done. The drought was already starting. There were objections. One of the objections is that it takes fossil fuels to pump the water, but now we have the solar-thermal technology to pump it.

What resources? The government has just put in $42 billion and another $43 billion into broadband and into very nice $900 payments and so on. I do not know that such a north-south water pipeline system—of course we have all the water in the north which we need in the south—is going to cost more than $100 billion, but I cannot vouch for that. I do not have the exact numbers. But just as a back-of-the-envelope calculation I would not think that it would be more.

This would be a second Snowy Mountains scheme par excellence which would build the infrastructure which Australia requires to survive. I do not think that we require broadband to survive and I am very happy to give my $900 back for alternative energy. But I do not know that the government is as aware as it ought to be that it has to act in time, inasmuch as we still have time.

THE CHAIR: Dr Glikson, you have not put this up just as a shock tactic or whatever. This is obviously modelling into the future to show us what would happen with sea level rises. If we head the way we are at the moment, what sort of time frame are we talking about with this slide you have up here?

Dr Glikson: I do not really need to apologise too much, because it is in every airport; that is why I showed it. Otherwise I would not have shown it. I do not like to shock people. I would much rather bring good news. The time frame for the melting of Antarctica—this experiment has not been done before. We have the intellectual property on what we are doing now. Emitting at the rate we do, two parts per million per year, is getting to the boundary of the ice age. The rates cannot be estimated. I hope that it is long term. I hope that it is at least a century.

But, in view of the tipping point that I have shown before, I utter a word of caution. We do not know how the atmosphere is going to react. We cannot argue with the laws of physics and chemistry of the atmosphere in the way that we do in economics. We cannot pull the levers down and say, "All right; we will put a trillion dollars here and we will bring the temperature down by one or two degrees"—except for

geo-engineering perhaps, hopefully. Otherwise, I do not know that we can.

So, when you ask me about a timetable, I do not know. I hope that it is a very long timetable, but we are now in a fog, like described before.

THE CHAIR: Thank you very much for presenting evidence to the committee this afternoon. We will be sending out the transcript. Could you check that for accuracy.

CARTER, MS CATHERINE, ACT Executive Director, Property Council of Australia
HEDLEY, MR TONY, ACT Division President, Property Council of Australia
RUGE, MS GESA, Chair, ACT Sustainable Development Committee, Property Council of Australia

THE CHAIR: Good afternoon and welcome to the inquiry into an ACT greenhouse reduction target. Have you had an opportunity to read the privilege statement and do you understand it?

Ms Carter: Yes, we do.

THE CHAIR: Would you like to start with an opening statement?

Ms Carter: I would, thank you. The Property Council of Australia welcomes the opportunity both to provide a written submission to the committee and its inquiry into ACT greenhouse gas reduction targets and particularly to provide an oral submission to the committee today.

The Property Council of Australia is the nation's peak representative of the property industry. Our members help shape, build and finance our cities and as such have a long-term interest in the future of our urban areas. Locally, Property Council members include property owners and developers who invest directly in the infrastructure that underpins Canberra, as well as other professionals working in the property industry, including engineers, architects, valuers, planners, lawyers and environmental consultants. Collectively, our members play a vital role in the future growth and sustainability of our city.

It is worth mentioning that property accounts for approximately 30 per cent of the total ACT economy and so is a key business sector and driver of the ACT economy and an important partner with government in delivering well thought out and sustainable initiatives and policies.

Turning to the issue of greenhouse gas reduction targets, which is under consideration by the committee today, the Property Council has in recent years commissioned several research papers which underpin our views in relation to the important role at state and territory level for complementary measures to the national CPRS and other federal climate change legislation in the form of targeted initiatives to unlock low cost abatement opportunities in the built environment.

The Property Council supports the retention of the targets proposed in the ACT government's weathering the change climate strategy, especially in the context of the expected growth of Canberra to around 500,000 residents by 2050. It is the change in emission profile in the coming years, as well as the ongoing review and monitoring of our emission trajectory, that we regard as being important. The Property Council, as indicated in our written submission to the committee, offers its active support in this process of change.

I would like to point out that in Canberra the property industry has already absorbed and is continuing to absorb the costs and risk arising as a result of increased federal

policies and legislation because of the very high component of commonwealth government accommodation in this city. In order to achieve targeted emission reductions for the ACT, we believe that greater incentives, education and collaboration are needed between the ACT government, the federal government and industry. We believe this is critical to ensure a meaningful and viable approach to encourage economic activity return on risk and capital sufficient to justify the investment by the private and public sectors towards achieving the greenhouse gas emissions profile for the ACT.

We have in our written submission provided detailed responses to the committee's terms of reference and I would like, if I may, to highlight a few of the major recommendations covered off in our submission. As stated, the Property Council supports the retention of current targets outlined in the climate change strategy, weathering the change. We believe these are very ambitious targets and imply that emissions for the ACT are to be reduced by 60 per cent of 2000 emissions by 2050. This in effect means a reduction of around a quarter of current emission levels in the ACT. This is for the whole of the ACT and does not address future growth, so clearly there is an even higher demand on a per capita basis.

As important as setting reasonable and achievable long-term targets is, and we believe these ought to be reviewed on at least an annual basis, the Property Council is also concerned about the establishment and implementation of effective short-term initiatives that will set the ACT onto the trajectory of emission reductions. The property industry, with the Property Council in particular, really offers active engagement with government and its agencies because collectively we will all be important players in achieving emission reductions.

Our submission outlines the significant impact that commonwealth legislation and the presence of the commonwealth government in the ACT have had on this issue and the ongoing requirements they are having on property owners, developers, tenants and managers in the ACT. Additional or, from our point of view even worse, non-harmonised legislation between the ACT government and the commonwealth government could stifle the already slowing property sector and hence hinder emission reduction targets. The Property Council sees the key role of the ACT government as to encourage, with initiatives and incentives, red tape reduction and the use of a broad range of administrative tools available. This applies in particular to the large sector of existing and ageing office building stock in the ACT, which we would be happy to address later in our presentation to you.

Key areas where the property industry can support the ACT emission reduction targets with the right incentives are through higher energy efficiency, increased production and use of renewable energy, better reporting by the ACT government on its own assets to set benchmarks, as well as more detailed reporting on annual emissions for each sector to allow comparisons and measurement of program effectiveness.

The Property Council and its members, especially in the private sector, have already demonstrated achievements of high environmental and emission reductions through many new projects, and I think they are evident if you look around the city. I would like to restate that the Property Council offers to work closely with the ACT

government, especially in areas of education, demonstration projects and development of effective incentives, to achieve long-term change for industry and the community in the ACT.

We talk about incentives and so on that can be implemented by the ACT government. The Property Council, as part of its pre-budget submission to the ACT government and in other submissions that we have provided in recent years, has spoken to government about really two things that could be done in the built environment. One is to do with retrofitting premises, so upgrades to existing stock, and also the adaptive reuse of existing stock. We are talking about commercial office buildings for other uses, particularly where it is possible to address emissions of this stock in the ACT. We have offered a range of suggestions to the ACT government that we are hopeful are under serious consideration. Many of them are around economic incentives—rate reductions for green building, land tax abatement, gross floor area increases, change of use charge remission or deferment—and we are particularly interested in the facilitation, as I said, of adaptive reuse of inefficient, older commercial office stock.

We are entering an environment where we have increased commercial office vacancy rates and we think there is a very good opportunity for the ACT government at the moment to take advantage of that and work with industry to convert many of those buildings.

That really concludes my opening remarks. I would just like to introduce Gesa Ruge, who is chair of our Sustainable Development Committee with the ACT division of the Property Council, as well as Tony Hedley, our ACT division president. If no-one wishes to say anything else, we will be very happy to take questions.

THE CHAIR: Thank you, Ms Carter. In your submission you talked about the COAG meeting on 30 April. Can you advise the committee what your expectations are out of that meeting?

Ms Ruge: I do not think that reference to the COAG meeting is in our submission.

THE CHAIR: Okay. I thought it had been mentioned. Maybe I have heard that along the way.

We were talking about the buildings and you were particularly mentioning some of the empty office buildings around town, particularly those in the category of the B, C and D buildings. What do you see that the ACT government can do around incentives to assist the owners of those buildings to improve the energy efficiency or adapt to other uses?

Ms Carter: There are really two approaches that we have advocated to the ACT government. To set the scene, as at January 2009, the ACT had an 8.5 per cent vacancy in its commercial office stock. That is the highest of any capital city around Australia. So we are going from an environment with very tight office vacancy to one of the markets with the most vacancy in the country.

This provides opportunities in two areas. The first is in terms of the adaptive re-use of existing office stock. The commonwealth government require that their employees be

housed in A-grade buildings, with a minimum of 4.5 NABERS rated buildings. And they seek, where possible, to do that. That is one of the reasons why we have a lot of this old office stock. We have proposed to government that they look at revisiting policies that were introduced about 10 years ago around relaxation of some of the planning rules. If you look at some of the commercial office buildings, you will see that they do not provide the requisite number of car parks to be turned into residential buildings or hotel accommodation. So some of the things we have raised are around planning. Some of the other things we have talked to them about are financial and economic incentives to encourage people to turn over their buildings for those purposes.

Mr Hedley: About 10 years ago, when Kate Carnell was the Chief Minister, she introduced policies which enabled and encouraged a number of existing but surplus buildings to be converted to residential use—buildings like the Waldorf, which was formerly the Wales Centre; 16 Moore Street, which became the Globe apartments; and the Jolimont Centre, which became the Novotel hotel. There are about 10 or 12 examples. That had the effect of, firstly, encouraging residential density in the city area and, secondly, with the buildings coming out of stock for office, there is significantly less energy use associated with conversion from a commercial office into residential. We think the time is right for those policies to be revisited.

At the time the Carnell government introduced policies with some relaxation of change of use charges, she insisted on some changes to the territory plan to enable greater residential density in the CBD and relaxation of some planning rules. We think the time is right for those sorts of policies to be reintroduced, and that would get rid of a number of surplus buildings and also encourage greater residential use in Civic and the other town centres. So we are encouraging the government to revisit those policies and we are encouraging their early introduction.

Ms Carter: To address the other part of your question, about retrofitting existing premises, as we outlined in our submission, while it is true for many building owners that there may be an important statement about a company's environmental and social credentials that arise as a result of upgrading buildings, in practical terms for many people there are presently very few commercial incentives for the owners of existing buildings to upgrade their buildings at all. Property owners are currently—and this is no surprise to anyone in the global financial crisis—managing a significant level of risk in regard to financing cost, decline in property values, lease obligations, increased vacancy rates, as indicated previously, and loss of income that arise during building upgrades, and the cost and delay that arise because of difficulties in the ACT planning approval processes. And these are just some of the barriers to people who otherwise might be quite well intentioned about doing something to upgrade buildings.

In summary, for a large number of older office stock, particularly around the city, upgrades will only occur without some partnership with government in accordance with the normal building life cycle responses. So that is why we see a very good opportunity at the moment to work with government to avoid the delay in the transition to low-emission properties in the ACT.

Mr Hedley: At a national level, the Property Council has recommended that the commonwealth government look at accelerated depreciation allowances if changes

and expenditure are made to make buildings more energy efficient. We believe that would be a significant encouragement. It does not fall within the purview of the ACT Legislative Assembly, but at a national level it would be helpful to have a recommendation that the commonwealth government examine the efficacy of having accelerated depreciation allowances where alterations are made to existing building stock to improve existing energy efficiency.

THE CHAIR: In your submission you have also put in some suggestions that are connected to the ACT government around the waiving of stamp duty or lower rates, some of those taxes, charges and so on—

Ms Carter: Yes.

Mr Hedley: Yes.

THE CHAIR: that would relate to upgrading your building or building a green building in the first place.

Ms Carter: In Queensland, for example, the new Premier of the Queensland government announced recently what is called a "green door", which is accelerated planning approval processes for green buildings. I understand that is something that is not contemplated currently by the ACT government but it is in the suite of things that we believe would be an incentive to industry to upgrade buildings.

THE CHAIR: It is certainly something that has been raised with the committee before. It was something that came out of that election in recent months. Going back to the rating system, the national Australian built environment rating system, and talking about the B, C and D grade commercial stock, could we have a little bit more detail about that rating system and also where those buildings are primarily located across the ACT, just to give us a bit of context?

Ms Carter: I would like, if I may, to take some of that question on notice. I can very easily provide the committee with the precise definitions of how the office grading matrix is used. I can speak to that now, but I think it would be useful for the committee if I provided that to you. It is around many issues, including the floor plate, environmental issues, where the lifts are and a lot of issues like that. So if I can take that on notice, I would like to do so.

THE CHAIR: Certainly.

Mr Hedley: The other thing we were looking at was where the buildings were located that are the 4½-star NABERS rated buildings. Am I right?

THE CHAIR: Yes, and part of that is also getting a sense of where they are. Therefore, when you talk about the adaptive use of buildings, are they in locations that would adapt nicely to residential use or mixed use?

Mr Hedley: Okay. There are a number of 4½-star NABERS rated buildings in the CBD. The closest example to here is Industry House, which is located maybe 150 metres from here. There are a number of existing buildings which are going

through the process of getting their rating, because you do not just get a rating; there has to be 12 months of analysis of the energy consumption, and that is total energy consumption, to get the rating. There are a number in Woden that are starting to come through, so there are probably about 20 in the ACT now that have a 4½-star rating.

With respect to the older stock, or older buildings, there are City West buildings and buildings in Northbourne Avenue that might be rated, if they were currently rated, at one or two-star NABERS rated buildings. Some of the stock in Belconnen town centre is at that sort of level, the original ones out there, and some of the original buildings at Woden would be rated one or two stars, to the extent that they have had a rating done on them.

Ms Carter: There is a concentration of older stock around Civic and the town centres, and that is why we think policies related to the encouragement of densities would be useful, particularly for conversion to residential uses.

It leads into another part of our submission, which is about the provision of infrastructure in the territory and the development of a sustainable transport plan for the territory. This is in some respects a hoary old chestnut for the Property Council, and probably indeed for the ACT government, as well as everyone represented here today. The Property Council is extremely keen that the ACT government develop a genuinely integrated and sustainable transport plan that is based on land use planning, population, where population is going to be, where people live and work, and that recognises modes of transport and addresses things such as park 'n' ride, and that looks at car parking prices, for example, to encourage people onto public transport. All of these issues are inextricably linked in reducing emissions.

As far as I am aware, there are two factors that contribute primarily to greenhouse gas emissions in the territory. One is buildings—and it is a disproportionate amount here because we have no heavy industry—and the other is vehicles on the road. All of these issues are linked. We believe that government, working with industry, could do a lot and that much could be done to address all of these issues.

THE CHAIR: So by addressing that issue of density and looking at transport corridors and building in that density, you can create that demand for public transport.

Ms Carter: Indeed.

Ms Ruge: In support of those last two points, in our submission we state that in regard to stationary energy in the ACT, which is over 70 per cent, at the moment it is one paragraph, and I think an important part to take on board through this inquiry would be to look at how this could be further monitored and more specifically identify four different sectors of energy use. At the moment it is not possible to meter or monitor against something. I think this will apply in particular to the ACT government assets. We would like to see in future more detailed reporting and input, and that the reporting relates to initiatives so that effectiveness of initiatives can then be compared in future years.

MR SESELJA: You talked about the commonwealth government standards for offices and you touched a little bit on the private sector. Are you aware of any 4½-star

rated buildings that the ACT government owns or occupies and what would you like to see from the ACT government in terms of its accommodation policies towards this end?

Mr Hedley: I am not aware of any 4½-star buildings. That is not to say there are not any. I am not aware of any. There is a significant capital expense in converting buildings from whatever their existing rating is to 4½ stars, and that depends upon the amenities and facilities in the building and things of that nature. If it is a single-glazed building with inefficient air conditioning and reheat systems—there is a whole range—it can cost up to $1,000 a square metre, which, on a 10,000-square-metre building, is $10 million. Just to convert something, for example, like Macarthur House, you could be looking at a budget of between $8 million and $10 million to convert that. With this building here, I could only hazard a guess, but it would be significant to bring it up to 4½-star NABERS rated. A significant part of the office stock that they are in, of course, is not owned by the ACT government. The Nara Centre is rented and Eclipse House across the road is rented. Many of those buildings do not have energy ratings on them. But it can be a significant impost on the budget to do it.

The other issue which arises is that, if the ACT government moves out of those buildings, what happens to those buildings? There was a report done by a firm called Davis Langdon, which we refer to in our submission, who are the world's largest building quantity surveyors. They talk about the embodied energy in existing buildings and how, if you have a 10,000-square-metre building which might be one star rated and you build an equivalent building that was 4½-star rated, the embodied energy in the existing building and the payback is 290 years. That is an independent world-wide study that has been done, and we refer to that towards the end of our submission. I think it is a very important point which we need to bear in mind. There is so much embodied energy in the existing built environment that if we were to force people out of existing buildings or make those buildings redundant just to build energy-efficient new buildings that are 4½ stars, there is a 290-year payback in terms of energy savings. Looking at the previous slide of 70 metre or 90-metre sea rises, that is a lot. That is towards the end of recommendation 6.

Our view is that one needs to be very careful in recommending that the ACT government, for example, vacate all of its existing non-rated buildings and move into new buildings. A better policy, we think, is to have a system of various encouragements which encourage either, as Catherine said, the adaptive re-use of existing buildings or conversion into residential or upgrades to existing buildings. And it is possible to do it. It is possible, although it costs money, to do an upgrade of an existing facility so the existing facility is a more environmentally efficient solution, we are suggesting, than either knocking down or leaving empty a non-rated building.

THE CHAIR: And you have explained that is also because of the embodied energy in that building.

Mr Hedley: Yes, it is the embodied energy, and we need to bear that in mind. There is the concrete, the steel, the glass, the aluminium and all the other bits and pieces that go into it. So a blanket suggestion that the existing built environment be bulldozed and put into a tip and new buildings energy efficiently built is nonsense.

THE CHAIR: Towards the end of your submission, you talk about the tune-up Canberra proposal and that you have been having discussions with government and you are hoping that that will progress well. Could you give us a bit more detail about what this proposal is?

Ms Ruge: We have had the opportunity to present this proposal to various ministers and their staff. The proposal is based on a joint grant system in which the funding is shared by the private sector and the government. We have only initiated, as a start-up program, a very small budget of $4.4 million over four years. That would allow, we believe, several small projects to proceed straight ahead. Jointly with the government, we as the property sector would identify selection criteria and relevant projects that could be used for showcasing. The examples would also involve behavioural change and some reporting samples that could be developed and put some practical examples on the ground in the ACT that could inform the policies as well as allow monitored results that then can be taken further.

At the moment it is a very small-scale program. We would like to see that accelerated in future budgets. It could also be diversified from energy to go into water, waste and other areas that we believe can be improved in terms of the sustainable footprint for Canberra.

THE CHAIR: So this would be trialling it. You spoke earlier, and it was in your submission, about the importance of being able to collect more data to be able to understand how we can reduce emissions and so forth and what is working and what is not. Are you seeing that as part of this trial you can be looking at what sorts of measures you could be putting in place so that that could also be informing what government might collect on its buildings in the future or what any building owner might put in place?

Ms Carter: The simple response to that is: yes. One of the things I wanted to mention is this. I know that the ACT government as a pre-election commitment allocated $75,000 for a green building study in partnership with the Property Council of Australia and the Green Building Council. We have been speaking to the government about that. I understand that that project was envisaged as a pilot project to demonstrate internally to government how buildings could be greened up.

We have spoken to government suggesting that they not proceed on that basis. The property industry knows how to build green. We do not think that it is necessary any more for money to be spent on investigating how to do it. The tool kit is there. Industry knows how to do it. It is just a commitment from the stakeholders involved as to doing it.

This particular proposal we put to government, although we consider it to be quite modest—we imagine that there would be something like 20 buildings that could be participants in this program. That is large and small—larger buildings, deeper emission cuts; but smaller buildings, a helping hand to people that are finding it a bit more difficult. Measuring and reporting would be part of that. We have proposed a methodology for doing that. It is something that we would look to do as a Property Council partnership with the ACT government to get some tangible outcomes.

Mr Hedley: Can I come back to something that you raised before and I have thought about? That is: what can the ACT government do about its existing stock rented? You could do what the commonwealth is doing. As part of a renewal of lease proposal from the commonwealth government these days, they are saying: "We are happy to stay in this building. We know it is not rated but if you undertake to do a program of upgrading to try to get to a four or 4½-star rating, we will sign a new lease." There is no reason why that policy, which the commonwealth has been applying—in some instances it is moving to new buildings, but in many cases, because there are not that many 4½-star rated buildings around, there is no reason why the ACT government could not require, as part of this process, that it will renew leases in existing buildings to have those buildings retrofitted. We think that is a much more economical solution than the ACT government going out and building 4½-star buildings itself.

MR RATTENBURY: Could you tell me how many new office buildings have been constructed in the ACT in the last five years—approximately.

Ms Carter: Could I take that on notice? I can tell you precisely if I can take that question on notice, but to hazard a guess—

Mr Hedley: No-one has built an office building in the last three, four or five years that has not been aiming at 4½ stars. This has been coming. The commonwealth's energy efficiency in government offices policy came out a couple of years ago. It was flagged before it came out. Certainly in the last three years—it may go back a bit earlier than that—there has not been a new office building built that has not aimed for a minimum of four and seeking of 4½ stars. So industry has been ahead of the game in terms of new office developments over the last three, four or five years. Over the last three, four or five years, nobody in their right mind in the private sector would have been building a building that has not been aimed at a 4½-star rating.

MR RATTENBURY: You say "aimed at".

Ms Carter: If I can be clear about that, there is no developer constructing buildings of any size looking for a commonwealth tenant that has not met or exceeded 4.5 NABERS units. The commonwealth government, we understand, is currently looking to raise that benchmark. Industry is very aware of that. You will find that, for future-proofing buildings, any commercial developer of any size is looking to exceed the minimum standard because they want to secure the commonwealth tenants. The greater problem is the old existing stock and smaller property owners, not property owners that house public servants essentially.

Mr Hedley: You queried the words "aimed at". When you are designing and constructing a building, all you are doing is aiming for a certain figure. You do not know what it is going to do until 12 months clear operation. You do not get your NABERS rating—you do not get any certificates at all—until there is 12 months proof of energy consumption on a per square metre basis. Under the commonwealth scheme, under the green lease schedule, that applies for only 12 months and has to be looked at every 12 months.

So there is quite a complex procedure. Otherwise you would have a situation where

you would get your 4½ stars and then you might not run the building in the future. But you do not get it for 12 months. It takes a full 12 months after the building has been occupied before you get the NABERS rating.

Ms Carter: It is complicated and challenging. I have got a couple of buildings in mind that were built to be five-star NABERS—major commonwealth buildings, major commonwealth tenants—but, when those buildings came out of the ground, it was never contemplated that people would be using those buildings 24 hours a day. Things such as security lighting, lighting of stairwells, air conditioning and the heat from IT systems—as Tony says, it is not as simple as building a building today and it being five NABERS rated forever and a day. It is a very complicated, ongoing partnership.

Mr Hedley: And expensive.

Ms Carter: And very expensive.

MR RATTENBURY: Do I take it from your comments, Ms Carter, that many buildings are not achieving the 4½ stars in their actual performance?

Mr Hedley: You do not know.

Ms Carter: We could not comment on that.

Mr Hedley: You do not know until the 12 months is up.

MR RATTENBURY: Sure, but presumably some of those buildings are now more than 12 months old.

Mr Hedley: Yes.

MR RATTENBURY: Are they meeting their aimed targets?

Mr Hedley: I am not sure that we can answer that.

Ms Carter: The department of finance does not release that to us, so we could not comment on it with any authority. In fact, it is information the Property Council has been trying to seek for a time about the performance of commonwealth buildings, but that is not provided internally and certainly not to us.

Mr Hedley: The NABERS register is a public register which is publicly accessible and available. That will show you which buildings in which locality have got a current 4.5-star NABERS rating or above. Those ratings are only available for a 12-month period, and each 12 months the building has to be re-rated if it wants to retain its NABERS certification.

Ms Carter: We have been quite active in seeking commonwealth government input to provide us with that advice. One of the things we touch on in our submission is that the commonwealth is contemplating mandatory disclosure of energy efficiency ratings in buildings but it is not a requirement or an obligation it places on itself. Central to a lot of our submissions we would really like to see some leadership from government,

not just punitive measures applied to industry where it is not matched by government behaviour.

MR RATTENBURY: One of the incentives that you listed that would be beneficial is an increase in gross floor area. I want to clarify: does that achieve any environmental benefit or is that simply to improve the financial return on the premises?

Mr Hedley: Our position on that is that the current planning restrictions on buildings in the CBD are in effect inefficient from an environmental perspective, in the sense that when you have height limits—for example, a limit on building heights—you are foreseeing urban sprawl. The current arrangements for residential accommodation, where we are stretching at the perimeter or constantly going out and out, is not achieving greater density and cannot be in the interests of the environment. What we are suggesting is that, if there were greater density in the town centres and the CBD, we would be in a situation with better environmental outcomes and less need for public transport if people were living and working in the CBDs.

At the moment we have a commonwealth government imposed rule called RL617, which is the height above sea level, the height of the Parliament House tower, which a building cannot exceed. Our view is that that is an artificial restriction which has deleterious environmental impacts on the people of Canberra.

MR RATTENBURY: Thank you for that clarification. I was not sure what the objective was.

In your submission you have supported the retention of targets proposed in the current weathering the climate change strategy. Can you explain briefly again why you have taken that position?

Ms Carter: I will go back to the figures that I spoke to at the start of my submission. It is our belief that the targets are ambitious, and to look at the numbers around this the inference is that the emissions for the ACT are to be reduced to 60 per cent of 2000 emissions by 2050, so that is a reduction to around a quarter of current emission levels in the ACT. But, as stated earlier, it does not address any future growth in Canberra, placing an even higher demand on a per capita basis.

As touched on in different points to our submission to you today, the ACT government does not currently have in place very robust monitoring of emission targets and we think, firstly, that the current targets are ambitious. But for targets to be meaningful they have to be monitored and be able to be achieved by industry and the community. We think it is hollow just to name numbers and pull them out of the air with nothing meaningful around them. So for that reason primarily we support the current targets and we think they are ambitious.

MR RATTENBURY: It is an important point that they should not be hollow, but I will come back to that in a moment.

I am particularly interested in the 2025 target that you say you support. Based on 1990 baselines, are you aware that that results in an approximate increase above 1990 levels

of 14 per cent?

Ms Carter: Yes.

MR RATTENBURY: And you support that position?

Ms Ruge: We also pointed out that it is important to get to an early and deeper cut trajectory and we are not in a position to ascertain, because there is only one bar number at the moment for emissions for stationary energy. So we would welcome early initiatives that allow a deep cut and, as we have recommended, to have an annual review of the emissions in the ACT would allow this to come down. But we believe it is very strongly dependent on immediate and significant initiatives to allow an impact on the short trajectory and then review it on an annual basis to see where that is heading. But it is not possible for us to come up with a number, due to the lack of data, to assess impacts at the moment.

MR RATTENBURY: I can accept that, except that you have stated in here explicit support for that number, that level of tonnage, of CO_2 emissions by 2025.

Ms Ruge: We are not able at the moment to see an improvement on that unless the short-term deep cut initiatives could happen—and we have outlined the possibilities of that—to then review that. But certainly the longer term, which is at the moment bringing down to a quarter of where we are now, assuming we are growing, is something we should target and hopefully achieve. But we think it is ambitious.

Ms Carter: Could we also take that specific question on notice and respond to the committee?

MR RATTENBURY: Sure. In terms of what is achievable, I was very encouraged by page 4 or 5 of your submission where you talk about research by the Australian Sustainable Built Environment Council. I was interested to read there about the potential for the property sector to achieve abatement of 27 to 31 per cent against baseline emission projections by 2030. Given that you believe that those sorts of emission reductions are possible, do you think that would be an applicable target for the ACT property sector?

Ms Ruge: Those reports relate to the property sector only and they are calculated at a national level. They are valuable guiding figures that are used in the industry. It is generally accepted that through energy efficiency, as well as through a significant increase of renewable energy, those cuts can be achieved with incentives and without too many additional costs. That is why we think that is the direction to move into.

Because the ACT, as we have outlined, has a unique context in that we have to supply commonwealth accommodation which is higher cost and with higher requirements, that should be taken into account. Hence the ACT government should be acting with supporting initiatives and encouragement to move this forward. So it is a combination of energy efficiency and, although we have not talked much about this today, the increase of renewable energy. Certainly the reduction and phasing out of fossil fuels will allow these significant steps in the future.

MR RATTENBURY: But there is nothing that suggests that those figures of a 27 to 31 per cent cut in abatement figures are not achievable in the ACT context?

Ms Ruge: We do not have enough information about that. As we outlined, there is not enough data. There is data on new and existing buildings through the NABERS rating, and I think jointly with the Property Council in future years to start collating emissions data would be an important first step and then work for the ACT scenario particularly and that could be more ambitious or less ambitious. These national reports give a direction of where things could be heading.

MR RATTENBURY: So these would be possible in the ACT but there would need to be a little bit more work to be specific?

Mr Hedley: It depends on the incentives that are offered. If a suite of policies were introduced which encouraged the existing built environment to adopt measures to reduce energy consumption, it is quite clear, from my own practical experience, that it is possible to significantly reduce the amount of energy consumed in the existing built environment. But, to achieve that, a lot of the economic advantages, or the cost-benefit analyses, do not sustain it at the present time.

MR RATTENBURY: I might just draw together a conclusion then. You have identified in your submission that it is possible to cut in the region of 27 to 31 per cent abatement by about 2030 with the right incentives.

Mr Hedley: Yes.

MR RATTENBURY: You have also identified that 72 per cent of emissions in the ACT come from stationary energy and that a disproportionate amount of the ACT's emissions come from the building sector, so that would suggest that we should be able, through the commercial building sector, to make a significant reduction in the ACT's emissions with the right incentives.

Ms Carter: Correct, yes.

Mr Hedley: Yes, the right policies in place.

THE CHAIR: Just picking up on the issue of incentives, and you have outlined some possible incentives in your submission, have you done any sort of costing work around what that would cost the ACT government to provide?

Ms Carter: No, we have not.

Mr Hedley: The biggest incentive is the accelerated depreciation allowances that fall within the province of the commonwealth government, and certainly the national office of the Property Council has been pressing hard to the commonwealth government to enable taxation legislation to be amended to enable accelerated depreciation. That is the single biggest factor which would encourage the owners of existing building stock to dive in and start doing some of the work. Then there is a suite of policies that we have outlined in our submission for the ACT government, if it has a mind to, if it were to adopt those sorts of policies, which would have a flow-on

effect in terms of getting the existing stock significantly more energy efficient.

THE CHAIR: You mentioned your project this afternoon, the tune-up project. In South Australia they have, for instance, a fund set aside so that people can access money to be able to green their buildings. Is that another part of a suite of programs that you think would be useful here in the ACT?

Ms Carter: It is interesting that you use that as an example. The South Australian government has adopted the Property Council's proposal for a buildings tune-up program. It is this proposal. It was included in the 2008-09 budget, and my understanding is that it rolled out in February this year. So there is precedent. My understanding is that the Tasmanian and New South Wales governments are also looking at this proposal. So the proposal in South Australia, given that we developed it, is very much one that we would support and propose for the territory.

THE CHAIR: Thank you very much for presenting that evidence to us this afternoon. A transcript will be sent out to you for you to correct.

The committee adjourned at 3.52 pm.