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SENATE

RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

Reference: Australia's future oil supply and alternative transport fuels

FRIDAY, 11 AUGUST 2006

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SENATE

RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

Friday, 11 August 2006

Members: Senator Siewert *(Chair)*, Senator Heffernan *(Deputy Chair)*, Senators McEwen, Nash, O'Brien and Sterle

Participating members: Senators Abetz, Adams, Allison, Bartlett, Boswell, Brandis, Bob Brown, George Campbell, Carr, Chapman, Colbeck, Coonan, Crossin, Eggleston, Chris Evans, Faulkner, Ferguson, Ferris, Fielding, Hutchins, Joyce, Ludwig, Lightfoot, Lundy, Ian Macdonald, Sandy Macdonald, Mason, McGauran, McLucas, Milne, Murray, Nettle, Payne, Polley, Robert Ray, Santoro, Stephens, Trood, Watson and Webber

Senators in attendance: Senators Allison, Heffernan, Joyce, Milne, Nash, O'Brien, Siewert, Sterle and Webber

Terms of reference for the inquiry:

To inquire into and report on:

Australia's future oil supply and alternative transport fuels, with particular reference to:

a. projections of oil production and demand in Australia and globally and the implications for availability and pricing of transport fuels in Australia;

b. potential of new sources of oil and alternative transport fuels to meet a significant share of Australia's fuel demands, taking into account technological developments and environmental and economic costs;

c. flow-on economic and social impacts in Australia from continuing rises in the price of transport fuel and potential reductions in oil supply; and

d. options for reducing Australia's transport fuel demands.

WITNESSES

Committee met at 9.03 am

MULLEN, Mr Noel, Deputy Chief Executive, Australian Petroleum Production and Exploration Association

PARIMALA, Mr Ranga, Director, Exploration and Access, Australian Petroleum Production and Exploration Association

ROBINSON, Ms Belinda, Chief Executive, Australian Petroleum Production and Exploration Association

CHAIR—Welcome. The Senate, as people are all aware, has referred Australia's future oil supply and alternative fuels to the Senate committee. I am not going to go through the specific terms of reference because I am sure people know them. The committee is due to report to the Senate on 19 October 2006.

These are public proceedings, although the committee may agree to a request to have evidence heard in camera and may determine that certain evidence should be heard in camera. I remind all witnesses that in giving evidence to this committee they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated by the Senate as a contempt. It is also a contempt to give false or misleading evidence.

If a witness objects to answering a question, the witness should state the ground on which the objection is taken and the committee will determine an answer with regard to the ground claimed. If the committee insists on an answer, the witness may ask to have that evidence heard in camera. I welcome representatives from Australian Petroleum Production and Exploration Association and invite you to make a brief opening statement after which we will ask you some questions.

Ms Robinson—Thank you very much, Chair. We appreciate this opportunity to appear before the committee today. We will keep our opening comments very brief to allow you plenty of time for questions. APPEA is the peak national body representing the collective interests of companies engaged in petroleum exploration, development and production in Australia.

As you know, APPEA has made a submission to this inquiry and we welcome the committee's interest in this critical matter of national importance. Our submission focuses on the first of your terms of reference, namely, projections of oil production and demand in Australia and globally, and the implications for availability and pricing of transport fuels in Australia. It particularly considers the role of petroleum exploration in Australia.

As we have stated in our submission, Australian oil production is declining and the production deficit is increasing. New figures released by APPEA today show a 10 per cent decrease in the level of crude oil production from 2004-05, continuing a downward trend that commenced in 2000. Specifically, crude oil production fell from 126.3 million barrels in 2004-05 to 113.3 million barrels in 2005-06, according to our preliminary data. Without major new discoveries, Geoscience Australia estimates that that Australia will be producing less than one-third of what it consumes of crude oil by the year 2015, compared with around 65 per cent today and 80 per cent

to 90 per cent over the past decade. This forecast translates into an estimated trade deficit in crude oil and condensate of around $20 billion by 2015.

APPEA supports government exploring all supply and demand initiatives that address future transport fuel challenges. It is a reality, however, that Australia's transport fuel needs will continue to be met by petroleum products for the foreseeable future. ABARE estimates that the share of oil in Australia's primary energy mix will be maintained at around 33 per cent for the next two decades. With this in mind, part of the suite of measures that Australia must contemplate is to find and produce as much oil as is technically and economically possible so as to ensure that the transition to what might be a very different long-term energy mix occurs with minimal disruption to the Australian economy. This is rational, sensible and achievable.

If we are to make headway, there are three aspects to petroleum exploration common to most parts of the world that must be addressed: firstly, timely access to acreage, including minimising sovereign risk through security of title and, secondly, adequate access to data and information. It is impossible to alter our national resource endowments. However, better data and information allow us to better understand the geology to target prospective areas. Research and development of innovative technologies that could enhance data and optimise the recovery of the petroleum resource are critical. The third aspect is a fiscal framework that balances the reward with the risk and cost for explorers.

While higher crude oil prices result in increased brownfield exploration and appraisal drilling, it does not necessarily deliver increased exploration in those areas where it is needed most, and that is the frontier areas. It does not provide Australia with any relative competitive exploration advantage. Frontier basins, of which Australia has many, are high risk and very high cost, as rightly pointed out by the Prime Minister in his speech to CEDA in July. Now is the time to take stock and address impediments to exploration in Australia's vast unexplored and underexplored geological basins to ensure that the rewards reflect the associated risk and costs.

Mechanisms that might be considered in achieving this are being explored through the recently announced national upstream oil and gas industry strategy. This is an industry-led strategy. These are likely to include recommended actions around the provision of precompetitive geoscientific information, technological development, improved acreage management and regulatory processes. That is our opening statement and, of course, we would welcome any questions that you might have.

Senator O'BRIEN—So $75 a barrel is not enough to justify the expenditure on the exploration in those frontier fields that you are talking about?

Ms Robinson—I think there is probably no doubt that we are seeing a lot more exploration around the world. I represent the Australian industry and I guess my job is to try to ensure that as many of the spoils associated with that come to the Australian people—after all, these resources are owned by the Australian people. Given the way that oil is marketed and priced around the world, it does not provide a competitive advantage for Australia. While we might be seeing increased exploration in the world, that does not necessarily translate into increased exploration, and particularly translate into increased exploration in those underexplored frontier basins where Geoscience Australia would say that if there is another oil and gas province in Australia that is where it will be.

That is perhaps the important point to know: it does not necessarily give Australia a competitive advantage, particularly since those frontier areas are very high risk and high cost. We are talking about perhaps a risk ratio of 1:15. In other words, if you drill an exploration hole you have about a 1:15 chance of finding something, and it has been very costly because it is deep water and so on, whereas a lot of the companies would prefer to go to, say, North Africa, the Middle East, Russia or other places where the risk ratio is much lower—in the Gulf of Mexico it is 1:4 and in West Africa it is 1:3. I think that is the issue.

Senator O'BRIEN—Why wouldn't we look to change the nature of our market here? You make a very good point about an emerging annual deficit of $20 billion with petroleum product imports. Why wouldn't we be concentrating on utilising the gas resource we have and conversion to liquids and gearing a fleet here for that sort of usage rather than leaving ourselves at the mercy of the decisions on investment that are made and the seemingly ever-increasing price of oil when we have, if we use it domestically, 90 to 100 years supply of natural gas?

Ms Robinson—That is quite a big question with a number of answers.

Senator O'BRIEN—It is a big question.

Ms Robinson—It is a good one. To start with the first part of the question, I guess it is not up to us in the end to say why governments should or should not try to encourage more exploration in those areas. First up it is important to say that we do support research into anything that will assist Australia deliver liquid needs to the Australian people, whether they are alternatives or fuel efficiency or vehicle standards or whatever that is. We are saying that part of that suite of measures should consider gas to liquids—that is part of it as well—and coal to liquids; all sorts of things I would imagine people would want to be researching we fully support.

Why would you support increasing exploration into frontier areas? In the end it becomes an economic question. You could argue that it creates more options for government—if they actually find a lot more oil, it does not mean that Australia necessarily has more oil available to it under existing market conditions but it provides governments in the longer terms with options. I think the argument is more about the wealth that it generates and I would say that people are wearing a lot of pain at the bowser at the moment. Given that these resources are owned by the Australian people and we know that we have a lot of unexplored areas out there, the question would be why wouldn't you try and at least gather the wealth that that could deliver for the Australian people? If you are going to wear the pain, why not at least try and gather as much wealth from it as possible? In the end I think it is an economic question. It is really about trying to return to the Australian people as much of the wealth that oil exploration and production delivers. For me and for our organisation, that is the information that we would like to convey. Ultimately it is not our decision, it is a government decision, and it is for opposition to have positions on these things. But in the end it is: why wear the pain and not try and retrieve the wealth, especially when you see that we could be looking at a trade deficit in petroleum products—and, of course, that is not just oil—of around $20 billion and upwards by 2020. I think the total trade deficit of Australia at the moment is around $19 billion. That is a fairly significant issue that needs to be understood, and particularly its implications.

Senator O'BRIEN—There is no doubt that there are good reasons to explore; it is an interesting proposition that we need more incentives. When you look at graphs that are showing

that basically the amount of oil being extracted and delivered to the world market—and that may be because of controls in certain markets on how much is actually delivered to the market—seems to be reasonably static compared to the way the price is rising. My original question was: how much incentive does the market need, given that whatever can be produced in whatever market can be sold? What price justifies the risk of a one chance in 15 of striking?

Ms Robinson—As I say, I do not think it is so much a matter of what price. Where there are risks investors will always go to where the risks and the costs are lower, and there are a lot of places around the world where comparing the high oil price with the risk and the cost delivers you a more attractive location than Australia. So I am not sure that it is just at what price. You talk about incentives. I guess we talk about the things that make it easier or more attractive to go into these areas which could include improving the competitive geoscience information. It is also about us continuing to make technological advances to enable us to go into places where we have not gone before and to be able to improve recovery rates of the areas where we do go. But it is also about perhaps licensing conditions for those people prepared to make that first jump—and often in our industry it is the first jump. We operate as a pack and once someone finds something everyone goes in. So sometimes it is really about just getting that first person in there to see what is around and if it delivers a positive result it often stimulates a bit of a stampede into those areas. It is also around regulatory issues, but it is certainly about understanding the risk-reward balance and having a bit of a sense of perhaps what has worked elsewhere around the world and adopting it in Australia. As I say, we do not have all the answers on this yet. We are going through the process of developing the strategy. We have got copies for you of the upstream oil and gas strategy, which really tries to identify the nature of the issue and to come up with some options that governments might want to consider if they are concerned about this and if there is an interest in wanting to move into these unexplored areas.

Just going back to part of your question about exploration, we are seeing exploration in Australia. First of all, it is reasonably stagnant, which is perhaps a little surprising in terms of the numbers of wells drilled and the metres drilled. It is not so stagnant when you look expenditure, but that really just reflects the 100, 200, 400 per cent increases in the cost of doing this stuff.

Senator O'BRIEN—Yes, I was going to ask you about costs. Day by day there are articles in the paper about the rising costs for a variety of infrastructure projects. You were suggesting that the costs of oil exploration are going up much faster than even the rate of increase of those on land construction projects. Do I understand you correctly there?

Ms Robinson—I think we are seeing cost increases in all areas and construction is one of them. I would imagine the construction costs on land are reasonably similar, but where we are seeing really big rises are in rig rates. For the rigs that we use for exploration our industry was paying about $65,000 a day about 18 months ago, and now they are upwards of $250,000 to $300,000, or even $400,000 a day, and they are the sorts of things that I am not sure that people understand. Steel prices of course over the previous 12 months up until six months ago increased exponentially, but in general we are seeing cost increases over the past 12 months of between about 30 to 50 per cent depending on the project.

Just to finish the previous question about exploration, we are seeing exploration occurring but where it is occurring it is in the known fields—in other words, the proven fields—so it is really about extracting the last bits in the proven fields. What that is delivering is smaller and smaller

finds. Last year I think the largest find was around 10 million barrels. When you consider that Australia consumes about 800,000 barrels a day that is a reasonably small find, and particularly when you think about the old days in the sixties of Bass Strait and so on. They are not billion barrel finds. That is why we are so interested in the underexplored areas. I would say it is one of the great opportunities that Australia has that a lot of the other OECD countries do not have. One of our great opportunities is that we do have these vast unexplored areas. That said, we do also have a perception of low prospectivity.

Senator JOYCE—We had Dr Ali Samsam Bakhtiari speaking to us at the previous inquiry. He gave the analysis that China, for instance, will go anywhere for oil, or do whatever it can to acquire the product. He also touched on an issue, which I would like you to clarify. He said he believed that there are up to 26 billion barrels of oil in Antarctica. Do you believe that is a possibility? Is it exploitable? And is any of this resource within the 42 per cent of the Antarctic that Australia claims to be its own?

Ms Robinson—There are two parts to my answer. The first is that I do not know. We have not done any assessment whatsoever on Antarctic reserves. The other part of the answer would be that it is probably not in our charter to say whether or not it would be of any interest. The Australian resources in Antarctica are owned by the Australian people and ultimately it will be the Australian people's decision as to whether or not anyone was going to move in there. I would have to say, just from a personal point of view, I cannot imagine that to be the case. But it has never been an issue that has been discussed by any of my members or within APPEA so I am afraid I cannot give you an answer to that.

Senator JOYCE—The problem is there are a lot of other countries that do not believe it is ours. There are a whole raft of countries that do not believe that we have any territorial right to where those resources are and that is the issue I am getting at. It is not going to be a decision of the Australian government; it is going to be the decision of another person's government. What sort of effect do you think a blending of petroleum based products would have on the horizon of oil and the horizon of usage of oil? Do you think there is a reasonable extension on the horizon of oil utilisation in internal combustion engines by blending with biorenewable products?

Ms Robinson—Those downstream issues do not really fall within our area of responsibility. We really only focus on exploration and production and that takes you to the pipe. We do not really work on downstream related issues. Any statements that I make in that regard are more personal opinions. I would say that at a general level anything that can extend or prolong, delay or help make the bridge from where we are at the moment to what may be a very different energy future is worth exploring, whatever that is. That said, I also note Samsam Bakhtiari's comments about some of the downsides of things like ethanol and some of the other implications that would certainly need to be taken into account in that regard—water usage, displacing land for food and those sorts of things. As I say, that is really not in our charter of responsibility.

Senator JOYCE—Do you agree with Dr Bakhtiari's statement that the horizon they see for the price of a barrel of oil where people would stop using it is about $300 per barrel?

Ms Robinson—I am not being very helpful for you, I am afraid, but we are also not a forecaster. We do not really look at those issues at all, and there are good, very well-paid people who try and forecast the price of oil and what that will ultimately do, and they do lots of

modelling—ABARE is one of them. I am not in a position to be able to say what price of oil it would take before people stop. That said, from reading Bakhtiari's statements to the committee I am not sure to what extent he took other petroleum based products into account, like shale oil and alternative oil supplies. I think there are so many complexities there in doing a modelling exercise like that, and there are agencies who are paid a lot of money to do it. And I would suggest—and I am sure you are already are—asking those forecasting agencies to comment.

Senator JOYCE—Since you mentioned shale oil, what is your envisaged potential of shale oil in Australia? How many barrels was it—466 million? Do you have any sort of figure on what is the potential of shale oil in Australia?

Ms Robinson—We just go by the existing published information. I think the International Energy Agency talk about eight billion barrels of non-conventional oil.

Senator JOYCE—I think we have received evidence. You might not have been here.

Ms Robinson—Yes, we just use the existing published public data.

Senator JOYCE—Do you have any views as to any potential problems with extraction of that product in regard to heavy metals and returning of overfill?

Ms Robinson—I am sure the people who operate those fields would be better placed to answer.

Senator JOYCE—Is there anywhere where Australia has territorial control that there would be the potential of further oil fields?

Ms Robinson—Where do you mean?

Senator JOYCE—Anywhere. Is there any part of Australia that is unexplored, deep sea, close to the coast? Are there any areas where they say, 'There possibly could be oil there, but we cannot go there'?

Ms Robinson—Using the Geoscience Australia data—and I note that you have got them back in today, so again I think that is a question for them—the sorts of areas that they are talking about at the moment are the Arafura Sea area, certainly around the Great Australian Bight in the south-west and also in the far Pacific: the basins—FCG we call it, I cannot remember what they stand for—in the further Pacific regions.

Senator JOYCE—What I am getting at is that the promotion of an alternative to oil can actually be an environmental saviour because it saves you going to areas where we do not want to go to find oil, such as the Great Barrier Reef.

Ms Robinson—Yes, absolutely.

Senator JOYCE—Would there be a potential of oil in the Great Barrier Reef? Obviously, I do not want to go to the Great Barrier Reef, and neither do I want to go to the Antarctic, but unless we find an alternative people are going to start thinking about going there.

Ms Robinson—On the basis of the information that Geoscience Australia has, we believe that there are vast areas outside of those environmental significant areas.

Senator HEFFERNAN—Given that you represent the explorers, I will take you to Bass Strait and Esso, the original field there, which has serious environmental problems, and which the Victorian government and the Commonwealth have been arguing about for some years with a fix to the fact that the original 1969 environmental planning did not include recharging the aquifer. So there is a better than 50 per cent chance that a large section of the Gippsland coast is going to subside into the sea because the field comes under the land mass and it is falling a metre a year.

One of the things that has been suggested in a committee—not this committee—to me as the chairman of the committee, was, 'The difficulty is that if we put pressure on a solution Esso—as it was at the time—might just walk away and leave us with the problem.' You are entitled to frown because that is what we were told. Do you think, taking the point that Senator Joyce is making, that if there were other oil fields discovered, but there were better energy technologies discovered at the same time, that the greed factor, or the ASIC obligation of the directors of these companies to maximise the benefit for their shareholders, would mean that they would use a strategy to exhaust one energy mass before they went on to the next energy mass?

Ms Robinson—I think you cannot really expect—

Senator HEFFERNAN—These are your people.

Ms Robinson—a specific answer to that. I do not answer on behalf of companies or their strategy.

Senator HEFFERNAN—I think they probably would. I think the point is that Senator Joyce has got some publicity a month or two ago when he went to the Antarctic. There was some sort of a ring came out of that there is all this oil down there, that we ought to have a fight over it, and most of the world thinks we ought to leave it there. But if the greed factor was high enough, I think they would be tempted to have a shot at it. I would not want them to have a shot at it, but we have taken evidence that at $60 or $70 a barrel coal liquefaction becomes a reality; at $90 a barrel oil shale becomes a reality less the problem with the greenhouse gas factor. Would it be unreasonable to say that as a phenomenon globally that energy suppliers would like to maximise the resource before they move on to the next resource?

Ms Robinson—Again it is more a personal view because I am not going to answer on behalf of member companies and their business strategies, and I do not know them—

Senator HEFFERNAN—It is quite unfair to.

Ms Robinson—Ultimately, you need to ask the companies who are involved in those areas those questions. I would say two things. Firstly, they have a very keen sense of their social licence to operate and they take those obligations extremely seriously and they also understand who ultimately owns those resources. Secondly, a lot of those companies are actually diversifying into other areas of energy supply. They are moving into solar, they are moving into

hydrogen, they are moving into all sorts of things, so they are diversifying and keeping their options open as well. I am not sure that for all companies it is really just about—

Senator JOYCE—There is a view that you are dragging the chain in going into those new areas, that you are being taken screaming and kicking rather than by free will, and that is the whole point. If the oil companies started moving earlier to these bio renewable alternatives, we would be relieving the pressure environmentally on so many other areas in the world.

Senator HEFFERNAN—Could I just focus on that. Obviously that is the argument that has been going on in Australia about ethanol, where if you put ethanol in your car two years ago the car was going to fall to bits. The people that were arguing that here at the bowser, that is the proprietors, in America were arguing the exact opposite argument. It was just a commercial thing which was full of jiggery-pokery. We have a huge supply of uranium and we face this same argument we have with the oil: will we exhaust all the oil before we move on to something else so we have maximised the benefit for the shareholders? Should we skip a generation and do away with uranium and move to the technology that will bring thorium on line? It is a pretty good argument. You could put some more money into the resource, because compared to uranium thorium is pretty harmless. Do you know what I am getting at?

Ms Robinson—Yes.

Senator HEFFERNAN—I think everyone wants to maximise the benefit and exhaust the whole thing and play the globe as a bunny.

Ms Robinson—I am not sure that is true.

Senator HEFFERNAN—Neither am I, by the way.

Ms Robinson—Our position, as I explained in our opening statement, I think is more aligned with the sorts of things you are saying, and that is prudent governments will be looking at everything they have available to them. They will be encouraging everything to try to assist them to move through short-term, medium-term, long-term changes to ultimately what the energy mix will be. I represent explorers and producers and the position that we are putting is that for some time we are going to be dependent on crude oil for transport fuels and what we need to do is recognise that that can be used to build a very valuable bridge to what ultimately should be, and could be, a very different energy mix.

I guess what we are saying is that no-one should wait until one energy source is completely exhausted before you start thinking about moving elsewhere but use it as a vehicle and do as much as you can so that you can minimise economic and other shocks to the Australian community as you make your way through to whatever that future is. I do not think anyone knows what that energy future is ultimately going to be. It is going to be dependent on commercial issues, environmental issues, social issues and public opinion—all sorts of things. I do not think we have any idea what the energy mix is going to look like in 20 years time.

Senator HEFFERNAN—I have one quick retort. I think the average punter in Australia would be curious to know why we sell gas to China for five cents a litre and buy our fuel here for $1.50.

Ms Robinson—Which fuel? Gas?

Senator HEFFERNAN—No, your car fuel.

Ms Robinson—Gas is not crude.

Senator HEFFERNAN—I am not talking about crude, I am talking about alternative energy sources.

Senator MILNE—On the point of prudent governance, can you give me a quick summary at the moment of what the government provides in terms of support for your industry and your members in terms of tax breaks and other incentives for exploration. Can you tell me what you do not have now that you are asking for in addition?

Ms Robinson—Senator, on the first part of your question, probably the most useful service or program that the government provides for the industry as a whole is the collection and provision of what we call pre-competitive geoscientific information. That assists the government then in deciding which areas they will release for bidding for acreage by any company and it is so, I guess, a program that they see enables the ability to generate as much interest as possible and the maximum wealth to the Australian people ultimately.

The other more recently introduced mechanism was something they called the 150 per cent uplift factor. The intention there was to try to identify those frontier areas that they felt, on the basis of the Geoscience Australia information, were going to be offered some prospect of realising some oil and gas potential. That is a taxation break that enables basically the 150 per cent level—it is bit like the R&D—for identified areas, and there are only a very few areas that are identified as being eligible for the 150 per cent uplift factor. Now, I guess I would have to say that is of limited interest in that it is only relevant to those companies that PRRT—petroleum rent resource tax—which is a profit based tax. Unless you are generating a profit, and a lot of these exploration companies are not, then a 150 per cent uplift factor is not of much benefit. They are the two key initiatives. Noel, are there any others?

Mr Mullen—Basically, the industry is subject to the normal suite of company tax issues in the same way that most other capital intensive industries are. Depreciation is generally over the life of the equipment. I guess the industry is different than a lot of mainstream industries in that it has an additional resource tax that applies to it which recognises that it is a community resource that is being exploited. But there is really nothing major in terms of what you would loosely call subsidies that are paid to the industry. I guess reference is often made to the old diesel fuel rebate scheme. The petroleum industry is not a major user of diesel so we are not major recipients of diesel fuel rebate or fuel tax credits, so really we operate in a similar sort of framework to most other capital intensive industries in the economy.

Senator MILNE—So what are you asking for now in addition to what you are already getting?

Ms Robinson—At the moment, we are not really asking for anything except to have the Geoscience Australia program extended beyond next year, when it is due to run out. But we are exploring all of these issues through this process which is the development of an industry

strategy for the upstream oil and gas industry. That is really trying to identify where the industry could be in 2015 and what are the key issues that need to be addressed in getting there. I guess, as I said in our opening statement, what we anticipate will be delivered through that process and that will be the process that will identify whether there are impediments to moving into those frontier areas for further exploration for gas and oil. I can imagine that they will be around things like geoscience information, licensing, acreage release processes and regulatory processes more broadly. But apart from that there is nothing specific and there is nothing specific I can answer to your question until we go through this process.

Senator MILNE—So there is nothing about extending the 150 per cent tax break and taking off the current qualifiers to that?

Ms Robinson—I would say, though, that everything will be considered as part of this process and I cannot imagine why all options will not be considered but ultimately, of course, it will be up to governments to decide whether there is a problem, the extent of the problem and what needs to be done to address it.

Senator MILNE—Okay. So, given what you have said about increased costs for exploration and given the record of exploration relative to discovery around Australia in the last decade, why would governments throw more money at exploration when the same money put into finding alternative fuels and developing alternative engines—electric cars, for example—could be a better investment of their money, given the prospectivity and the high cost and the low return to date?

Ms Robinson—That is a question obviously you have to put to government, and I am sure you are on a regular basis. The only answer that I can give to that, if I was government I would be considering the need to get back to that bridge, to try to make the smooth transition to whatever needs to be done into the future as smooth and as shock-proof as possible. You have to come back to that in a world where we are seeing demand squeezing supply around the world for oil and you thought you had these vast sedimentary basins out there that had a prospect of oil, we would wonder why we were not at least finding out what we had there as part of the necessary suite of measures, and only one part of the suite of measures.

Senator MILNE—Just following on from what you were saying, what you are recognising is that we are at the bridge, we do need to bridge to an alternative fuel future to crude oil. In that context, can you tell me your view of peak oil?

Ms Robinson—We are not saying that; what we are saying is that there are a bunch of varying forecasts out there about the amount of oil and gas reserves there are around the world, and in particular here we are talking about transport fuels. The International Energy Agency, as you know, has said that we have only used a third of the resources there are around the world. I do not think at this stage I would say whether or not we are on the brink of a looming disaster. That said, I do not think personally that we have to just use the information that we have available to us but in any planning for the future, again, a prudent government I think would want to understand every scenario and always plan for the worst-case scenario, and plan for that in a way that minimises any shock to the Australian economy and minimises any decrease in the wellbeing and welfare of the Australian people.

Senator MILNE—You are not prepared to put a time frame on it?

Ms Robinson—Absolutely not. As I say, there are a variety of forecasts out there on the extent of the world's oil reserves. We are not a forecaster by any stretch of the imagination and I think my life would be fairly limited if I did try to do that. There are people who are paid good money to do that.

Senator HEFFERNAN—On the exploration side of it, you say you have a booklet that is looking at upstream. What about downstream, to make it viable? Having just come back from Trinidad—

Senator JOYCE—That explains the tan.

Senator HEFFERNAN—who supply 73 per cent of the United States liquid natural gas but have a huge downstream industry, do you give consideration in your exploration sums of what is viable and what is not to what you could do downstream?

Ms Robinson—That is an interesting question.

Senator HEFFERNAN—I think it is one everyone ought to address.

Ms Robinson—I do not represent the downstream industry, but, of course, a lot of upstream industries of any industry do not represent the companies that make the products that they sell to. That said, our companies—

Senator HEFFERNAN—What we are talking about here, as you keep saying, is the welfare of Australia.

Ms Robinson—Yes, but I also represent the oil and gas exploration production industry.

Senator HEFFERNAN—But in Australia we are a victim of a world cartel, for instance, in fertiliser and chemical. We do nothing about the fertiliser potential of the north-west shelf gas.

Ms Robinson—In Australia I represent 55-60 members involved in exploration and production, so we are not talking about a cartel here, we are talking 55-60 companies in Australia who are exploring for and producing oil and gas.

Senator HEFFERNAN—But we actually have the potential, through your people, to bust a world cartel, for instance in fertiliser, but no-one talks about it.

Ms Robinson—I am not sure that is something that I can address.

Senator WEBBER—My question sort of follows on from Senator O'Brien's first question. Earlier in its hearings the committee received evidence from ABARE. Given what you have said about the further incentives that are needed for exploration at the current price of $75 a barrel—

Ms Robinson—I actually have not said that.

Senator WEBBER—Sorry, okay. They are looking at going back to a price of about $20 a barrel. Firstly, does APPEA have a view on that; and, secondly, what will that mean for future exploration?

Ms Robinson—No, we do not have a view on it. As I say, we are not forecasters.

Senator WEBBER—If we go back to $20 a barrel—which ABARE says but no-one else that has appeared before the committee agrees with—what will that mean for exploration?

Ms Robinson—If it went back to $20 a barrel I think we would see what we have seen in the past around the world, and which is perhaps part of the reason why we are in the predicament that we are globally, and that is a failure to invest in exploration.

Senator NASH—You mentioned the potential for reserve growth from enhanced oil recovery. Can you expand a bit on enhanced oil recovery, what it means and what it entails?

Ms Robinson—At the moment there is a recovery rate of oil around 50 per cent. Obviously, if you can increase that rate of recovery by even a few per cent that can make a big difference. In other words, if you can find technology and use technology to increase the amount of oil that you can recover from your wells, you produce more oil.

Senator NASH—That is my question: what are those technologies? Do they exist and you do not have access to them, or are they technologies that are yet to be developed?

Mr Mullen—I think the technologies are emerging. The two concepts, which are often interchanged, are reserves and resources. Reserves are something which is producible effectively under the current economic framework; resources are a broader concept of what resource is in place but may not be recoverable. The technologies are emerging that allows us to increase the switch from, effectively, the resource to a reserve number. That is something that time will only provide solutions for. It is certainly something that our member companies are focusing on very strongly. At higher oil prices, that is one of the stimuli in place to increase the recovery rates.

Senator NASH—Who develops the technology if something is emerging? Who is responsible for R&D in terms of technological advances?

Ms Robinson—A range of people. A lot of the companies, obviously. The companies themselves do an enormous amount of R&D around the world. Then, of course, there are a number of scientific organisations around the world that also assist in this area and the universities and all the usual R&D agencies. One of the interesting developments around the world is the increasing role being played by national oil companies, state-owned oil and gas companies around the world, and it is interesting for a variety of reasons. One of the reasons is that, while they are playing a more significant role in exploration around the world, the world is still very reliant on the private companies for the development of technology. Most of the technology is being developed in the private sector by the companies but certainly in conjunction with the scientific organisations.

Senator NASH—Do the companies work together at all or do they do it individually?

Ms Robinson—No, they often work together. In fact, Australia has an interesting initiative in Western Australia called WA:ERA which is a joint R&D outfit set up by CSIRO in conjunction with a number of Western Australian based oil and gas companies. They all contribute to that because, of course, there is a lot of technology, not just increasing recovery rates but actually allowing people to go to more difficult areas and so on, and there is a lot of work being done through WA:ERA, collaborative work in those sorts of areas. Obviously, there is always going to be a consideration given by companies to their own competitive advantage, as you would expect in any industry, but there is a lot of collaboration through those joint public-private type initiatives.

Mr Mullen—I guess, just to lead on from there, one of the unique characteristics of the industry is that a lot of the projects are developed under joint ventures and bringing in the expertise of different companies within individual projects. Company X may be able to bring a technological solution that the other partners in the joint venture are not aware of, so there tends to be that sharing of technology as well.

Senator NASH—Thank you.

CHAIR—When we are talking about this expanded exploration into the deeper sea areas and the areas you were talking about, it is more expensive, so I would have thought that the higher oil price partly stimulates that exploration. The price of oil coming out of that more expensive exploration is going to be much higher, is it—that is a fairly safe assumption?

Mr Mullen—I think the price of any ultimately recovered oil is really only related to the quality of the oil, so a shallow water recovery oil resource if it is equivalent in terms of its technical specifications will receive exactly the same price as one from a frontier area. There is not a higher price received just because it is a higher cost destination.

CHAIR—Let me turn the question around, then. It is only economic to look for that oil if you are going to be getting a higher price for that oil: is that a safe assumption? I am going on the back of the comment that you just made about if it is $20 a barrel that decreases exploration.

Ms Robinson—Yes, I think that is a reasonable assumption, and that is that there is an adequate return on your investment, and that is a long-term financial planning exercise that they do, taking the value of oil not at the time that they go in there but certainly they work their return rates long into the future.

CHAIR—It is probably a fairly safe assumption that production companies will only be going to those areas if they think they are going to get a higher price for that product.

Ms Robinson—Not if they think they are going to get a higher price; they will go in there if they think they can get their planned return on that investment.

CHAIR—Let us go through the steps, then. In that case they will only start looking for that oil if they are going to meet their returns. It is more expensive to go looking in those areas, therefore they will only go there when the price meets their returns and they make a profit above that.

Mr Mullen—Yes, I think that is a fair comment.

CHAIR—What I am getting to is that in one of our terms of reference we are also looking at is the impact of higher oil prices as it relates to a whole lot of things in Australia. So that the oil that we are talking about is still going to be expensive oil, isn't it?

Ms Robinson—Yes, oil is the same worldwide.

CHAIR—When we are looking at alternative fuels and the impact of higher oil prices and reduced oil supply, this oil is not going to solve that problem—it is a stopgap measure on the way to finding alternatives.

Ms Robinson—We would not say it is a stopgap measure, but it is certainly a measure that governments could consider if they are wanting to—it is a stopgap measure if you accept that we are going to be dependent on fossil fuels for our transport fuels for some time into the future, no matter what that future looks like, even if that continues to be a fossil fuel long-term future. But certainly those sorts of measures are part of the transition in making your way to whatever that future is. Whether it is alternative fuels, whether it is fossil fuels, whether it is fuel efficiency, whether it is car efficiency standards, whatever it is, it is part of trying to smooth a transition to whatever that future holds.

CHAIR—Thank you.

Senator ALLISON—I wonder if there is a graph in your submission which I cannot find which would show the link between exploration and the trends over time in terms of discovery in quantities of oil?

Mr Mullen—I do not think we actually have a graph in our submission but I know it is material that Geoscience Australia produces and it shows a lumpy growth. Certainly, significant quantities of our reserves were discovered in the sixties and seventies in the early phases of the exploration programs. There are significant jumps, however, that take place in corresponding periods where we have had significant discoveries since those times. Certainly there is not a chart that APPEA itself has produced but Geoscience Australia does plot over time the discoveries that have taken place correlated with exploration.

Senator ALLISON—Could you repeat that last sentence?

Mr Mullen—Geoscience Australia produces a graph that does plot the discoveries over time in the context of the exploration effort that has taken place as well.

Senator ALLISON—Okay, and that presumably shows that we are getting less findings for investment than we were in the sixties?

Mr Mullen—For crude oil? For petroleum overall, I think it is difficult to make any generalisations because there have been significant gas discoveries made in the last two decades. In terms of crude oil a lot of the discoveries were made in the sixties and seventies but there have been discrete finds since then—significant discoveries since those times. But certainly in terms of gas, there have been significant discoveries made in the last decade.

Senator ALLISON—We will look at that submission to see what the trends and the quantities will be.

Mr Mullen—Certainly, Geoscience Australia has that information.

Senator ALLISON—Thanks.

CHAIR—Thank you very much for coming today and presenting your evidence. If you have any further information, please feel free to send it in to the committee. Thank you very much.

[9.57 am]

HOOPER, Mr Barry, Capture Program Manager, Cooperative Research Centre for Greenhouse Gas Technologies

CHAIR—Welcome. There is a little bit of bureaucratic stuff I have to do before we start. I just have to remind you that these are public proceedings, although we may consider a request to hear evidence in camera. I also remind you that this committee is covered by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be taken as contempt by the Senate. If you do not want to answer a question you should state your reason for that and the committee will consider whether we want you to answer the question or not, and if we do you can ask for that evidence to be given in camera.

I would like to invite you to make a brief opening statement and then we will ask you some questions.

Mr Hooper—Thank you. The Cooperative Research Centre for Greenhouse Gas Technologies is commonly referred to as the CO2CRC. The CRC researches the capture and geological storage of carbon dioxide for the purposes of greenhouse gas abatement. This form of carbon capture storage, often referred to as geosequestration, starts with the separation and purification of carbon dioxide from industrial sources such as power stations. The CO_2 is then compressed to a dense form and transported to carefully selected storage sites so that we can store the CO_2 deep below the earth's surface for a considerable time—thousands of years.

The most likely storage sites for these reservoirs for CO_2 are depleted natural gas fields and deep unusable saline aquifers. This technique has been used in a range of large-scale projects in Norway, Canada and Algeria and is planned for many projects such as the Gorgon project in Western Australia. The CO2CRC is just completing the third year of our seven-year CRC cycle and the work follows on from some extensive geological work on the CO_2 storage question carried out under the GEODISC program of the Australian Petroleum CRC which dates back to 1999.

The CO2CRC has the added features of a capture program, which I manage, and the significant area of pilot and demonstration projects. We are in the process of establishing a geosequestration research project east of Warrnambool, in the Otway Basin in western Victoria. That project will demonstrate the transportation and geological storage of carbon dioxide, looking particularly at leading-edge monitoring and verification projects so that regulators, governments and the community can be shown that this technology is safe and secure.

The CO2CRC is also active in performing techno-economic studies on the large-scale infrastructure projects that will need to result as this technology becomes commercialised. One of the projects in particular is the Latrobe Valley CO_2 Storage Assessment, referred to as the LVCSA, that was funded by the federal government. I project-managed that project, which looked at the issues of storing up to 50 million tons of CO_2 from Latrobe Valley sources some

2,500 metres below the earth's crust in offshore Gippsland Basin below the depleting oil and gas fields in Bass Strait.

This work was linked to the Monash coal to liquids project. Our involvement in the project was primarily in the collection, transportation and injection of the carbon dioxide and in looking at the costings and all of the issues associated with that, including the opportunities for our other CO_2 sources to be factored into that. So I am in a position to answer the questions that the inquiry might have around those aspects of geosequestration, carbon capture and storage, and the handling of the CO_2, in relation to projects such as the LVCSA.

In conclusion I would like to provide a bit of background on the processes and developments of carbon capture and storage and geosequestration, just to bring you up to date—particularly with reference to the United Nations Intergovernmental Panel for Climate Change reports which were just issued, in particular a special report they commissioned on carbon capture and storage. They noted that carbon capture and storage would be one of the options in a portfolio of measures for stabilisation of greenhouse gas concentrations, so it will be particularly important in the power generation sector as a technology. They say that the basic individual technologies are available today and in use in industry. While there may be some issues of scale-up for the demands of the power industries, we believe these can be dealt with today.

This is demonstrated by large companies in the oil and gas industry, such as Chevron, BP and Shell, recently announcing that they were investing significant sums in large-scale CCS projects of various types in a number of settings around the world. The reason these units would not necessarily be installed today is largely one of economics. As we see today, the cost of the capture is relatively high, and the majority of the research effort and capture programs—such as the CO2CRCs'—are being directed at reducing those costs. This is in line with the need to reduce the cost for the global community—the cost that we would have to bear to reverse the issues of CO_2 and other greenhouse gases—and the United Nations Framework Convention on Climate Change actually highlights the need to consider those economic impacts of reductions.

The good news is that a lot of the research and the work that has been going on in the last couple of years are beginning to show evidence of driving down the costs, and the research community globally is confident that these opportunities and outcomes will be delivered. The IPCC report also discussed the risks associated with this technology, but it did highlight that the risks for the starting point in the capture were no greater than the sorts of risks for these sorts of plants that exist today in the community. Furthermore it noted that the risks associated with CO_2 storage from well-selected geological sites were no more significant than those for natural gas storage, use of EOR—enhanced oil recovery—and all those sorts of risks that are considered acceptable today. Those are my concluding comments from the IPCC report and on that note I will conclude my introductory remarks.

CHAIR—Thank you. We will now move to questions.

Senator ALLISON—What stage are you at with your work? Is this project at the very early stages or—

Mr Hooper—Are you referring specifically to the Latrobe Valley project?

Senator ALLISON—Yes.

Mr Hooper—The Latrobe Valley project was based on work that has been done over a number of years. There was original work from the GEODISC program back in 2001 and then some work by APEL—now Monash Energy—and then this particular work. It is the most advanced work by such a project anywhere in the world, and we believe we are fairly confident as to all of the issues. As far as the installation or application of the project itself, we are not in the driving seat of that. I know that Monash have submitted some presentations to you, so I think I would have to defer to them in terms of that project. But as for the ability or the likelihood of this technology being able to be applied in the work that we did, it is reasonably well developed. There are still a lot of recommendations. Our report, which is available on our web site, has things that need to be done, but the actual timing in all of that is probably more going to be driven by the actual project itself in terms of the coal to liquids and so on.

Senator ALLISON—Sorry, I have not had a chance to read all the documents that you presented us with this morning. What are some of the things that need to be done?

Mr Hooper—In terms of that particular project, there are some more geological studies that we need to do just to define some of the broader storage capacity. We are very confident with what we got for the basic project and as to what we were asked to do in that project. There are issues to be resolved about interactions with the existing oil and gas reservoirs and the companies associated with those, and we are involved with those companies in talking through these issues. So those particular pieces of work still need to be done, and there are a number of years worth of work that would be required to bed all of those things down.

Senator ALLISON—So your job—sorry if I missed the point—is to look for the geological opportunities?

Mr Hooper—Our work in that project was very much about looking at the issues around the carbon capture and storage component—and we were not involved specifically in the coal to liquids plant et cetera—and that is our focus and the focus of our research.

Senator ALLISON—What are the cost barriers or other barriers to sequestering underground? What are the challenges you are dealing with?

Mr Hooper—The costs vary quite widely depending upon what the application is. In focussing on the alternative fuels issues, it is around the likes of coal to liquids et cetera, and the sort of costs that would—

Senator ALLISON—No, I am sorry but I thought you were involved in the geological issues.

Mr Hooper—Yes, but it is about the costs associated with removing the CO_2 and storing it in geological settings but taking the CO_2 from a project such as the Monash project. So the costs are different than they might be, say, from a power station, because there are different profiles of capture costs and storage costs. Looking at the project and how it would link to a project such as Latrobe Valley, our studies show that the cost of compressing, transporting, injecting and storing the material would be at a scale of 15 million to 50 million tonnes per annum—because those are

two of the cases that we looked at in the project—and they were down in the range of $8½ to $10.90 per tonne of CO_2 avoided. They are in the report.

Senator MILNE—Senator Allison, would you mind if I just clarified that particular answer? What I am trying to understand is what level of carbon tax on today's prices that means. What price would we have to put on it to make that a reality, to break even, at Latrobe Valley? Let us assume we are talking about coal fired power stations. You are talking about how much money and I am saying this: if we implemented carbon capture and storage today and made it mandatory, what would be the level of tax that would have to go on to make it feasible for the companies to do it?

Mr Hooper—As I said, there are different costs, and the power generation is a quite different set of circumstances to this—

Senator MILNE—Yes. I am asking about power generation in the Latrobe Valley right now.

Mr Hooper—I would quote the IPCC report's work on this. They say that the uptake of the use of CO_2 carbon capture and storage would be unlikely to be significantly used without a price of around $US25-30 per tonne of CO_2 avoided or without various emission limits.

Senator MILNE—What is $US25-30 in Australian dollars? Is it about $50, for argument's sake? So we are talking about a substantial carbon tax before this is even going to be considered for five minutes by any coal company in Australia.

Mr Hooper—I just repeat those figures.

Senator ALLISON—That is a really interesting set of figures you have just told us about. It was my understanding that that was the order but the work that was being done at present was to see how that cost could be driven down. You are saying that $US25-30 is about the range of the cost?

Mr Hooper—That is the figure that the IPCC was quoting.

Senator ALLISON—When does your work on this project finish?

Mr Hooper—We completed this work at the end of last year. Our work of looking at opportunities and sites continues, and further work is being done but in the broad research framework.

Senator ALLISON—In factoring in those costs, for how long do you expect monitoring to take place to make sure there is no escape from whatever reserve reservoir the CO_2 is being put into?

Mr Hooper—One of the key things we are looking at are fact these monitoring and verification issues. As I mentioned before, it is part of the Otway pilot project. The actual monitoring is very much related to the specific location. What you do is model the actual movement of the CO_2 and effectively confirm through the monitoring that what you are predicting is where it is. The actual time the monitoring would need to be continued for is an

issue that would be developed on a project to make sure that there is a very secure understanding of the movements of that material. It is hard to express a figure, but it would be as long as is necessary to be satisfied that the storage is monitorable and is in the right spot.

Senator ALLISON—Several thousand years?

Mr Hooper—No. I should clarify that. The physics are that the CO_2 goes in as CO_2, it is buoyant and it rises through the rock, because it is stored as a material in the rock, and it begins to absorb in the water and over time actually transforms into a stable immobile species. That takes a fair while—maybe a hundred years. We expect the monitoring could be curtailed well before that. As I said, it is very much a specific project-by-project situation, but it would not need thousands of years. In fact, by that time we expect that all of the CO_2 would have become immobile and dissolved effectively as CO_2 carbonated water.

Senator ALLISON—This obviously poses a huge regulatory challenge to governments, since CO_2 cannot be seen should it escape. Do you have any suggestions? Have you done any work on what sort of regulatory environment might need to be put in place to ensure that the CO_2 remains underground?

Mr Hooper—One of our remits is to advise and provide technical input to that issue and we have been active in working with the departments here in developing that, and significant work has been contributed to the international discussion on this, developed here in Australia with Australian content. So there has been a significant amount of work and certainly the IPCC report documents a lot of that. There is also the work with the Carbon Sequestration Leadership Forum, the CSLF, and so on. So there has been quite a lot of dialogue here and overseas and we have been contributing to that.

Senator O'BRIEN—You talked about the estimated cost of the Latrobe Valley project and the work being done to try and find if that cost can be reduced. What are the factors that feed into those costs? How would you break those costs down into separation, condensation, transportation and storage? Can you give us some idea about that and the areas where you think there might be the potential to reduce those costs?

Mr Hooper—Yes, we did a number of sensitivity studies in the report. In broad terms the cost breakdown includes compression, which is around a third of the cost. That also includes the cost of any additional power that would be needed, because in any removal process for CO_2 you actually have to take some energy to remove it. So the compression costs—about a third of the overall capital cost—were for that compression and any power make-up you need. About 20 per cent is in the pipelining and the residual is in the injection, which in this case includes platforms, wells and also some additional monitoring and verification over time—well remediation and so on. So we made some estimates for that.

Senator O'BRIEN—So nearly half the cost is injection and monitoring?

Mr Hooper—Yes, that is correct, and that is largely because of the offshore location in this instance—because of the additional cost for offshore pipelines and so on.

Senator O'BRIEN—So if it were land based there would be a possibility—ignoring pipeline costs, distance and those sorts of things—that it would be considerably cheaper, would it, to inject sequester?

Mr Hooper—The compression will be more or less the same. It would have some impact on exactly the sort of source that you were taking from. The pipeline is very much length dependent—dependent on the proximity of the sources to the sinks. Injection is largely offshore in relation to additional costs for offshore. We did do quite a few sensitivity analyses and found that different types of wells could actually reduce the costs quite significantly. I do not have the figures directly in there, but they are in the report. It was able to reduce the cost. In terms of the cost of CO_2 avoided, using innovative drilling techniques reduced it by 20 per cent.

Senator O'BRIEN—I am sorry—CO_2 avoided? I am not clear on what you mean by that.

Mr Hooper—Normally the way the cost is referred to is as dollars per tonne of CO_2 avoided. The term 'avoided' means that, yes, you are capturing a certain amount of CO_2, but a certain amount of energy is needed to recover that and some of that may or may not, depending upon how you configure the plant, result in some additional CO_2 being produced which you have to back out of that calculation.

Senator O'BRIEN—How do these costs compare with known carbon sequestration projects around the world?

Mr Hooper—Because of the almost ideal proximity relationship between the sources and the sinks in the Latrobe Valley and the offshore Gippsland Basin, this is at the lower end of storage costs. It is often quoted as having figures in the order of $10 a tonne for storage. Just because of a quirk of the way we did the study, the figure comes out at $10 a tonne, but to compare that with other international figures it compares to a figure of around $5 a tonne. I will not go into the details of that, but it is certainly as low as we would expect anywhere in the world. It is a very good location for that sort of sequestration opportunity.

Senator O'BRIEN—Do you have any idea what sort of cost that would add to the fuel, per litre, produced by the Latrobe Valley project, if that had to be factored into the cost of that fuel?

Mr Hooper—We have not been that closely involved. The liquid production format plant was not part of our remit and we are not embedded in that way.

Senator O'BRIEN—You do not have an idea of the tonnes of CO_2 per litre?

Mr Hooper—To give you an approximate idea, the sort of generation of CO_2 from the 60,000 barrel-a-day plant is, I believe, about 13 million tonnes a year. The cost to do that, per tonne of CO_2 avoided, was around $10. You can back calculate all those numbers but—

Senator O'BRIEN—It was 60,000 barrels per day and how many million tonnes per year?

Mr Hooper—Thirteen million. The actual cost of that was around $10 per tonne. I would have to take that on notice and check, but that is my recollection.

Senator O'BRIEN—We could do a rough calculation, couldn't we, on the basis of those figures?

Mr Hooper—That is correct. I would have to check with Monash that those numbers do line up, but that is my understanding at this stage.

Senator O'BRIEN—Have you any knowledge of work being done on CO_2 sequestration in other parts of Australia?

Mr Hooper—Our work is associated with all the work that is going on in that area. It is a very active area. I mentioned before that there is ongoing work with the Gorgon project and that work is being done effectively by Chevron. That certainly is quite active. There are a number of other activities and projects, the Latrobe Valley being one. We have done a number of regional studies as part of our work, both in the GEODISC program and the CO2CRC. We have looked at mapping the sites and the locations where we expect to get good proximity between sources and sinks. That work is ongoing. A number of projects have been raised, some of which are going forward with various funding under the low emissions technology fund and so on.

Senator O'BRIEN—Have you any idea of the estimated costs of any other projects in Australia?

Mr Hooper—We are doing work on looking at the regional issues of the costs. I would say that the proximity of the sources and sinks, whatever, in the Latrobe Valley would be very much at the low end. We have done some additional work in a number of other regions which also show that they are reducing and, while larger than the Latrobe Valley, would certainly be reasonable for carbon capture and storage.

Senator O'BRIEN—What range are we talking?

Mr Hooper—There is one area we are looking at between $30 and $45 a tonne, CO_2 avoided. That is not the same as the Latrobe Valley project, and I emphasise that; it is more a post-combustion type or taking from other CO_2 emission sources.

Senator O'BRIEN—A sort of power station?

Mr Hooper—Those types of applications, yes. They are unrelated, if you like, to the fuels.

Senator O'BRIEN—Is that because of the different process in capture?

Mr Hooper—Yes, it is all affected by the capture. The difference is in the way you capture CO_2. The situation with the Latrobe Valley project and the coal to liquids is that because of that process there are steps and processes already in place as far as producing the liquid from the coal goes, but you do not need those extra costs. So it really comes down more to the transportation compression for such a coal to liquids project.

Senator O'BRIEN—But, in the case of a coal fired power station, if that were what you were looking at, the costs are significantly higher at the capture stage, and then your transport and sequestration costs will be comparable, subject to distance and—

Mr Hooper—That is a fair comment. There are a number of ranges of capture costs that have been documented, such as in the IPCC report, ranging from, for instance, impost combustion from $US29 a tonne to the upper figure of, I think, $55. I would have to check that last one, but that is the sort of range. Then you would add some costs of the transportation for the full carbon capture and storage.

Senator O'BRIEN—Were the figures you gave us earlier Australian and not US dollars?

Mr Hooper—Yes, they were.

Senator O'BRIEN—I thought I would compare like with like.

Mr Hooper—I differentiate that because that is the way they were reported in the IPCC. They have done a broad collation of virtually all the work that has been done in the world, so they have a broader overview than our projects, which we are building a compendium of. It just gives you a better, broader scope.

Senator O'BRIEN—What about a project like the Gorgon project? Have you any ideas of carbon capture costs as distinct from transport and storage costs?

Mr Hooper—I do not have any numbers for that.

Senator MILNE—I am going to come back to the numbers in a minute. Obviously, the optimum scenario for carbon capture and storage, assuming that you can technologically prove that it is achievable, is this link between source and injection—source and storage—and you are saying the Latrobe Valley is optimum because you have got the Gippsland Basin right there. Obviously, the storage capacity is not unlimited. You described this technology as a medium prospect. So, given the limitations that are there, how long could you run Latrobe Valley and continue to store the CO_2, based on what we know of the basins or their known capacity to absorb CO_2?

Mr Hooper—The target for the Latrobe Valley report was 50 million tonnes a year for a 40-year nominal project life, which is 2,000 million tonnes of CO_2 storage, and that was easily achieved. We did all the necessary modelling to demonstrate that. We also state in the report we expect that there would be significantly greater volumes there, and we quote a figure of around 6,000 million tonnes, which, on the basis of the 50 million tonne rate, could store around 120 years worth of CO_2 emissions. We have not done the full modelling on the 6,000, but we have gone into print on that basis—that there is 120 years at that rate—so there is a fairly significant storage potential.

Senator MILNE—What about other areas in Australia—the Hunter Valley, for example?

Mr Hooper—The original work on GEODISC under the Australian petroleum CRC showed some concerns in the New South Wales region, and that was on very early data. We are actually in the process of reviewing not only that area but also other areas elsewhere in Australia, and it needs more work.

Senator MILNE—So, apart from the Gippsland Basin, where in the rest of the country have you found this proximity between source and storage?

Mr Hooper—The original GEODISC work showed good proximity, as you say, in Victoria and Queensland and various opportunities for how that would be achieved. It also showed significant storage basins in the north-west of Western Australia, but clearly they are not necessarily in close proximity.

Senator MILNE—Where in Queensland are you talking about storage?

Mr Hooper—There have been a number of reviews in the Bowen-Surat Basin and in other basins to the west of that.

Senator MILNE—What sort of relative costs are we talking about there compared with Gippsland and the Latrobe Valley?

Mr Hooper—We have not completed those studies, so I do not have those numbers with me. As I said before, a lot of the cost is in the injection. As for the transportation, as long as you have large volumes and get the economies of scale for that, it does not necessarily rule out longer pipelines to still give you a reasonably low cost.

Senator MILNE—Coming back to the cost and the figures you quoted me, is geosequestration capture and storage viable without a price on carbon, whether it is leveraged as a tax or by some other method?

Mr Hooper—I go back to the comments from the IPCC report that large uptake of that is unlikely unless there is a certain level of carbon price or there are requirements in terms of mandated emissions et cetera. That is as quoted by that report.

Senator MILNE—So it is not economically viable unless we put a price on carbon? That is clearly what you are saying in that context. I want clarification of what you said earlier. You said in relation to the Latrobe Valley and the Gippsland Basin that you have brought the costs down to $8 to $10 per tonne of CO_2 stored.

Mr Hooper—Avoided.

Senator MILNE—Avoided. Is that in Australian dollars?

Mr Hooper—It is.

Senator MILNE—Then you mentioned a figure of $US25 to $US30 per tonne of CO_2.

Mr Hooper—Correct.

Senator MILNE—Can you explain to me the relativities of those two?

Mr Hooper—The first one is a specific project derived cost. It incorporates all of the capital operating costs and so on for that project. Those other figures are a broad brush in terms of being

across the issues of carbon capture and storage. When you look at postcombustion there are different ways that you can actually capture the CO_2. You can either put capture on to existing power plants as they stand today or look at introducing a different power generation technology which actually drives down the cost of capture significantly. It is alternative technology; it is a technology that is used today. That is the lowest component cost of the capture. The figures that I quoted before in terms of the IPCC report were on the postcombustion, but similar numbers to the IPCC are down in the range of $15 to $20 for the cost of capture on a similar US dollar per tonne of CO_2 avoided. So there are different ways you could approach this rather than necessarily going straight to either postcombustion or what they call precombustion. The numbers from capture that I quoted before were for one of those two forms.

Senator MILNE—Can you tell me what the current CO_2 omissions in the Latrobe Valley are now—the estimated total?

Mr Hooper—It is my understanding that it is in the order of 65 million tonnes per annum. It is in that order; I would have to go back and double-check on that specifically.

Senator MILNE—Those figures which you gave me before—the capacity of the Gippsland Basin to absorb it—did you say that was based on 50 million tonnes a year?

Mr Hooper—It was.

Senator MILNE—Why are you basing it on 50 million tonnes a year when we know that it is already in the vicinity of 65 million tonnes a year?

Mr Hooper—I was quoting the report and the work that we did.

Senator MILNE—So in other words, if it is coal mining as usual or an increase in coal mining, then the figures you have quoted me about the potential years and absorption capacity are obviously going to be less by a factor of 15 per cent in that case.

Mr Hooper—Yes, it is just a matter of dividing it by a different figure.

Senator MILNE—It does not seem to be very sensible to be working on an estimation of 50 million tonnes if there is already 65 million tonnes going up.

Mr Hooper—We were just following the remit we were given under the contract.

Senator MILNE—Okay, thanks.

Senator HEFFERNAN—Can I just ask a couple of quick questions on CO_2? With the North West Shelf and the potential—and I have no idea what the answer to this is—of the liquid natural gas trains, which we built, to process the gas, where is the CO_2 from that proposed to go?

Mr Hooper—Apart from—

Senator HEFFERNAN—I notice on your list here, there are some of the participants. And I notice that some of these participants are also in Trinidad, who supply 73 per cent of America's

liquid natural gas They were dopey enough to tell us, when we were there a couple of weeks ago, that they incinerate it. When we got their scientists down, they owned up: they put it through with everything that does get incinerated, but it finishes up in the atmosphere. I wonder if we have those sorts of bold plans for the North West Shelf.

Mr Hooper—As occurs with all CO_2 generated from power stations and so on and industrial sources of which LNG is one, essentially all of the CO_2 has gone just to atmosphere from burning, as it does with cars.

Senator HEFFERNAN—So the environmental plan is zilch. I mean you are happy to put it into the atmosphere.

Mr Hooper—I am just stating what actually happens.

Senator HEFFERNAN—I would have thought this group was some sort of group of honourable people who want to minimise that and also protect the planet and yet one of the givens in this business is that you just stick it into the air.

Mr Hooper—I am just saying is what has happened. The intent of capturing not only from power stations, from industrial sources—in the case of the In Salah project in Algeria, the Sleipner and Gorgon project in Norway et cetera—the other opportunities or the other places that CO_2 comes from is as the actual gas is being produced and that is being looked at being reinjected. I am not saying that should continue but it is up to—

Senator HEFFERNAN—One of the problems in my head is that—without naming anyone on your list—depending on where they are operating out of, they vary their environmental conscience. There is an industrial park in Trinidad, which I think is going to turn into an environmental swamp. When you are there you play by those rules as a responsible corporate citizen and when you go to somewhere else where they are a bit fussier, you just up your game, in other words, 'When in Rome, do as the Romans do'—do you really think that is responsible?

Mr Hooper—I think my only comment is that—

Senator HEFFERNAN—How do you do things competitively? I went to an iron steel mill in China that did employ 400,000-odd people and they rationalised it to 150,000, so it is a pretty big mill. I was there for four days and did not see the sky because of the smog—how do we compete with that?

Mr Hooper—I think the CO2CRC and all of the work that we are doing is very much looking to come up with solutions to prevent that continuing, certainly on the CO_2 front. All I could say was that in the experiences of working with all of our participants they are active in dealing with all of these issues.

Senator HEFFERNAN—You understand what I am saying, though. They have an obligation to their shareholders to maximise the profit. If you have to play by a different set of rules somewhere else to get a profit, it is fair game.

Mr Hooper—I cannot speak for the individual companies. I speak for the CRC and what we are trying to do.

Senator HEFFERNAN—All I am saying is that with the North West Shelf, if you have some influence on what is happening up there, I would like to see (1) some downstream value-adding and (2) some consideration given, rather than to the smoke and mirrors operation in Trinidad, to some fair dinkum response to the CO_2.

Senator STERLE—Your website describes geosequestration as a medium-term option. How far in the future is medium term?

Mr Hooper—I think carbon capture and storage is definitely a transitional technology. It is very much dealing with the very big issue we have now, as we move over the next century to something that is carbon neutral. In terms of the time that this would take to be done, it is something that we need to be considering in the next five years, and there is work going on now. In terms of demonstrations, there are actual projects out there. I think over the period of the next 10 years we need to be significantly following this path if we decide that this is an abatement technology that can contribute to the issue.

CHAIR—I think we have exhausted the questions. Thank you very much.

Mr Hooper—Thank you.

Proceedings suspended from 10.42 am to 11.07 am

SCOULAR, Mr Russell Gray, Government Affairs Manager, Ford Motor Company of Australia Ltd

CHAIR—Welcome. Have you heard the spiel about being covered by privilege?

Mr Scoular—Not today, but I have heard it on previous occasions.

CHAIR—In that case, that gives me barleys—I don't have to do it! I invite you to make an opening statement and then we will ask you some questions.

Mr Scoular—Firstly, thank you for the opportunity of appearing before the committee and participating in the inquiry. I would like to make a few opening comments. Obviously, there are a number of issues confronting the global and Australian automotive industry at the present time, and rising oil prices is one of those issues. From our perspective as an automotive producer we are not an expert on specific global oil supply and pricing issues and some of that side of it but we certainly can share with you a broad outline of the industry and corporate initiatives we have taken to improve the environmental performance of our vehicles.

In terms of Australia and Australia's new car fleet, I think the national average fuel consumption of our vehicles has improved by some 30 per cent since the 1980s. Our industry as such, under a voluntary agreement with the government, is committed to achieving more. We are currently targeting a 12 per cent average fleet improvement at 2010 compared to 2005. It may surprise you, for example, to know that today's Ford Falcon is more fuel efficient or uses less fuel than the small two-litre Ford Escort used to use in the late 1970s.

We also announced last night it was our intention to offer a six-speed automatic transmission on all our Falcon sedans. Previously, that transmission has only been available in the upper series models. The effect of that for the buyer of a base-level Falcon XT sedan would be an improvement in fuel consumption of the order of six per cent compared to the traditional four-speed automatic transmission that has been standard in that car.

We can also share with you some perspective and some experience that we have had as a company that we would claim to be the leading automotive company in alternative fuels in Australia. We have manufactured and sold in this country some 50,000 dedicated LPG Falcons since we introduced that variant of the car in 2000. As we talk today we are undertaking a little bit of a promotion where we are trying to demonstrate that we can do a lap of the mainland of Australia for around $1,000. Earlier this week the car got to Perth, and the Melbourne to Perth cost of fuel was $199.33, for what it is worth.

CHAIR—I have never done that trip like that before.

Mr Scoular—I have never really volunteered or had any enthusiasm to do the trip. It is the fuel cost. Furthermore, as a company we have been very supportive or sought to be supportive of the government's various biofuels objectives, with a particular emphasis of spreading the uptake of E10 fuels in our vehicles. All our vehicles that we currently sell in Australia—our passenger cars and light commercials—are suitable to run on E10 blended fuels.

It is possibly not unusual in forums such as this with the types of topics that we are looking at that we get asked the question: why we don't build smaller cars in Australia? So I thought today perhaps that I would seek to pre-empt that likely question, in anticipation that it would probably come up anyway.

One of the critical factors we face in Australia is getting critical volume mass in our production volumes of what we build. We are a relatively small producer on a global scene. Our speciality, our skill, our manufacturing infrastructure, if you like, is tailored to medium to larger cars, where we have been able to build out or eke out a valuable volume niche in the marketplace.

One of the characteristics of the small car market in Australia is its incredible fragmentation—the large number of brands, the large number of models, derivative source countries. Just as an illustrative point, in the first half of this year, in round numbers, we sold approximately 40,000 new Falcons. The top-selling small car in the marketplace, in round numbers, sold 20,000. In that period, the average volume of small cars sold in Australia today by model is of the order of 3,000 per model. So we do not see that, if we sought to go to that end of the market, we could get the volume base to give us a return on the investments that we would have to make to do it.

We think we are better off to target our skills, our knowledge and our capability toward a niche where we have some history and some performance and, if you like, some shelter from the degree of competition that is increasingly fragmenting the bottom end of the market. That does not mean to say we do not sell small cars in Australia and in our dealer showrooms. We import a wide variety of cars at the small end—Fiestas and Focuses—but I think they will continue to be imported as opposed to being produced locally.

One factor—and I touched on this in our submission made some time ago to the committee—that is sometimes overlooked when we are looking at the issue of fuel efficiency of vehicles and how we can reduce people's dependence on oil based fuels and reduce their cost of motoring—is the savings that can be made by people's driving styles. It is not just the technology of the vehicle or the fuel make-up, but people's driving styles can actually have a significant influence on the level of consumption. Ford has been quite aggressive in Germany with ecodriving courses for its customers. With many thousands of people having gone through those courses, it has seen savings of the order of 20 to 25-plus per cent, compared with the cost from more aggressive driving styles.

In today's environment, from both an environmental and an economic perspective, it is a pretty easy way for people address the issues and get a good return without being dependent upon future breakthrough technologies or whatever. It is really there to be had. Whilst in a sense I am not saying that we should only focus on that and not focus on the technologies, I am really saying that, as much as the road safety debate is very much about better cars, better drivers and better roads, I think that the debate and the issues we are looking at in this inquiry are probably along similar lines and will take a tripartite type approach to addressing them. Those are my opening comments. I know I have covered a fair landscape and I would happy to answer any questions. I will do my best to.

Senator HEFFERNAN—One of the great drawbacks in the bush—and obviously the medium sized car is pretty handy, especially if you have to go over gravel roads, and with some

of the cars you see driving around town you obviously cannot even get over a grid without tearing the muffler off—is the fact that they are a fire hazard in grass. Will there be any technology in the future to get rid of the fact that, if you drive a modern car into a paddock, you start a fire if there is dry grass there?

Mr Scoular—I honestly do not know.

Senator HEFFERNAN—That is leading me to the question of where you think diesel will go in terms of cars.

Mr Scoular—I think I can probably answer the second question a little more easily than the first.

CHAIR—The second one is probably more relevant to the inquiry, as much as I am interested in that for my rural constituents.

Senator HEFFERNAN—It is the catalytic converter, as you know. We have had some great departmental people go out and light huge bushfires because—oops!—they did not know that as soon as you drive into the grass you light a fire with the catalytic converter.

Mr Scoular—On the issue of diesel fuel, from a passenger car perspective, of course, diesel fuel is a very significant fuel in the European market, for example. Some 50 per cent of all passenger cars sold in Europe are diesel powered. In Australia, diesel has largely been a commercial vehicle or truck fuel with very limited passenger car application. Now in more recent times that we have new, clean fuels and low sulphur diesels, we are starting to see a quite significant increase in the number of diesel passenger cars sold in Australia.

Senator HEFFERNAN—Might we see a diesel Falcon?

Mr Scoular—We might.

Senator HEFFERNAN—If it is commercial in confidence, I do not want to get you the sack.

Mr Scoular—No. I would not confirm or deny it. I think one of the issues about diesel is that it is obviously now an accessible fuel from a passenger car perspective because of the new fuel standards. There is still a long way to go. One of the issues with diesel that is hard to make a judgement call on is that you still have to pay more for the vehicle. The actual vehicle itself, or the technology in the engine itself, is more expensive vis-a-vis a petrol car, but you get an incredibly better level of economy from it.

Senator HEFFERNAN—But isn't that a fuel con? As you would know—you might not be as old as me but you have been around long enough—diesel was always 10c a litre cheaper than petrol up until recent times. If you go to New Zealand, it still is. Why is that?

Mr Scoular—I do not know. I am not a fuel company expert, but I was making the comment that a diesel engine in a car is more expensive than a petrol engine. It is a little bit like the dual fuel LPG scenario: you have to pay more to buy, but if you do sufficient mileage, with the economy benefits available you will reap significant benefits.

Senator HEFFERNAN—Thank you.

Senator MILNE—I would like to go to the issue of vehicle fuel efficiency standards. Would all of the vehicles that Ford produces in Australia meet the Chinese mandatory vehicle fuel efficiency standards?

Mr Scoular—Personally, I am not across exactly what the latest Chinese fuel efficiency standard is, so I cannot answer your question.

Senator MILNE—I must say I am surprised by that, because Australian politicians you may or may not be aware of are touting the Chinese-Australian free trade agreement as having a possibility of exporting Australian vehicles to China. We do not have a mandatory fuel vehicle efficiency standard in this country, but they have one in China, and it is a high standard, so I wanted to know how many of the cars produced by Ford would be able to be exported regardless of what the free trade agreement would be. I am very surprised that Ford is not across that.

Mr Scoular—We are not across the detail of it at this point in time because the free trade agreement is still potentially some time away. I made a comment about not knowing the detail. I know directionally about the Chinese regulatory approach, but I am not sure of the details of how it exactly applies to vehicles and whether it is against vehicles specifically by model or a corporate fleet average.

Senator MILNE—Why do you oppose a mandatory vehicle fuel efficiency standard and want to continue with a voluntary standard?

Mr Scoular—The Australian vehicle market is very diverse. We draw our vehicles from a wide variety of sources and countries, including Australia, of course, Europe, Africa, Asia and America. I think a voluntary approach gives you far greater flexibility in how you source vehicles and the types of vehicles you sell than a mandatory approach. I think it would be very difficult to design a mandatory type arrangement in Australia that could be, if you like, equitably applied across different brands, different manufacturers and different importers. Whilst some of them are, if you like, full service type suppliers of vehicles, a number of others specialise in different ends of vehicles or different categories of vehicle.

Senator MILNE—But we have mandatory standards for a whole lot of other whitegoods and things which you could argue are exactly the same in terms of sourcing them from many countries, many makes and many varieties, and we can manage energy efficiency standards, ratings and so on. Why can't we do the same with fuel efficiency standards? Isn't it just that it is a prerogative of the manufacturer at the moment?

Mr Scoular—No, I think the manufacturer has demonstrated that over time through various voluntary programs and voluntary initiatives significant savings have been achieved and a significant improvement in the fuel efficiency of the fleet has been delivered. I think a system and a program that gives maximum market-based flexibility is preferable to a more mandated regulatory approach.

Senator MILNE—Was the $52 million that the Treasurer provided to Ford Australia tied in any way to fuel efficiency?

Mr Scoular—The vehicles that will evolve from that grant that you are referring to will be significantly more fuel efficient than today's vehicles.

Senator MILNE—What was the grant for?

Mr Scoular—The grant had a number of elements to it. One of the important elements was that Ford Australia has taken on a major R&D automotive design project where we will have the global leadership for the production of a new vehicle to be sold in more than 80 countries around the world. The vehicle in question will not be made in Australia but its entire engineering and design activities will be led from Australia, with a large part undertaken here. That was a significant element of the grant. The second major element of it was for, if you like, future significant developments of our E8 platform, which is the vehicle platform under which we build Falcon and Territory vehicles.

Senator MILNE—The question I am asking here is: was the significant contribution Ford makes, since this grant was for design capacity, to be used to design the world's most fuel efficient vehicle of whatever size you are designing for? Was that in any way written as part of the agreement or was fuel efficiency not part of the agreement? You said that it may result in a car being the most fuel efficient, but was it part of any agreement?

Mr Scoular—Our submission to government in terms of the issues about the grant covered some major environmental gains for those vehicles in question.

Senator MILNE—Like?

Mr Scoular—Both tailpipe emission and fuel economy. So whether it is actually formally part of the grant contract or not, we certainly believe that we have a moral obligation, and it is certainly our intention, to deliver on it.

Senator MILNE—I have got some other questions on LPG. I now want to ask some questions in relation to the 100 per cent LPG gas Ford cars—and I will declare that the car I drive as my private-plated vehicle is that particular car. Is it more expensive to produce than the petrol engine equivalent?

Mr Scoular—Yes.

Senator MILNE—Significantly more expensive? I mean, what is the cost differential in production? And is that a factor of critical mass, or engine components et cetera?

Mr Scoular—There are a number of elements to it. Obviously, a vehicle of that type carries some unique engineering and design work that is not amortised over the entire Falcon model range, so there are some additional costs there. It also has some unique componentry. For example, the fuel tank is very different to the fuel tank in a petrol vehicle. It is a tank specifically designed for that vehicle, to give you a good sized tank with good sized travelling distance, but also to neatly fit in its location so you do not have a significant intrusion into the luggage space—so there are those types of costs. Obviously, there are other costs that go with it being a lower volume car in terms of complexity in production.

Senator MILNE—So what is the on-road cost differential between the two new Ford models—approximately?

Mr Scoular—I think the option price on the dedicated LPG model is approximately $1,400. By comparison, if you sought, for example, to do an after-market conversion, that would be of the order of $2,500 to $3,500 in the marketplace.

Senator MILNE—So, given that it is $1,400 more expensive to produce but its fuel running cost is considerably less and its greenhouse gas emissions are considerably better, why isn't Ford promoting it as a fleet vehicle? As you say, it is a medium to large car; it is the sort of fleet vehicle that a lot of government and business fleets have. Is it because the profit margin to Ford is less than that for the petrol vehicle?

Mr Scoular—No, it is not a case of not promoting it. As I said to you in my opening comments, we have sold of the order of 50,000 LPG vehicles in the time since we launched it. It accounts today for approximately 20 per cent of our Falcon volume—that is a combination of passenger car volume and light commercial vehicle volume. It is an important part of our vehicle mix, and increasingly so as demand has grown in more recent times. We have sought to increase our promotion of the vehicle in a number of ways, including, as I alluded to earlier, the lap of Australia.

Senator MILNE—How long would it take you to gear up if there was a significant shift in car fleet conversion?

Mr Scoular—We have been progressively, in more recent times, increasing our production capacity of that vehicle and our suppliers' capacity to supply the componentry for it. How long and how far we can go I honestly do not know.

Senator MILNE—My final question is in relation to eco-driving. You said that in Germany Ford pays for the eco-driving courses and promotes them and so on. Why are you not doing this in Australia?

Mr Scoular—I would like to clarify that. In Germany, I think, the courses that Ford has been heavily involved in have been in part a partnership between Ford and a number of external organisations of the RACV type. We have looked at similar models in Australia. We have a policy at work on where we like to get involved in activities. We see ourselves as a national company because we have customers and motorists driving our products all over Australia. So if we sought to introduce a program of that type I think we would like it to be a national program. The advantage the Germans have over us in Australia in that type of activity is far heavier concentrations of people to do it. We have looked at it in the past, and I am sure we are going to continue to look at that type of thing. We give information to our customers, in terms of handbooks and that type of information, on how to drive the vehicles. I still think there is an opportunity to do more.

Senator MILNE—It just seems to me that Ford Germany is doing it and Ford Australia is not doing it. You have large concentrations of people in Sydney and Melbourne for a start, and in all the capitals. Yes, I can understand your position where you are looking at dispersed populations

in other parts of the country, but why couldn't you be partnering now and doing this activity straight away?

Mr Scoular—I think part of it would be just how quickly you could get a course established and set up—curriculum materials, people to participate—what would be the best way of doing that? It could be suggested, for example—and our industry has been very heavily involved in a pilot program to enhance the safety skills and driving skills of young people—that it may be worth looking at that in the context and saying to drive a vehicle in an environmentally efficient way is just as important as driving it in a safe way. Maybe there is an opportunity there that elements of an ecodriving course could form part of a pilot program that sought to be developed at this stage with its focus primarily on safety.

Senator MILNE—You are saying that you could do it, you might do it and you are thinking about doing it—is there any plan to do something of this kind in the next year?

Mr Scoular—Not at this stage.

Senator MILNE—Thank you

Senator NASH—I am just interested in Ford's view on the development of the ethanol industry. I note in your submission that you say you are participating in development of the ethanol industry. Can you outline for us what Ford Australia is doing?

Mr Scoular—We have done a number of things. Obviously, we have sought to spread the word about the suitability of our vehicles to run on E10 fuel. All the new vehicles we sell today in Australia are capable of running on E10. We have participated very much in the development of the labels for the inside of the fuel filler caps—they are on all our local vehicles. We are in the process of spreading that to cover all our vehicles, so all our customers will not have to refer to their driver manual or owner manual to find the fuel efficiency—it is there in their face every time they top up. We have participated in a number of promotional type launches of the labels to promote—

Senator NASH—That is very commendable too. When you discuss LPG in your submission, I note that you say you have done that to such a great degree because of the ready existence of a national fuel distribution network. If the availability of ethanol increased across the nation, would that make Ford Australia more likely to become more involved in the development of vehicles that are appropriate for an ethanol industry?

Mr Scoular—If we saw an infrastructure there and saw a market opportunity, I think we would be there.

Senator NASH—So it is a bit chicken and egg?

Mr Scoular—I think it is a bit chicken and egg.

Senator NASH—It is a bit chicken and egg isn't it? It is great you have done the things that you have here in Australia, but compared to what Ford is currently doing in America, it is not nearly as substantial. I understand just recently—I think it was only in May—that the CEO of

Ford and two other major car companies went to Capitol Hill in terms of their support for alternative fuels and what more they could do in developing alternative fuels and even looking at how they were going to increase their availability of E85 cars and those types of things. I am just wondering why there is such a discrepancy. In the US, we see a very strong focus by the car companies themselves to be part of the push toward the alternative fuels and, in particular, ethanol in the US. In Australia, while you are doing some good things, it is at a much, much lower level. Why do you think there is that discrepancy?

Mr Scoular—I think there are a number of factors. The availability of the fuel is a critical issue for any vehicle that you sought to offer in the market place. If we look at this situation in the US, Ford is expected to produce about 250,000 E85 or flexi-fuel capable vehicles this year. In a volume share of production type mix that is probably even lower than our LPG focus, but it is an important part of the corporation's activities.

Even in the US, the infrastructure for the availability of E85 blended fuel is still, I would say, very much in its infancy. It is very geographically concentrated. You cannot do an east coast to west coast journey at the present time. There is a long way to go. It is evolving and we are watching it closely. An added factor—and I am open to correction here because I am talking from memory—is that in the US I think there is a government credit toward the production of those vehicles to what is known as the corporate average fuel economy or CAFE standard. So I think there is a bit of an incentive there as well.

Senator NASH—So you making the direct link between the availability of fuel and your ability as a company to go down that road of developing more things that are appropriate for the industry?

Mr Scoular—Correct. We had some experience some years ago when we took a look at compressed natural gas and whether we should offer CNG variants of Falcon. We did a small number of trial cars. The difficulty there, from a passenger car perspective, was really twofold. The size of the tanks was very large, to give you a significant travelling range in a vehicle, so there was a significant intrusion into the luggage space. Also, natural gas does not have the travelling range of petrol, diesel or even LPG, so people have to top up more often. It is probably a type of fuel best suited to vehicles that are involved in depot—A to B—type transport as opposed to everyday running about.

Senator NASH—You are obviously looking at alternative fuels in a very positive way, which is great, and what you can do to be part of that. What, in your view, would help increase the availability of an ethanol blended fuel across the nation?

Mr Scoular—Obviously consumer demand is a very important part of increasing the supply and availability of any commodity. With ethanol, it has been a long road. I think it now appears to be on a good road for those who wish to develop the industry. I think there was a period where there was perhaps concern about the credibility of the fuel, or people did not really understand the fuel. I think now there is a lot more confidence about it. I think the important thing is that E10 is out there, that it is a known commodity. It is becoming increasingly available, and I think there was some movement overnight on pricing, which would be of benefit. So we have got E10: let's totally focus on getting a good national spread of that.

Senator NASH—I couldn't agree more. On consumer demand: isn't it a bit 'chicken and the egg' in terms of availability? If we have not got the availability out there in the marketplace then how can we possibly measure, or even get, consumer demand if they cannot buy it? My Senate colleague Ron Boswell said very cleverly the other day that he used to sell paint brushes but 'if you don't have them in the market no-one can buy them'. If we do not have the ethanol out there in the market how do we get this consumer demand going? Isn't that a direct link? Don't we need to get it out there so they do?

Mr Scoular—Obviously that is an element to it, but I think the issue of fuel and the publicity that will come from things like the price changes will start driving consumer inquiry from what are still relatively low levels to higher levels.

Senator O'BRIEN—I am sorry I had to leave the room briefly, so someone may have asked this question. I want to ask about the Territory and the fact that it is not available with an LPG conversion. Can you tell us why that is?

Mr Scoular—It is not available with an LPG conversion simply because at this stage, with the limited engineering and design resource we have, we elected to concentrate on developing and marketing petrol engine variants of the vehicle.

Senator O'BRIEN—Is there any issue with its capacity to be fitted with the storage tank?

Mr Scoular—In the current broader environment it is obviously a topic that we are looking at very closely, as to what we may be able to do there, what perhaps we should do there, what may be the opportunities there—that type of thing.

Senator O'BRIEN—There was no contemplation of it as a future option when the vehicle was put into the market?

Mr Scoular—I think there is increasing contemplation at the present time as to whether we should do it.

Senator O'BRIEN—I think you were telling us how fuel efficient the converted Falcon is. Would you expect the same fuel improvement capacity for the Territory, which, on your own figures, clearly consumes more fuel per 100 kilometres than your Falcon? Clearly, the fuel efficiency of the Territory is a potential issue for you marketing it. Why there was not an early consideration of that, and is the capacity of the vehicle to be adapted without affecting its marketability a stumbling block for you?

Mr Scoular—Given the nature of motor vehicle design, you are talking very long lead times, and the Territory was an additional vehicle for us to design and engineer in Australia. It placed a significant resource strain on our product development organisation, which historically had been very much Falcon focused. It was a question of making a best judgment call at the time in terms of the allocation of resources.

Senator O'BRIEN—You told us that the diesel engine is more expensive. How much more expensive is it and why?

Mr Scoular—I think it is due to the nature of the technology and the design characteristics of the engine. As to how much more expensive it is, off the top of my head I am not sure, but I think it is in the order of $1,500 to $2,000 a vehicle. Probably the best way to determine it is do a comparison. There are a number of light commercial vehicles that are sold in the marketplace, like pick-up trucks, where you can have the option of a diesel variant or a petrol variant. Looking at the price variation between those two would largely give you an indication.

Senator O'BRIEN—If Ford were to consider a diesel variant for vehicles, would it be able to produce those in Australia, or would it have to import them?

Mr Scoular—I think that we would look at importing simply because, if we were to look at a diesel type engine, I imagine it would be of a relatively modest volume. I think the petrol engine would stay as your main engine line. The question of what is the best use of resources and the best investment return would probably lead you to importation. I think the important thing would be that, if one was to do that type of thing, the benefits would potentially be there for the consumers. I will also make the point that, whilst one may import a different type of power train, a significant amount of local adaptation work would still be required to utilise that power train in locally designed vehicle.

Senator O'BRIEN—What sort of utilisation of a diesel engine would make it competitive price-wise with a petrol engine, given you have given such a figure for the LPG conversion?

Mr Scoular—I would have to take that question on notice because it would be affected by the price of the fuel and the distance you need to do. Historically, to get payback for LPG conversions you had to do Y kilometres a year. Whilst I am broadly aware of what the paybacks are on LPG, I am not sufficiently across diesel pricing to answer that.

Senator ALLISON—The national average fuel consumption target for vehicles is 6.8 litres per 100 kilometres by 2010. Does Ford expect to achieve that level of efficiency by that time?

Mr Scoular—There has been an update of that standard. The standard was originally set at 6.8 litres per 100 kilometres, as you suggest. It has subsequently been amended to be based upon a CO_2 grams per kilometre number as opposed to a consumption number. I think the industry is currently targeting 222 grams by 2010.

Senator ALLISON—Did this change effectively relax that figure or—

Mr Scoular—No, I would not say it relaxed that figure. The figure was introduced to reflect the fact that one of the main drivers for having a target or a number of any type is CO_2. CO_2 is an issue regarding climate change and the greenhouse effect. It was felt that measuring it only by consumption, as it has historically been measured, was largely a petrol driven number. As more alternative fuels came into the marketplace, the industry and, I think, the government felt that it made more sense to have a way of measuring it that would enable alternative fuels, whether they be LPG, diesel or whatever, to form part of the mix.

Senator ALLISON—What does that mean for petrol vehicles?

Mr Scoular—The target covers all vehicles now, where it was historically just a petrol target. The target, covering all vehicles up to 3.5 tonnes—light commercial and passenger vehicles—is 222 grams of CO_2.

Senator ALLISON—Is that equivalent to 6.8 litres per 100 kilometres for petrol?

Mr Scoular—It is a slightly higher number because it reflects a change in the drive cycle way of measuring it.

Senator ALLISON—What was that change?

Mr Scoular—I would have to take the question on notice as to precisely what the change was, but there was a change in the drive cycle which reflected a change in the tailpipe emission standard. We moved from what I think was historically known as the ADR 2877 to an ADR 81/00.

Senator ALLISON—Will Ford achieve that for all of their petrol vehicles by 2010?

Mr Scoular—Ford will make a significant contribution to it. It is an average of all the fleet. It is not applied corporately. We would probably be just above it because our mix and our speciality is medium to larger vehicles.

Senator ALLISON—Have Ford considered petrol-electric hybrids?

Mr Scoular—Ford corporately and globally is looking at a number of technologies for the future. It does market a hybrid in the United States. In fact, it was the first manufacturer to introduce an SUV hybrid in any market around the world. It is the US variant of the Ford Escape, which is currently not available in a right-hand drive configuration.

Senator ALLISON—What is the argument against manufacturing them in Australia?

Mr Scoular—Manufacturing hybrids or manufacturing per se?

Senator ALLISON—Hybrids.

Mr Scoular—Again, I think it is a volume issue and a cost issue. Hybrids are only one technology that is potentially there for the future. It is a valuable technology but, if you are looking at a market like Australia, it is very much a niche technology.

Senator ALLISON—What makes it a niche technology?

Mr Scoular—I think it is the current cost of hybrid vehicles in the marketplace.

Senator ALLISON—But isn't that a bit of chicken and egg? Surely, the cost comes down when you have got volume, but if people cannot buy hybrid vehicles from Ford now how are we ever going to resolve that?

Mr Scoular—There is obviously an element of chicken and egg to the price of it, but I could never see a hybrid vehicle's cost coming down to meet a petrol vehicle's cost, because a hybrid vehicle, by its nature, has electric and fuel power trains within the system, so there is more there anyway. It is not quite a like-for-like comparison.

Senator ALLISON—At what point do you reconsider that in terms of the price of petrol? Given that petrol-electric hybrids typically halve the petrol consumption, what price does petrol have to be before the payback period is an acceptable one for the extra cost of the vehicle?

Mr Scoular—I think increases in the fuel price would have to be quite substantial before you would see a very significant volume of folks electing to buy a hybrid. I think there are currently two hybrids on sale in the Australian marketplace. Whilst it is not for me as a representative of one company to comment about another company's products, those products, even with their increased volume of late, are still very much modest in volume. I think, in round numbers, there are around 1,000 units in Australia today.

Senator ALLISON—The difference in price between the two vehicles has come down in recent times if you are talking about the Toyota Prius.

Mr Scoular—But it is still substantial.

Senator ALLISON—The saving on petrol costs at the present time for the average motorist driving a hybrid would be about $2,000 a year. As I understand it, the difference in cost between the hybrid and the standard car is now close to $10,000—

Mr Scoular—It is probably a little bit more.

Senator ALLISON—So the pay-back period has come back to about five years. In your view, what would it have to be in order to make it a serious consideration for Ford?

Mr Scoular—I do not know precisely.

Senator ALLISON—On fuel efficiency, you say in your submission that 'fuel savings of more than 30 per cent are well suited to the Australian vehicle manufacturing industry'. Auto manufacturers have been criticised for claiming great efficiency in some respects but then loading up vehicles with lots of energy use items—for instance, electronic windows and airconditioning systems that now use much more energy. What do you have to say about that? Are we simply using more energy because of all the add-ons in vehicles or are efficiencies being found in, for instance, airconditioning as well?

Mr Scoular—I think efficiencies are being found that deliver benefits to the consumer. You mentioned a couple of technologies that can be fitted to a vehicle and have an influence on fuel consumption. There are other technologies as well. One of the issues that we face is that, over time, our vehicles are being made considerably safer, and quite understandably so.

Senator ALLISON—What safety measures add to fuel consumption?

Mr Scoular—The body structure of a car and the air bags—all those technologies add weight. Safety features inevitably add weight to a vehicle and weight is an enemy of reduced fuel consumption.

Senator ALLISON—A lot of work is done to make the body of the car more aerodynamic, but as I understand it there is still a long way to go for the underside of a vehicle to be aerodynamic. What sort of progress has Ford made in efficiencies in that area?

Mr Scoular—Ford has done a number of things over time to improve the aerodynamic efficiency of a vehicle, whether it be over or under the vehicle. We have placed considerable emphasis on the frontal design of a vehicle—where you break through the air—to improve efficiency. We have done things like design exhaust systems underneath the car so that they are actually up in the floor rather than mounted along the bottom. Those types of things can have the desired effect of reducing vehicle drag.

Senator ALLISON—Is there more scope?

Mr Scoular—I think there is always more scope to do more things; there is just that element of cost—

Senator HEFFERNAN—If they keep lowering them there would be no room for any air to go under them!

Mr Scoular—I was going to make a comment about the fire but I thought I better not!

Senator ALLISON—On vehicle weight, do you see a future for carbon fibre construction of vehicles? Is this something on the horizon for Ford?

Mr Scoular—I think mass availability of carbon fibre passenger car type vehicles is still some away. It is an incredibly strong material. You see it used very widely, for example, in the construction of Formula One racing cars, but it is a very expensive material.

Senator ALLISON—How expensive is it? What are the current comparisons?

Mr Scoular—I do not know precisely how expensive it is. I am unaware personally of any passenger car that is currently on sale in Australia which makes substantial use externally of carbon fibres.

Senator ALLISON—What are the barriers to getting more compressed natural gas into our vehicle fleet?

Mr Scoular—I can only talk in the context of passenger cars and light commercial vehicles, because they are the types of vehicles that my company produces. The issue, really, with compressed natural gas is the size of the tank that is required or would be required to give motorists the travelling range or travelling distance that they would wish to have. That is a factor. There is also the factor, again, of the distribution network and ready availability of the fuel. We think that as a fuel it is more suitable for larger vehicles, whether they are buses or heavy trucks, particularly those whose operating pattern has them going from depot to depot or

going from a depot out and about then returning to the depot. In my own company's case, we run a fleet of large B-triple trucks between Geelong and Broadmeadows with our carrying componentry. Whilst they are diesel vehicles at the moment, we are looking at converting them to natural gas—again, because they are on a particular route. There is more flexibility in terms of the size of the tank underneath the truck—to park it. When running from depot to depot it is easier to put in a refuelling tank to refuel the vehicles as well. Personally, I think natural gas is more suitable for larger vehicles than it is for lighter vehicles.

Senator ALLISON—What about the prospect of home refuelling—a small compressor that does its work overnight in the garage?

Mr Scoular—I do not know what the economics of that would be.

Senator O'BRIEN—We are told that there is such an add-on available for a vehicle in California. That is part of the evidence that this inquiry has received.

Mr Scoular—Sure.

Senator ALLISON—Is it the case that Ford produces a vehicle for export that runs on 85 per cent ethanol?

Mr Scoular—From Australia?

Senator ALLISON—Yes.

Mr Scoular—No.

Senator ALLISON—There is a manufacturer somewhere?

CHAIR—There is a manufacturer. It is obviously not Ford.

Mr Scoular—No, it is those other people. I am not sure if it is 85 per cent.

CHAIR—They export them to Brazil.

Senator ALLISON—Do you see it as problematic that we have a law which prohibits the blending of more than 10 per cent ethanol? As to the vehicles that you talk about, almost all of your vehicles—I am not sure whether it is almost all or it is all—

Mr Scoular—It is all now. It was almost all in 2005.

Senator ALLISON—You mention more than 90 per cent of new petrol vehicles sold by Ford in Australia in 2005. So now it is 100 per cent?

Mr Scoular—Correct.

Senator ALLISON—I am aware that the Commonwealth did tests of vehicles and found that there was no demonstrable damage with 20 per cent blends of ethanol. Do you agree with that or do you think that the 10 per cent limit is appropriate?

Mr Scoular—I think that the 10 per cent limit is appropriate. If we look at it today, the availability of E10 fuels is still very much in its infancy. It spreads around the country.

Senator ALLISON—But from the point of view of your vehicles, are there any of those that you currently make that would not run satisfactorily on 20 per cent ethanol blends?

Mr Scoular—I think we would have to look seriously at making a number of technological adjustments to our vehicles if it were to be E20.

Senator ALLISON—And would they be serious adjustments or just tinkering?

Mr Scoular—I do not know the degree. It would probably vary from vehicle to vehicle. I do know, for example, that the European standard is E5 for ethanol. Most of the European vehicles are calibrated to E5. If we went to E20 I think we would have some significant issues to address.

Senator ALLISON—And Brazil?

Mr Scoular—Brazil has been higher, but Brazil in one sense is, I think, a unique case in that the Brazilians have been in the ethanol industry for some 25 to 30 years, producing at a higher level. Largely, in terms of their economy, their motor vehicles are very much domestically produced and supplied vehicles. Whilst they have some imports, the import penetration of motor vehicles into Brazil is far lower than in a more open market like Australia.

Senator NASH—Ford might like to come back to us with exactly what adjustments would be necessary to run up to a 20 percent blend.

Senator HEFFERNAN—I have had a drive in the E85 that has been driving around Sydney. Senator Nash, you have had a drive in it too, haven't you?

Senator NASH—I have not, actually.

Senator HEFFERNAN—I thought they said it was only a few hundred dollars to convert the thing—was that someone pulling my leg or is that true?

Mr Scoular—I am not aware of how much it costs to convert. As I understand it, they obtain a conversion kit.

Senator HEFFERNAN—They lifted the bonnet and said, 'You've only got to pull out that piece'—whatever it was.

Mr Scoular—I am not sure what work may have been done there in an engineering sense to the durability of the fuel system, the tank. I am not sure what has been done in terms of the vehicles' operating calibration.

Senator HEFFERNAN—You would wonder, if you were going to do it, why you would not do the necessary things so that, whatever you pulled out, it would handle it.

Mr Scoular—Sure.

Senator HEFFERNAN—It is only a matter of adjusting the chip, apparently, and some fuel line work.

CHAIR—I want to go back to the issue of the $52 million grant. We have just been looking on the net to try and find the program. You might be able to tell me, without us going back there, what grant program that funding was made available under.

Mr Scoular—Do you mean the $52 million that Senator Milne referred to?

CHAIR—Yes, the $52 million.

Mr Scoular—The application for that grant was made under the strategic investment coordination grant—the SIC grant in Invest Australia.

CHAIR—In that case it is different to the one we were looking at. To save us looking it up here—you may know the answer—was that a one-to-one or a two-to-one grant process? It is relevant because we have had evidence from—

Mr Scoular—Do you mean how much the Ford Motor Company were putting into the programs?

CHAIR—Yes.

Mr Scoular—In the period that it covers, which is basically a 10-year horizon, we are talking about associated capital investments in Australia of $1.8 billion. So it is certainly not a one-for-one process.

CHAIR—We have had evidence from other people and other companies about different grants programs. I was interested in looking at how that program compares to some of the other grants programs—for example, the Low Emissions Technology Demonstration Fund. Has Ford ever looked at that or applied for that?

Mr Scoular—We have had a number of looks at that program. We have never pursued a formal contract to do things under that program.

CHAIR—Is there a reason for that?

Mr Scoular—Again, you have to look at a number of programs and you have to look at where your engineering resources can be best applied. It is really a question of priorities and limited resources.

Senator WEBBER—In some of the information that has been around in some of the other reading, there is a concept—mainly in France and Korea, I will admit—about compressed-air cars. Does Ford have a view about them? What do you know about them? What can you tell me?

Mr Scoular—Sorry, about compressed—

Senator WEBBER—Cars driven by compressed air, fuelled by compressed air, in France and Korea.

Mr Scoular—I am not saying it is not technically possible—

Senator WEBBER—They make them and use them—

Mr Scoular—but I am unaware of it.

Senator O'BRIEN—They do exist.

Senator WEBBER—Yes, they do exist; they make them and use them.

Mr Scoular—Sure.

Senator ALLISON—It is compressed air.

Senator O'BRIEN—Electrically compressed air.

Mr Scoular—Where do they make them?

Senator WEBBER—Korea and France.

CHAIR—Thank you very much. I know we have taken more of your time than we said we would, but it is very much appreciated.

Mr Scoular—Thank you very much.

CHAIR—If you could send that information to the secretariat, that would be great.

Mr Scoular—No problem.

[12.05 pm]

AYLIFFE, Ms Lynden, Assistant Secretary, Environment Standards Branch, Australian Greenhouse Office

BAKER, Mr Christopher, Director, Fuels and Technology, Australian Greenhouse Office

KESBY, Mr Paul, Director, Air Quality Section, Australian Greenhouse Office

MCGLYNN, Mr Gene, Assistant Secretary, Energy Efficiency and Community Branch, Australian Greenhouse Office

STERLAND, Mr Barry, First Assistant Secretary, Industry, Communities and Energy Division, Australian Greenhouse Office

WARD, Mr Michael, Acting Director, Clean Fuels and Vehicles, Australian Greenhouse Office

CHAIR—Welcome. I know I do not need to read the preliminaries to you because, I am sure, all of you will have appeared before and be fully aware of parliamentary privilege. Is that correct?

Mr Sterland—Yes.

CHAIR—We can get straight in to it. I would like to invite you to make an opening statement.

Mr Sterland—Let me broadly introduce some of the team we have here so that you can put that in context. Gene McGlynn is the Assistant Secretary of the Energy Efficiency and Community Branch, which deals with the elements of fuels and transport that the Australian Greenhouse Office has an interest in. Chris Baker heads that team and runs the Alternative Fuels Conversion Program, for example. Lynden Ayliffe heads the branch concerned with fuel standards and that area of regulation.

We have made a submission to this committee, which we are happy to let stand and take questions on. To reinforce the areas of responsibility that this department has that are relevant to the committee's terms of reference, the department administers the Fuel Quality Standards Act, which is directed at ensuring high quality fuel to allow modern engines to achieve high efficiency and low emissions. From the Greenhouse Office's point of view, greenhouse gas emissions from the transport sector amounted to some 13 percent of emissions in 2004. More broadly, emissions from transport are a major air quality issue generally in Australian towns and cities. In the Greenhouse Office we have been responsible for implementing the Alternative Fuels Conversion Program since 2000 and have conducted numerous studies and field trials into the use of alternative fuels in Australia. I might leave it at that—that sketched out the area of interest. We have made a submission that covers some of the factual things. We are happy to speak to that and take questions.

Senator MILNE—I would like to start by drawing your attention to advice given to us by ABARE saying that if conventional oil supplies become constrained then there is no problem because we will just go to coal-to-liquid fuel. I would like your assessment on the greenhouse gas emissions of coal-to-liquid fuel.

Mr Sterland—The ABARE response was looking at market prices. If the oil price was at a certain level—

Senator MILNE—Basically they were saying that if the oil prices go up there is not a problem and even if the conventional oil depletion comes into play, as some of us might suggest in our wildest dreams, Australia has plenty of coal and we would just liquefy coal as a transport fuel so we would have no problems at all about transport. At the time I said, 'But you simply cannot do that, because of greenhouse,' and they said, 'We are just putting greenhouse to one side; coal-to-liquid fuel is a suitable transport fuel.' I am not asking you whether it is technically possible to drive a car with liquefied coal; I am asking for the AGO's assessment or the team's assessment of the greenhouse gas ramifications of coal-to-liquid fuel and carbon capture and storage that would be associated with it.

Mr Sterland—We have not done any specific analysis of that technology. The greenhouse factors would depend very much—as you mentioned in the second part of your question—on whether carbon capture and storage facilities are attached to such a facility. Without a specific configuration, that is going to be critical to any of the greenhouse impacts of that sort of technology. That whole system of coal to gas to liquids with carbon capture storage is a new area and you would need to analyse the specifics of a specific project to assess greenhouse impacts of that sort of technology.

Senator MILNE—Can I ask why the AGO is not doing that given that one arm of government is applying huge amounts of money to that technology? Surely we deserve to have an analysis on the greenhouse side as an equivalent input.

Mr Sterland—Sorry, which programs are you referring to?

Senator MILNE—Why isn't the Greenhouse Office looking at the greenhouse gas emissions of coal to liquids?

Mr Sterland—Which programs involving huge amounts of money are you referring to?

CHAIR—Carbon sequestration programs.

Senator MILNE—Carbon sequestration. Through the whole low emissions technology fund multimillions are going to—

Mr Sterland—That is administered from our portfolio, so I am aware of that. If proposals come through under the low emissions technology demonstration fund, greenhouse impact is one of the criteria that would be assessed. I cannot speak to that process. The general sense, if an industry was created on that basis, would depend on the technologies that would be used at that time.

Senator MILNE—On the issue of ethanol as an alternative fuel, we have had quite a lot of advice that lignocellulose is the most hopeful option for greenhouse gas benefits among ethanol based fuels. What support is the Greenhouse Office giving at the moment to that research into lignocellulose ethanol?

Mr Sterland—The Greenhouse Office does not have research funding support. We operate more at the commercialisation end and the demonstration end of the technology cycle. We administer a number of programs jointly with the industry portfolio in that space. My understanding of this area of technology—and my experts might elaborate on this—is that it is at a much more basic level of research than that end. Certainly, if there were commercial applications being trialled, they would start to be in the frame for some of our programs—for example, the one that is run out of the industry portfolio, the Renewable Energy Development Initiative—but they would need to be at that space of development at that point. At the more basic end of research, there may be work in other portfolios, but internationally there is a lot of work in this area and the question for any of that funding would be what specific contribution Australia can make to that sort of research.

Senator MILNE—The problem I have at the moment is that the recommendations to the government on ethanol are basically reasonably negative—that is true of your submission and certainly of the report of the biofuels task force to the Prime Minister—but the point is that, if you do not analyse lignocellulose, you are actually selling short one of the main positives of ethanol production. This is our concern: by taking a narrow analysis of ethanol as it currently stands on current technologies, we are actually denying ourselves a huge potential benefit. I am asking: why isn't the work being done on lignocellulose?

Mr McGlynn—If anyone in the world can develop a technology that makes work and that is cost effective, Australia is linked into that international work in a way where that can be picked up here as soon as it happens. What is happening is that there is massive investment in developing that technology overseas, and it is not clear what Australia can add to that development. The assessment of ethanol to date has been based on the ethanol that exists at the moment. It is not a negative evaluation; it is an evaluation of the product that exists.

CHAIR—Sorry to interrupt. There is work being done here: I know there is some work being done in Western Australia. Are you helping to fund that?

Mr McGlynn—Sorry?

CHAIR—Have you looked at that? Are you helping to fund it? Are you aware of it?

Mr McGlynn—I am not personally aware of that work. The evidence I have seen is that the work that is going in the USA in particular—and I think CSIRO, as the body that looks at these issues in a more technical sense, would confirm this—is the leading work and the one that seems most likely to deliver the sort of outcomes that people are looking for.

CHAIR—Sorry, I did not mean to interrupt.

Senator MILNE—No, that is all right. We should probably stay on ethanol. I will let other people come in on the ethanol stuff

CHAIR—Okay. If it is okay, we will focus on ethanol for a while.

Senator NASH—I note in your submission that you talk about the environmental impacts of biofuels being needed to be reviewed regularly. I take it that is why there is a tender out at the moment for evaluating the health impacts of ethanol blend petrol. Can you just expand a bit on that for the committee—what it is, what you are hoping to achieve?

Mr Ward—Certainly. The Biofuels Taskforce found that the health impacts of ethanol blend petrol were unknown—there was a number of conflicting studies—and particularly unknown in terms of the Australian context. That study is intended to examine tailpipe and evaporative emissions of ethanol blend petrol compared with normal petrol.

Senator NASH—More broadly, I want to go to the issue of ethanol and the potential benefits there. How much ethanol is actually being used by the oil companies at the moment?

Mr Ward—The Department of Industry, Tourism and Resources has petroleum production statistics.

Senator NASH—But you do not have access to any of those?

Mr Sterland—No, it is not this portfolio's responsibility to cover that.

Senator NASH—Okay.

Senator ALLISON—Could I ask about the biofuels action plans which were signed on to in December last year by most of the oil companies? Is there someone here with expertise in that area?

Mr Sterland—Not particularly. I think they involved the industry portfolio principally. This portfolio was not involved in the implementation of those elements.

Senator ALLISON—So this was all through Prime Minister and Cabinet?

Mr Sterland—Industry.

Senator ALLISON—You talk about the report of the Biofuels Taskforce and say that it found very little by way of greenhouse benefits and there was also negligible impact of E10 on particulate matter. But now you think that might be different. What led to this turnaround and why was it not discovered at the time of the task force or as part of the process of the task force that particulate matter would be reduced by E10 blends? Sorry, it is a complicated sentence.

Mr Ward—The task force did not conduct any research on its own; it simply reviewed existing studies, and a couple of studies found this 40 per cent figure. I think the task force used wording like they 'do not assert that it is a scientifically based figure'. The Prime Minister then directed that further research be done to confirm that figure and the health impact of ethanol under Australian conditions, which is the tender that Senator Nash referred to.

Senator ALLISON—When will that work be done?

Mr Ward—The tender closes on 22 August, so we are hoping to have at least preliminary results by the end of the year.

Senator WEBBER—I want to go back to the conversation that you were having with Senator Siewert about the work being done in Western Australia. I am a little perplexed that you know what is happening in America but you do not know what is happening in my home state. Call me parochial and old-fashioned but, if I know about it, I would have thought the quest for knowledge would mean that you would know about it.

Mr McGlynn—I am not an expert on ethanol research or production research; I am referring to the CSIRO, which has stated that they think the work that is most likely to deliver the results is in the United States, where hundreds of millions of US dollars are going into that research. If that level of activity was happening in Western Australia, I guess I would be aware of it.

Senator WEBBER—We have lots of Americans who come and visit us about different flora and what have you that can be used in this quest. They see some of the work being done in Western Australia as quite significant. I know the state government has a biofuels task force, which a good friend of mine chairs. There is lots of activity being driven by both the university and Minister Chance in particular. I am a bit concerned that there does not seem to be a lot of state-federal communication happening.

Mr Sterland—Our focus at the much more basic research end is quite limited. We tend to be focused very much on things that are coming to market. There would be lots of individual areas of research at the more basic end that we are not closely involved with, but we will have a look at that so we are up to date. We are involved at the commercial end, so if things are coming down that pipeline we will look into them.

Senator WEBBER—The thrust of the work that is being done in the west is at the commercial end.

CHAIR—You might also want to look at the work that Microbiogen is doing. They appeared before us in Sydney. It might be useful for you to have a look at that. If you do not look at that bigger picture stuff, who does? Who in government looks at the bigger picture and thinks about strategies of where we should be going? We have heard quite a lot about lignocellulose and we know it is a technology that is coming down the line. I understand it is a bit more difficult but that it is probably much better in the long term for biofuels than food crops. That is a very quick snapshot of the evidence that we have heard. Who has that big picture view within government and says, 'Let's invest there'?

Mr Sterland—In terms of where we invest research dollars, it is done largely through the science and innovation framework where national priorities are set and people come forward for funding particular initiatives through the education, science and technology portfolio. From time to time, the government develops something like the energy task force in developing the energy white paper, and that is a broad energy policy. The Prime Minister's task force on biofuels was another instance where that thinking was brought together and that technology was referred to in that task force.

The actual allocation of research funding through the national priorities is a matter for the education, science and training portfolio. Various things like the energy white paper have input into that in terms of overall priorities, but you do not then have those structures in place all of the time to assess individual grants. So the energy white paper had a bit of a look at technologies in the energy area in Australia—the leader technologies and other issues there broadly. Then it is up to the science agencies to then operationalise that.

CHAIR—How do they then relate back to you in terms of looking at which would be the best in terms of greenhouse gas emissions, for example? Who does the comparison or gets that overall view of whether it is better to invest a buck in—

Senator MILNE—Coal to liquids or—

CHAIR—Yes, exactly. Is that done? If it is, who does it? If it is not then why not?

Mr Sterland—Where it is done is through existing program frameworks. The energy white paper is focused on the low-emissions technology demonstration fund, which is focused on demonstrating certain technologies that meet certain criteria. That is done within that framework. Built into that program there is a requirement that technologies can make large reductions in emissions and have a potential in the longer run. That includes renewable and other low-emissions technologies. So within that program framework there is an assessment criteria and that will be allocated.

CHAIR—I understand that process. But what happens if they are not getting funding through that program? What if they are like the coal to liquids program—they potentially get funded elsewhere? Does anybody come to you and say, 'Have a look at this and see what the greenhouse implications are'?

Mr Sterland—People approach us. The public approaches us all of the time with various requests to the minister and all of this sort of thing. But our analysis is focused on the technologies that are coming through the existing program framework. We step back at certain times to discuss the overall policy framework, such as through the energy white paper, and make broad comments about the relative importance of different technologies. But following that we tend to set up program frameworks. As I said, our programs are focused on those technologies that are close to market. A lot of the energy white paper framework was focused on that—on bringing those technologies to that final stage. You set broad criteria—hopefully generally neutral criteria—and let whatever technologies can meet those criteria come up.

The energy white paper also looked at the research and development end of the technological spectrum and identified some priorities which are in the process of being traced through those various programs—what the technologies are that Australia can make a real difference in, where we have a very particular comparative advantage to focus the research on. That is in a general science and innovation framework which has to prioritise money amongst a whole lot of things. The energy white paper set some priorities in the energy area and they are now being considered by CSIRO and other agencies that are involved in allocating science and research effort.

Senator HEFFERNAN—Do you have a priority in the setting of expenditure on research between the creation end of energy and the expenditure end of energy? If you do not know what I am talking about, I will tell you.

Mr Sterland—Could you elaborate on the question?

Senator HEFFERNAN—We have, for instance, the liquid natural gas chain, which exhausts CO_2 into the atmosphere, versus when that energy eventually ends up in a car tank somewhere and the CO_2 goes into that. Do you ever make those calculations on which is the most efficient way to reduce greenhouse emissions—at the manufacturing end of the resource or at the expenditure end of the resource? Which is more important—to stop it where it is coming in to the country as liquid natural gas and being processed or where it is being burned in a car?

Mr Sterland—We make assessments and we put together an inventory of where emissions come from. So we have a fairly good handle on it.

Senator HEFFERNAN—What is the difference in the load? How much do we create in manufacturing the fuel versus how much we create in burning the fuel?

Mr McGlynn—A couple of years ago we undertook, with the CSIRO, a very detailed life cycle assessment of the whole range of fuels. The answer to your question is that it depends; for different fuels there are different balances between emissions at the production end and emissions at the use end. Even for any given fuel, there are generally different ways of producing it.

Senator HEFFERNAN—I have watched all this go on recently in Trinidad where they, cool as a cucumber, said, 'We just stick it up through the tube into the air, mate.'

Mr McGlynn—There are many factors. There are issues about what sort of energy is used for some of the refining process, what level of CO_2 might be present in the gas as it comes out of the well, the method of production and the method of distribution. There is a whole range of questions in those lifecycle issues. We did a study of that some years ago with the CSIRO based on the technologies that exist. But, again, there is a recognition that, as technologies and processes move on, that needs to be done on an ongoing basis. That is why in the energy white paper there was a measure announced on technology assessments to ensure that, on an ongoing basis, the government in a whole-of-government process looks at technology developments domestically and internationally and reviews those.

Senator HEFFERNAN—At the present time with the present knowledge, and given the loads—and we had evidence earlier of the huge loads out of the Latrobe Valley—are we whistling in the wind? Is it such a load that it is just not scientifically or physically possible to deal with the load?

Mr Sterland—At the Latrobe Valley power station?

Senator HEFFERNAN—Just generally the load. Is it beyond our capacity? Are we doomed to fail?

Senator MILNE—At the current rate, yes.

Mr McGlynn—I am not sure—fail in what objective?

Senator HEFFERNAN—There are millions of tonnes being emitted into the atmosphere. Does the science say that we can deal with half of it or that, with the whole, it would be that big we would have to go to the moon? What are we up against?

Mr Sterland—We are moving into the broad area of climate change policy more generally with that question.

Senator HEFFERNAN—We are.

Mr Sterland—The government has introduced a range of programs. It accepts that there has to be significant reductions in CO_2 in the longer run. The policy and program framework is designed to test, develop and demonstrate technologies to make significant reductions in CO_2. The low-emissions technology demonstration fund is all about that—that is, if the technologies were proved up and rolled out on a wide basis, which technologies can deal with those very big amounts.

Senator HEFFERNAN—What technologies do you think might deal with it?

Mr Sterland—It is a process that is under consideration now, so I cannot be explicit about the individual—

Senator HEFFERNAN—You do not have to be explicit.

Mr Sterland—The program framework invited a broad range of technologies. They could be renewable or related to fossil fuels. Indeed, there was a prospect of demand management and those sorts of significant technologies in other areas of the economy. If they could reduce emissions significantly, they could attract funding under that measure. Clearly, in Australia's case, there are some important renewable resources. They are in the frame. Australia has a very large interest in exploring and demonstrating clean fossil technology as well. The government's perspective is that, as long as emissions are reduced, it has a neutral approach to the technologies that can reduce it. For example, you can use renewable energy or you can reduce the carbon emissions from fossil fuels.

Senator HEFFERNAN—I surrender on the question. The difficulty that I have is that, if I am a corporate body and I want to maximise the profit of my resource, whether that is brown coal or whatever, and I want to defend my position on what I am doing to destroy the planet—which is what we are doing—I would use the cover of doing all of this science work to fix all of this. But at the same time I want to get rid of all of this bloody brown coal or whatever it is under the cover of a proposition that might solve one per cent of the problem I am creating.

I think we have seen the best of the planet. I think we are seeing the planet off ever so slowly now. Your great-grandkids will probably wonder what the bloody hell we were up to. I just wonder whether it is not just a spectacular con—the whole thing. A picture paints a thousand words. For instance, India, Pakistan and China are going to run out of water. China has

recognised that they are going to run out of water. India has not. Perhaps there is some global denial. It is like the changing of the guard at Buckingham Palace that does not actually guard the palace; the electronics do. The symbolism of research et cetera do not match the size of the problem.

Mr Sterland—All I can say is that the programs represent a very large investment of taxpayer money. They are very seriously being assessed with that objective in mind.

Senator HEFFERNAN—I am not criticising that at all. It is wonderful. But I wonder whether it is anything other than symbolic.

Mr Sterland—The scale of them is such that they are other than symbolic. But that is a broader question that is not for me to answer.

Senator NASH—In your submission you were talking about the air quality impacts of ethanol. You said that work is progressing to confirm the air quality impacts of ethanol. What is that work and when is it likely to be completed?

Mr Ward—The tender that we referred to earlier was on the health impacts of ethanol. That study will look at the tailpipe emissions and evaporative emissions of ethanol. So that is the air quality impact.

Senator NASH—So that is specifically referring to that tender. You go on to say that it is being revisited in light of evidence of possible significant reductions in the particulate matter from E10. What is the evidence?

Mr Ward—It was a couple of studies that the Biofuels Taskforce referred to. They were studies conducted overseas. One was from Alaska and another was from Canada, I believe.

Senator NASH—Why has it taken so long? The task force report was in 2003, wasn't it?

Mr Ward—It was in August 2005. It was a year ago.

Senator NASH—My understanding is that in the United States they are actually mandating in certain towns because of the benefits of ethanol in improving air quality. We are just looking at it now and we are doing this work on evaluating it. Are they just guessing? What are they basing their requirement to use ethanol for air quality improvement on?

Mr Ward—It is really a question for them, I guess. I am not sure exactly of the detail.

Senator NASH—What I am getting at is that we are just about to go down this path of the tender and look at it. Are you saying that you do not know on what they have based their decision to mandate on that basis?

Mr Sterland—It is an area that is not our—

Senator NASH—What, the environment?

Mr Sterland—There is a side of the department that deals with fuel standards, I am saying. One of the key ways of working of the Prime Minister's task force was to go out and look at the existing evidence in the field. This was the conclusion it drew. It collected the evidence from behind the policies of other countries and drew those comparisons.

Senator NASH—But my point is that America has already made the decision on that basis. If we are not going to accept the fact that they are making a decision on that basis, are we saying that they are just guessing—that we need to reinvent the wheel and prove it all again?

Mr McGlynn—The health study is meant to look at a number of these issues in the Australian context, which is different from parts of the US in some ways and that has to do with things like what happens in different climates. Where it is very cold you might get different issues in terms of vehicle performance and other issues. There are also issues about the limiting pollutants, which may differ from air shed to air shed. In general, in Australian urban air sheds NOx tends to be more important than carbon monoxide, which tends to be more important in some US air sheds. There are some different potential impacts. That study is meant to look at many of these issues and make sure they are relevant to the Australian in context.

Senator HEFFERNAN—Do you have documented evidence of the environmental equation of fuel versus food use of the resource—the end outcome of turning a nation's grain production into fuel instead of tucker, and the environmental flow-on from that? You blokes are the environmentalists so I am happy to be advised. Obviously, it is like feedlotting—and we do not have a fart reduction program for greenhouse cattle in Australia. There is the effect of the energy required to feed a beast in a feedlot versus being put into an ethanol plant versus turning the bullock out into the paddock. Do you do that sort of work—the environmental impact of that?

Mr McGlynn—We have tended to look at comparisons of different ways of producing fuel for use as transport fuel and making those comparisons. There have been assessments made by others of the implications of that sort of thing—for example, if a biofuel became a significant part of the market, what percentage of different food production might need to be transferred to that, and they are large numbers.

Senator HEFFERNAN—I thought you might have had some literature on it. Obviously, it can still work because the downstream industries from an ethanol plant are an important part of it— whether it is a 6,000-cow dairy or a feedlot, or whether the ethanol plant is downstream from a flour mill. I wondered if the work had been done to document that.

Mr Sterland—That life cycle work that Mr McGlynn referred to earlier does that from the end point of view. It is largely about comparing petrol, diesel and biofuels, and that equation comes into the comparison because they are like uses and it makes sense to make that comparison. Narrowing down the environmental impact of food versus fuels is a bigger question. We have not done a particular analysis of that.

Senator NASH—Have you had any submissions for the tender to date?

Mr Ward—No; the submissions do not close until the end of August.

Senator NASH—Have you had any so far?

Mr Ward—No.

Senator NASH—What are the criteria? How will you pick who is best able to do this?

Mr Ward—I would have to refer to the tender, which clearly details the criteria. Ultimately, it is whichever tender offers best value for money.

Senator NASH—Would you mind supplying the criteria to the committee? In the description of the tender you said that an appropriate sample of vehicles must test petrol E5 and E10. What is an appropriate sample?

Mr Ward—That will be negotiated with the successful tenderer. We want to get a spread of vehicles that is representative but remain within budget. Obviously, we cannot test every vehicle in the fleet, so there will be a representation of different emission control technologies, different sized vehicles, Australian made versus overseas vehicles, different vehicle kilometres—those sorts of parameters.

Senator MILNE—I have a question about vehicle fuel efficiency standards. In your submission you talk about national average fuel consumption targets. Ford Motor Company tells us that that has now changed; I am surprised that an explanation of what that means is not in the Greenhouse Office's submission. We also know that in the UK they link the cost of registration of a vehicle to the greenhouse gas emissions of the vehicle. I see that you will be making recommendations through the COAG process of the transport initiatives. Why aren't we setting a firm national standard on greenhouse gas emissions and not making variable standards for variable engine types and variable fuels? There is a different standard for diesel, LPG and petrol. Why do we not just have a greenhouse gas emission standard for vehicles on Australian roads?

Mr McGlynn—There are a couple of questions there. When the NAFC, the national average fuel consumption target, was negotiated with the industry, it was agreed at the time that the target would shift from a litres per hundred kilometre measure to a grams per kilometre measure. That was to account for alternative fuels. That process is happening, and it is not quite finished. It is complicated by a number of factors. Since that started there has been a new test cycle for vehicles in terms of emissions. The new NAFC agreement raises the limit of vehicles covered from 2.7 to 3.5 tonnes, so it includes a range of vehicles that were not included in the past. That translation has to happen, and I guess it is proving fairly complicated. But it is not a change, in the sense that that was anticipated when the agreement was done. In that sense, the NAFC is moving towards a greenhouse standard. It is not a regulation but, in terms of the target, it is moving to a metric which is a constant greenhouse metric.

Senator MILNE—But it will not be mandatory; it will be voluntary.

Mr McGlynn—That is correct.

Senator MILNE—How effective has the voluntary target been?

Mr McGlynn—At this stage it is really impossible to measure. It is a target for 2010. The nature of vehicle fuel efficiency changes is such that you do not see steady progress; you tend to see jumps here and there when new models are introduced. So it is not something you can easily

monitor on a year by year basis. It really is something you have to look at over a long period of time. We will have to see how it comes out. We do not know yet.

Senator MILNE—How does your standard compare with the mandatory Chinese standard?

Mr McGlynn—I do not have that figure. We can take that on notice and get it to you. If we do have it, we will let you know now.

Senator MILNE—Have you looked at the idea of making recommendations with regard to registration and CO_2 emissions?

Mr McGlynn—At this stage, within the COAG context, essentially any option is on the table. It is certainly something that has been discussed. It is obviously a state government more than a Commonwealth government issue.

Senator MILNE—So it is all under discussion?

Mr McGlynn—Yes.

Senator MILNE—The final question I have is in relation to electric cars. Why have you not assessed electric cars, since you said you are looking at technologies? There are electric cars on the road right now in London. They are being produced in India. They are not allowed to come into Australia. They are being held up by Customs because we do not have a standard under which we can run electric cars. Why is the Greenhouse Office not pushing for electric cars? Why do I not have an assessment in front of me about them?

Mr Baker—The emissions from electric cars are what comes out of the power stations. It is difficult to make an assessment of the absolute emissions from an electric car because it depends on where you charge up that car. Obviously, if it is a photovoltaic or other renewable program then it is zero. If, as you say, it is at Hazelwood, I would have to check the numbers, but from memory if you are using brown coal to produce electricity to run that car then you are probably better off running it on petrol, from the greenhouse perspective.

Senator MILNE—That is right, but if you live in Tasmania and you are getting power from a hydroelectric power station and plugging it in then you are not using brown coal. So why are we not looking at electric cars? Why are we stopping them from coming into the country?

Mr Baker—If you look at a hybrid vehicle, that is essentially a partly electric car. If you look at a fuel cell vehicle, they are essentially fully electric cars. We are doing trials on fuel cell vehicles in conjunction with the Department for Planning and Infrastructure in Western Australia. Hybrid cars, as you know, are available in the market now.

Senator MILNE—But the department of transport is holding up the import of the Reva car into Australia at this moment. There is no assessment in your submission about such cars. Will you please have a look at why that is occurring?

Mr Sterland—We can look at why. It sounds like a customs standards issue. When we are examining our forward looking programs and deciding where to put our support there is a twin

set of objectives we look at, which is potential for greenhouse gas reductions and likelihood of major rollout. And those two factors are considered together in prioritising funding. That is all I can say on those. Any particular technology will go through that metric.

Senator MILNE—Just let me say that by comparison coal-to-liquids is getting huge amounts of money and yet the Centre for the Low Emissions Technology said to us that, even if carbon capture and storage was 100 per cent successful, the greenhouse gas emissions out the tailpipe of the vehicle would be the same as conventional oil. Surely the Greenhouse Office should be recommending to government that all funding cease on that basis. That is not occurring.

The frustration we have is that all these other agencies of government are pushing technologies and we are not seeing the same push back for alternative technologies. That was a comment rather than a question, sorry.

Senator ALLISON—I just want to ask about the studies. You said that in Australia a number of trials were being conducted of engines operating at higher rates of biodiesel—that is, higher than five per cent. I find this hard to understand when biodiesel is often said to be able to be put in a vehicle which runs on diesel, without any modification. Firstly, what is the nature of the trials, and why is it that engine manufacturers—who are they?—are saying that the current fleet should not use diesel which is a blend of more than five per cent?

Mr Ward—I am not sure who is doing the trials. I understand the New South Wales department—

Senator ALLISON—This is in your submission. There are a number of trials.

Mr Ward—The New South Wales Road Traffic Authority did some testing on biodiesel blends for emissions. The blend strength is really a question for individual diesel engine manufacturers and the levels that they are prepared to warrant in their engines.

Senator ALLISON—I find that extraordinary given that they were very opposed to ethanol blends as well until the Commonwealth did a study which demonstrated no deleterious effects, even with 20 per cent.

Senator NASH—Nothing blew up and the sky did not fall in.

Senator ALLISON—Why does the Commonwealth not take the view that perhaps there is a vested interest in this question?

Mr Ward—The E20 study showed that ethanol should be capped at 10 per cent, which was why the 10 per cent cap was introduced in 2003.

Senator ALLISON—But nonetheless, is it not right that the auto manufacturers were threatening not to uphold warranties if ethanol blends were used?

Mr Ward—That is a matter for the manufacturers as to the warranties that they—

Senator ALLISON—I am just telling you what happened. You acknowledged that. Why do we now believe them when they say that you cannot put in anything more than five per cent, when everyone knows the farm truck runs on 100 per cent? Why is there a limit of five per cent?

Mr Ward—It is not government policy to impose a limit of five per cent.

Senator ALLISON—That is not what I asked you. We have no knowledge about this. There are some trials being done but your office has no knowledge about the desirability or otherwise of blends above five per cent in biodiesel?

Mr Ward—The five per cent limit is, as you know, widespread in Europe—that is, the five per cent cap. As you know Australia does not make diesel engines. We import them from either Europe or the US, and I presume the European manufacturers are picking up that five per cent limit from their experience in Europe.

Senator ALLISON—Have you done any work on people who are actually using 100 per cent in Australia? I might be wrong but I think farmers are running around the farm on trucks and tractors.

Senator MILNE—Brazil runs every day on it.

Mr Baker—In response to the question of where the trials are occurring, the South Australian government is conducting trials, as I understand it, on B20 blends on the bus fleet. The Brisbane City Council has conducted trials on a higher range of biodiesel, as well. A number of mining companies and trucking companies are also conducting trials. For them, it is a question of getting a consistent supply and a consistent quality of supply. They would like to know, for purely commercial reasons, before they invest in a large-scale rollout of biodiesel that it does make commercial sense for them and that it does not damage their engines and go through. I am assuming it is purely for a commercial test regime that they are doing this.

Senator ALLISON—It is my understanding that mining companies have been taking up 100 per cent biodiesel in large quantities but, of course, now that we have no excise on off-road use of diesel that will all come to an end pretty quick smart. Have you done a study on the effects of reducing excise on diesel for off-road use, including for mining companies, and the take-up of biodiesel?

Mr Sterland—Response to excise changes is obviously an issue for the Treasury portfolio.

Senator ALLISON—Have you done a study on the impact of that decision?

Mr Sterland—On emissions reductions?

Senator ALLISON—On the decision to reduce excise on diesel and what impact that will have on the availability or the take-up of biodiesel by mining companies?

Mr Sterland—No, we have not analysed that.

CHAIR—Do you know if anybody has?

Mr Sterland—Are you talking about the impact of the changes in the energy white paper?

Senator ALLISON—The impact of the legislation we dealt with just a matter of weeks ago.

Mr Sterland—This portfolio has not done studies in that area.

Senator ALLISON—Why is that?

Mr Sterland—Our portfolio interests are to do with the administration of the Fuel Quality Standards Act. My colleagues here are involved with biodiesel standards.

Senator ALLISON—Who did an impact study on the greenhouse implications of this change?

Mr McGlynn—When the energy white paper which foreshadowed those changes was put together, those issues were considered. The government made a judgement and chose to proceed with the changes as they were.

Senator ALLISON—What is the impact?

Mr McGlynn—I do not have that figure.

Senator ALLISON—So we don't have that figure?

Mr McGlynn—I do not have that figure. The government made a decision to implement changes to the fuel excise which would move to a more even and competitive neutral system, while retaining a significant financial advantage to all types of fuels which are not currently in the excise system. It made a decision that it wanted to move to that system.

Senator ALLISON—So what is the impact of greenhouse in terms of greenhouse?

Mr McGlynn—I do not have that figure.

Mr Sterland—I have not got the figures here, but there was analysis done of the total changes of that whole package, and a number of complementary measures relating to fuel use were also introduced at the time. There was the mandatory membership of the Greenhouse Challenge for large fuel excise recipients, where you had to join the Greenhouse Challenge Plus program to access those fuel credits above a certain threshold.

Senator ALLISON—I am familiar with all of that.

Mr Sterland—That was a judgement made in total.

Senator ALLISON—Can you give the committee at some stage a forward projection of the greenhouse impacts of that change—and just confine it to that change—and what your predictions are of the uptake of biodiesel from when that applies? I will leave that one with you.

Mr Sterland—We will take that on notice.

Senator NASH—I have the same sort of interest in this that Senator Allison does. Could the department take on notice and provide to the committee what the advice from the engine manufacturers was exactly, that it should be no more than five per cent blend?

Mr Baker—That is on the website of the Engine Manufacturers Association, which is the global body that represents the interests of diesel manufacturers, especially those in Europe and the US. I am not sure if it represents Japan.

Senator NASH—We want the information as it relates to Australia.

Mr Sterland—We will take that on notice.

Senator ALLISON—I want to ask about the hydrogen bus trial in WA. There was an announcement made by the minister for the environment about increasing the Commonwealth funding to that program. Can you refresh my memory about how much that was?

Mr McGlynn—The announcement there related to an extension of that trial, and also a linking of that trial to an international project. The amount was $350,000.

Senator ALLISON—I thought it was some millions; it was either $3 million or $6 million.

Mr McGlynn—No. The government has also announced it will spend money on—this is part of the government's program to look at the potential future of hydrogen, and in particular looking at heavy vehicles as a start to hydrogen. That extension ties the Perth project into an international study, which is looking in 10 or 11 cities—

Senator ALLISON—Sorry, that was already tied into the international study. That is the whole point. It is a Daimler-Chrysler around the world trial.

Mr Baker—The original study was part of the CUTE study—the clean urban transport for Europe study—which was about trialling fuel cell buses in nine to 11 cities around the world. That main study finished earlier this year. There is an extension to that one, which is referred to as high fleet CUTE, which is extending the range of vehicles. It is using a range of internal combustion hydrogen engines, and also looking at the design for a precommercial hydrogen fuel cell bus design. So there is the original project with the fuel cell buses in the various cities—that is coming to a close at the moment; I think the report is due out fairly shortly—and then there is an extension to that trial to look at what would you do in the next stage, and a number cities have taken that up.

Senator ALLISON—I thought at the time the minister announced there were going to be a certain number of extra buses that would be funded as a result of that. Is that not right?

Mr McGlynn—There was an announcement in the 2004 election context of potential rollout of hydrogen buses through Australian capital cities. How the government has decided to proceed with that is to undertake a scoping study, of which this link in with the best international data is a

part, and then a broader scoping study of looking at some of the financial issues and others that would be involved in that.

Senator ALLISON—So it is not now for buses; it is a scoping study.

Mr McGlynn—The scoping study is for hydrogen broadly, with buses as a likely first step for the reason that heavy vehicles, particularly depot based heavy vehicles, tend to provide a good starting point for introduction of new fuels, which require major new refuelling infrastructure.

Senator ALLISON—The reason I ask is that, as I understand it, the people who are running the trial got a bit of a surprise to hear that this amount of money would fund the amount of buses that the minister was proposing.

Mr McGlynn—One million dollars will not fund that many buses. I think that is pretty clear.

Senator O'BRIEN—The evidence we had from Hydro Tasmania was about their interest in a hydrogen project which went beyond buses. It involved a small bus fleet, a significant light commercial vehicle fleet and a series of refuelling stations. They said they discontinued because the overall cost of the project was such that they would need to commit significantly more than the funding which was available from the Commonwealth to run the project. What discussions has your department had with Hydro Tasmania about that project, if any?

Mr Sterland—I think we should take that on notice. They may be part of a program structure where, if they have in fact taken place, there may be commercial-in-confidence elements involved.

Senator O'BRIEN—There did not seem to be in the evidence that they gave us any commercial-in-confidence issues. There may be cost precision issues in terms of what they are prepared to reveal. If you are taking those discussions on notice, I am interested to know what impediments there were from a Commonwealth point of view to funding that project. I think they said the maximum funding available for the project was $20 million.

CHAIR—Senator O'Brien, we were just looking at that, because I was interested in that. It was higher, but the issue was that they said it was one to two in funding rather than 50 per cent.

Senator O'BRIEN—Yes.

Mr Sterland—One to two was the ratio for funding?

Senator O'BRIEN—I think they were putting in double what Commonwealth funding was available to them to run the project.

CHAIR—Yes, and that became too big a project for them. But if had been one to one—that is, if instead of contributing two-thirds they contributed 50 per cent—it would have become more of a bite sized project for them. It went up to $60 million.

Mr Sterland—I see. I think we would have to look at this across our full program scope. We will take this on notice and discuss it. It sounds like a different program from the one we were originally thinking about.

CHAIR—It is the one I was referring to before. I just looked up the *Hansard*. It is the Low Emissions Technology Demonstration Fund.

Mr Sterland—That is the one that is in process now. We will take that on notice and see what we can say about that, given it is an existing process. Those funding conditions are our eligibility criteria for that program. That is on the public record, if that is all. That scale was for the Low Emissions Technology Demonstration Fund as well.

CHAIR—I know Senator Allison wants to put another question on notice, but can we just add to that one. Is it possible to tell us how many grants have not been approved because proponents have not been able to meet the 1:2 ratio but would have met the criteria if it had been 1:1? Is it possible to get that information?

Mr Sterland—We would be able to give you information on how many were ruled ineligible on that ground. The ones that may be eligible—and that is really your question, I suppose—get through that gate and are then assessed on broader merit.

CHAIR—Sorry, Senator Allison. I just wanted to follow up on that previous one.

Senator ALLISON—Can you give the committee an update on the compressed natural gas refuelling stations, for which there was a bucket of money some years ago? Was that budget used up? How many refuelling stations did we get? What, if any, assessment has been made of the need for further subsidies or arrangements to ensure CNG is available in places where people need it?

Senator MILNE—Are the ones that we subsidised still operating?

CHAIR—Sorry, Senator O'Brien.

Senator O'BRIEN—Just in relation to the matters taken on notice: in your request for information about what sort of discussion has been held by Hydro Tasmania and the department, can you advise whether the flexibilities in the program as to the funding that is available have been discussed and whether consideration has been given to introducing further flexibilities into the program?

Mr Sterland—That is essentially a policy issue. There would not be much more to say in the question on notice with respect to that element. For the Low Emissions Technology Demonstration Fund, the appropriation is through my department and division. It is implemented jointly with the industry department, and the actual implementing agent is AusIndustry. They would have been the front line in discussions with Hydro Tasmania. They would have been purely discussing the program as it sat. Whether they raised issues of, in a sense, changing the program under future iterations we will take on notice.

Senator O'BRIEN—Okay. Could tell us how much money is available and how much is committed?

Mr Sterland—That will be only available when the announcements are made for that program.

Senator O'BRIEN—When are they scheduled to be made?

Mr Sterland—In the latter part of this year. The process is finalising now and announcements will be made in coming months.

Senator O'BRIEN—Is it expected that the full amount will be expended?

Mr Sterland—I cannot comment on that.

Senator O'BRIEN—Why not?

Mr Sterland—As I said, the program is a 15-year program. It is under final consideration. It is with ministers for their consideration.

Senator O'BRIEN—How much is available per year?

Mr Sterland—I cannot comment on that, Senator.

Senator O'BRIEN—Why not?

Mr Sterland—As I said, the program is a 15-year program. It is under final consideration. It is with ministers for consideration.

Senator O'BRIEN—How much is available per year?

Mr Sterland—The total program was $500 million, and there is a notional profile in the estimates base, without knowing the actual projects that were going to be successful. The overall amount is the amount to focus on, and that is $500 million. There was a flagging in the white paper that there may be subsequent rounds, so the actual amount available in future is dependant in decisions in that first round.

Senator O'BRIEN—So I will find the amounts in the AusIndustry PBS, will I?

Mr Sterland—The amounts?

Senator O'BRIEN—The notional annual funding.

Mr Sterland—They will be under our portfolio in the budget statements, but the overall amount is $500 million and the first round of that is being assessed as we speak.

Senator O'BRIEN—I am asking: is there a document that sets out a notional annual spend?

Mr Sterland—The original energy white paper would have the first four years of that. I think the budget estimates would be in our PBS.

Senator O'BRIEN—I can look that up. Thank you.

CHAIR—Thank you very much, If you could send the stuff we have asked you to take on notice to the secretariat as soon as you can, that would be great.

Proceedings suspended from 1.11 pm to 2.10 pm

BARRETT, Mr Paul, Deputy Executive Director, Australian Institute of Petroleum Ltd

DICKENS, Mr Nathan, General Manager, Policy, Australian Institute of Petroleum Ltd

TILLEY, Dr John, Executive Director, Australian Institute of Petroleum Ltd

CHAIR—Welcome. I inform you that these are public proceedings, although the committee may agree to have evidence heard in camera, if you so wish. I also remind people that the giving of evidence is protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated as a contempt by the Senate. It is also a contempt of the Senate to give false and misleading evidence to a committee. If you do not want to answer a question, you should state your grounds and the committee will consider that request and, if we do require an answer, you may request to give that in camera. I invite you to make an opening statement, then we will ask you some questions.

Dr Tilley—It gives us great pleasure to appear before the committee this afternoon. AIP represents the downstream sector of the oil industry, which undertakes purchasing, refining, distribution and, to a limited extent, the marketing of petroleum products. AIP is not involved in policy development for upstream activities, which include the exploration and extraction of oil and gas.

In appearing at this Senate committee hearing AIP represents the views of our four core member companies: BP Australia, Caltex Australia, Mobil Oil Australia and Shell Australia. Our key proposition in evidence to the committee is that a reliable supply of transport fuels is best achieved through a stable policy framework which allows the market to work effectively. We believe that this approach will ensure a flexible energy production sector, based on diversity of energy sources. In the case of transport fuels in the near term, this will include conventional fuels, gaseous fuels of various forms and biofuels. As noted in the government's 2004 energy white paper, Australia has significant alternative energy sources in biofuels, shale oil, gas to liquids and, potentially in the longer term, hydrogen.

From our point of view, a stable policy framework will encourage flexibility and will ensure that unintended consequences are limited, fundamentally unsustainable activities are avoided and supply security is maintained. We believe that a flexible market will naturally adjust to changing circumstances over time and that individuals will adjust to higher energy prices by a reduction in consumption, changes in fuel choice and transport modes or by examining alternative methods of conducting their affairs. We have seen all of these responses as a result of the recent high fuel prices.

We note that the recent high fuel prices have already brought forward substitution away from oil based products. However, we would urge caution in assuming that this will bring any sustained price relief, as progressive substitution towards alternative fuels is likely to increase the price of those products and greater demand for those products will increase the price of feedstocks. International ethanol and sugar prices are good examples of this.

The AIP proposition that we put to the committee is consistent with the conclusions of the Australian government's 2004 energy white paper. In our view, the role of government is central to achieving this policy framework. Many of the initiatives in the white paper have sought to implement the framework and we consider that there are further roles for government in developing policy in technology facilitation and in influencing transport demands through urban planning. For example, technology developments facilitated by the production of cleaner fuels will assist in addressing fuel economy, urban air quality and greenhouse gas emissions. In addition, government reports on biofuels have highlighted the importance of further technological development in biofuel production to reduce production costs. In summary, we strongly support government policies which facilitate efficient energy market operation that is in the long-term interests of the Australian community.

Senator O'BRIEN—In the absence of colour it is difficult to understand completely your charts, particularly those on pages 7 and 8. Can you run me through which of those bars on the right-hand side of the top chart are which?

Dr Tilley—Are we talking about this one that I have here?

Senator O'BRIEN—Yes, although you have got colours there.

Dr Tilley—The first bar is North America. The second one is Southern and Central America. The third one is Eurasia. The fourth one is the Middle East. The fifth one is Africa. The last one is Asia-Pacific.

Senator O'BRIEN—Would you explain to me what the chart on page 8 is seeking to represent?

Dr Tilley—Is this figure 3?

Senator O'BRIEN—Yes.

Dr Tilley—Figure 3 is illustrating the decline in spare production capacity in the OPEC group over time and at the same time it is showing movement in the crude oil reference price—the West Texas intermediate crude price. So you will see that as OPEC spare capacity has been declining the West Texas crude reference price has been increasing over that four-year period.

Senator O'BRIEN—Presumably, demand for West Texas intermediate crude has grown in proportion to the growth in price. Is that what we should read from that? So your capacity is down and therefore spare capacity has been filled.

Mr Barrett—What has happened has largely been a demand-driven response in the world oil market. We have not undertaken an in-depth analysis of the world oil market because it is beyond the scope of our brief, but the response to oil prices has pretty much been a response to the drawdown of spare capacity.

Senator O'BRIEN—Should we understand that graph to show that where there is a reduction in capacity, other than for events like Cyclone Katrina, that is because the refineries want to buy more oil and process more oil?

Mr Barrett—As a general proposition that would be correct.

Senator O'BRIEN—So what sorts of numbers are we looking at in terms of the demand for crude? Do we have any idea of the volume of crude that is going through these refineries? Are those figures accessible?

Dr Tilley—When this graph is referring to production capacity, it is crude production capacity to get it out of the ground; it is not processing it through a refinery. So this is about available crude oil supplies to the market from OPEC. What they have done is show how much of the OPEC crude production capacity is underutilised. Back in 2002 there was a significant component of OPEC crude production capacity underutilised. You can see that over a period of time, as the graph is showing, that production capacity has declined and at the same time we have seen the crude oil reference price, the West Texas intermediate price, increasing. This is not a graph about refinery production capacity.

Senator O'BRIEN—You could understand that graph regarding price and availability until about December, when capacity seemed to be static, but there seems to be a trend in the growth of the price.

Dr Tilley—We included the graph in our submission as one of the illustrations of the factors influencing crude oil prices, simply to indicate that the declining amount of spare production capacity appears to be having an influence on the crude prices. There will be other influences as well. There is a limited number of inferences that I think you can draw from this graph, but it illustrates a particular point that we were trying to make.

Senator O'BRIEN—On the face of it, it seems that you can draw the inference that there has been a response to spare capacity through to December and then the market, despite there being no noticeable change in the spare capacity, has gone on an increasing trend, generally speaking. That is what it seems to say. It is your graph; I am interpreting it as one of the senators looking at this inquiry. Presumably you are trying to influence us, so I invite you to draw me to a reason why that is not a reasonable conclusion.

Mr Barrett—That goes a bit beyond our brief, but in the way you have framed the question I think we should answer it. During that time, what you see is a quite healthy buffer in the crude oil market, with regard to the OPEC sources of crude oil, of about six per cent. It has come down to a very small buffer in the world crude oil market. Obviously, with that limited level of buffer available to the market, the market tends to be more sensitive. One of the explanations that you could draw from that, with the oil price continuing to rise, would be continuing geopolitical tensions. With such a low buffer, the market is more nervous to those developments. I would stress that that is not the key area of our analysis in this submission.

Senator O'BRIEN—In terms of production for the Australian market, refining capacity clearly has an influence on our market, but to what extent do our fuel standards have an influence on the availability of refined unleaded fuel for our market?

Dr Tilley—The fuel standards that the government introduced in 2002, which are progressively being rolled out through to 2008-09, definitely apply to all of the production from the refineries in Australia and would also apply to the 23 to 25 per cent of petroleum products

that are imported into Australia. So they would apply to anyone purchasing products from the international market for use in the Australian market. They would need to buy fuel that complies with the Australian standards. Fuels meeting those standards are available from a number of the refineries around Asia. I think it is worth noting that a number of the countries—the major economies in the Asia-Pacific region—are progressively moving to adopt the same fuel standards that Australia has adopted. I remind you that the Australian fuel standards that have been adopted mirror the European fuel standards and are very similar to the North American fuel standards. Australia is not really at the forefront of applying fuel standards. There are a number of economies in the Asian region which are further behind Australia in adopting what are becoming essentially globally available cleaner fuels.

At the moment the Asian refineries are producing limited quantities of fuel that meet Australian requirements, but over the next couple of years a number of the other Asian economies will be adopting the same standards. We have copies of one of our other publications here which gives you a detailed chart of all the Asian economies and when they are moving to the new fuel standards. You will see from that that Australia is by no means right at the forefront, but we are one of the leaders in a group of countries moving forward. Japan, for example, is ahead of us.

Senator O'BRIEN—Where does China sit?

Dr Tilley—China is likely to move into the same area as Australia by about 2008.

Senator O'BRIEN—Presumably what you are telling me is that Australian fuel prices are not being influenced by our fuel standards to any significant degree.

Dr Tilley—Our understanding is that there is a small quality premium applying to fuel meeting Australian fuel standards at the moment, but as more countries around Asia move to use fuel of the same standard that fuel will become more readily available over the next year or two as a more standard run from a refinery.

Senator O'BRIEN—How many refineries in Asia produce the fuel that we require?

Mr Barrett—Off-hand I could not give you an exact number, but I am aware that the diesel specification is supplied out of Korea and Taiwan and is readily available. Certainly the Singapore refineries produce fuel to Australian specs. Those are the ones I am aware of. I do believe—and I might have to qualify this—that the new Vietnamese refineries are going to be producing cleaner fuels.

Senator O'BRIEN—Obviously one of the issues this inquiry is considering is the long-term availability of fuel and the effects availability of supply will have on price. Your submission suggests that we could expect fuel supplies at expected demand levels to last no less than 40 years. Do I understand that correctly?

Dr Tilley—We provided that information on I think page 7 or page 8 of our submission as general background information. AIP has made no specific study of its own of the global crude supply outlook. What we have done is drawn on, by way of illustration, analyses by a number of companies and organisations which have looked at the issue in great depth. We felt that one of

the more useful illustrations was to show that, for example, analysts at BP—and I think the committee has already had discussions with BP—had used their analytical tools to identify at least a 40-year supply of crude at current levels of consumption.

CHAIR—Are you aware of the critique that has been made of that data? We have heard evidence from Ali Samsam Bakhtiari. His analysis of that information is that they used information from Saudi Arabia in particular and other Middle Eastern countries whose data has been the same for last 20 or 30 years. So he casts a great deal of doubt on the accuracy of that information.

Dr Tilley—To reiterate a point that we made at the start of the presentation, AIP focuses on the downstream side of the industry. We have not done detailed analysis of global crude supplies. For the purposes of our submission we have drawn on some information that is available from some of our member companies to illustrate the point. I understand that there are different views around as to the reliability or otherwise of the available data.

CHAIR—That is my question: why put in that data if you have not done the analysis of it, because it is presenting one side of the picture, when we have had other evidence? It seems to me that, if you are putting it in, you do an analysis of it.

Dr Tilley—We made the choice that we felt it was useful background information. We have indicated the source of the information. We feel that it provides one useful framework for looking at the issue. Quite clearly there are going to be other views on global crude supplies, but it comes back to a broader point that we were making that from a downstream industry point of view we believe that, provided that the energy and liquid fuels market is operating efficiently, it is not a significant issue as to whether there are 30, 40, 50 or whatever number of years of supply. As long as the market is operating efficiently and there is a stable policy framework which points towards a flexibility and diversity of energy supplies for transport purposes and the market is getting the correct signals, the market will take those sorts of things into account. That is where we are coming from in the way that AIP and its member companies are looking at the supply of fuels to the market.

CHAIR—If the data on the oil reserves is incorrect, I would suggest that that is an incorrect signal that is going to the market.

Dr Tilley—There are others on both sides of the debate who are more expert than I am on what the available global reserves of crude are. I am simply not in a position to say to you whether BP's analysis is correct or incorrect or whether Dr Bakhtiari's analysis is correct or incorrect. There are different views.

CHAIR—I will leave it after this, but, if you are putting in one set of figures and you do not have an opinion on them, I would suggest that you put in the other set so that we have both sets of information. Putting in one set makes it look as though that is the set that you endorse.

Dr Tilley—I think at the time we wrote the submission we did not have access to Dr Bakhtiari's views. I would note that.

CHAIR—They are fairly well publicised as well.

Mr Barrett—I would make the further point too that we only note that there are contrary views. Whether peak oil exists or not is not germane to our central argument. I do take your point that what you are saying is that we should have analysed it, but all we are really saying by noting the BP views is that there are a variety of views around about peak oil.

CHAIR—Thank you. Sorry, Senator O'Brien; I interrupted you.

Senator O'BRIEN—You talk on page 26 of your submission about a reduction in refining capacity—in Australia, I take it—for LPG. Can you give us more information about that?

Dr Tilley—In 2003, I think it was, ExxonMobil decided to mothball the Port Stanvac refinery in South Australia. That reduced the amount of refining activities in Australia, so that has flowed through to the LPG data. Subsequently, the refinery at Altona has been re-rated significantly, so that the volume of LPG coming out of that refinery would have declined as well.

Senator O'BRIEN—At about the same time we actually increased our imports of LPG, I think you tell us. The share of refinery production has dropped from 43 per cent of total consumption to 29 per cent.

Dr Tilley—Yes.

Senator O'BRIEN—So we were not producing enough for the market before those changes happened, but after those changes we produce even less.

Mr Barrett—I think it is worth recognising that this is solely from Australian refinery production. Obviously, the majority of LPG consumed in Australia comes from naturally occurring sources.

Senator O'BRIEN—Are you saying it is unrefined, unprocessed?

Mr Barrett—It is extracted from companies like BHP, Kleenheat and Wesfarmers, who process it from natural gas streams into propane and butane, which make up LPG.

Senator O'BRIEN—Perhaps I misunderstood your submission.

Dr Tilley—The first sentence of that paragraph talks about naturally occurring sources coming from the Gippsland Basin, the North West Shelf and the Cooper Basin. It is associated with the production of crude oil, condensate and natural gas. There is one stream, or one flow, of LPG coming into the Australian market from basic production of crude oil and natural gas and the second stream of LPG coming into the market is one of the products of the refining of the crude oil.

Senator O'BRIEN—Can you tell us how much of our consumption is refined and how much is flowing from basic production?

Dr Tilley—All the data is in the Australian petroleum statistics that are available from the Department of Industry, Tourism and Resources. If we can take that on notice we are happy to come back with some information, but I am not sure what proportion of LPG from refinery

operations is consumed in the Australian market—as opposed to export—and what proportion of naturally produced LPG goes into the Australian market versus the export market.

Senator O'BRIEN—I take it that it is possible that we could easily be self-sufficient in LPG from our own production.

Dr Tilley—I thought I saw some information in one of the media reports yesterday—and it may have been in one of the statements from either the Prime Minister or one of the government ministers this week—that suggested something like 40 to 45 per cent of total LPG production is consumed in Australia and the rest is exported. Paul, can you recall that figure?

Mr Barrett—I cannot recall the exact number, but I think it is in the vicinity of 12,000 to 14,000 megalitres of production of LPG. We consume about 40,000 megalitres of petrol and diesel in Australia.

Senator MILNE—I would like to start with a policy framework question. You say in your policy that it should be based on rational economic argument. You go on to say that the taxation system needs to be neutral between fuels and that, if the government chooses to subsidise particular activities, the mechanism should be transparent and finite, and objectives clearly defined. How do you suggest we represent the subsidy that is currently going to the petroleum industry in terms of greenhouse gas emissions? We are all subsidising the activities of the oil companies at the moment. How do you suggest we represent that subsidy? At what time should we stop that subsidy? Is a carbon tax the appropriate way of ending that subsidy? What mechanism do you suggest?

Mr Barrett—Where to start, Senator? Certainly there is a price of carbon in Europe. Certainly Australian policy does not institute a price of carbon in Australia now. There are policy arguments with regard to that. As for what our membership says about that, both BP and Shell are very strongly supportive of a price of carbon. ExxonMobil and Chevron have made contributions in the US, which have not come out in exactly the same place. In terms of assessing the subsidy, you would need to take some sort of judgement about what the price of carbon may be. Certainly the Australian refining sector is open about what our missions for refineries are. All our members, other than ExxonMobil, are members of Greenhouse Challenge Plus. AIP was a foundation member of Greenhouse Challenge Plus. We certainly recognise the greenhouse challenge, as it were, and we have developed a series of AIP positions seeking to address that issue.

Senator MILNE—I take it from your answer that you want the extent of the subsidy in terms of greenhouse gas emissions to be public, transparent and finite and that the price on carbon is clearly the best way of doing that. At what point do you think it would be appropriate to introduce a carbon tax? Are you supportive of us introducing a carbon tax now, consistent with your view that there should be a level playing field and that we should base policy on rational economic argument?

Mr Barrett—As I said, the Australian government does not have a policy for putting in a price of carbon.

Senator MILNE—No, I am asking you about your organisation. This is your policy principles, not the government's policy principles. You are saying there should be a level playing field.

Mr Barrett—We are complying with the government's policy on that. We have two different positions, as I said, with regard to price of carbon. Certainly it is transparent. There is a whole range of different opinions about when a price of carbon should come in and what should be the appropriate goal for the reduction of greenhouse gases, whether it should be 50 per cent by 2050 and so forth. As to what Australia may do, that is a question we will all have to sit down and debate over the coming years.

Senator MILNE—But, as far as your organisation's policy, the introduction of a carbon tax would be consistent with the policy principles that you are encouraging.

Mr Barrett—I have espoused what the principles of each of our members are.

Senator MILNE—It is encouraging to think that some of the oil companies support a carbon tax. I will now go on to vehicle fuel efficiency standards. Do you support mandatory vehicle fuel efficiency standards/greenhouse gas emissions standards?

Mr Barrett—Certainly the Australian government has vehicle standards. In many ways, they determine what fuels are required for the vehicles.

Senator MILNE—But they are not mandatory; they are voluntary standards at the moment in terms of fuel efficiency.

Mr Barrett—Are you referring to the national average fuel consumption targets?

Senator MILNE—Vehicle fuel efficiency targets, yes.

Mr Barrett—Those are certainly voluntary, but there are design rules which set emissions and so forth.

Senator MILNE—I understand that.

Mr Barrett—They determine what fuels we provide. We are largely in the hands of the auto manufacturers as to what fuels are required for what types of vehicles being sold.

Senator MILNE—But do you have a policy position on the introduction of a mandatory vehicle fuel efficiency standard, whether that is fuel consumption per 100 kilometres or whether it is grams of CO_2? Does your organisation support mandatory standards?

Mr Barrett—We have not discussed that at all.

Senator MILNE—In relation to technical improvements, in your submission you say that technology improvements in petroleum exploration and production are expected to continue and that that will increase reserve estimates. Can you tell me what sort of improvements you are talking about?

Dr Tilley—There are a range of technologies that are of use in identifying petroleum reserves. Again, we are using this to illustrate a particular point, but as far as we understand it there are significant technology development opportunities in relation to seismic surveying, drilling of reserves, and computer applications that will allow more effective analysis of the available data, particularly seismic data. We are referring to those sorts of examples. We have drawn on views from a variety of sources, both international and national, that there appear to be a variety of technology innovations coming off the drawing board.

Senator MILNE—Is this in relation to identifying additional supply out there somewhere?

Dr Tilley—Yes.

Senator MILNE—What about the costs in accessing that? Surely there gets a point where marginal returns do not make it worth while?

Dr Tilley—In terms of developing the technology?

Senator MILNE—Yes.

Dr Tilley—I think you are getting outside our general sphere of focus at AIP but, quite clearly, in a general sense there are people out there who are looking at and researching new technology options. They are obviously being funded from a variety of sources. The application of those in oil company businesses would obviously need to take account of the costs associated with developing proprietary versions of those, or acquiring the technology and also applying it. Then, there will be limits, in economic terms, to the extent to which it can be applied to particular fields.

Senator MILNE—What sort of analysis have you done? Most of the analysis you have is on the optimistic side of generating greater supply out there by improved technology. What about the alternative scenario that technology is failing in a greenhouse world to be able to maintain supply—the Alaskan field being the most recent example—and with the hurricane season coming up shortly? Where is your analysis here of the likely disruption to supply by failing technology as a result of the tundra thawing, for example, or as a result of more water being pumped into old wells to try and push out the last oil that you can get? Where is that kind of analysis?

Dr Tilley—For the purposes of this submission from AIP, we have focused on the supply of fuels from the starting point of production through to supply to end-consumers. The focus of my organisation is not on the upstream—in other words, finding it and getting it out of the ground, and all the issues associated with that. There are other organisations that do that. For the purposes of a general introduction to that part of the question, we provided some material in the submission. But we would acknowledge that it was a general introduction. It is not intended to be a definitive analysis of that part of the equation. We have tried to focus our attention on the activities that we are primarily directed at, which is refining crude oil and supplying petroleum products into the wholesale and retail markets. So that is the prime focus of our submission.

Senator MILNE—But in terms of the disrupted supply from refineries, the climate change ramifications are quite substantial and that risk analysis is not here.

Dr Tilley—We come back to our point that we made earlier that an efficient international operating market should be taking all of those factors into account. We believe that it does. So as those factors play out on a day-to-day basis, they will affect the availability and price of crude oil in our operations. But we have chosen not to analyse that side of the equation in our submission. We felt that others were more appropriately equipped to do that.

Senator MILNE—In the last day or so, there has been a reduction in cost for ethanol blends. Why could that not have been done ever since there has been no excise on ethanol? Why did it occur in the last 24 hours? Why is it possible now, but has not been possible ever since it has been available?

Dr Tilley—I would prefer it if you directed that sort of question to our individual members. As a matter of policy, the Institute of Petroleum is not familiar with internal decision-making of individual member companies, particularly on pricing or commercial matters.

Senator MILNE—But you have got a whole section in your submission as a fuel pricing summary, how it all works. It is a mystery to every Australian out there how suddenly fuel prices can change when a bit of heat is brought on to an assessment of those blends at the pump, how it can happen in 24 hours, even though, ever since ethanol has been available, the price has not been able to be reflective of no excise. There is not much point at one level citing individual members doing this and that, and on another level saying, 'We can't comment on what individual members do.'

Dr Tilley—I am afraid that the rules of my organisation preclude the members discussing amongst themselves matters relating to pricing and decisions taken within their organisations. It certainly precludes me from making assessments or being briefed on the reasons why they may have taken a particular decision at a particular point in time. I am sorry, but I simply cannot help you.

Mr Barrett—The press releases from both BP and Caltex do make it clear what the reasons were for each of their strategies. Each of the strategies they have employed is quite different.

Senator NASH—I am interested in the biofuels part of your submission. I note that we certainly are taking some steps forward compared to where we were three or so years ago. In your submission you say:

Clearly a critical factor remains the acceptability of biofuels to customers.

You also say there is still obviously, in your view, some 'significant consumer resistance'. Why do you think that is?

Mr Barrett—This was really adequately covered in the last roundtable on ethanol that the Minister for Industry, Tourism and Resources—

Senator NASH—I was not at that, so if you could just answer the question.

Mr Barrett—I was going to go on to that. There were probably two sets of data that were presented at that meeting. One was the BP data, which showed that there was quite an

improvement in the consumer confidence in the towns that they were servicing, particularly in Queensland. There was another set of data that was tabled by Caltex, which showed that there was still difficulty in the Sydney market in getting greater consumer acceptance. It is largely marketing surveys. I guess that is the short answer to your question.

Senator NASH—No, my question was: why has there been the negative response in the first place in your view?

Mr Barrett—If you go back over the history of ethanol blends, starting from 2002, when the fuel standards were first implemented in Australia, there were significant supplies of E20 in Australia. At the time there was a good deal of debate about the fact that a new fuel standard, E10, had been set. Then there were quite a number of instances where fuel blends in excess of E10 continued to be supplied to the market. There were instances where there were E26s, E32s and a whole range of other high-level ethanol blends. That was during the course of 2002 and 2003. Then we had the infamous car damage incident. I guess with the combination of those things—

Senator NASH—But that was never proven, was it?

Mr Barrett—No, it was not.

Senator NASH—So when you talk about the blends and the level of the blends, of itself that should not have given rise to any concern for consumers, because it was never proven that any of those damage incidents was a result of ethanol?

Mr Barrett—True, but then you had a government commissioned report by Orbital which said that E20 blends had the potential to damage components. That was the chief outcome of the first Orbital study.

Senator NASH—Indeed. I would like you to have the opportunity to respond, even though it was a long time ago, to the comment that was made at the time that AIP launched a ferocious campaign against ethanol. Why do you think that would have been said?

Mr Barrett—By whom?

Senator NASH—The *Australian* newspaper at the time put that forward. Why do you think they put that forward?

Mr Barrett—Yes, I recall now—this was about the letter we wrote. No, I do not believe that we did. At the time, certainly, we wrote a couple of letters to cabinet, pointing out that we viewed that there was a future for ethanol in the fuel mix, but also that E10 was the accepted blend standard. That was endorsed in the World-Wide Fuel Charter and endorsed in the Australian fuel standards. I do not think we adopted any so-called ferocious campaign. As the person responsible I suppose for this 'ferocious campaign' I am at a bit of a loss to understand where this campaign came from. Certainly I pointed out a number of facts and certainly we have laid out of number of submissions with regard to ethanol, but ferocious campaign—I do not think so.

Senator NASH—Good, that clears that up then. If I could just move on to the action plans, which are obviously a great initiative of industry working with government on this. The bottom of the bracket in the voluntary target for this year is 89 million litres. Are the oil companies going to meet that?

Dr Tilley—Can I start by saying that those action plans are confidential plans that the four members have given to the Prime Minister.

Senator NASH—So you do not know what is in them either?

Dr Tilley—I have not been briefed on the content of the plans. All I am aware of is what you are aware of—the various bits and pieces in announcements that have been made progressively in the latter half of last year and this year as individual companies roll their plans out. I did notice a report, I think earlier this week, in which a spokesperson for the Prime Minister indicated that companies were on track with their action plans. But in terms of the details, I am simply not in a position to say whether they are not on track. You really would have to direct that question to the Prime Minister's department.

Senator NASH—Okay. We might just note that, Chair. I am assuming you are not aware, then, of how much ethanol is being used by the oil companies at the moment? Or is that something you are aware of?

Dr Tilley—We do not have any up-to-date information. Most of the volume—

Senator NASH—What is the last information you have?

Dr Tilley—Most of the volume data that we have access to is the data that is published in the *Australian petroleum statistics*. I think their June data is just about to come out or has just been released. I am happy to come back to you with whatever volume data is in that, but we do not have access to any corporate data in terms of their total volumes of ethanol being used.

Senator NASH—All right. That would be good if you could take that on notice and bring it back to the committee. This is my last question. Recently we had the chairman of Shell as a witness to the inquiry. Shell's submission talked about their use of ethanol internationally and noted that they used five billion litres internationally. From memory they said 'where legislators favour ethanol'. We went on to discuss that. He did in fact say that they were more likely to use it if it was mandated. Is that also the view of AIP or of any of your other member companies?

Dr Tilley—I think it is fair to say that the AIP view is that we believe there is a role for ethanol in the fuels market. Quite clearly, it is an expanding role. AIP has not expressed a particular view about a mandate but, in general terms, we do not believe that mandates are the best way to get the market to work. There are invariably unintended consequences that start to make the whole mandate exercise more and more complex.

CHAIR—Thank you very much.

[3.01 pm]

AHERN, Ms Siobhán, Principal Policy Officer, Processed Foods and Renewable Fuels Unit, Queensland Department of State Development, Trade and Innovation

HARRISON, Mr Bruce, Principal Policy Officer, Processed Foods and Renewable Fuels Unit, Queensland Department of State Development, Trade and Innovation

JARDIE, Mr Phil, Manager, Processed Foods and Renewable Fuels Unit, Queensland Department of State Development, Trade and Innovation

CHAIR—Welcome. All witnesses before a committee are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated as a contempt of the Senate, as will giving false or misleading evidence. If you object to answering a question you may state the grounds for objecting and the committee will determine whether it will insist on an answer. If it does insist, you may request that the evidence be given in camera. I invite you to make an opening statement and then we will asks questions.

Mr Jardie—I head up the Queensland government's team which is implementing the government's policy on renewable fuels and, at the moment, ethanol in particular. We would like to make an opening statement and we thank you for the opportunity to present and put forward a case for the recommendations the Queensland government believes could be considered. We think that potential new sources of oil and alternative transport fuels are critical to meet the future fuel needs of Australia.

The Queensland economy is the most diversified of the states. Perhaps we are not as geographically dispersed as WA, for example, but certainly in a population and an economic sense we are the most dispersed state. We obviously have large agricultural and mining activities that are highly dependent on transport fuels. Australia's self-sufficiency in relation to oil will continue to decline in the coming years and I do not think that is in dispute. We believe that the Commonwealth, in those circumstances, needs to consider the full range of alternative fuel options available to increase fuel diversity. We are talking about more than just biofuels or what would normally fall under the category of renewable fuels; we are talking about the full spectrum of alternative fuels that are available.

Regarding the extent and type of alternative fuels to be developed, we believe that will be dependent upon the self-sufficiency that Australia wishes to maintain, the price of the available fuels and of course the environmental impact that the community is willing to accept. We believe biofuels can play an increasing role in Australia's fuel biodiversity, but we do not believe that biofuels alone will be able to replace the shortfall resulting from declining petroleum production. We think that is an extremely important point. However, having said that, we are also very strongly of the view that, once lignocellulosic technology becomes available—and we believe that, with the amount of money that is being put into it, it is a matter of when and not if—at an economically viable rate, the result will be an increase in the contribution of ethanol to the Australian fuel market.

The Queensland government's position, if I can go to that, is that we share community concerns over rising fuel prices, declining global oil reserves and the potential impacts that they are going to have. We are willing to work closely with the Commonwealth government in an effort to find sustainable and long-term solutions for our transport fuel needs. We think that it is a joint responsibility in that sense. The committee may be aware that Queensland has been active in establishing ethanol as an alternative fuel in Queensland. We come bearing gifts. We have some of the material that we use in the marketplace and we would like to put that on the table a little bit later on. I will put some papers on the table a little bit later on as well.

In May 2005, the Queensland government released its $7.3 million Queensland Ethanol Industry Action Plan, which will run until July 2007. It prescribes activities to develop the ethanol industry. Substantial funding was allocated firstly to the Queensland Ethanol Conversion Initiative, which is an initiative of about $4.8 million. That is aimed at funding the conversion of service stations to sell ethanol blended fuels. There are some fuel distribution facilities and some vehicle testing. The initiative has been reasonably successful in that we now have some 151 ethanol blended fuel outlets in Queensland, as at 3 August. There are applications for an additional 80 to 120 outlets under the new scheme. So we are going from 150 outlets, with an additional 80 to 120 on the books. The underlying philosophy of the Ethanol Conversion Initiative is that the government in Queensland believes that the way to stimulate production is to work on the demand side. Until recently, the government was very much of the view that if demand can be increased and consumer confidence can be increased then supply would follow. We may have a few comments to make a little bit later about what we have actually observed happening on the supply side.

The second part of the Ethanol Industry Action Plan was a communication strategy. The material that you have in front of you—the caps that we have brought and the bags that you see—is all part of the ethanol communication initiative. It is a $2.28 million initiative to better inform consumers about ethanol and create demand for ethanol and blended fuels. The pilot was run in April 2006 in the Toowoomba area. The way it works is that we have a team of two people who, according to a roster, go to service stations. They hand out this material and speak to consumers as they go to the petrol pump. We go to a zone—for example, Mackay—and have a team there with a car that has 'ethanol' and the +e symbols painted on it. We run a radio campaign on the local radio at the same time. We target particular regions where ethanol fuel is available. We do not see any value in doing, for example, blanket TV coverage when there is no ethanol blended fuel available in certain areas.

Generally speaking, we see biodiesel and the broader range of alternative fuels as a complement to the ethanol industry development. We are investigating opportunities for biodiesel and other alternative fuels. In fact, the Queensland government, as the Premier has announced on a number of occasions, is working on an alternative fuels policy. In addition to that, the Premier announced at the Climate Change Summit held in Brisbane recently that a biodiesel action plan would be released. You may expect to see similar things in that plan to what we have talked about in the Queensland Ethanol Conversion Initiative, although they will be targeted to the particular problems and issues we see with the growth in the biodiesel industry.

I now turn to the Queensland government's submission itself. In addressing the terms of reference of the inquiry, the submission covered a range of issues such as oil exploration and transport efficiencies. Some of those things fall outside our portfolio, but it is preferable for the

purposes of the Queensland delegation that we focus on the development of alternative fuels, because that broader range of fuels is really where we see the benefit for the future. Of course, we are prepared to take questions on notice if we cannot answer any question.

Key messages from our submission are that meeting Australia's fuel transport needs will require a range of strategies. They include, obviously, increased investment in oil exploration, but again we stress the development of alternative fuels, the efficient use of public transport, naturally, and increased use of fuel-efficient vehicles and technologies, which is expected. Australia could help safeguard against the threat of peak oil by diversifying its fuel base through the expanded use of alternative fuels. That is the key message that we bring.

What are the alternate fuel options, and what are we talking about when we talk about them? We have tried to stratify them by the time frames in which we think they can be developed and the time frames in which we think that they will become available to the market. So what we are talking about here is, in the short term, the zero- to five-year horizon, liquefied petroleum gas, compressed natural gas, the biofuels, naturally, which are ethanol and biodiesel, and the coal to liquids type technologies, which we are seeing developed in Chinchilla in Queensland at the moment. In the medium term, the five- to 10-year cycle, we see gas to liquids as being a viable technology and oil shale, if they can overcome the environmental problems amongst other things. In the longer run, the 10-year-plus horizon, we see hydrogen as a potential alternate fuel.

Some of the technology processes such as coal to liquids and oil shales have yet to be proven economically viable while at the same time meeting environmental concerns. With coal to liquids, obviously sequestration of the CO_2 gases that are produced as a by-product needs to be further developed. Technology and other challenges need to be addressed by government in collaboration with industry to ensure that alternate fuels achieve a realistic share of the market. Australia in particular has an abundance of coal and gas that could be converted to liquids such as clean-burning diesel.

What do we see as the impediments? The major impediments we have identified in the submission include the fuel excise on alternate fuels. Our recommendation there is to delay the introduction of the fuel excise on alternate fuels that is due in 2011, so that a biofuels industry can establish itself and avoid import competition. The next issue is the current biofuels target of 350 megalitres by 2010. We are firmly of the view that the target should be increased, as it is not sufficient to stimulate large-scale biofuel production. The target is less than one per cent of the total Australian fuel market of 35 billion litres per annum. The third issue is engine warranties for biodiesel. Consumers require clarification on the issue, especially engine warranty and protection for biodiesel blends above five per cent. Clarification is needed to ensure that there is consumer confidence in biodiesel. We think that, if there happen to be some quality control issues with biodiesel, we could very quickly run into some problems with consumer perception.

Feedstocks for biofuels. We believe that we are heading for a potential lack of suitable feedstocks, and this is identified as a major impediment, particularly for the biodiesel industry. In evaluating potential feedstocks required to support growth of the industry we have, today, been talking to your industry people about how we might collaborate on feedstocks in the future. With the large amount of tallow taken out of the market by BP and the Australian Biodiesel Group, we have seen an enormous ramp-up very quickly in biodiesel production but we believe

it will reach a ceiling equally quickly, because of the feedstock issue, whereas with ethanol there is a much lower level of production currently, but a much greater potential to ramp up.

Alternative fuels research and development. A greater national effort is required to promote the collaborative R&D to establish alternative fuels in the Australian fuel market. We would very much like to work strongly with the Commonwealth in the area of feedstocks for biofuels, and R&D on these other areas.

Fuel efficient vehicles. A recommendation could be that the Commonwealth should encourage consumer uptake of fuel efficient vehicles—including hybrid electric vehicles and flexible fuel vehicles—to help offset fuel demand in the domestic market.

That is our opening statement. We are happy to elaborate on any of those things and we would also like to table some reports. The Queensland government recently conducted a select committee on the impact of petrol pricing, which was a joint parliamentary committee, probably similar to this one, and we have the Queensland government response to that petrol pricing select committee report. It is recommended that these reports be considered by the committee.

Our other point now would be to say that we welcome the current inquiry into the price of petrol in Australia. We welcome the review and we look forward to the outcomes of that inquiry also.

Senator NASH—I am very interested in what you are doing. You are obviously very focused in this area. In your opening remarks you mentioned that you might make some observations about what is happening on the supply side with ethanol. Do you want to expand on that?

Yes. As I indicated in the opening remarks, the Queensland government targeted its incentive and promotion efforts at the consumer end—the demand end—of the chain, in the belief that stimulating demand would ensure that supply would follow. Our observation of the market is that there are three parts to the supply chain. The first part, obviously, is the ethanol producer; the second part is the distribution network, which is the fuel and oil companies; and the third part is the consumer market.

We have observed that the consumer market responds in a classic supply-and-demand model. In other words, if price is low, demand is high for the product and we have the normal type of supply and demand response, which is what we expected when we started the ethanol initiative. In the production side we observed that the same sorts of rules applied. If there is an incentive in terms of price or demand then the producers want to get on with the job of establishing new projects.

Our observation of the oil companies is that they operate in a different kind of model altogether from that. The model is that the fuel companies are in a situation where they are not experiencing a physical shortage of oil, despite the high price. They are making record margins on their refining business, and therefore they are satisfying their shareholder needs to be profitable. They are therefore not under any real pressure to take on biofuels, except for the pressure that government is applying to them.

What is the corollary of that? Where do you go from there? The ethanol producers have a financing market that is structured in such a way that the banks require them to get long-term off-take agreements to underwrite or amortise their projects through the life of those projects. The banks and the financiers are very nervous or uncomfortable about funding these projects unless they have long-term off-take agreements. The fuel companies are, I guess, risk managers. They are very much concerned about entering into long-term supply contracts, because all of a sudden into their business come these risks to do with agricultural feedstocks and drought—supply issues that were never there before. From the fuel companies' point of view, for them to enter into long-term contracts raises their risk profile.

Our observation of what they are inclined to do is this: they say to the ethanol producers, 'Yes, we're prepared to look at contracts with you but we want to price all this risk and the only price we're prepared to give you is X'—whatever X is. The ethanol producers then take that back to the banks and the banks say, 'Hang on a minute, guys: this doesn't price in our risk, and we're not prepared to finance you.' You end up with this stalemate situation in which you have the fuel companies operating in a market share model—which is how you would characterise it in game theory if you were trying to analyse their behaviour—as opposed to in an ordinary supply-demand type model which is occurring at each end of the chain.

Then you have the Bob Gordons of this world who will turn around and say that it is all the fuel companies' fault because they will not enter into long-term contracts. But at the same time the fuel companies are behaving in a typical market share way, a typical profit maximisation way and a typical risk management way for that kind of industry. We have, we believe, a little bit of a stalemate at the moment in the supply side.

What are the things that could break that stalemate? One thing that could break it is if you were to get players coming into the market who can afford to build plants and who are not reliant on long-term supply contracts. There are other models in play—for example, the BP contract with Primary Energy in Western Australia. In that model, BP is taking 100 per cent of the off-take of the plant and in effect owns the plant without taking the risk of the project. Other models proposed by industry include mandates and things of that nature to try and break that nexus. We probably do not take a view on that at this stage, but it is certainly a suggestion from industry.

To get back to the supply question, the behaviour of the fuel companies that we observe is that they like to buy either on contracts that they have in place with established players or in the spot market. The fuel companies would rather do that than take any substantial risk on new players—unless we are talking about the BP type model at Kwinana, where they are really taking a very strong hold over that project.

Senator NASH—If we look at this year and the 89 million litre target across biofuels and then look at the ethanol component of that—whatever the figures are, because we do not know—across at least three and maybe four major oil companies, then, compared to the volume of fuel that they turn over, would that percentage of ethanol that they would have to write long-term contracts to secure really be risky?

Mr Jardie—I am not from an oil company, so I cannot speak for them. But our observation—

Senator NASH—I am just interested in your observation.

Mr Jardie—is that they think so. That is our observation, and that is why we think that there exists the quandary that we currently face.

Senator NASH—You are quire right about demand and pulling it through. It seems to be coming through, though, that there is this sort of chicken and egg situation, in that we want to increase the demand but do not know how to do that without increasing the availability, and yet have difficulty increasing the availability when it is perceived that the demand is not there—whether it is or not. What is the solution to breaking that chicken or egg situation?

Mr Jardie—We do not believe that chicken and egg situation exists in the same way, and I will explain why. When the ethanol communication campaign was launched, along with it we launched a market research campaign, which is being conducted by a company called TNS. You may know TNS as they are a well-known market research company. As we were rolling out—and I think it started six months before—

Senator NASH—So in October.

Mr Jardie—Yes, October last year. It was six months before the communication campaign started in earnest. The communication campaign started in about April, so it was a little bit more than six months. We had been researching the attitudes of consumers prior to the commencement of the campaign, so that when we started the campaign we would have some idea of what impact on consumer views our marketing campaign would be having.

As part of that market research work, the single biggest factor that seemed to come out of it was that people would be much more willing to try e10 and much more willing to buy it if there were a pricing differential. What you now see today—or yesterday, in fact, from the press releases of BP and Caltex—is that they are now giving a price differential. We believe that price differential reflects what they are capturing in terms of the margin in those contracts, which we were talking about before, with the ethanol suppliers. So what the companies are doing—out of the goodness of their heart!—is passing on that discount to consumers. We note that there are some sunset dates in those arrangements; nonetheless, while those margins are there the fuel companies are passing them through.

Getting back to the chicken and egg situation, if the pricing reflects the costing that we believe BP and Caltex are genuinely trying to do at this point in time, we believe that demand is not an issue. Take the independent fuel companies. Let us go back to our argument that says in the middle of the supply chain we have a market share type model which is based primarily on what would be called a game theory type matrix. Let us say that the behaviour of the early movers was to try to get into the win-lose box where they are winning for as long as they can over everybody else. When we say that we say that in terms of market share and margin. The independents get into the market and they price cheaply on the basis that they are using the ethanol-blended fuel and they are offering higher octane content. In other words, if you go into an independent service station, you are buying a 95-octane fuel at the same price or less than what you are paying for a 92-octane fuel. Ironically, that fuel has actually cost the independent less to make than the regular fuel that it would otherwise buy. So, ironically, the independents are making more money out of that fuel, they are increasing their market share and their margin at the same time and, believe it or not, the consumers are accepting that: they are buying that ethanol-blended fuel in those circumstances without any issue.

Senator NASH—Do you have an observation to make on why BP and Caltex only came out yesterday with their 3c price differential when they could have done that all along?

Mr Jardie—That is a question that you would have to put to them.

CHAIR—We tried.

Mr Jardie—You tried.

Senator O'BRIEN—You talk in your submission about TravelSmart and about directing people to public transport. What is the Queensland government doing in relation to the public transport sector to take pressure off the demand for oil and pressure off the road system?

Mr Jardie—I would like to take that question on notice and come back to you on it with a full answer. The short-term observation is that, for example, in Queensland we have created on our major motorway in Brisbane a busway. Our public train system has been expanded to the Gold Coast—in fact, it travels from the Gold Coast every day—and the Sunshine Coast. So the Queensland government has a number of initiatives. I cannot respond fully to that question because we do not have a representative from the transport department here.

Senator O'BRIEN—Perhaps you could do that. I appreciate that there have been some improvements. I am curious as to how it works further north in Queensland and to know what initiatives are in place in the regional cities as well. If there are any initiatives by private providers or local government providers that you could advise me about, I would be very interested in those. How does TravelSmart work?

Mr Jardie—Bruce, would you like to respond to that?

Mr Harrison—No. I do not know how TravelSmart works.

Mr Jardie—We have some documentation about TravelSmart. This submission is a combination of information that came from various departments. Unfortunately, the transport department is not represented here today.

Senator WEBBER—While you are looking for that documentation, I am from Western Australia and we have TravelSmart and I was just wondering if it was based on the one we have got?

Ms Ahern—Is your program based on getting information out into the community?

Senator WEBBER—It is multifaceted.

Mr Jardie—The documentation says:

TravelSmart encourages the use of environmentally-friendly transport such as public transport, cycling, walking and car pooling. It supports voluntary change in the behaviour of individuals and organisations by raising awareness through campaigns, and improving access to information and opportunities to use environmentally friendly transport.

It works with a range of partners, including school communities and local, state and federal government agencies, to reduce the number of vehicle kilometres travelled and from sites to increase the use of environmentally friendly travel modes of walking, cycling, public transport and car pooling. There are a variety of sub-projects being undertaken. These include the Brisbane North Travelsmart communities and the partners are AGO and Brisbane City Council. They engage 70,000 households over 52 suburbs.

The TravelSmart workplaces include the Noosa Council, which engages 544 employees. Queensland Transport targets over 2,000 Queensland Transport employees. TravelSmart schools recently included the Sippy Downs precinct which engaged 1,280 families and achieved an overall 20 per cent reduction in the VKT. The Noosa precinct engaged 1,400 families and achieved an overall 31 per cent reduction in vehicle kilometres travelled. So Queensland Transport and the Australian Greenhouse Office and the Department of the Environment and Heritage are partners in the greenhouse gas abatement program. This program hopes to achieve a total of 720,000 tonnes of CO_2 abatement through Travelsmart projects.

Senator O'BRIEN—What is the budget for TravelSmart?

Mr Jardie—From 2003 to 2007 the total investment in the program was $8.5 million, with Queensland Transport contributing $2.8 million dollars. There is a website listed: www.transport.qld.gov.au/travelsmart.

Senator O'BRIEN—Will that give me the full details?

Mr Jardie—We will respond to your particular questions but there are obviously details on that site.

Senator MILNE—In tabling that information, can I ask if there is any analysis on what fuel savings they estimate have been achieved over the period it has been operating?

CHAIR—We can put that on notice.

Mr Jardie—We will undertake to find out that information.

Senator O'BRIEN—It says in your submission that the first commercial phase of the Chinchilla coal-to-liquid project is slated for 2006. What does that mean? Are we expecting it later this year? Can you give us revised information on that?

Mr Harrison—I will reply to that. The Chinchilla Project is about gasifying coal underground and then the gas that is produced from the underground coal can be put through a gas-to-liquids plant which then produces some liquid fuel, largely diesel. The Chinchilla Project has recently been listed on the Australian Stock Exchange to raise some money, $22 million, in fact, in order to purchase a small GTL—gas-to-liquids—plant. Our understanding is that that GTL plant will be in operation some time later this year. We also understand that they have engaged a consultant to undertake an environmental impact study on that project and work has started on that. That is where the project is to date.

Senator MILNE—I have a couple of things I want to discuss, including natural gas as heavy transport fuel and the distribution network. Is there a distribution network for compressed natural gas in Queensland? Is that something you have looked at in terms of alternative fuels?

Mr Harrison—There is not much of a natural gas network in Queensland. To date, Queensland has not had a large supply of natural gas to draw on, and that is one of the reasons behind the Papua New Guinea pipeline that is under way. They have not started construction on the Australian part yet, but my understanding is they will sometime in the near future. To answer your question: no, there is not a huge natural gas infrastructure in Queensland. At the moment, our view is that natural gas will occupy a niche market for heavy vehicles such as buses in Brisbane, and the Brisbane City Council has been purchasing a number of buses there and it will continue to expand that. But at the moment, it is probably a niche market at this stage because of the infrastructure issues.

Senator MILNE—You say in your submission that one way of showing leadership in alternative fuels and reducing demand is to move government car fleets, and by inference council car fleets and so on, to more fuel efficient vehicles. You have talked about ethanol, obviously, and electric hybrids, LPG and so on. Does the Queensland government or local government in Queensland, or both, have a target for a percentage of vehicles in the fleet to be alternative vehicles in some way?

Ms Ahern—There is not a target as such, but QFleet, which is the Queensland government vehicle fleet owner, has the largest fleet of Toyota Prius, which are hybrid vehicles. There are more than 200 of those vehicles. Less than two per cent of the vehicles in the fleet cannot run ethanol blended fuels. QFleet has worked very quickly and has been very proactive in ensuring that all of its vehicles are able to run on ethanol blended fuels or are hybrid vehicles.

Senator MILNE—So that might be quite an important signal to the market about ethanol production. If the car fleets are capable or are geared up to run on ethanol blends, then it is an important signal to producers who are backing the whole thing. That is something that is apparent around the place, but it has not been taken up by governments as far as we can see—that is, to mandate changes in the vehicle fuel fleets to give the right signals.

Mr Jardie—Certainly the Queensland government has moved to do that. We understand the Commonwealth has also started to do that. New South Wales government has been doing the same thing. But I would still go back to our earlier point—that is, we can stimulate on the demand side as much as we like and send signals through to the ethanol producers, but, if you cannot get that middle part of the market playing the game, it all comes to little avail.

Senator WEBBER—Quite a while back, the committee received some evidence from ABARE about their forecasting and predictions. We have since travelled around and spoken to the Department for Planning and Infrastructure in Western Australia, which is my home state, and other places. ABARE's forecast at that point was the price of oil would come down to $20 a barrel.

Mr Jardie—When was that put out?

Senator MILNE—It was $30 to $40.

Senator WEBBER—I am sorry, it was $30 to $40. That was earlier this year.

Senator MILNE—And they stand by it now.

Senator WEBBER—And they are standing by it. Do you think I would be unreasonable to be a little sceptical about that?

Mr Jardie—Let me put it this way: what we think would be reasonable is that there are many sources of fuel pricing predictions in the marketplace. Recently we had the US government benchmark their price at—what was it, Bruce?

Mr Harrison—I am not sure of the exact price, but it is either in the high 40s or the low 50s. They have recently reassessed their view of what the long-term oil price will be. The US government has moved it up from $30 a barrel to closer to $50 a barrel.

Mr Jardie—Whilst we accept ABARE's opinion on this, we also accept that other forecasters with equal credibility in the marketplace are saying otherwise. If you listen to the marketplace, there are predictions of oil prices at anywhere from $30 a barrel to $120 a barrel. There is even the odd prediction of $200 a barrel. Respected forecasters such as ABARE are saying $40. The US government, which could arguably be given a little more consideration in the market than ABARE, is saying $50. Our view is that it would be closer to $50 than $30.

Senator WEBBER—We have not had anyone else appear before us who has been willing to accept the ABARE prediction. ABARE are coming back, so it would be interesting to see if they would like to revise their view. I think they should, particularly with all the other evidence we get about the shortage of supply. It is not often, when you have a finite supply, that the price comes down rather than goes up. I do not know. Maybe that is just my view.

Mr Harrison—Currently, we are consuming more than we are discovering.

Senator WEBBER—Indeed.

Mr Jardie—Very senior people from BP and Shell have briefed us in recent times. The gentleman from BP in the UK was very interesting. He got up in front of us and said: 'Twenty years ago I was saying there was 20 years of oil supply left; today I am here to tell you there is 20 years of oil supply left.' He said the difference between today and 20 years ago is that the oil that we are having access to now is in places and countries where there is much greater sovereign risk, where there is potential for war and where the access to the oil—the infrastructure—is not that great. You only have to consider some of the East African countries where they try to siphon petrol from pipelines and, very unfortunately, blow themselves up. You can see that what they are saying to us—and this was my point earlier—is that at the moment there is no actual physical shortage of oil. I think that is a very important point. The real issue is that it is becoming harder to get it safely and economically. The price, then, reflects the risk in getting it rather than a shortage.

Senator WEBBER—We have always known that some of the oil we are accessing was there, but the fields have been uneconomic compared is to now. We have had a lot of evidence about how people are developing those fields now that the price has gone up. We are consuming that oil and therefore it is hard to see how we would still have access to it if the price came down.

Mr Jardie—Quite so. The reason you would have access to it is that once the infrastructure is in it is a sunk cost, and, from an economic point of view, any return is better than no return. But

you are quite right: the behaviour is that you only develop those fields if you expect to have an economic return.

Mr Harrison—I assume that ABARE would be assuming that, as the price of oil increases, the companies that want to explore for oil would go out and see if there is any oil they can find that would be economic at that price. The price on the market at the moment is $75-plus a barrel, but it is interesting to note that the major oil companies around the world, in determining whether they want to explore for oil or not, are working on an internal oil price of around $30 to $35 a barrel. So they are not using the high price of oil to see whether they should go and look for oil; they are using a lower price. That means that maybe they are not going out to look for the oil that we think they should be looking for because of the high price.

Senator WEBBER—We had the federal department before us earlier today. I got a little concerned because there is a whole lot of research activity and other things going on in my state that they did not seem to know about. Being from WA, I am particularly parochial, but I am sure those of you from Queensland can understand that. It concerns me that there perhaps is not enough combined federal-state collaborative work being done on addressing or trying to find the solutions to this challenge and that you have one department going off in one direction and another going off in another. Is there something more that we can do to have a greater collaborative approach?

Mr Jardie—I suppose, with the greatest respect, I would say that has more to do with politics than the bureaucrats. We would very much like to work with our federal colleagues. We met with them earlier today as part of our visit here. We have put on the table with them some offers to work with them for the very same reasons that you have alluded to. I note also that, for example, in the alternative fuels area, and this is a plug for them, my team in Queensland consists of three core policy officers and a range of field officers. Is the total staff in the federal department about three, Bruce?

Mr Harrison—Working on those issues, yes.

Mr Jardie—What I am saying is that I think that in the area of alternative fuels, the federal bureaucracy is vastly under-resourced. That would be my observation.

CHAIR—Thank you very much for coming down and talking to us. It was really useful.

Committee adjourned at 3.46 pm