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, 29 APRIL 2009

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

By authority of the Legislative Assembly for the Australian Capital Territory

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WITNESSES

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Amended 21 January 2009

The committee met at 1.59 pm.

EIRITZ, MS CINDY MARION

THE CHAIR: Good afternoon, and welcome to this public hearing of the Standing Committee on Climate Change, Environment and Water, inquiring into ACT greenhouse reduction targets. This afternoon we are hearing from Ms Cindy Eiritz in a private capacity, followed by various representatives of SEE-Change Canberra, a community-based organisation which is very actively promoting more sustainability in Canberra. From SEE-Change, we will hear from Emeritus Professor Bob Douglas, Executive Officer Vanessa Morris and ACT committee members Dr Vivienne Teoh and Ms Cindy Eiritz. Our last set of witnesses will be the Managing Director of Energy Imaging, Ms Jenny Edwards, and the director, Mr Andrew Cleary. Unfortunately, two of the witnesses that we had scheduled had to withdraw due to unforeseen circumstances.

Ms Eiritz, would you please confirm for *Hansard* that you understood the content of the privilege statement.

Ms Eiritz: Yes.

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

Ms Eiritz: Certainly. I would first like to read a statement from Dr Amelie Barry. She was supposed to be appearing with me but is unable to. She asked that a statement be read:

> Permaculture ACT and its sister group ACT permablitz network are committed to providing information and resources to individuals and groups as to how to mitigate the potential effects of climate change and to demonstrate to others how to live a lower ecological impact lifestyle.
>
> After reading the ACT's kerbside waste audit of 2007, it has become apparent that one of the areas that could have the greatest impact in quickly reducing greenhouse gas emissions is composting and reducing the landfill gas emitted from the ACT's landfill. Since 50 per cent of landfill gas is methane and the remaining is basically CO_2, it makes sense to quickly and drastically reduce these gases from our landfill.
>
> Interestingly, 48.5 per cent of all household waste is compostable. That means that the average ACT household throws out 851.24 kilos of rubbish a year. This means that 412.85 kilos of that rubbish is compostable.

Basically, what Dr Barry is trying to point out is that a lot of the emission reduction targets are not looking at this particular aspect. Indeed, the 30 per cent reduction by 2012 that a lot of community people around town are aspiring to could be achieved just by putting composting bins in our streets. That is quite phenomenal. I will continue:

> For every kilo of rubbish in the landfill, 0.94 kilos of landfill gas is emitted. That means that in the ACT each household is responsible for over 800 kilos of

> methane and CO_2 emissions from their rubbish alone. Multiplied by the 112,000 households in the ACT, that is 89,600,000 kilos of greenhouse gas emissions per year.

What Dr Barry suggests is that, by the ACT collecting and composting that roughly 412 kilos of compostable waste generated by each household—not mentioning the restaurant and industrial food waste—you could reduce the amount of greenhouse gas emissions from landfill by half. She says:

> The ANU composts its green wastes and food wastes in an industrial size composting machine. One large enough to handle the capacity of compostable waste generated in the ACT is available. That means that being able to change over to this could be quite easy.
>
> Furthermore, by returning the compost to ACT citizens, people can grow their own fruit and vegetables, and carbon sequestration in the soil of CO_2 is greatly increased.

Interestingly, another figure she found was that turning over your front lawn and your nature strip to a permaculture garden sequesters, and the amount that you save from food miles is the same amount as a car.

There are lots of initiatives about how to do what, but just by people growing their own vegies in their front gardens, as Permaculture ACT has been promoting, could offset their whole car.

Additionally, the reduced ecological footprint of households by travelling less for food and relying less on food being shipped means a drastic reduction in their impact. She says:

> Permaculture ACT and its sister group ACT permablitz network hope that simple solutions such as the ones outlined in our submission will be implemented in the ACT due to their low cost and great impact in reducing greenhouse gas emissions and the ecological footprint of the ACT. Thank you for the opportunity to present these figures and ideas.

THE CHAIR: Do you want to make an opening statement?

Ms Eiritz: Yes, just briefly. Something that really draws my attention is that 61 per cent of household emissions come from heating and 20 per cent come from hot water. There is a lot of discussion about what to do about emissions, but, given that 73 per cent come from just our stationary energy, to me the answer is really quite simple: people need to put on a jumper and find something to enjoy other than hot showers.

The amount of money that is being invested in this territory to micro-analyse the problem from 50 million different angles is really a little sad. All of the information is causing your average citizen to not really know where to start and to not take the most effective actions because they are not told to go and put on a jumper and find something to enjoy other than a hot shower. I know that that is a desperately simplistic way of looking at the problem, but if we take some of the analysis out and just look at the pure facts, some of the solutions really are that simple.

What I would like to be able to contribute this afternoon is discussion on how to rapidly transition to sustainability. I would like to contend that the main way that people learn is person to person conversation, and this is the bit that has largely been missing in a lot of the programs. The programs have been fantastic in terms of their rigour, their thoroughness and the opportunity in what they are looking for, but we are not actually achieving that last step, which is how to have the person to person conversation so that things can occur.

A lot of the government information campaigns are targeted at outcomes without a lot of appreciation of the human dimension. That is the main thing that I would like to offer to the committee this afternoon—a human dimension perspective on this particular problem.

THE CHAIR: Thank you. In your submission, you talk about local opportunities. You have touched on a few of those, but I would like to elaborate a little further about what you see as the local opportunities in order to reduce our greenhouse gas emissions.

Ms Eiritz: Firstly, I am not from the ACT—I have been living here for only five years—but I think it is an absolutely fantastic place. The way that it is set up, the demographic and the nature of where our emissions are coming from mean that we have got an absolutely brilliant opportunity to be able to make a quite big difference quite quickly relatively easily and to rebuild our communities in that regard.

As a 21st century society, our communities have become quite fragmented and dislocated as a result of our time commitments to work and the nature of how our society has evolved. Climate change is an absolutely fantastic opportunity to rebuild some of the social fabric of our communities as part of a human adaptation campaign.

To deal with the mitigation side of climate change, I think that it is really quite achievable. There is a lot of human resource capacity within the community that is doing work now and is ready to step up and do a lot more work to support what the government is trying to achieve.

THE CHAIR: Later in your submission, relating to that comment you just made about social fabric, you talk about some of the movements and action that have been taken at a community level—that community development sort of approach to taking action on climate change. You have listed a number here in your submission. Do you see that other community programs are an important part of the picture as far as reducing greenhouse gases is concerned? And what do you think government could do better? Is it doing enough around supporting that sort of community development and those sorts of transition town types of approaches?

Ms Eiritz: The government has done a lot and I think that largely there is a bit of a disconnect in terms of communication. What I have found in the community is that most people are not actually aware of a lot of the good work that the government is doing, of a lot of initiatives that are available for them, to help. And because, when people become involved in climate change, they tend to get a bit passionate and a bit overkeen, they are very quick to come up with a new solution instead of climbing

back to what is already existing.

So in the first instance I think that the government is doing a lot of really great work. I think that that work could have a lot better effect by more people knowing about it. In terms of actually supporting community groups—once again, the government has done a very good job in supporting organisations like SEE-Change that are really starting to make a difference. The only point I hazard something on there is that I think that all money that is expended needs to be quite clear about results. With the work we are doing with the community and with the government programs, I do not think that we are optimising what might be possible there.

MS PORTER: I know that part of the early programs for community awareness by SEE-Change were in my electorate, in Aranda, Cook and Macquarie, where there was a lot of work done by volunteers who literally doorknocked and talked to people about what they could do and how to get involved. I know also that there was a program through the various colleges where young men were going and getting other young people involved in getting that message. You talked about word of mouth and you are saying that we are not getting our message out there in an effective way. I am wondering whether it is by engaging in those particular methods that SEE-Change used in the first instance. Do you think it is about those methods? If so, how can government support those methods of both getting the local message out from the people who are involved and also getting the government message out?

Ms Eiritz: The challenge needs to be tackled from two ends at the same time. It needs to be tackled very strategically from an organisational perspective, but it also needs to be tackled very personally in terms of the interaction. This has been the difficulty in coming up with the optimal program so far: you do not usually get both of those aspects within the one sort of person or the one sort of team. The individual interaction and the work that SEE-Change is doing need to be supported within a wider framework.

For example, the work that the HEAT team does is one-on-one auditing within a confined environment. I wonder how much more effective that money could be if every person who had an audit became a bit more of a train the trainer sort of thing. I was given an office space by Energy Strategies last year; I worked there for eight months just doing research voluntarily. That was an opportunity. If you could take something like the HEAT audit and, when that person was making those changes, connect them into a wider peer support network, the chances of people actually being able to make those behavioural changes would be a lot stronger.

We found that people are very keen to talk about what they have done. If we can create that sort of mechanism where people can say, "I've done this," and there is that sort of energy, it gets a bit of a buzz going around the city and we could probably engage a lot more people other than just the early adopters through that sort of mechanism.

THE CHAIR: Do you also find that people are a little lost when it comes to what is available for them and what their eligibility is and so forth? I am wondering what sort of solution there is there. Do you see any benefits in a one-stop shop approach where people can go in and say: "Here's my house. Have a look at it and tell me what I am

eligible for and what would be best and most worthwhile"?

Ms Eiritz: Absolutely. As I was saying in the introduction, one of the biggest barriers is the fact that there is too much information and most of us are all quite time poor. As a result, people become overwhelmed and cannot be bothered going through the details. Certainly anything that can be done to distil exactly what needs to be done and how to do it and says, "Here's some resources and support to be able to do it," is our best chance of being able to create the best effect the most quickly.

MR SESELJA: The letter at the front of your submission made quite interesting reading and rather distressing reading about feelings of guilt and the like.

Ms Eiritz: Welcome to my world.

MR SESELJA: I want you to expand. There is a paragraph near the end where you say:

> … it is not fair that we are all feeling guilty each time we leave a light on, when our governments are selling our future off to unscrupulous corporations.

Do you want to talk a bit about that? Also, on another issue, one of the things in part of the debate you have probably been following with the Australia Institute is highlighting some of the problems with the ETS in the sense of saying that if you take local action it makes no difference to the overall equation because it then all gets used as credits and the like. I would like your thoughts on that.

Ms Eiritz: The biggest point I would like to make is that for governments to be able to take any action there needs to be political will, and as citizens in the community we are actually failing in our democratic responsibility to help support government. I am involved within climate groups and the national climate network. I have tried to encourage the idea that we need to support the government. To make no bones about it, the situation is an absolute disgrace. Our democracy is in crisis. At the federal level, it is terribly sad that people who would come in on such an idealistic notion of what we were going to do in such a short time frame would be completely closed down by being bullied by fossil fuel interests. That is really sad.

The reason I think that is sad is this. I went to the switch to green expo last year, which once again was a wonderful initiative sponsored by the ACT government. The gentleman from California, the billionaire who does the solar thermal—the Aussie guy—was there. He showed us that he already has a plan for solar thermal—how he could put farms in the desert and how we could change over our coal economy—to still ship energy, but energy of the solar thermal form. It is this information problem again. A lot of that information is not getting through to people who can do anything with it. Within the community, we are all just worried and scared, thinking of what sort of future we are leaving for our children. There is no real mechanism for the community to be engaged in a way that the government can feel less vulnerable to fossil fuel interests and more supported and able to take the sorts of courageous steps that I think we need.

MR SESELJA: Getting back to the ETS and the local action, I am particularly

interested in your perspective because obviously you are looking to take local action as much as possible and looking to encourage it and get the message out. You understand the problems with the current ETS in that sense. If that were to pass through the federal parliament as it is, where do you think that would leave you in terms of the action you want to take locally? What would that do for your motivation or the sorts of things that you want to achieve?

Ms Eiritz: The problem is the target. There are lots of different bits and pieces of the CPRS which are really quite scary, but the problem is really the target. If we are locked into such a low target, we may as well all just—planet Titanic is on the way; we may as well just party while the ship goes down. That is really quite sad. We are doing everything within our ability to be able to raise the profile locally, but, as I said, it really needs to be a tandem effort; it needs to be a matter of how we generate political will to support the government. I do not think that there is any other way to make forward progress on such a difficult issue.

THE CHAIR: In your submission, you mentioned the acceptability of local and offshore offsets. Your argument was that it is quite legitimate to be purchasing those offshore. Can you explain how you think this is equitable—why you believe that it is equitable?

Ms Eiritz: I do not see climate change as a problem that is occurring in isolation. I believe that climate change is reflective of a number of areas within our global dynamic that have opportunities for improvement. In terms of our lobbying for Copenhagen, I am dealing with activists over in Denmark who are looking at the human dimension. What we are trying to put forward is not to look at the Third World in the way we look at them, but to actually look at them as ecologically sustainable cultures who have ecological and social capital that we can only dream of. This is where it comes to the acceptability of local and offshore offsets. Until we can share some of the resources a little more equitably, we are not going to get agreement at the global level. Why would you, as a Third World country, want to follow this path that has already been taken?

That is why I think, in terms of offshore offsets, if we have got the money to share—and we do, within this community—it is actually reasonable to be able to support some of those communities and to help them to find their way. Even if we come up with the perfect solution here in the ACT, that is not going to stop the global situation. So I think it can only be looked at as a global problem and we cannot be isolationist in that perspective.

THE CHAIR: You do not think that what that does is basically to allow those richer countries to be able to put off doing anything about reducing their emissions; they can just buy those offsets and be done with it and just keep churning out emissions?

Ms Eiritz: No, I think it is like what we were describing before, about having to do two things at once—having to do the strategic thing as well as the personal thing. We need to go about changing our lives and making them more sustainable, but I think strategically we need to look at the big picture of how those things go through. Some 350,000 people here in Canberra are using as much as 1.75 million people in China. It is quite a fundamental disconnect. We need to work out how to get the technology so

that we can support those countries to be able to leapfrog past the industrial age, which was probably a cultural mal-adaptation in the scheme of things, and get to a renewable energy economy that they can run. I think it is important that we come up with the best possible, perfect solution here for Canberra, but I do not think that in itself is enough.

THE CHAIR: You write "could citizen investment into this sort of power generation be expedited by removing the perverse disincentive of black power being cheaper than green power". Are you suggesting that we need a higher mandatory renewable energy target for the ACT?

Ms Eiritz: Yes, I would really like to see 100 per cent in 10 years. With our affluence and all the concern, and with the amount of people around town who talk so passionately about wanting to do stuff, I think that is entirely achievable. I think that the challenge with green power for the population that cannot afford it is that if it is going to cost more, it is perverse. I guess what I am contending is: how much has been spent on programs over the last five years here in the ACT to do climate-related stuff? Exactly what have they achieved? By exactly how much have emissions been reduced out of that money that has been spent? In terms of being a devil's advocate, if all of that money had been spent on transitioning us to renewables, how much further down the track would we be?

MS PORTER: With respect to your comment about information, I think you were right in that we need to make sure that information gets out there in a more shorthand way. There is too much information and it is not digestible; therefore some people just say, "Enough is enough." I was thinking about the statement that you read out before for the other person, and about the vegetable garden idea. I heard someone talking about it on the radio over the weekend. Peter Cundall was talking about how he has converted his front garden into a vegetable garden. Of course, in Canberra we do not have front fences, which could be problematic, unless you had an agreement with everyone in the street that we were going to share our vegetables; otherwise you would probably find your tomatoes gone in the morning.

The other point is about the nature strip. We cannot plant vegetables on the nature strip. I have found through my constituency work that people do not know what they can plant on their nature strip. They do not realise that it is not theirs and they cannot plant anything they like on it. You also made a point in your submission about the fresh food markets. How many of us know where the stuff that we buy at any of our fresh food markets and our farmers market actually comes from? Do we just accept that because it is at a farmers market it comes from there, or do we carefully examine where it comes from? You are right: we need to get more information out there, and we need to make sure that it is accurate information and it is information that people can absorb.

Ms Eiritz: Yes.

THE CHAIR: Thank you, Cindy.

DOUGLAS, EMERITUS PROFESSOR BOB AO, Chair, SEE-Change Canberra and Chair, Australia 21
EIRITZ, MS CINDY MARION, Committee Member, SEE-Change Canberra
MORRIS, MS VANESSA, Executive Officer, SEE-Change Canberra
TEOH, DR VIVIENNE, Committee Member, SEE-Change Canberra
THE CHAIR: I welcome the representatives of SEE-Change. Has everybody had a chance to read the privilege statement?

Prof Douglas: Yes.

THE CHAIR: Can you confirm for Hansard that you understand that statement?

Prof Douglas: Yes.

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

Prof Douglas: We would each like to say a few words as part of the opening statement. I would like in this opening statement to say a little bit about SEE-Change and where it fits into the ACT and then to identify the four major propositions we would like to put to you. You have got them in front of you.

SEE-Change is now three years old. Mary Porter was, of course, the person who launched the SEE-Change book and was part of the original roundtable that participated. We also had bipartisan involvement in that. What came out of that was an organisation that has grown quite quickly. It is attempting to empower people in the suburbs to understand the nature of the problems we are confronting and to take action on them.

Climate change and ecological footprints were very much a central part of the discussions that established SEE-Change. We recognised that this was a major global challenge, and I think it has become increasingly clear that it is the most important challenge on the horizon for humanity as a whole. I am delighted that the US administration has today made it absolutely clear that this is one of its very top priorities, and we are urging, as our first submission to you, that the ACT government should make dealing effectively with carbon emissions and climate change its very top priority, and it should be its first call on the budget. For that reason, we want to emphasise that, to our mind, this is more important than anything else you do as legislators.

The second point we want to urge is that the ACT is in a unique position and should stand up, not only because it is the biggest polluter in the country in terms of its lifestyle but also because it is able, in ways that other parts of Australia may not be able to do, to give effective leadership. Vanessa will speak to proposition No 2, which relates to our belief that you should urge amendment of this carbon pollution reduction scheme.

Ms Morris: The carbon pollution reduction scheme, as you know, has many opponents. Within SEE-Change, there are two general views. One is that the CPRS in its current state is so deeply flawed that it should not be passed. There is another school of thought that we are putting today, which is that it takes so long to get to the

point that the CPRS is at and that, if it is scrapped now, we have lost another two years. Given that, we would like to urge the ACT government and all of you, in a cross-political way, to urge the federal government to significantly strengthen the emissions target and to significantly alter the elements of the CPRS that put a cap on the target. As you know, it is people in groups like ours who do a lot of work on their own emissions by choice and are finding that we will not be covered in a new CPRS. This is all information that you know.

We think that, given your proximity to the federal government, any pressure that you could possibly exert to strengthen the CPRS in its current format would be the best thing possible for the citizens of the ACT. Of course, it is a big political ask, and I know that the wheels of power up there are different from the wheels of power here. Certainly, as Cindy outlined, and I am sure you have heard it many times already, the urgency is such that we need to come up with much more imaginative, creative and, frankly, courageous ways of approaching this, and we ask that you see it in that light.

In terms of the CPRS, I will briefly run through a couple of points about where we are coming from. Many of our members have actively done what they could to reduce their own emissions. They have spent many hundreds of hours of their own time outside work to work on educating fellow Canberrans, to work on creating workshops and tours. It involves an immense commitment and it indicates an incredible passion. I will say here that the people in my company are exemplars of that.

But that is not enough, obviously, and we do not want to be seen to think that that is enough. We do not want anybody to think that is enough. We are leading by example, and we would like to think that a lot of our members are leading by example, but we need to see really fantastic, strong leadership at a political level. We are prepared, having spoken to our membership, to work as much as possible together. Again, I would say that the cross-political environment is the healthiest way that we could envisage that happening, to do things radically differently and very quickly. SEE-Change is very keen for that major legislative support for higher emissions targets, in addition to the initial community leadership that we believe many of our members have shown.

Prof Douglas: Maybe I can take up from there and say that SEE-Change in two parts of Canberra committed itself, after public meetings of more than 100 people, to try and reduce the ecological footprint of their suburban area by 30 per cent over the next three years. That was a very big ask, but it is interesting how it united people in a belief that there was something that they could do and that they could start working on it. That has been the exciting thing about this organisation. As Vanessa says, people like Cindy come out of the woodwork and say, “I want to work with you.” There are a lot of such people around Canberra.

When we committed ourselves to that target, we also committed ourselves to try to measure our progress to that target. If, as we urge, the Legislative Assembly picks up on a 30 per cent target over three years, I would urge you also to pick up on the ecological footprint as the mechanism for bringing Canberrans along with you. It is a well-validated measure of lifestyle and impact. The government of the ACT has worked closely with the ISA group at the University of Sydney, as have we in SEE-Change. It is possible to arrive at an estimate of the footprint from an analysis of

random household expenditure surveys, because what the household expenditure survey does is identify the embedded energy that is used in all of the decisions that people are making.

The whole measurement and monitoring of greenhouse gases is very complex and I am sure you have spent many hours discussing it. If you decide to go with an ambitious target, about 50 per cent of the footprint is determined from greenhouse gas emissions, which the ISA estimates enable you to arrive at. When I did my household expenditure survey, I was able to obtain an estimate of what proportion of my household decisions was generating what proportion of CO_2 emissions. I do not know whether you have had any discussions about this on the committee, but it seems to me that this is a very practical way, a motivating way and a mechanism that we know people in Canberra are ready to work with. So we are urging that you adopt a 30 per cent target within three years. We believe it is attainable. We have not done any modelling to prove this, but we believe that, given the efficiencies to be gained in ACT lifestyle and given the fact that if we are going to crack this nut it is going to take a major shift in lifestyle for affluent countries like ours, the ACT could be at the leading edge of that. I am happy to answer further questions on that, but that is the point we are urging.

Finally, we are urging—and Cindy and Vivienne are happy to talk briefly—the kinds of changes that we think need to be made to weathering the change in order to bring about a really excited, involved and effective ACT population on this matter.

Dr Teoh: We came at it from the perspective that, with the big changes, we asked ourselves: is the 30 per cent reduction possible? What kind of things might be useful to tell the committee and also—the big elephant in the room—how will it be financed? So we recognise as a point of principle that the government would want to have any strategies with the greatest value for the taxpayer dollar possible, and also perhaps that the revenue base of the ACT might be seen to be an issue, and we were thinking that there would be plenty of potential to grow green industries, either in the ACT or on a regional basis, because we already do regional agreements—or we should be—in health and other areas. So we were looking to see whether that would be a possibility here.

In terms of looking for the biggest value for money, everyone has got a role. People have a role to change their behaviour; governments have a role to provide the infrastructure—the rules, the regulations, the standards and in many respects the initiatives. The biggest area that the ACT could make an improvement in is its power generation, because a great deal of our power comes from electricity and I heard Michael Costello say that if everyone used GreenPower it would be the equivalent of taking 500,000 cars off the road. So to my mind that is a very significant thing.

I do not use GreenPower, but I would like to. I am looking at photovoltaic cells. I have solar hot water. My solar hot water has saved me 20 per cent in my energy bills. I would like to use GreenPower but I am wondering why I would be punished for doing the right thing. I would like to see the government look at the costing model. I realise that the model is such that people would want to not discourage R&D, and perhaps that is why the current pricing system is as it is. But I would like the government to have another look at the pricing model to see whether there could be a

levy which is transparent or some other way to reward people with GreenPower, so that they can purchase that. Obviously, the recent initiatives of offering people GreenPower and the feed-in tariff are great. But, if you really want to make a difference, here is an area that you can look at.

Other areas are an integrated transport strategy. You have probably heard this a lot, so I will not dwell too much on it, but again there are some things that the ACT government could do immediately. The ACT government could have hybrid vehicles and they could encourage the public servants to use them as well. With public transport, the introduction of the REDEX bus service is great, but, again, the government should have a better look at what people want in a public transport system, not just what we can afford. We need to be able to strive longer term.

Finally, there should be planning and building practices and regulations to support livability and sustainability. In the submission we put up the idea that, with the federal government's affordable housing and its first homebuyers scheme, it has promoted a lot of house building in the outer suburbs; but is this sustainable in the longer term? What is housing affordability? To me, and maybe to my fellow travellers here, it is the whole-of-life housing affordability. If it costs me more to travel by car from the outer suburbs, I am not really living in an affordable housing situation.

There is also the issue of perverse pricing. Apart from the electricity issue, perhaps you could talk to the federal government about the car leasing arrangements. I know lots of public servants, and I was one once, who have a car on their salary packaging arrangements. The thing is that I would have had to drive it at least 25,000 kilometres to get the discount on the petrol, and I know people who are driving around, creating a lot of greenhouse gases needlessly, to do that. In Canberra, where we have a lot of public servants like that, it is something for the government not only to talk to the federal government about but to have a look at within this city.

The only other thing I could say is that I would like to see all policies looked at and the question asked: is this sustainable? I know that the Greens support triple-bottom-line principles and I would like to see that in the future.

THE CHAIR: Thank you.

Ms Eiritz: I would just add briefly two points. In terms of changing over transport—we talk about light rail and all these massive things—some of it can be quite easy. There is a gentleman driving around town in a bomb that he found in a paddock. It cost him $150 and one day's labour to change it over to hydrogenise the car, and he has reduced 30 per cent of his emissions. So I just want to flag that there are massive solutions but there are also really simple solutions that are already out there in the community.

There is a similar situation with physical infrastructure and how we reduce, for households and businesses, the stationary electricity, I heard today from the federal government that there is a $250 billion climate change action fund and out of that there is $2.5 billion for the initial physical infrastructure. So it seems to me that, if we can come up with ideas as to how to make these happen, the money is going to become available and the solutions are there as well; it is just a matter of joining the

two together now.

THE CHAIR: Thank you. I would like to go back to proposition 1 of your submission. You talk about investment and I was just wondering what sort of investment in what areas are you particularly promoting or focusing on, and have you done any analysis of that.

Prof Douglas: What has SEE-Change done?

THE CHAIR: Yes, and what do you see as the way forward when we are talking about national leadership and initiatives?

Prof Douglas: I think SEE-Change is predicated on the assumption that what really counts in our body politic is people and that people who do not understand the seriousness of this issue cannot take this any further. So we have invested our entire efforts so far in identifying key people who do understand these matters; this has been the starting point. We are now attempting to involve people who at the moment feel there is something out there but do not really understand it. One of the things we are investing in is street parties, involving the local precinct in thinking about the issues and understanding the processes.

We are stretched to the limits at the moment as an organisation. We have got two part-time employees, thanks to the support from the ACT government. You may be aware that we have requested a more substantial budget allocation in the coming budget. We recognise that times are tough but we think that this is a pretty good investment for a government that is going to depend on an activated electorate to carry it forward as a leader. I am not sure that I have answered your question, but that is where we are investing our effort, in trying to involve as many Canberra citizens as possible in really understanding the challenge that we have before us. To that extent I think we can work very closely with the legislature on this.

Ms Eiritz: So the money goes into paying the facilitators—in our case, we have Vanessa, who does an amazing job. But you do not just get Vanessa; you also get hundreds of other people who are involved in doing things, so that is where your benefit comes from.

MR SESELJA: I have a question—probably for Vanessa, but for any of the others—in relation to proposition 2. You have made it very clear there that you would like a major amendment of the CPRS prior to it passing. The way it seems to be going is a potential deadlock in the Senate at the moment and I suppose the question would be for SEE-Change: if it is not significantly amended, that is if we do not see the kind of changes that would significantly increase the target and allow local action to be not futile, I suppose, is it still your contention that it is better than nothing, that we should go ahead with it and then look to change it later, or would you rather see it voted down and then we try and fix it and get something better?

Ms Morris: In its current fashion it is not doing what our membership, and I imagine a lot of the Australian public, expected that it would do. So I would say that it is not good enough.

Prof Douglas: We have had debate in the committee about this. It seems to me that it is better than absolutely nothing, but only just at the moment. It does establish the infrastructure for measuring our greenhouse emissions. It gets us two years ahead. But to my mind if what I desperately hope will happen in Copenhagen happens and we do get serious leadership from the United States and China—and I think the signs are looking better now than they have looked for a while—Australia will be shamed into making the sort of adjustments and it will have a scheme intact. But, having said all that, we have debated whether we would say to you that we urge that it should be defeated, and the consensus in the organisation is that it should not be at this stage but that it should be very radically amended.

MR SESELJA: I just want to isolate the point, because we have had Dr Denniss here before the committee and we have all heard his public commentary on this, which has now had a lot of currency. But that particular point about the fact that, as it currently stands, local action does not make any difference to the Australian reduction in emissions—what do you think that would do to groups like yourselves and your efforts to engage with the community if we saw a CPRS in its current form which basically meant that any local action does not make any difference? From your perspective, are you able to tell us how you think that would impact?

Ms Eiritz: I would like to say that I think groups will be gutted. A lot of people who are volunteers in the community—we go to work all day; we go home; we try and cook dinner for children; and then we go out to these meetings at night. It is really hard work doing this. If there is no reason to be doing it, we would rather be enjoying our lives. The answer is that SEE-Change is a pretty strong group, so I imagine that SEE-Change will probably still keep going and fighting things regardless, but it is really quite difficult.

The thing is not so much the voluntary action, though that is a big point and it is big to us personally; the biggest thing is actually the target. If we stick with five per cent, we are going to go over the tipping point, which means that the permafrost is going to melt. We just have this next eight months to be able to work out what we need to do and get it through to Copenhagen so that sometime in the 18 months after Copenhagen we can get the decision that needs to be made. Most of us are not looking at what would happen if it does not get through. If it does not get through, we are all up shit creek really.

THE CHAIR: In some of the statements, and as you have just explained, there are different opinions within the group around whether it should just be scrapped or whether it needs to be modified. Going along on that second way, which is about modification, Cindy, you have just raised that targets need to be raised. Are there other modifications that you believe need to be made in order for this scheme to operate in a way in which you believe it will be effective?

Ms Morris: In the sense that, as I understand it—and I have not read the full legislation; I will say that right now.

MR SESELJA: Not many have.

Ms Morris: In the sense that there is a cap, that indicates a ceiling. So, if people,

companies or cities choose to do better than others, there is a ceiling to that. That seems to be a significant flaw.

Ms Eiritz: And the two main points to be aware of are that entrenching the right to pollute as property sets a dangerous precedent in a world that needs to start drawing down carbon out of the atmosphere now. Establishing a right to pollute is still taking us in the opposite direction. Right now, regardless of how much we are going to pollute in the next 10 years, there is too much carbon in the atmosphere. We need to start drawing down right now. Establishing a right to pollute and worrying about the market trading off these is just continuing that.

The second point is that the scheme violates its own polluter pays principles with its provision of free permits and the extensive corporate compensation. This is what we were talking about before—about the whole fossil fuel lobby side of it. It violates its own polluter pays principles and allows them to continue doing what they are doing instead of transitioning to a renewable economy, which is possible now.

Ms Morris: The other compelling argument, which is a bigger picture argument but this really needs to be seen in this context, is that the GDP of most countries around the world within the next 20 to 30 years is projected to increase. Certainly if you ask most government leaders, they would say that that is what they want. With the increase in GDP come an increase in the standard of living and an increase in energy use. There are projected dramatic increases in expected energy use within the next 40 years or so around the world. In that context, if we have leadership at a local level that then produces stronger leadership at a national and international level, we will be able to take that into account. If we are just fiddling around with five per cent and we finally feel fabulous that we have got to 15 per cent or something, that is nothing on the increase in energy use that is projected in the next 40 years. We really need to look up ahead, look around us, look around the world and get very bold.

Prof Douglas: Let me add that the ACT could make a difference to Australia in the same way as Arnold Schwarzenegger and California have made a difference to the US. Throughout the Bush years, California was doing some pretty positive things. I think it is helping to place the US for a real push forward. I think the ACT could be doing the same thing.

Whether or not we succeed in defeating the CPRS—and I think I have finally come to the view that we probably should not—we should certainly be urging that the renewable targets are very substantially increased. For the ACT government to stand up, across parties, and say, "This is what we are going to do in the ACT," would, I think, be a very fine example.

THE CHAIR: You just made the statement again that we need an emission reduction target but, along with that, we also need a renewable energy target. Those things go hand in hand.

Prof Douglas: Absolutely, and I see absolutely no reason why the ACT could not move very substantially, whether it be 60 per cent by 2020. Again, these tend to be figures out of the air unless you do proper modelling on them. For mine, the renewable technology is there. It is evolving quickly. ACT people can afford to invest

in it. They are already showing that they want to. The ACT government should be giving them the leadership and saying, "Yes, we will give you everything."

I think the ACT government did a very fine thing with its feed-in tariff. I think it could be doing much more in initiating its own efforts to move from coal to renewable generation—at the very least, gas now but developing solar thermal technology as quickly as possible. As I said at the beginning, we think there is nothing more important to the ACT than to invest in a proper strategy that will lead Australia.

THE CHAIR: There is a proposed stage 2 for the feed-in tariff which would then go to larger developments such as shopping centres or whatever. What is your view on that? Are you supportive of the feed-in tariff going to stage 2 so that it is beyond just the domestic situation?

Prof Douglas: It is not an issue we have discussed in detail but, as far as I am concerned, it is something I am supportive of. As I say, I think this is a very important moment in time. The next five to 10 years are a bottleneck. It is a very important bottleneck and it is important that we use whatever is available to us.

I would like to tell a story that one of our members told recently at a meeting. He said: "Other people tend to want to spend their spare money on BMWs or status symbols of that kind. My status symbol is that I make a declaration on my roof that I am putting my extra money into something that will invest in my kids." It seems to me that, because we are a relatively affluent part of the country, we should give everyone in the ACT the encouragement and the stimulus to move to use their disposable money not on mag wheels for their Ferrari but on things that will invest in their kids' future.

MS PORTER: Under proposition 2 on page 4, at the bottom, where you are talking about these incentives for people, you say that free bus travel could bring in an overnight change to public transport usage. Do you have any evidence that providing free bus travel actually gets people on the buses? I am wondering whether or not there are other attitudinal things apart from cost. As you say, we are an affluent society. We do have disposable incomes. I am wondering whether the cost of public transport is uppermost, or is it that plus other things?

The other one I want to ask you about while I have got the opportunity is: you talk about altering the ACT's rental laws. I was wondering whether you could expand on this.

Prof Douglas: Do you want me to talk on this?

Ms Eiritz: I can talk to the last one.

Dr Teoh: There is just one thing. Anecdotally, I know, from people who have already got their free bus pass because they are 75 and over, they have said: "We have never used the bus before. We will try it." They liked it. They do not need to use it; they are fit; they have got cars. But they did.

MS PORTER: Now they are using it because it is free?

Ms Eiritz: Yes. I think it is not so much the money as the message as well. What we are trying to do here is undertake a cultural adaptation. If you have got something that is a bit gimmicky in terms of people wanting to hoot around for free on the bus, you can get a bit of a dynamic going where people get to know each other and they take the bus not necessarily because it is free or it takes less time, because we all know it does not, but they might join in for the social interaction. So I think it is important to look at these problems not just from the financial point of view and the restrictions on what happens on that side of the house but from the wider perspective.

Ms Morris: I might add that there is evidence overseas that, when bus, train or light rail travel becomes free, more people do use it. If you consider that catching a bus will be free or getting in your car will cost you money, it starts to shift the thinking and increase the incentive, again, on a psychological level, as you were saying.

MS PORTER: What has happened in regard to government-rented buildings?

Ms Morris: Given the stationary energy use and reliance in the ACT on the amount of federal and state government buildings that agencies or governments rent, if there were an expectation that all of these buildings had to be at a certain level—four stars, five stars, whatever the rating was with regard to environmental retrofitting—that sends a very clear message to the owners: if you want to have a government agency renting your building, you just have to do that. In a sense, as we have seen in many of these other areas—solar is a classic example—once you increase the amount of activity in that field, the prices drop. You then start to set a benchmark for the city. That was the thinking behind that point.

MS PORTER: Yesterday, we heard from a witness that often when people purchase or rent a building they retrofit the building, to the detriment of the energy ratings. It can happen. It is very difficult to prevent people, once they move in, altering the energy rating because of what they do to it. They can actually downgrade it because of what they do. It was an interesting point made by the witness, I thought.

Ms Eiritz: Once again, from a marketing point of view, there are a lot of businesses around town that have gone through the audit process and have spent money doing quite wonderful things. But it is not up there and acknowledged. Because of that we have not got a culture of people taking pride in the fact that we built a five-star building completely away from where there are any people to be able to actually go and work in it. We are sending mixed messages by the things we are doing. I think the important thing is: if people can be more up-front in terms of the marketing side of it, it can become a cultural norm that we all aspire to. Then, hopefully, some of those things will not happen.

THE CHAIR: Thank you very much for attending this afternoon. A transcript will be sent out to each of you to check for accuracy. Please check that and let our secretary know of any changes.

Short adjournment

EDWARDS, MS JENNY, Managing Director, Energy Imaging
CLEARY, MR ANDREW, Director, Energy Imaging

THE CHAIR: I would like to welcome the Managing Director of Energy Imaging, Ms Jenny Edwards, and the director, Mr Andrew Cleary. Could you indicate whether you have read the privilege statement and understand the statement?

Ms Edwards: Yes, I have, and I understand it.

Mr Cleary: Yes, I have read and understand the privilege statement.

THE CHAIR: Thank you. Do you want to make an opening statement?

Mr Cleary: I was going to start with an introduction. We are from Energy Imaging. It is a company that we started about a year ago. I returned from a sabbatical and we decided that we wanted to do something good for the environment that would help with greenhouse gas abatement and also try to make our houses warmer at the same time. I am an old Canberran and Jenny has lived here for quite a while, so we have got quite an interest in Canberra. We know that it is a cold place and there are a lot of people living with some pretty awful winters. We thought we would start doing some research into exactly why this is happening and why energy bills are so high and see if we can start reducing them.

We spent quite a while researching on the internet as to what they are doing in Europe and the United States in terms of this. We have come up with probably the most practical and definitely the most cost-effective solution, and that is acknowledged by DEWHA as well, which is air leakage and reduction of air leakage. We are also looking at insulation. We are using technology to do this. We have got a thing called a blower door, which creates negative pressure in a house, and we get empirical readings as to how leaky a house is. We are also using thermal imaging, so it can look at quality and quantity of insulation as well. Using those in tandem, we are getting a pretty good idea that most houses in Canberra, particularly older houses, are very leaky. As an analogy, if you have a fridge with no seals, it costs a lot more to run than a fridge with seals. That is pretty much what we are finding, and we are seeing energy leaking out during winter at a rate of four times an hour. So for every 15 minutes you are losing heated air.

This is generally to do with some quite simple things that can be readily fixed—uncovered fans, downlights, door seals, window seals. We are also finding there are a lot of problems in the envelope between architraves and walls, windows et cetera, which can be very easily caulked and capped.

In addition, there are some very poor quality insulating jobs because it has never been audited. I know that a lot of people have got, for example, wall cavity insulation. It is very difficult to see where it is, so with our thermal imaging equipment we can look through the wall and see how the placement is. We are finding that a lot of the time it is only 50 per cent full.

We have got a series of recommendations that we would like to present to you. Jenny will go into more of the ins and outs of exactly what we have been finding, because

we have now been collecting information for six months and we are just beginning a trial as well. We would also like to talk about the EER system in Canberra. Jenny and I are currently doing a course at RMIT in energy rating houses in second-generation software. We were just talking to Zed about this; it is being brought in this Friday. It is a vast improvement on the old way of doing it and it requires a reasonable amount of knowledge of building materials, construction and architectural plans and a bit more time than the old way of conducting and reaching an assessment. We believe that at this moment in Canberra there is no real certification for EER assessment.

The other problem is that all the information is fairly disparate. So the data is collected on personal laptops or whatever, and a small fragment of the results is put into ACTPLA, when probably the best thing to do would be to have a centralised store of these results so that you guys can check EER progress against legislative changes or government spending, for example, over time. So it might be a measured effect.

MR SESELJA: You were talking about something coming in nationally on Friday in terms of energy ratings. Can you expand on what that is.

Mr Cleary: Yes. The software is based on AccuRate. It is an engine developed by CSIRO. The interface currently is called FirstRate 4. The next version, FirstRate 5, which is far more comprehensive and uses the model in a much more complex manner, is coming in on Friday across all states of Australia. So that will be the way of assessing EER for new buildings.

MR SESELJA: This will apply here in the ACT as it does elsewhere in Australia?

Mr Cleary: Allegedly there are only two people in Canberra who are trained in that, not counting us.

Ms Edwards: Only two people who are nationally accredited with the Australian Building Sustainability Association.

Mr Cleary: The rest of the people are FirstRate 1 accredited or not accredited at all. Seeing there is no weight of numbers to carry out the tasks, apparently FirstRate 1 has been extended for another six months, until people become accredited in the next level of software.

Ms Edwards: I might clarify a couple of things. Currently in the ACT, when we had the mandatory disclosure for sale of existing housing stock, that is where most of the EER assessment has been done. People who do those sorts of assessments in the ACT have to be registered with ACTPLA, but that registration does not require national accreditation as it does in the majority of other states. But ACTPLA determine whether they think people are suitably qualified to conduct those, and they have given it the stamp of approval to do that. For new building design, anybody can actually do the EER. You do not even have to be registered in the ACT. So anybody is conducting those EERs.

When this switch happens on Friday, there will be no requirement, for existing housing stock, for the registered EER assessors to use second-generation software.

This switch has been happening since 2007 but it is finishing this Friday. So there has been plenty of time to work on this. I have spoken to staff in ACTPLA and I have been told that they are hoping to make the change but it may be six months away. Until then, Andrew and I, although we are trained in second-generation software—I am also a trained home sustainability assessor—cannot register to do EER assessment in the ACT, because we are using software that is too advanced, which just seems insane. But there is a discussion paper, as you are probably aware, coming out from ACTPLA about EER in the next day or so. We will be responding to that. But it does seem to be a big hole. The ACT clearly led the way for a long time, but we have fallen well behind in EER now.

THE CHAIR: Just to clarify, Ms Edwards, with FirstRate 5 software coming out, you will not have to be accredited in order to go and assess?

Ms Edwards: If you are going to use FirstRate 5, in the rest of the country you have to do a four-day training course—two days on software, two days on building thermal performance theory and professional conduct. That is the requirement everywhere else, it seems. I do not know what they are going to make the requirement in the ACT, but currently, with the earlier versions of FirstRate 4, there is no requirement to have training.

THE CHAIR: Is there any monitoring around the quality of assessment?

Ms Edwards: According to ACTPLA, they did some auditing of FirstRate 4 EERs earlier this year or late last year. I do not know what the results of that were. I am looking to see that in the discussion paper. In Victoria they do some auditing of EER assessment. I do not think much is happening, and there seems to be a huge variation.

THE CHAIR: Would it be your recommendation that we really need to come in line with those other states and territories around the accreditation?

Ms Edwards: Yes, definitely. Shall I carry on with the presentation?

THE CHAIR: Yes.

Ms Edwards: Basically, at Energy Imaging we focus on insulation and air leakage. Gaps in insulation, which are shown in the image to the left, and physical gaps in the building structure, the air leakage which is shown to the right, basically equate to a huge loss of energy and money and significant greenhouse gas emissions. But, on a positive note, they provide an opportunity for very cost-effective energy efficiency improvements.

We aim to cost effectively reduce those greenhouse gas emissions in domestic and small commercial buildings. As you would know, buildings present the largest opportunity for greenhouse gas abatement. What makes us different from other energy auditors in Australia is that we use technologies to actually measure, to quantify and locate, the energy loss. Nobody else is currently doing that.

As Andrew mentioned earlier, DEWHA acknowledged that air leakage is a big issue and that overseas standards and research recognise that draught sealing is one of the

most cost-effective ways to save energy. Here in the ACT, 40 to 50 per cent of our energy use is on heating and cooling. Draught sealing and insulating are relatively low-cost energy efficiency measures, particularly in comparison to things like cavity wall insulation or double glazing, which are becoming very fashionable at the moment, it seems. They are good measures, but they are not going to work if you have got holes in your structure.

Potentially, draught sealing and insulating alone could save 30 to 50 per cent on heating costs, and that is based on studies overseas and work by a Victorian retrofitting company. This equates to greenhouse gas reductions of three to six tonnes per year per ACT household, so it is significant and it is quite quick and easy to achieve.

When we talk about air leakages, there is often a bit of confusion with ventilation. Just to clarify, air leakage is that random, uncontrolled infiltration. Ventilation is about using your exhaust fans, opening your doors and windows. It is a completely different thing. We have got so much infiltration in Australian homes that we are in no danger of compromising our indoor air quality. So we have to separate those two things. Controlled ventilation is the key for energy efficiency, indoor air quality and building durability, and having no air leakage.

We test with a thing called a blower door and our thermal camera. The blower door is basically a gigantic fan and fancy pressure gauges that are used to depressurise the house. So we draw the air out of the house, then air outside at higher pressures flows in through all the cracks and gaps in the structure. In Canberra houses, that alone is often enough; you can walk around and you will feel strong breezes blowing in in all sorts of places around the house. But to make our technique more sensitive, we use it in combination with thermal imaging, which allows us to detect the smaller, more concealed cracks and gaps. The thermal imaging can also be used independently of the blower door to assess the quality and integrity of insulation quickly and non-invasively. So they are two quite powerful technologies, and they are routinely used in North America and throughout Europe.

What do we find in Canberra houses? Air leakage is generally expressed in terms of air changes per hour, so it is the number of times the entire volume of air in a house changes. Fifty pascals is the international standard for comparison. So 50 pascals is an artificial or test pressure, but it is the one used to compare houses. Normal pressure differences are in the range of one to 10 pascals. What we find is that a majority of Canberra houses are experiencing more than 20 air changes per hour at 50 pascals. To put that into perspective, new houses in parts of Europe and parts of the States are now required to have no more than three air changes per hour. They tend to be in the colder climates, and at those levels you require mechanical ventilation because you would compromise indoor air quality.

In the UK, in 2006, their new building standards introduced a maximum air leakage standard, and they are aiming for the range of between three and nine air changes per hour. That range will give you substantial energy efficiency improvement but will not require mechanical ventilation. So there is a huge opportunity in Canberra to bring houses down below 10 air changes per hour. We think that can be achieved quite easily and at relatively low cost.

So typically it is greater than 20 air changes per hour at 50 pascals. The DEWHA publication last year suggested or estimated that Australian houses were two to four times leakier than North American buildings. Our results are suggesting that it is more like three to five times leakier. So there is a big potential. By aiming for less than 10 we can reduce heating costs by 30 to 50 per cent and those greenhouse gas emissions by three to six tonnes, so it is very cost effective.

Air leakage and insulation need to be done together. One without the other does not make sense. What we are really talking about is improving the building envelope of houses. We need to seal them and insulate them. Just five per cent gaps in insulation equates to a 50 per cent loss or reduction in effectiveness. We find five per cent gaps common. In fact, that is often a good scenario.

Cavity wall insulation is highly variable. We are finding big gaps. Until now, without thermography or thermal imaging, you have not been able to check whether the cavity wall insulation is actually there.

Even if you do have magnificent insulation, and I have tested houses that are beautifully insulated, if you have uncontrolled air leakage and there are physical gaps in the structure the insulation cannot work: the heat is flowing directly out through the gaps.

What we need is air leakage standards in combination with R-value standards.

I want to turn to air leakage and EER. We discussed EER a bit earlier. Air leakage is meant to be considered as part of EER. An energy efficiency rating is about the potential of a house; it is theoretical. It is not about measuring things. Air leakage is there, but because assessors are not trained or are not aware of the significance of air leakage they do not take this section of the EER seriously.

This EER is on my own home. I moved back to Canberra a couple of years ago. I was not going to move into anything that had an EER of less than three. My house has got 3.5. But it also has 21 downlights, and you can see on my EER that it says there are no downlights. It has three uncovered exhaust fans. It has massive gaps around the doors. It is as leaky as a sieve. It has an EER of 3.5 but is experiencing 22 air changes per hour at 50 pascals. So it is freezing in winter and it is incredibly hot in summer.

Again, the fact that assessors in the ACT are not even required to undertake the training means that they largely ignore this section. Most EERs are done from plans or over the phone on existing housing stock; they do not bother to look for the gaps or check for the downlights, the fans and things. There is big room for improvement.

I will now show you some pictures of what we actually see. This is a classic example of missing ceiling insulation. This is a brand new extension on a high-end property in Forrest which has just been completed. The insulators have been and signed off that it was all done. We went in on a 29-degree day. The nice blue section is the cool insulated section. The red sections, which are at nearly 32 degrees, are completely missing insulation.

THE CHAIR: That is a significant area of that roof.

Ms Edwards: Yes. The little bit that is there is doing nothing. When you have got that much missing, you have effectively got an uninsulated room.

This is another section of the same house. A larger part of it was insulated, but again there are huge gaps. That is in the major living area. A lot of the problem with this one was that there were downlights. The insulators are not allowed to insulate right up to the downlights, but we often find that electricians go in, move that out of the way and do not think that it is important to put it back.

Moving to cavity wall insulation, the image on the right is of a wall that is getting direct sun, so the hot section is the area that is missing. On the left-hand side, it is on a cool wall and the insulated sections are appearing in pale green. So there are significant gaps. When they install cavity wall insulation they cannot see where the studs and the noggins are, so they have terrible trouble getting beyond them and getting the insulation spread evenly.

Downlights are an absolute disaster for energy efficiency, for all sorts of reasons. We know that the halogen globes use a tremendous amount of energy. But it is not only that: they are in unsealed opening in your ceiling and it creates a gap in your insulation. They are hot and they create their own little convection current, so the stack effect is enhanced. So you are losing your warmer air through downlights very rapidly. In Victoria now, they require houses to have Isolite covers on downlights, to reduce air leakage but also because of the fire safety issue.

But it is not just downlights; it is even standard lights. Again, electricians and other tradesmen are not educated about the importance of air leakage, so when they go and put penetrations in the ceiling for wiring or for plumbing they often leave big holes. It is concealed by the light fitting—we cannot see it—but there is a lot of air leakage occurring.

Moving to skirtings, again, skirting boards make things look nice and tidy, but they do not seal air leakage. That is very common. But at any of the junctions—wall to wall, wall to floor or wall to ceiling junctions—you will often find leakage.

Most people, when they do think about air leakage, think about directly around the windows and doors. We find that it is actually between the architrave and the wall where most leakage occurs.

One of the most frightening things we are finding now is that double-glazed windows have appalling leakage around them. That might be to do with the fact that the window is wider and that air sealing is not considered part of the job, so you are left with a huge gap between the architrave surrounding the double-glazed window and the wall. So you have an expensive double-glazed window that effectively is doing nothing. When the heat can transfer or move directly through the cracks, it does not matter if you have double glazing there.

These were again on a very nice extension. They had done their cavity wall insulation and they had done their double glazing, but there was significant leakage all the way

round. Also, the ceiling was full of downlights. The owner reported that they found it impossible to heat.

Another frightening example is around heat sources themselves. This is a very efficient split system that has been installed in a small ex-guvvie that has been renovated to be energy efficient, but there is direct air leakage around it. In this house, as they are pumping out their heat it is leaking straight back out through the wall. We also find that with ducted gas heating the ducting itself often has a fair bit of leakage. But, sadly, there are usually physical gaps between the edge of the duct and the roof space so the heat is being pumped out and going straight up into the roof space or up through the downlights that are sitting right next door.

Turning to manholes, again it is not standard practice in Australia to seal them or even insulate them, so they are nice hot spots.

As for bathrooom fans, you can buy covers for bathroom fans now, but it is not standard practice to install them.

I do not think I have a slide of it here, but another thing I have discovered in the last few houses I have tested is that they have evaporative cooling, and evaporative cooling systems are a huge source of air leakage. You have a unit sitting on top of the roof that comes down to the ceiling space. The unit is supposedly sealed, but it is not. When we do the testing, we get dramatic air flow through the ducting itself, and, again, the area between the edges of the vent and the ceiling is not sealed so there is leakage directly up through the ducting. I have now had a couple of houses that report that, since they have put their ducted cooling in, their gas consumption in winter has increased significantly. That is something that is happening a lot in the ACT, with lots of people installing evaporative cooling.

To summarise, 30 to 50 per cent of heating and cooling costs can be accounted for by air leakage. Minimising air leakage will significantly reduce greenhouse emissions and domestic energy bills. Unless you consider air leakage, you are greatly compromising the effectiveness of any other energy efficiency measures you implement. And it really is the most simple and cost effective way of achieving energy efficiency.

That leaves us with our recommendations. Andrew, do you want to talk to those?

Mr Cleary: We have printed some out; we can give those to you afterwards. From what we have discovered so far from our research and from the houses we have tested in Canberra, the most important thing to do with this is start to raise awareness of it. Surprisingly, not many people are aware of it. They certainly do not know the dramatic impact that sealing a house can have. This afternoon I was talking to a builder friend of mine who is getting hydronic heating fitted. He has spent the last two weeks sealing his house and he cannot believe the difference. And he has been building for 20 years and he is a good builder. So it is an education system.

As well as that, we have to tie in some legislation if possible. I understand that that is a lot harder to push through, but at the end of the day it is not very much more expensive, if at all, to build a house that has a reasonable level of leakiness than to

build a normal house. It just takes a little more care. There are materials available—there are some tapes available—which are negligible in cost compared to the overall building costs of the house. And the downstream effects in cost savings will be enormous anyway.

NatHERS has done some research that shows that there is a definite correlation between EER level and selling price. If owners are educated that EER is going to help them in the end to sell a house and get more money for it, and also save on downstream costs, then, hopefully, there is going to be some more incentive to do that.

THE CHAIR: Part of that also is people having confidence in the rating system—that proper ratings are being handed out.

Mr Cleary: Absolutely. Again, that is what we have been talking about—if we can have a look at re-marking the EER system. You are right: at the moment people do not have a lot of faith in it. It is essentially an embuggerance for real estate agents to do it so there is not a great deal of care. It comes down to education and legislation, I suspect.

Ms Edwards: I think that here we were more interested in raising awareness of air leakage. The EER is definitely a big issue, but Andrew mentioned a very respected builder here in Canberra, and we have spoken to numerous builders and people who work in the industry and they simply do not realise that air leakage is a big issue. It is not that builders are being slack; it just has not been part of our thinking and has not been part of their training. So we do need to educate and raise awareness—on both sides: consumers and the builders.

There are different ways that you can do that—provide those incentives. We could make air leakage testing a requirement of building certification. It is in many other parts of the developed world. You could do that by setting a maximum air leakage standard—which they have just done in the UK, where they have gone for quite a conservative range of three to nine air changes per hour, which we could easily achieve here. Or you could audit new certified buildings for their air leakage rate and also the quality of their insulation.

A commercial builder I know is often frustrated by the quality of the insulation. He does spot checks; he does his own auditing. He is staggered by what he finds. He cannot understand why, for compliance, the electricals are checked and the glazing is checked but no-one really gives two hoots about the insulation.

THE CHAIR: So this is about the installation and—

Ms Edwards: Yes, the quality of the insulation.

Mr Cleary: If we do actually build houses according to an EER regime, then—we talked about this—it is a theoretical measure of the house and what it can achieve. But obviously the practical measure then needs to be tested once the housing is completed. So somebody needs to come in and have a look to see that everything that is in the plan is in the house. That includes the air leakage and the insulation. Without that, as we have mentioned, it is—

THE CHAIR: On one of the slides, you were making the point that sometimes the electrician can come in and move aside insulation, pull it back from downlights and so on. But in one of those slides a significant percentage of the roof just was not covered. I am concerned that people are maybe out there spending money on insulating their property and unfortunately they are not getting what they have paid for.

Ms Edwards: Particularly with the new federal government insulation rebate, the number of stories are increasing.

THE CHAIR: So monitoring becomes very important.

Ms Edwards: Absolutely.

Mr Cleary: Yes, it does.

Ms Edwards: And it forms one of our recommendations. With respect to the other way to encourage homeowners, here in the ACT it would be quite simple to include comprehensive draught sealing as a measure that is eligible for the rebate under the ACT energy wise home audit program. I have discussed that briefly with the HEAT team—that it would be a good way to go.

We also think it is a great opportunity to collect very valuable data, because there simply is not data on Australian construction as yet, and provide an auditing function by pre and post-testing the public housing stock that is currently being retrofitted under the weathering the change strategy. We are talking about spending $20 million here in the ACT over 10 years on public housing stock. A lot of that is on insulation and air leakage sealing, but it is not being audited. We can audit it, but it also provides us with a great way to potentially assess the effectiveness of the draught sealing and the quality of insulation installation.

Mr Cleary: One of our pet bugbears is the use of halogen lights. We have come across houses—and we all probably have them—that have 40 or 50. It is just like poking holes in the ceiling. They are fire hazards; they use quite a lot of power and essentially are expensive to run and make your winter heating bills excessive. It is a needless waste, at the end of the day, especially when they can be replaced by more efficient bulbs. The new LEDs are very good now. Even so, as a cheaper measure they can be covered, using things called Isolites or thermo-seals, which allow insulation to be put right up to them. That potentially alleviates one fire problem, because, firstly, you are keeping the dust that typically settles around them away from the hot bulbs and, secondly, you are reducing that five per cent gap we were talking about, which takes the 50 per cent of activity away. It can all be done very cheaply. I think it costs about 10 bucks a pop to stick one of those on and fit it. That would be a very good thing to bring in to the building code here in Canberra.

Ms Edwards: In Victoria they now require downlights to be covered with Isolites.

Mr Cleary: Likewise with ceiling exhaust fans: they are just holes in the ceiling, and the hot air just rises and flows straight out of there. So there is an enormous heat loss. To get a cover for those is very cheap and they are very effective as well. So they

should be mandatory as well.

Ms Edwards: Moving back to the EER, the ACT should be requiring that all EER assessors of new and existing housing stock—I had not realised there was that difference in the way they were treated—need to be trained and nationally accredited in the second-generation software. There does not seem to be any good reason why not. We also need to be regularly auditing the EER scheme for both existing and new housing stock, particularly now that the study has been done showing that one star of energy rating can equate to a $6,000 to $9,000 increase in the sale price of your property. That provides an incentive for real estate agents to give houses higher EERs, but who is checking whether they are accurate?

Mr Cleary: In my other job I have a software development company. We do modelling for Defence on war-fighting vessels, so I know a little bit about this. If we really want to be able to do this auditing process properly, it will take a little bit of development work, but if we could have a centralised database that would hold all of the data, which then could be queried, to get whatever answers we need, that would ensure auditability and quality control and it would give the data some life and some value as well. I think that would be a small but very significant investment in looking at the way we are going to be tracking over the next number of years in terms of housing efficiency.

THE CHAIR: Therefore, that could be another way that you could analyse the data around reduction of greenhouse gas emissions.

Mr Cleary: Yes, and when it comes down to estimates et cetera, that would be one measure—having a look at the way you have tracked over that period, and obviously in line with bills and all the rest of it. So there can be some reasonable-quality research done if the data collected is accurate.

Ms Edwards: Again, assuming that everyone is using the second-generation software properly; otherwise the data—

THE CHAIR: I think you said earlier that you have used your imaging on commercial buildings?

Ms Edwards: Not yet. I have tested the personal home of a commercial builder and certainly I have been talking to him at length, but I have not actually done any testing in commercial buildings yet. That is certainly our plan, and we have been contacted by a couple of commercial builders who are interested. They seem to be more interested in the insulation than in the air leakage. Again, people do not seem to know about air leakage being an issue. But I have not got any data yet.

THE CHAIR: Mr Seselja, do you have any questions?

MR SESELJA: That was pretty comprehensive. You have not left many gaps for us! From a broad point of view, you talked about the cost effectiveness of plugging air gaps and air leakage. Are you able to give us an understanding? Obviously it would vary from home to home, but for an average size home, what is the ballpark that people would be looking at in order to plug the gaps?

Ms Edwards: We are doing our own trial at the moment because there is no data. From what we have seen overseas, and from what a specialist retrofitting company in Victoria have been doing, we are talking about well under $1,000 to comprehensively air-seal a house—probably in the low hundreds. A lot of it is DIY stuff. A lot of it really can be done—

MR SESELJA: Once you know where it is, you can get the sealant.

Ms Edwards: Yes, absolutely; it can be done quite easily by the homeowner. So the costs are very low compared to double glazing and cavity wall insulation. The company in Victoria that have been doing the retrofitting work are finding reductions of 50 per cent in heating costs. Overseas work suggests 20 to 40 per cent, but given that our housing stock is so leaky to begin with, there is greater potential for savings. So I do think we will find 30 to 50 per cent, but we are testing a range of houses that have got different leakage issues and we are implementing different strategies to air-seal, whether it be downlights being the major problem or evaporative cooling. They all have different problems. As we seal them or fix them, I am going to be quantifying the reduction in their leakage so that I can determine by just how much that is reducing air leakage. Then we will compare winter energy use this year to winter energy use last year, to give us a much more accurate idea of what is going on.

Mr Cleary: Essentially, it is a cost-benefit analysis, incremental, based on the aggressiveness of the retrofit. Another thing we are finding is that people, rather than going through this step first, which, we now know, is the first step you would go through, are contacting the heating and cooling companies, and they will come along and say, "You need a bigger heater." So you are finding small ex-government houses with these heaters on the side which nearly blow the windows out, and that is the only way that people can stay warm. And the bills, of course, are astronomical.

Ms Edwards: And what makes that worse is that, as soon as you put ducting penetrations in your ceiling, you are increasing your air leakage. There have been studies in the UK regarding putting ducting in low-income housing. They have done air leakage sealing and put in new, efficient ducted heating systems and they have actually gone backwards, because of the holes through the ducting and the leakage around the ducting. So that one is a double-edged sword.

MR SESELJA: But there are ways of plugging those gaps as well?

Ms Edwards: Yes. Again, quite simply, by making the tradesmen aware that when they put a vent in the ceiling they really should seal around it—and insulating our ducting too: I do not think that in Australia we insulate our ducting anywhere near the way they do overseas. Again, lack of awareness is a big problem with tradesmen.

THE CHAIR: Have you been along to talk to those institutions that are teaching our builders?

Ms Edwards: The Housing Industry Association and people like that—that is certainly our plan. But we thought that, for them to take us seriously, we really needed to have some data, so that is what we have been concentrating on initially. But that is

certainly the plan. Personally, I have been educating individual builders.

Mr Cleary: And learning the tools of our trades as we go along. We want to seem to know what we are talking about before we start teaching people. I think we are at that stage now where we have got a fairly good understanding of what is going on. And business is starting to come along. People are starting to get interested now. Jenny is doing quite a lot of work in the houses of normal citizens who are interested in fixing their houses up. There is a message going out there that it is a good thing to reduce greenhouse gas emissions now.

THE CHAIR: As well as make your home more comfortable and reduce your energy bills.

Mr Cleary: Yes.

Ms Edwards: Absolutely.

THE CHAIR: The Housing Industry Association, the Master Builders Association and so forth certainly have got some great initiatives going, so I am sure it is something they would be very interested in.

Ms Edwards: Yes.

MS PORTER: And the CIT as well.

THE CHAIR: The CIT also has some great programs.

MS PORTER: Practically, how long does it take a householder to have this happen?

Ms Edwards: If I come in to do a thermal imaging and an air leakage test, it takes me an hour and a half to two hours.

MS PORTER: Do they need to leave the premises while that happens?

Ms Edwards: No. In fact, it is great if they are there. My background more recently is in science communication and science show presentations. It is like doing a giant science show: when you can show the homeowner with pictures where the problems are, and they can feel the air leakage, it is very powerful.

MS PORTER: Talking really practically about the cost benefit to them, how much does it cost them? If it was adopted more widely, would the cost of that go down?

Ms Edwards: Yes, definitely. The cost at the moment is $330 for your average four-bedroom home, but that is not only for the test. We also generate a full-colour report that details all of the issues and has a suggested rectification list which they can then take away as a DIY guide.

Mr Cleary: With the research, obviously we are going to find the best cost benefits. We will be able to come along to a house and say that if you cover the fans, put the downlight covers in, seal the doors and perhaps a couple of other small issues, without

going and testing it, there would be a marked improvement. The cost will depend on the household budget, at the end of the day. They can go down to the most minute detail to seal their houses, and if they are going to be spending a lot of money on double glazing or putting up energy generation devices, it might be worthwhile, but for people who have not got that sort of income then it can be done incrementally, for sure.

THE CHAIR: I would like to thank you very much for what was a very interesting and useful presentation this afternoon. A copy of the transcript will be sent to you, so please check that for accuracy and let us know if there are any corrections. The hearing is now adjourned.

The committee adjourned at 3.58 pm.