COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

SENATE

RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

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

TUESDAY, 11 APRIL 2006

PERTH

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SENATE

RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

Tuesday, 11 April 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, Lightfoot, Ludwig, 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 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

BENNETT, Dr David, Founder, Sustainable Transport Coalition 1

BEVERIDGE, Mr Andrew, Project Manager, Commercialisation, Office of Industry and Innovation, University of Western Australia 1

BOWRAN, Dr David, Grains Industry Development Director, Department of Agriculture and Food, Western Australia 1

FLEAY, Mr Brian Jesse, Private capacity 1

HARRIES, Professor David, Director, Research Institute for Sustainable Energy 1

HEAD, Mr Glen Michael, Director, Perth Fuel Cell Bus Trial and Transport Sustainability, Department for Planning and Infrastructure, Western Australia 1

IRESON, Mr Gary, Director, Gas and Power, Wesfarmers Energy, and President, LPG Australia 1

RICE, Mr David, Principal Network Planning Office, Department for Planning and Infrastructure 1

ROBINSON, Mr Bruce, Convenor, ASPO Australia 1

ROSSER, Mr Matthew, Chair, Sustainable Energy Association, Western Australia 1

UPTON, Mr Michael Leslie, Manager, Vehicle Policy, Royal Automobile Club, Western Australia 1

WOOLERSON, Mr Tim, Bus Fleet Manager, Public Transport Authority 1

WORTH, Dr David John, Convenor, Sustainable Transport Coalition 1

Committee met at 3.28 pm

BENNETT, Dr David, Founder, Sustainable Transport Coalition

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WORTH, Dr David John, Convenor, Sustainable Transport Coalition

CHAIR (Senator Siewert)—I welcome all witnesses. I hope we can talk about the issues in a slightly more informal manner than we will at tomorrow's hearing, where we will have the usual question and answer session. Although this is a more informal hearing and not as formal as the question and answer session, proceedings are still protected by parliamentary privilege. Who would like to kick off on the first issue of peak oil?

Dr Worth—The Sustainable Transport Coalition had a conference in 2003 called 'Beyond oil' where we first started to look at this issue. At that stage, oil had just gone to $30 a barrel, so I do not think it is really a question about a peak and when; it is really about the level of production that has been produced in that year versus the demand from those who want to consume the oil. What we have seen from the data in the last 18 months is that world oil production has plateaued at about 84 million barrels a day. It stayed about the same for 18 months. Over that time, a number of countries have found it difficult to get the oil that they want. We do not notice it here so much in Australia but, if you go to Africa, the Philippines or Nicaragua, you will see that they

are not getting the oil that they want. To me, that does lend credence to this idea that there is a peak whereby those countries that are pumping oil are pumping at full capacity but they are not meeting the demands of all of the countries that want to get the oil that they want to get.

Dr Bennett—There is a terminology that has come into the debate called depletion psychology in which countries that do have oil are not all that keen on expanding their oil production. That seemed to be the message that came out of the Paris conference last week between the international oil companies and the national oil companies where the national oil companies said that they are essentially overloaded with contractors and not very interested in working harder to put more oil on the market at this stage.

Mr Fleay—To add to that perspective, I look at these things from the point of view of the energy cost of getting energy. Much of the past oil that came from, and even the present oil that comes from, a very small number of giant oilfields was and is very cheap oil to produce, which means there is a very low energy input to get a large energy output. That area is reaching its peak and starting to reduce. An increasing energy input is required to get the same output. All of the new sources are in remote and difficult situations like the Arctic and in deep water offshore where, again, the energy input required to get it is increasing. The net energy yield is diminishing, which is what counts.

There are then a whole lot of complex relationships such that you cannot trust the statistics that come from places like the former Soviet Union, Russia and particularly the Middle East countries, because there is a lack of transparency. This is also contributing to the uncertainty. It is in that sense that I do not speak so much of peak but of a bumpy plateau that we are in the beginning stages of. We will not really know that things have started to decline until we are past that period. Therefore, the sooner we start adapting to the situation, the better. The longer we delay, the more difficult and the more traumatic it will become.

Mr Beveridge—I would like to add that peak oil may have happened and it may not yet have happened, but it will happen at some point. We can all debate when that might be but, irrespective of when peak oil happens, we need to take action now and to accept that countries like China and India in particular will have a voracious demand for energy in the next 50 years. As well as avoiding exporting greenhouse emissions to those countries by alternative fuel, such as LNG, we need to help those countries to be able to develop their own alternative energy sources so we do not end up wrecking the planet. Peak oil is a concern and it should be a concern. The reason I say that is companies like Woodside are now having to go into increasingly deeper water to extract the reserves, which will become even more expensive. So the price of oil will carry on rising way faster than the CPI rate. Therefore, we have to accept that we need to not only conserve oil but also look at alternatives as a way of ameliorating the problem.

Mr Robinson—On the points made: is peak oil a concern? ASPO and a whole lot of other people certainly think it is. We would suggest that there is a probability of, say, 30 per cent that by the end of the next parliamentary term peak oil will be here. For instance, a third of the oil professionals at Australia's peak oil conference, APPEA, put up their hands as saying they think that we are at peak or thereabouts. A third thought we are not and a third did not have an opinion—they thought it was too hard or did not want to put their hand up in public or whatever. That is quite a reasonable summary of having in the order of a 30 per cent chance that we are

close to peak, a 30 per cent chance that we are quite some distance away and a 30 per cent chance that we do not know.

As to the question of the differing views, the ABARE submission says: ‘No worries. Oil is going to go down.’ There is a quote from the *Financial Review* of a Nobel Prize winning economist saying, when ASPO Australia was launched, that peak oil was baloney, that ASPO had it all wrong and that oil would go down to $US15 a barrel in the next couple of years or something. So we have points of view from economists and people like ABARE, but those points of view have often been proven to be wrong. In fairness, the peak oil people have often been wrong in the past too, but in early 2005 ABARE said that the price in 2006 would be $US35 a barrel. Today it is $US68 or whatever, so ABARE have been systematically wrong.

The Nymex, the New York Mercantile Exchange, crude price today for delivery in December 2011 is quoted as $US67 a barrel, which is effectively the same price as it is today. ABARE are saying it will be $US39 a barrel, just over half of that. So there is a conceptual problem with the point of view from the economists, who often only consult other economists. ABARE’s submission said that they were quoting the International Energy Agency, which is dominated by the oil-consuming countries. They were quoting the US Energy Information Agency, so they were only looking at one side of the story and were providing a very one-sided view. That is one of the reasons why the views differ. The economists, particularly in ABARE, are not talking to the oil industry professionals.

Mr Rice—Just to follow up very quickly on that point: even ABARE says that Australians are price takers in the world market. I think that speaks for itself.

Dr Worth—I think Bruce made a very good point. One of the main reasons that there is a debate is that there is no one location that we can go to for information about oil and gas. There is no one location in the world that will tell you of every oil well, when it was found, what its reserves are and how much it produces. The second factor in the debate is that the definition of oil now has spread. We all have in our minds the image of *The Beverly Hillbillies*: you plonk a hole in the ground and up comes Texas crude. In terms of oil reserves, people now are counting things that are mined—tar sand, shale oil and so on. They are counting liquids that come from the production of natural gas. So it is very hard, because we are not talking about the same thing. I think that is part of the confusion when we start to talk about peaks and so on. Certainly, data is around that says that the light crude, the easy stuff to make petrol out of, has already peaked; it peaked four years ago. I think we need to be careful when we talk about people. That is why in some ways it does not quite matter; it is more about demand and supply, from my point of view.

Mr Fleay—I would throw another hat in the ring, and that concerns natural gas. The cost of transporting natural gas any distance is six to 10 times greater than it is for transporting oil. That means, when it comes to looking at natural gas in its own right, we will not have so much a global peak but a series of regional peaks. Two of those have begun right now. One is in North America, where about 80 per cent of the discovered natural gas has been consumed and it is in decline, which has a significant bearing on the electric power industry. The other is in Europe, which is basically North Sea, where they consume 17 per cent of the world’s gas. Similarly, they have consumed, I think, 60 per cent of their discovered gas in the North Sea. But, in the UK, it is 75 per cent and already they are in steep decline and in great crisis with declining oil and in

becoming an importer of oil and an expensive importer of gas; it is also affecting the electric power industry.

Mr Robinson—Just to comment on why the views differ and what we can do about it: people think the International Energy Agency is perhaps like the Intergovernmental Panel on Climate Change, which was set up to be international and to have as much scientific input and as little parochial national input as possible. The International Energy Agency was set up by the OECD as a cartel to counterbalance OPEC, so it is just another international cartel and it is far from objective. So, for there to be data around, we really need an intergovernmental panel on oil depletion. Asking the International Energy Agency and the Energy Information Administration for data could lead to what is probably happening where we have our own intelligence failure. We have seen intelligence failures occur from taking only one source of information—for instance, with the weapons of mass destruction in Iraq. If you asked one side for the story, you got one answer; and if you ignored the other side, you might get into trouble. Looking more locally at the wheat issue, if you take one side of the story, you only get to look at that. Later something might turn around and you will have ministers appearing and answering as to why they did not see the other side of the story.

It is really important that Australia does not just parrot the International Energy Agency figures, which is what ABARE are doing and what the federal government's energy white paper is doing. We should try and avoid that. I really appreciate the Senate initiating this process of perhaps getting through the intelligence failure coming out of the state of denial and the taboos in discussing this, but people who just quote the International Energy Agency figures are really missing a whole lot of the points. There are a lot of other sides to the story and the International Energy Agency has been criticised on professional grounds for a whole range of reasons. It is just one side of the story.

Mr Beveridge—I have a comment for the panel and the people invited here today. Really the question is: who is looking at the overall economic impact of the effects of peak oil? Peak oil is going to happen at some point, as I mentioned, but what I am saying is that the impact on the economy not only of Australia but also of the Western world is going to be immense. I do not see any urgency in the way that is really being taken on board. For example, look at Boeing and Airbus. They are both developing very large R&D and manufacturing projects to build big planes—the Dreamliner, these new next-generation aircraft—but in 10 or 20 years time what are we going to be putting in the tanks? Who within Boeing and Airbus is looking at the jet A1 replacement? I do not see any urgency in the airline industry particularly.

How would that impact on global travel and the economy? We are now freighting a lot of our produce overseas and importing stuff. We are very good at doing environmental impact analyses of the effects of things, but the economic impact analysis I think is done quite poorly and I do not see any real sense of urgency. We need to really develop that sense of urgency to predict what might happen accurately and try and take whatever steps we can to head off the real crash that is going to happen in probably 15 or 20 years time.

Mr Rice—To take that point a bit further, perhaps we are too interested in analysis and not so much in imagining what the various possible futures might be. One suggestion is that the federal government have a look at different scenarios. In the Sustainable Transport Coalition we looked at scenarios of petrol costing $1 a litre, $3 a litre and $10 a litre. Offhand, $10 a litre sounds a

heck of a lot, but it definitely gets the imagination going and it means that you think, 'If it's $3 a litre'—which is practically what it is in Europe now—'it doesn't make a heck of a difference.' We have done some transport modelling that showed it might make about a 30 per cent reduction in trips, and that is in trip lengths rather than trip numbers.

But, if it is $10 a litre, it starts to sensitise your antenna as to what is really going to happen. Actually, there are some good things that can happen as well as some bad things. There are a lot of health benefits. Australia is in a very powerful position with its reserves of natural gas and so on. I think we need to overcome that psychological barrier of the fear of this, which I believe is one reason why it is not being looked at, and the paralysis that comes with somewhat conflicting figures and get beyond that. It does not mean to say that, if the Senate looked at a scenario of $10 a litre, it was actually going to be $10 a litre for many years, but it is just to see what the patterns would be on the economy, on the government, on local equity—the impact on people who live in the inner suburbs versus the outer suburbs of our cities—and all of those things. But, given that those things are going to happen, we believe it is clearly an important question.

Senator MILNE—I wanted to follow up on a couple of points that have been made, particularly the question that was posed: why isn't there more strategic planning? The response when this is talked about sometimes in parliamentary circles is that, if oil starts to run out, we will just do more exploration: we will give more tax breaks to explorers and they will find more and then the problem will be solved. There is a lot of that belief that there is plenty more out there. It might cost us a bit more money, the technology might have to be more sophisticated, but if there is a market driven need for it then we will just go out there and find it. That is the first thing.

The second thing is that there is not generally an awareness of the convergence of climate imperatives with peak oil or the notion that the solution for both is the same and therefore it would be a good thing to act regardless of the oil scenarios. I think ABARE is in part responsible for this because of their continual recommendations and advice to other government agencies on what their assumptions are about long-term prices of oil. I am interested to know from people on the panel how many of you use the ABARE figures as the assumption on which you base your calculations, particularly those of you who are involved in government infrastructure and public transport planning and so on. Are the ABARE figures what you are basing your strategic planning for the future on? If not, where are you going for your analysis?

Mr Head—We are looking with some scepticism at the ABARE figures and we are feeling the lack of an alternative source of data right now which forces us into a situation where we have to consider scenarios, as I think STC have done in the past. At the moment we have almost daily arguments with economists who are doing cost-benefit analyses on various technologies and so on, but they will always go back to the ABARE data as the only hardline data. We have to go back and say, 'Put aside your economic ethics at the moment and please just work it on this price,' which we seemingly plucked out of the air but which is really an extrapolation of current pricing trends with a built-in shock absorber for anticipated supply interruptions. But we would welcome a more rigorous source of data.

Dr Bennett—The history of the 1970s was that an increase in oil price led to depression and, as a consequence of that, the price of oil went down as well as there being more finds in non-OPEC countries. So to some extent I see that economists are worried about talking up the

increased oil prices and creating a depression as a consequence, because it is a very emotional and emotion driven process to lose confidence in the economy. It has been interesting that the rate at which oil prices have risen over the past few years has been slow enough to avoid that same depression taking place, although the reserve banks around the world are increasing their interest rates because the increased price is flowing on to the general economy. We are not out of the woods yet and probably never will be, so we can imagine an economy that keeps running just off a depression being manipulated as far as possible by the reserve banks. So, yes, if you then start saying that ABARE might be building those sorts of scenarios into its forecast, it is possible that the price of oil will drop to $39 a barrel, but that is going to be as a consequence of significant depression around the world.

Dr Bowran—The Department of Agriculture and Food uses ABARE figures, but we are always very hesitant about using them as the only figures, so we tend to take a range of scenarios, above and below, to see what the cost will be to agriculture in particular of having higher or lower fuel prices. It has been particularly relevant, given the depressed prices for grain in the last few years, that fuel has been such a significant cost to the industry. So in general we have found that the prices tend to have been higher than ABARE has anticipated, and I think just about everybody else has come out with the same conclusion.

Mr Fleay—First I will sum up the points that David Bennett made about the 1970s. In the 1970s there was never any possible prospect of a shortage of oil. What led to the energy crisis then was that in about 1971 oil production in the USA peaked and has been in decline ever since. That, for the first time, left them vulnerable to manipulation. The oil crisis arose when the Middle East countries restricted the supply of oil in protest against what was happening in Israel. There was never any prospect of a shortage of oil at that time. It was a political problem that led to that oil crisis, but that was not well understood at the time. To put it in perspective, in 1973 the cumulative production of oil to that year was about 250 billion barrels. It is now about 1,000 billion barrels. This is basically the reason why the prices fell from 1980, when the reaction to responses in the 1970s went to a huge surplus of supply over demand and collapsed prices.

The current price rise is quite different. It is being driven because demand is pushing hard against supply, which is a quite different situation. As far as the economists are concerned, there are serious deficiencies in conventional economic theory in the way that they handle energy. They regard it as just another commodity, whereas it is in fact energy that drives everything. I do not need to tell you that, if there is no energy, everything stops.

That question of the centrality of energy is subject of ecological economics and has a critique of conventional economics, and this question of the difference between what economists say and what people like me say on this perspective is at the root of the issue, because we go back to the core of the structure of the theories and the defects in economic theory. I discuss that in appendix 1 of my submission.

Dr Worth—I would like to address Senator Milne's questions. The material from ABARE is intellectually bankrupt. The reason is that they use only IEA information; they do not try to obtain information from any other source and pose the differences. That is why they have been wrong. In 2002, when oil had hit about $40 a barrel, they predicted that oil would be about $21 a barrel in 2006. They are out by a factor of three. Why is that? It is because they are taking information from only one source.

There are other sources of information. ASPO International is made up of geologists who have collected information oil well by oil well, and they have prepared a data model that gives very different views from the IEA and the EIA. There is another called mega projects, which is available on the web, and it has also got information from the ground up, well by well. The STC invited a person from the National Iranian Oil Company out here to a conference in 2004, and he has his own model. So there are other information sources that government agencies should be looking to. By providing information from only one source I think they are seriously undermining the ability of both federal and state government agencies to do their jobs.

I will turn now to the question of why, in terms of price signals, markets cannot go and find more oil and gas. If I go and dig up a shovel load of dirt in my backyard at Willerton, I will find some uranium in very small quantities. I will find some iron ore, some copper and some zinc. Oil and gas are not minerals; they are not like that. They only appear in certain places around the world in certain regions. Most of those regions are very well known. It is not as if there are places unknown to the industry. That is why in many ways we have a market failure.

We have a very high price for oil. For the last 18 months the world oil supply has basically plateaued at around 84 million barrels a day. It has not gone up in the way in which the IEA said it would, which was to 120 million barrels a day. The likely CEO of Total, the major French oil company, said yesterday that there is no way that it will reach 120 million barrels a day. So people within the industry are now starting to criticise the agency, which only ABARE uses.

CHAIR—I will take the next comment as the final one on this section. The senators can ask any questions, and then we will move on to the next section.

Mr Woolerson—As David said we, as with the other government agencies, also use ABARE as a guide, and we model against it ourselves. And we find it completely inaccurate.

Senator O'BRIEN—Mr Beveridge, you talked about the major manufacturers of aircraft and the fact that they are not planning for oil to run out in 20 years. Are you saying that the freight-moving vehicle manufacturers are? Is there a cross-transport-industry blind spot on this issue? Is no-one looking at this as a possibility? How should we understand the fact that major industry does not appear to be planning for oil to run out in 20 years, as you suggest it will?

Mr Beveridge—That is certainly a very good question. I think I am seeing a lot more pragmatism on the part of the motor vehicle industry. Certainly the Japanese manufacturers, Toyota in particular, are looking at smarter and more fuel-efficient vehicles, but they are also moving towards hybrid vehicles and, long term, they are going to move to fuel-cell, hydrogen-driven vehicles. That is okay.

But I see a complete head-in-the-sand mentality by the aviation industry in particular. That will affect all of us in this room. We all travel by air. JetA-1 is one of many fractions off the distillation column and it has a direct impact on our everyday lives. So I do not see any of the major volume airline manufacturers really taking this seriously. They are dabbling in very futuristic things, like the HOTOL project, which was put on the drawing board many years ago: Sydney to London in two hours in a sub-earth orbit, driven by a rocket engine. That is great but where is it? I do not see any evidence of that as being a realistically affordable mass transportation system.

So I think the airline industry really needs a bit of a kick up the derriere to say, 'Hey, what are we going to be putting in our tanks in 20 years time?' If JetA-1 is still available, what will the price be? Typically the cost of a seat is roughly 20 per cent of the cost of fuel, which does not sound very high. But if the cost of fuel doubles it might be the cost of a seat beyond the point at which mass travel is affordable, apart from business travel and the high end of the market.

Mr Robinson—I would like to make a clarification. Senator O'Brien mentioned the question of running out of oil in 20 years. That is a common shorthand. We are actually talking about a peak. We are talking about running short of oil in 20 years. I do not think anyone is seriously talking about running out of oil. It does not matter particularly, but sometimes the media gets things wrong.

In fairness to the aviation industry, if we consider the 1948 Holden, the first Holden, we find it was 20 per cent more fuel efficient than the current Commodore. If we look at the 1948 plane and the current Airbus, I think we will see that the aviation industry is doing remarkably well in comparison with the automobile industry.

Dr Bennett—As I understand it, the fuel efficiency per passenger of the Dreamliner is much higher than the current fleet of planes, so you can see some sense in what they are doing. But the smaller planes are incredibly inefficient. So fly-in fly-out mining, as being practised in Western Australia, is very likely to be seriously affected by increases in the price of Avgas.

Mr Rice—I will make a very quick additional response to Senator O'Brien about the automotive industry versus the aeroplanes. There are plenty of other land transport alternatives to the car that are much more fuel efficient, such as walking, cycling and public transport, whereas there is not an alternative to high-speed, across-the-seas transport. There is the old passenger liner for ships, but that is a different response to the demand altogether.

Senator MILNE—That is the point that I wanted to pick up: a lot of people are now saying that the aviation industry knows that, if there is a limited supply of oil, it will be the No. 1 priority because there are no alternatives. Therefore, it does not have the same imperative to plan for a period of considerably less supply to them.

If they get the oil it means that other people do not, so there are a range of things that have to be developed elsewhere. That is the point I wanted to make, which perhaps leads into the next section. The thing I worry about particularly is the flow-on impacts to global trade and globalisation, particularly in terms of the Australian economy. As we lead into this next section about what our response should be—and you might want to speak about it more—I note that we are still running an Australian economy based on an export market which depends on fuel. What is your response to that? Are we going to see the point at which we cannot export product competitively and we cannot import it either?

Dr Bennett—The response will be very different in different parts of the economy—for example, the local crayfish industry relies on loading the lobster tails to Japan mainly on passenger planes that have space in their holds. You can imagine the same would be true of tuna going to the Japanese market. So there are a number of industries that will be very heavily affected. I remember talking to a wildflower producer, and he said that he only took space that the lobster industry did not take. So he would be even more affected. But I do not know what

will happen with iron ore. It may well be that the energy efficiency of iron ore production in the Pilbara would be very little affected by considerable increases in oil prices.

Mr Fleay—To add to that in connection with the question of trade, coming back to the theories of economists and economics the so-called law of competitive advantage, which dates back to the early 19th century, is based on the premise that rather than being self-sufficient countries should specialise on what they can do best and trade, which of course means increased transport. That is the basis of all free trade and even interstate trade—if you think of each state in this country as being a bit like a country. Ever since the early 19th century, the cost of transport has been diminishing. Initially it was coal fired, then oil came in in the early 20th century. Oil was significantly superior as a transport fuel, especially with the very cheap oil from the giant oil fields which dominated in that period. My view is that that period has come to an end, and therefore we have to start thinking of a focus on being more self-sufficient as a strategy into the 21st century. The old view is losing its validity. However, that is a very complex question because of the great deal of interdependence that occurs around the world. Just to give you an indication, Japan was nearly self-sufficient in grain in 1950, but as a consequence of its industrial development it now imports about 70 per cent of its grain. A similar thing applies to South Korea and so on.

So a huge period of readjustment has to take place, but nobody is giving much thought to that at the moment. I mention in my submission that it is something we need to start thinking about, and we need to start a dialogue with the economists about the deficiencies in their theories regarding the way they handle energy. That must be a part of this. I also mention that it raises the question of the current dependence of food production and the whole food chain to households on fossil fuel energy—mainly petroleum. I also throw in that modern industrial agriculture has been described as a way of using land to convert petroleum into food. I deal with that in my submission. We need to know important information about where all the embodied energy in all these steps is so that we can have a clear picture of which things are the critical ones to tackle first and so we can create a long-term strategy. My view is that the most important use for the remaining oil—the first priority—is that food supply and food chain, for obvious reasons.

Mr Beveridge—I have just a quick follow-up comment on David Bennett's remarks. In terms of the freight transport industry, it is crucial to economies such as Australia's and those of export economies. There is nothing to stop existing railway and shipping providers using biodiesel to replace bunker oil. We have even had inquiries from the US Navy. It is saying, 'When we come to refuel at Fremantle, can we get access to biodiesel to fuel our ships on?' So the US Navy is looking at biodiesel as a viable alternative for bunker oil, which is in itself a very low grade and low quality oil. It is at the bottom of the distillation fraction. Whereas jet fuel is at the top end, bunker oil is down at the bottom. It is pretty horrible stuff. But biodiesel is a perfect alternative for bunker oil. So I think you are exactly right in that transportation and freight transport is crucial. I do not really see the shipping industry looking seriously at developing alternative sources to bunker oil.

Mr Ireson—Just on the question of competitive advantage, I think Brian's point is very valid. When you think about various countries and the competitive advantages they have, what we see in Australia is a situation where we do have an abundance of natural gas. The natural gas here is relatively cheap to access. We already have an extensive infrastructure. So, unlike the US, which is running short of natural gas, we are in the opposite situation. We have an abundance and

reserves for quite some decades ahead when compared to oil and diesel in particular. We now import some 20 per cent to 25 per cent of our requirements and it is probably going to increase, particularly given that oil companies are increasing their specifications. So we are getting a higher grade diesel now in this country with low sulfur. That comes at a price because, of course, there is limited availability of it around the region. So the oil companies price it on an import parity basis. The difference between this high-quality diesel and our abundant natural gas is large.

We see an opportunity there for many companies. The mining companies are a classic example. They can utilise natural gas instead of diesel. They will be able to then retain their competitive advantage. What will be needed, though, is a commitment from the government in terms of policy for alternative fuels. My company has been involved for the last six years in developing liquefied natural gas as a method of getting over the cost, if you like, of transport of natural gas. By liquefying it, we are able to transport sufficient energy to be competitive with diesel. It is a relatively new technology, and we are competing with an industry that has been around for 100 years. I guess it is in that area that we think that, in terms of the government's direction, it is important to see some leadership so that we can plan the investments that we are looking at in order to put the right infrastructure in place to span at least two decades. To have certainty in policy over that period is very important.

Mr Rosser—Just to focus on the question from Senator Milne, the development of the gas assets in Western Australia were really stimulated in the seventies by the oil crisis and the need to secure low-cost energy for the mining sector, which was looking at a complete shutdown based on what was happening with the oil prices. It resulted in Western Australia signing the largest take-or-pay contract ever entered into at that stage by the Western Australian government. It resulted in the construction of the Dampier to Bunbury gas pipeline and the development of those fields.

Unfortunately, I think we are starting to find ourselves in the same situation that we were in when we developed those fields initially. We are running out of energy. I hear what people say about an abundance of gas, but the reality is that the entire gas reserves of Australia would be used by the US in three years. It is not some infinite source. What is happening with the development of the gas fields is that those projects are very expensive to get off the ground, particularly the development of the compressor stations. They are only realised with long-term off-take agreements with countries that can afford to pay. If you are a small user of natural gas in Western Australia it can be quite difficult to get a bite of the cherry and sign an off-take agreement that will give you access to that gas. So we are in a situation where we could be just exporting the entire reserves.

Dr Worth—I really believe this is a lever for government to get more involved in our community and to take away the power of the market to supposedly solve all our problems. To give an example, just this week in the upper house of Western Australia they were debating an issue where an Indigenous community that rely on diesel for power ran out of diesel. That meant their sewerage pumps failed and sewage overflowed. So it is not just about cars and trucks; it is about all sorts of impacts in our society. People just cannot rely on the market to solve those sorts of issues. It is the big sleeper of Australian politics. Just in the last week the Queensland parliament presented the report of an inquiry into petrol prices. In Queensland they provide an 8c a litre subsidy. There were over 90 submissions. Most of them were from individuals. The anger

at what people are having to pay and at the impacts on their lives makes this the big sleeper issue in Australian politics. Governments need to get involved. At state and federal level in the last three years they have just sat back and watched the oil price go up—in all governments.

You get a sense that the Australian public want somehow to go back to $1 a litre. They do not care how it happens—that is where they want to go. The impacts will be in our community sector. Meals on Wheels and all these non-profit groups have had to cut their services in WA in the last 12 months because more people have gone to them seeking assistance. So it is not just about fuel and trade; it is all these impacts across our society that at the moment governments are not aware of. I know that: I have been around to many state government departments, and they are not gathering data on the impacts because it has just come out of left field. 'Why should we gather data about oil and fuel?' But the impact will come when, say, the Department for Community Development are asked by the Salvation Army for more money. So I think state and federal governments need to get involved, and we need to get involved pretty quickly.

Senator NASH—What sort of involvement do you mean?

Dr Worth—The first thing is to make the public aware that in fact this is a critical issue that will not go away. We will not be back at $20 a barrel. We will not be back at $1 a litre for petrol. This is a key role for governments to intervene with new policies. In WA they are encouraging, say, Perth to become more dense, therefore using our public transport systems will become more attractive to people than just jumping in their cars. But it really requires a debate between parliaments at all jurisdictional levels about oil. We are just not aware. We just roll up to the petrol pump every week and fill up our car, and we never think about what is going on, where it comes from, how it gets here or the fact that it is now costing Australia about $17 billion a year to import oil. The second major part of our current account deficit issue at the moment is import of oil. It would start off the first part of a discussion—town hall meetings, whatever it takes to vent some of that anger. There is no way that we can go back to subsidising oil. We cannot follow the Queensland model. We cannot go back to $1 a litre, because people will take their oil and sell it where they can get a higher price.

Senator MILNE—This is the crux of the political dilemma: there is hardly a politician alive who is going to go out and say to people with rising oil prices, 'We're going to take away the subsidies.' The popular response is to promise to give more subsidies going into an election—to subsidise more exploration, to subsidise this, to subsidise that, to maintain the diesel fuel rebate, to subsidise petrol prices. Just last year in the Senate there was a proposal to subsidise petrol at the time that the price was going up. Is it an appropriate response to maintain these subsidies? If it is not, what is the appropriate response?

Mr Robinson—In response to Senator Milne's question about the trade and whether iron ore is going to be more affected than crayfish and wildflower exports, I would like to suggest that we define the problem better before we start suggesting that cray tails go by bicycle and iron ore goes by plane or whatever. We have long suggested an oil vulnerability assessment, a risk analysis, a risk management modelled on the oil vulnerability task forces they have in Queensland or, as Professor Newman has suggested, an office of oil vulnerability. The oil vulnerability assessment should be done at a number of different levels. Senator Milne was asking about a national trade type thing. We need oil vulnerability assessments at a federal level, at a national level, at a local government level, at a local community level, by industry sectors,

by individual corporations and by individuals. There should be a range of things, because we cannot define the problem. We cannot work out the solutions until we know what the problems are. This is particularly important. We cannot just say that biodiesel or hydrogen or bicycles or fish and chip shop oil will solve the problem if we do not know what the problem is.

There are large numbers of solutions as to how we can do things better—taking your second point about how to do it better. The clearly sensible thing to do is to put up the fuel tax, which I hope we come to later. The clearly sensible thing to do as a politician is to avoid mentioning that. The only way we can do that is to engage the community. We had petrol rationing during the war. If people understand the situation then, firstly, they will think of a lot of ways that they can lower their own oil vulnerability. They can do their own risk assessment. There will be a whole growth industry of consultants who can go around and help people go through that—and ASPO Australia is hoping to be part of that, because no-one else is. Also if people understand they can look at things as people have done in wartime and other times to change the situation.

It starts at a sensible, professional level—not just saying that $3 a litre is unacceptable, which we heard a community service organisation say. We have to accept the scenario that these things might happen and we have to have a plan B. We might have something like the hurricane that hit New Orleans, and at federal, state and local levels the US was shown worldwide to be completely bloody useless. They had rows of buses sitting in a lake when there was no transport to take people out from nursing homes. We are going down that road but if, from this Senate inquiry, we can engage the community there are all sorts of plan Bs from oil vulnerability assessments. That is crucial. We cannot just go back to talking about whether we do biodiesel or fish and chip shop oil.

Mr Head—I would like to respond to both senators' questions about market and market failure and then lead into a potential government response to that. One of the concerns is that there is massive investment at the moment in the status quo. We have our transport companies investing in their production plant for 10 to 15 years out and airline companies investing 20 years out. We know that any societal change to a new technology has very long lead times. We have discussed natural gas for vehicles, LNG and CNG, and these lead times are significant and substantial. That means that the companies and the markets that the economists are relying on to take the lead are going to play out their existing hand of cards for as long as they possibly can. I respectfully suggest that they might not want to look at a different set of cards until retail prices have doubled or tripled.

A little back-of-envelope calculation of prices tripling in WA—so instead of $1.30 a litre we are looking at $3.90 a litre—indicates, obviously, that that is going to affect people. So the amount of travel we do as a society in WA is going to go down. It will drive some short-term innovations and efficiencies so that will also improve. Notwithstanding that, at that point in time we will be spending more than $1 billion extra as a society just on our transport fuels just for our cars—not counting all the incremental costs that go into all the products that we buy and everything else.

As a taxpayer, I would like someone in the political sphere to stand up and say, 'This is the future that is coming—whether it is today, whether it is tomorrow, it is coming.' We can deal with that when it arises, at the point where we will be paying $1 billion per year every single year, or we can perhaps invest a few billion dollars up front and make sure that never happens.

You will only get a rational analysis of that from the taxpayers and the voters if they are informed.

This brings it back to the points that have already been raised about oil vulnerability maps and the level of public engagement we need. We need this like we have never needed it before. We have to be innovative. We have to not go to people with information but engage them in an intellectual way and also at an emotional level. People have to understand the consequences. For all those reasons we cannot rely on the markets. The government does need to take a strong lead.

Mr Rosser—I will pick up on one of the points the senator made about those policies that could drive change, and some of the points that David made. We are seeing people paying over $3 a litre for diesel fuel at the moment and those people are the least able to pay. We have people in remote communities who are going without because they do not have the money to buy diesel. They also do not have the critical mass required to undertake those kinds of policy initiatives that may result in the development of alternatives such as renewable energy projects, biofuel projects and things of that nature that would make a real difference and would be cost effective in their location. We need some policy development in the area of identifying what works now and developing those projects for them. Assisting to get biofuel and renewable energy projects in place would really make a difference. It builds on Glen's point—spending one dollar now to save dollars in the future. It is really not in the interests of the fossil fuel industry to acknowledge what is going to happen. A tripling of their profits is in their interests.

Prof. Harries—I liken our current situation with oil to the situation we were in with electricity going back many decades. We had monopoly providers and there was very little planning. We virtually said: 'What did we do before? Let us build another coal-fired power station.' Oil has been a far greater problem because we have relied on very large monopoly oil producers from overseas and we have felt (a) that we had very little capacity to anything and (b) there is very little need. One of the things that have exacerbated that problem is that at the state government policy level there is actually very little in terms of transport policy. No-one owns the transport policy agenda in this state, like they do stationary energy. There is no office for sustainable transport policy.

We are facing massive uncertainty. I am personally very reluctant to look at crystal balls and guess what fuel prices are going to be. I think we have to accept that we have got huge uncertainty. We are behind the eight ball in that we have not had the planning systems in place to help us deal with that. The sensible strategy—and I have heard some of them around the table—is to start putting ourselves in a position where we can start planning. That means not just informing the public and working with groups. It also means—and this is very dear to my heart—understanding what we are going to need to have a very flexible approach to be able to deal with that uncertainty. That is going to go right across the board. How can we help companies develop the liquefied natural gas infrastructure they need? What training are we going to need? What skills are we going to need? What information are we going to need to be able to help us move when we need to move?

My plea is that we are going to have to look at our information needs and how we can address them. As politicians you have a very unenviable task because of that uncertainty and because of the limited planning capability we have. It is going to be very hard for you to engage the public—'Hey, we have a problem; let's do something.' I think we are going to have to take it

step by step. We need to look at what we are missing—what are the gaps. We need to do a real SWOT planning analysis of what we need to know.

Mr Rice—An answer to Senator Milne, in part, is: the role of government itself. I see in the possible questions for this hearing that it says, ‘Arguably government intervention implies correction for market failure,’ which to me spells out that all of you are economic rationalists. Perhaps that is not very exciting and it is probably not true. However, there is an alternative model that was put to us by a man called Matthew Quinn, who talked to us about the rise of sustainability in Europe. He said a few neat things, like the regions—for Australia, read the states—are about the right size for the sustainability debate, because people know each other reasonably well and yet they are big enough for vision. He then went on to say that their vision was largely spatial. By that he meant it was mapped. For instance, he showed us a map that looked like a terrain model of Wales in the UK, which is very hilly. The map reflected that, but it was actually the distances from primary schools, so it was getting at a fundamental social need.

Back to WA and our department: we are trying to build on some work that Griffith University has been doing on producing oil vulnerabilities for Sydney and Melbourne, and we are doing one for Perth. We think their work is overly simplistic and we are trying to improve on it but, given that hopefully fairly soon we will have some reasonably well thought out maps of oil vulnerability, what are we then going to do with them? It opens up a whole field of possibilities. Are they vulnerable because they do not have access to public transport? In which case, we can start long-term strategic planning in association with the PTA. Is that impractical? In which case, perhaps we should not be looking at further development in those areas, and we should be looking at our land use reflecting that. That is a very quick slide, if you like, from the biggest picture of the role of government to some practicalities. I think we need to do all of those things.

Mr Ireson—Economic rationalism or not, it is here and it is going to be something we all need to live with, and the energy white paper is clearly driven by economic rationalism. It talks about competitive fuel neutrality, if you like, from a taxation perspective. It talks about being able to at least recognise the costs of the fuels in terms of overall benefits to the environment as well, so there is some scope to work with, in this economic rationalist framework, to perhaps still deliver on the things we need to.

But I come back to the fact that in doing that we have to have a clear path about what we want out of the fuels of the future. I do not think it is for governments to try and pick winners in fuels, whether it is ethanol, biofuels, renewables, LNG or CNG. Each of them can have a role in the right environment, but we have to have a framework within which they can work, some certainty around them and then the innovation and the capital resources available in this country to develop them. We have to come back to making sure that there is that right framework—the right signal—and particularly an ability to take into account the full environmental benefit of the fuels that are being considered.

I mention that because, at a federal level, it appears to us that there is a lot of focus on greenhouse gas emissions. Greenhouse is certainly an important issue, but we think that overall air quality, particularly from a transport fuels perspective, is quite important, so we would encourage a broader discussion. We seem to be able to engage state governments very effectively on issues about air quality, but we do not have that interface at a federal level. I think that that is an element that could do with some further debate. It is perhaps not directly related to

what we are talking about today, but I do think the environment needs to be considered in the context of sustainability, going forward.

CHAIR—We are still to hear from Brian and David. I thought that after that we might then move onto a specific discussion about alternative fuels. I hope that is satisfactory. We sort of touched on it just now anyway.

Mr Fleay—I want to take up an aspect that was central to my submission and which I have amplified in a supplementary submission I have put in, which is not on the website. It is in relation to some pioneering work initiated by Alannah MacTiernan, the Minister for Planning and Infrastructure here in Western Australia, which deals with these complex issues and engaging the public. There is some real landmark guidance as to how to go. The first thing I want to deal with is how in all of the discussion here people have come up with problems and things that need to be done. The problem with all of those things is that they impact on all people and all businesses in different ways and on different time scales. There is an inherent complexity in them and all sorts of feedback loops and the like, such that you cannot use a top-down management approach. The very nature of such systems is that no one person can fully understand them. This is some of the modern thinking that arises from the so-called chaos theory. That means that you need a process whereby you can engage all the stakeholders and the public in this process to deal with those things. It was done successfully with the Network City plan, which was quite a significant effort. It has also been done on smaller scales. Basically it involves getting various stakeholders with their different viewpoints to state their case—people giving an overview of things and the like. With the Network City planning, there were 140 tables with eight people each, each with a computer. This enabled good, close dialogue between the people on a table which could then be fed into the whole group. All sorts of solutions emerge from that.

I was also involved in a similar thing on a smaller scale at Geraldton when there was a conflict between road trains and residents. At the end of that meeting, even though there were strong differences, we looked at what it would be like if we continued the way we were and what it would be like if we went down a different pathway. At various stages in the process each side had to argue the other’s case. It reached a point at the end where everybody, all of the 70 people involved, agreed that we could not carry on as we were and that we had to change, and there was a perspective on doing so. This is the way forward. What governments have to do is not manage and come up with solutions but give leadership of this kind in order to get an informed population and to unleash the creativity of people to find solutions. We cannot do it any other way. This is the way forward.

Senator STERLE—I would like to comment on that. I was at that road train meeting in Geraldton. I must admit to everyone here that I have a vested interest as an ex-burnt-out truck driver. At the time I was wearing my Transport Workers Union hat quite proudly. Just a little more on that: the previous state government had legislated and overturned certain road rules. Previously, as you would know, road trains were not allowed into the Perth area, but then that had been done. There was a lot of angst and disagreement among the stakeholders. But, from my recollection, for the first time in the history of the transport industry, we got together and said, ‘It’s now too late.’ The minister was trying to defuse the situation, but there had been huge investment on behalf of transport operators large and small—ranging from an extra dolly in a trailer to about $80,000 to the Tolls and the Wesfarmers of the world, which had invested

hundreds of thousands of dollars—and we could not go back. That was a little bit different, because we had it rammed down our throats by a previous state government. But we did all grow up for that day because we could not go back on that.

Mr Fleay—Could I respond to that?

CHAIR—Very quickly, because we need to move on.

Mr Fleay—There are plenty of tensions in there. It has to be a continuing process. The essence of it is, I think, that it combines in one process people cooperating and competing at the same time. The two are not mutually exclusive; they are complementary. It is finding that mix that is absolutely essential to seeing the way forward here. We cannot move forward before that, particularly if we start bringing the peak oil into it. If we start to say, 'It looks as though we've got to reduce our use of oil by this amount,' it puts a perspective on it that enables us to make the change. You have the potential in that for everybody to see that everybody is making adjustments and to see it as just and equitable. That is critical.

Dr Bennett—I want to say a few words in defence of economists. There are good and bad economists. I would like to table at some stage a paper by Nick Gruen and Kenney Lin in the *Economic and political overview* published by the Committee for the Economic Development of Australia. I will read a couple of quotes from it. It says:

Allowing oil prices to rise and better pricing of other resources that are not well priced at present (like road use and congestion) will economise on our use of oil, facilitate greater investment in oil exploration and production, and the development of alternative sources of energy.

For the transport ministers to knock back road pricing in the last week or two was a very retrograde step. The paper also says:

... it is most unlikely that Australia will ever be competitive at making Corolla-sized cars ... policymakers should be very wary of underwriting such ventures with additional assistance.

There are several other quotes that I could highlight from it.

I want to move on to alternative fuels. I take a particular interest in biofuels. We recently had a conference, at which Senator Milne spoke, on bioenergy and biofuels. At that conference, the speaker from BP Australia stated that BP would not touch palm oil. This is one of the moral hazards of biofuels. The fact is that the increasing demand for biofuels is now a significant hazard in the preservation of biodiversity and tropical rainforests around the world. Similar activities are taking place in relation to tropical rainforests and sugar cane plantations. It amounts to the fact that the more we make demands on the plant kingdom of this earth in terms of both food and fuel, the more we are going to do damage to it. The situation is that one rates human food first, animal food second and fuel third. It is disturbing to see the diversion of human and animal food into fuel. It seems to me that one of the actions that government can take is to make no more concessions and no more subsidies for the production of biofuels.

CHAIR—Stunned silence.

Mr Rice—There seem to me to be a couple of alternative fuels that have been missed off that list in the background. One is a fairly obvious one: electricity, whether it comes from coal, gas or nuclear sources. Particularly for urban transport—I know that there tends to be a view in the federal government that it is all about exports and interstate transport, but a huge amount of the fuel that we use is used in our cities. That is something that we need to think about.

The other one, and I do not say this tongue in cheek, is Weet-Bix. What I am really talking about is what we eat—we have a problem with obesity—and turning that into transport, particularly walking and cycling. Again, do not overlook those for personal transport. About half of our trips in Perth—and Perth is a very spread out city—are less than five kilometres long. We could save a huge amount of fuel, we could have big health benefits and we could have social benefits with more eyes on the streets for a relatively little cost. We are talking about the 'no regrets' option. We are talking about how you as politicians are going to get some of these things in place. It is not going to be by just saying nasty things like, 'You have to cop a high increase in fuel.' It is going to be by saying some useful things as well, like how this is going to benefit people.

If we look at social changes, it is now commonplace to wear seatbelts and it is not commonplace anymore for thinking people to smoke. It may be not commonplace in the future for thinking people to drive V8s unless they absolutely have to. There is an encouragement thing. There is a health thing. There are a lot of pluses in this, particularly if you adopt that broader overall sustainability view of what government is all about. If you do not govern for sustainability, why are you governing at all?

Mr Beveridge—I am going to restrict my comments in this phase just to liquid fuels for transportation. I think that, long term, we are probably going to be heading for the hydrogen economy, but that might be 50 years away. The reason I say that is that we could put hydrogen in our vehicles now and they would run quite happily. The problem is storage. Until we can crack the storage problem and actually store enough hydrogen in the vehicle to be able to go a reasonable distance, hydrogen is not going to really crack it. Whether it is fuel cells or hydrogen in a tank that you can run in your petrol engine, which you can do now, the storage problem is a major one. Really, what I am saying is that, given the impact that reaching peak oil will have—whenever that happens—we need to look at liquid transportation biofuels as a stopgap between now and the hydrogen economy, which might happen in 50 years time.

I think we need to set much more ambitious targets to replace some of our fossil oil with liquid biofuels. We have this 350-megalitre target. While I think it is good to have a target, I think it is very low. People are advising me that 30 per cent of our liquid fuel could be replaced by biofuel and we could still grow enough food in Australia to meet our needs. That implies a nine-billion-litre a year biofuel target, which we need to look at probably within the next 10 years. On the combination of biodiesel and bioethanol, the technology is starting to become quite mature. What needs to be thought through very carefully is this: if we are going to start making biofuels which simply do not take into account the CO_2 problem, we will have a major problem. Therefore, if we are going to burn natural gas in our cars, as we do now, we will be basically unlocking the carbon that has been stored for millions of years; whereas if we used liquid biofuels that were made from renewable sources—that is, wheat, gas or whatever—we would have a much more closed cycle whereby we were not adding to the CO_2 problem.

What concerns me greatly is that as a nation we have presold a lot of our LNG to China. Basically, we are exporting the CO_2 problem. China is going to be a massive user of energy in the next 20 years. We are basically accelerating global warming, which is going to really make the situation much worse.

Senator MILNE—I wanted to follow up on the issue of China, because it is very difficult to even contemplate the scale of the global impacts of China and India combined but China primarily. Lester Brown in his book *Plan B* basically says that at its rate of growth China will absorb virtually all the cereal and grain crops of the whole planet. What else is anyone else going to eat? Plus, they are in the black—America is in the red—and they can afford to buy up as much food-producing land as is necessary to produce biofuels et cetera. His conclusion is that the current economic model does not work for China and that, as it does not work for China, it does not work for the rest of the world. It is pretty profound to try and take in the scale of the impact. On this question of liquid natural gas, I have seen all the stuff in recent times about Australia touting its liquid natural gas to the US, to China and to anyone who will buy it. I am interested in the collective view here on whether it is appropriate for Australia to be selling—and I understand the WTO rules; let us just put those aside—liquid natural gas?

Mr Beveridge—I will just respond to that directly with a very quick comment. I think it may well be appropriate, but with a proviso which says, 'Okay, we'll only sell you LNG provided you use technology to avoid emitting CO_2 into the atmosphere.' And we are starting to do that now. At UWA we are developing some very smart technology which you can bolt on to your LNG-powered power station in China which would actually allow you to burn hydrogen in your power station and basically not release any greenhouse gas into the air. In fact, Alan Carpenter is in the US at the moment and he is negotiating, with Doug McEachern, who is the Pro Vice-Chancellor, Research and Innovation, at UWA, on a very smart technology which an American company is taking. Wesfarmers Energy are also playing a major role in this project. So the technology is starting to become available. It will be available probably in the next five years. So I think, yes, we can sell LNG, but only with the proviso that we use technology to ameliorate the CO_2 impact. That is my response.

Mr Ireson—In response to whether it is appropriate to be exporting the LNG that we have: I think the reality is that, without the export income, these kinds of investments would not be undertaken in the first place. The scale of investment that is required to develop these resources is very hard to get your head around. For a country like Australia, without the interest from the oil majors and their seeing this is a country that they want to develop because it has free trade and certainty in terms of taxation treatment and the like, we would not have the developments. Without the developments, we would not have the domestic access to the natural gas that I was talking about earlier that in fact now gives us a competitive advantage against imported diesel. So I think we have to be very careful that we do not isolate ourselves. At the end of the day, it is business on a global scale that we are talking about and it is very hard to be isolated from that.

Mr Head—I am going to be a bit controversial, and Gary may wish to come back on this one. According to data from our Department of Industry and Resources—don't get hung up on the figures; it is the magnitudes we are looking at here—we have 80 to 130 years worth of natural gas supplies. That is at current levels of use, which we know is not going to happen: demand is going to increase. If we were to translate a significant proportion of our transport task to natural gas, that duration, that window of opportunity, would reduce right back down to between 20 and

50 years, notwithstanding that the peak is going to occur somewhere halfway along that period. With the time lags for introducing new technologies and getting societies to make that transition, it will take us 20 years to get to the point where we are all using natural gas. And then what do we do? We say: ‘Shit, natural gas is running out; we’ll have to do something. We’ll have to introduce the new technology now so it’ll be ready in 20 years time.’ So it kind of makes you think that it might be worthwhile leapfrogging some technologies which we have a pretty good idea are problematic from the point of view of a long-term solution to supply and which also have the greenhouse gas and climate implications. Gary’s point about developing export markets and local markets for it—I cannot see a justification for that.

Mr Ireson—Just to respond: as a company that has committed to making a transition in terms of fuel use, we only look at what is available. If it has to be economical for the customers today, we have to look at developing long-term contracts to underpin the supply. We look at horizons of 10 to 20 years. We cannot go beyond that. I wish we were game enough to leap into the hydrogen economy. It is not the way our company looks at it and I do not think it is the way that many modern corporations consider investment decisions. They are prepared to take a view which is medium term—in the 10- to 20-year range, if you like; for some, you would say that is very long term—and they work with what is known today. And what we know today is that we have the technology and the acceptance from the customer perspective, and it is within that framework that we have to work. In an ideal world, it would be fantastic to be able to take that leap into the hydrogen economy, but we see LNG as being a bridge fuel to that hydrogen economy. We are not going to end today with oil as we know it and then start tomorrow with hydrogen. There is a transition of—who knows?—15, 20, 30 years, and all we are saying is that you need a framework even for that.

Mr Fleay—I dealt with this question of alternative fuel in one part of my submission. I finished up with a chart showing the energy-profit ratio on a vertical axis and increasing economic effectiveness on a horizontal axis. The energy-profit ratio is the energy content of the fuel divided by the energy used to get it. The higher that figure, the more useful the fuel. There is a difference in effectiveness. We are never going to see a coal-fired aeroplane, for example. It is that sort of picture. This chart gives a picture on the basis of the information I have available.

What comes out in that picture is that the petroleum products that have been taken from giant oil fields stand out above everything else. Nothing else can match them. It would be useful to look at that. But we do need a lot more information in this country. A lot of work needs to be done to find out what the energy-profit ratios of our various fuels are to update that figure. This is an important task so that we are able to sort the wheat from the chaff, know what you can and cannot do and know what can be used for a transition to help us to get to one point. In this sense, everything that everybody says has some role somewhere in it, including using natural gas as a bridging fuel for transport while we make a lot of other changes. This is the essential point.

Hydrogen is not an energy source—it is an energy carrier. You have to manufacture it. When you look at that aspect of it—and you obviously cannot in the long term think of using a fossil fuel to manufacture it—you find that, with the problems of storing it and the energy needed to compress it and so forth, the prospect of hydrogen being a successful transport fuel is quite remote. You have to have the right approach to make the right sort of analysis. This is important to develop.

Mr Robinson—On the exporting of liquefied natural gas, firstly there are published suggestions that there has been political interference in the export of liquefied natural gas. We talked about ABARE's serious error ranges. People may have superannuation going into Woodside. Woodside is selling things on a 30-year contract for a price on the S-curve or whatever it is based on ABARE's thing that, as the price of oil rises, the price of natural gas tails off or levels off. We are selling liquefied natural gas dirt cheap. We are selling it substantially below market prices. This comes back to the intelligence failure. ABARE has not been providing reasonable guidance to people.

Secondly, we should not be selling the stuff cheap, certainly. There is a book called *The Hype About Hydrogen* which echoes Brian's point that we need a source for hydrogen, whether we make it from coal or gas or nuclear power. There is no foreseeable source of hydrogen. So we cannot talk about the transition to a hydrogen economy. The hardest thing is not storing the hydrogen but finding it or getting it or making it first. As to the biofuel thing that we were talking about, for instance, if we took all of Australia's wheat crop, which is on average 20 million tonnes per annum, and turned all of that into ethanol, we would get some nine per cent or 10 per cent of Australia's oil usage. There would be no bickies in the parliamentary tea rooms and no bread in Woolies. We would not be exporting any wheat around the world. So biofuels have very serious scale limitations. In terms of alternative fuels, I think it is quite clear that conservation is the best alternative fuel—that is, not using it rather than replacing it.

Prof. Harries—Going back to Senator Milne's question—should we be selling LNG to China?—I would have to back Gary. I am afraid the reality is that if you want to develop those fields you need a large foundation customer. We do not have the market here in Western Australia or Australia to support that sort of infrastructure investment. Having done that, though, now we are at the stage where we need to question how much more liquid natural gas we should be selling and for what price. I disagree with Andrew that we should be having conditions on the sale of gas to China. I think that would smack of developed world arrogance. We would have to be very careful about any sort of approach to that. I think we should be willing to technology-share with China.

On the question of hydrogen—again, being a sceptic—on the one hand I was engaged in a debate with someone very senior in BP and, on the other hand, with someone very senior in DaimlerChrysler. BP were telling me, 'Hydrogen is years and years off. We can do so much more with the technology of the internal combustion engine and so on to get it.' The DaimlerChrysler person said, 'I believed that until I went to China. I'll tell you now that fuel cell vehicles will be here in about 20 years.' When I said that we are facing major uncertainty, those are the sorts of things which will be very difficult for us to factor in and we need to be ready on a number of fronts.

Dr Bennett—In my personal submission I make the point that, for defence reasons, Australia has to do something about its long-term oil resources. I am not quite sure that natural gas is the thing but, if you think back through the wars of the 20th century, they were all essentially about oil. Hitler was stopped on his way to the Caspian Sea in Stalingrad and on his way to the Middle East at El Alamein. China is already pumping oil into the ground as a strategic resource. As far as we could gather from the appropriate government committee, Australia is bound by some international regulation that we have to have 90 days of supply, and most of that has been in the Bass Strait oil pipelines rather than in a standard resource. It seems to me that we have to start

thinking very quickly about having a resource. Whether we have that resource as an untapped oilfield, or as an oilfield that has been refilled with oil which has been purchased on the world market, is not up to me to say.

Mr Beveridge—I have a very minor comment, following on from David's comment and also Bruce's. What we are saying here is that we have quite a complex problem and therefore we need a quite complex but really a quite simple solution which requires a combination of conservation aspects, different technologies and different approaches. There is no right or wrong answer. We are not saying, 'Let's go to biofuels, let's go to hydrogen, let's go to conservation.' We are saying that all of these different facets have a vital role to play. I think the government has a crucial role to formulate a framework, where we can have a debate and discussion and say, 'Okay, we need to involve aspects of conservation, technology, big industry—the heavy hitters; BP, Wesfarmers.' They all have a role to play accepting that, where we are now, we ought not be critical necessarily of the likes of BP and Wesfarmers. They have done great things over the years. You can argue that what they are trying to do from hereon is in the interests of their infrastructure and their shareholders and that is fine. So we ought not be critical of them. We ought to say, 'Let's accept that here is where we are; let's develop a strategy, a policy and a framework for discussion, where we can involve the stakeholders in a way that allows the nation to go forward with a fair chance of heading off the problem in 20 years time.'

Mr Rosser—I just want to pick up a couple of points on the previous topic. I was at the Farmers Federation conference two weeks ago. The conference was entitled 'Fuelling the future'. The farmers were very keen to stand up and say that they had no moral obligation to supply foods, that they would sell to the highest bidder and if the highest bidder was going to be fuel then so be it, because, when grain hits low record levels, no-one feels a moral obligation to pay them a fair price for their product. They were as one; there was unanimous consensus in that room. I suppose it is something you could only understand by being a primary producer.

I think that the key thing that we need to tie the two together and provide the technology pool that will see us develop those kinds of technologies that are going to see us into the future and make sure we leapfrog is a carbon tax. With regard to Glen's point on leapfrogging and Gary's point on natural gases and transport fuel, I am a bit confused, because I thought natural gas was going to be the transition fuel for the stationary energy sector, so I am not sure how it is going to compete with the transport sector. A carbon tax does it. A carbon tax in place will send a signal to the market to provide fuels that are carbon free, that are not fossil fuel sources and will really see us into the future. We see it being effective in Europe at the moment in providing a pool and putting in people's minds that renewables are the way to go. Also, it sends a clear message to the finance sector about where the future lies. We will start to see investment in technologies that we would not otherwise see investment in, not so much because there is a guaranteed market there all of a sudden but because the future is a bit more obvious and a bit more certain. I put that to you.

Mr Woolerson—I agree with Matthew wholeheartedly. With regard to the fuel tax credit reform, I believe that the government could steer communities and industry into using these short-term fixes until we do develop a full-time fuel for the future. The alternative fuel credit rates applying from 1 July will only steer people away from these types of fuels, and I think that could be damaging.

Dr Bowran—One of the things that does not come up in this debate is the research agenda that goes with it. Certainly in the United States we have now seen a huge drive for research because of the incentives put in place by government to foster biofuels. The consequence of that is only just starting to flow through in many new innovations. We are certainly starting to see some of them in Australia. I think one of the areas that needs to be looked at is what the research innovations and research incentives that are going to drive the alternative fuels sector are. Whether the government has the right policy settings in place or not with its current research and infrastructure funding, I am not sure, but I think that is something that could be looked at. Because we have the opportunity to piggyback much research that is done in the rest of the world, we should be using that wherever possible.

Mr Upton—I would like to issue a word of caution about imposing extra taxes and so on. They are obviously a way of changing responses but, no matter how much tax you put on something, you cannot make it happen if the research, the knowledge or the will is not there. I am thinking about what happened in California towards the end of the nineties. They tried to push the introduction of battery electric cars by a whole range of incentives, but the technology was not ready. While manufacturers made electric cars and some people used electric cars, it did not go any further than that because the technology was not at a point where it was usable. I am cautioning that, before taxation is used to change things, you have to do the research to make sure that what you are trying to make happen can happen.

Mr Head—In response to Mike's suggestion there, using the Californian example: governments around the world—much more so than Australia—have set particular targets. That has led research agendas and commercial investment and so on. With regard to the specific example that Mike used about electric vehicles or zero-emission vehicles in California, he is correct in saying that it did not lead to the result they anticipated in the short term when they first introduced it, but it has been responsible for the speeding up of the development of a whole range of technologies. For instance, we have the three hydrogen fuel cell buses here in Perth. DaimlerChrysler is the company that is drawing that project together for the European Commission. They have told us that one of the main drivers for them to produce this technology and get it commercialised is access to the North American market and the California market specifically. That may not have had the immediate effect on the ground, but it has dramatically influenced the range of options that are now available to us or will be available to us in the near future. I would not like to see the government downplay the role of setting firm targets. Probably the most equitable way of doing it is to set targets for emissions reductions or CO_2. You can either impose a tax or set a particular goal in terms of litres of biofuels. Other countries around the world, such as Iceland and Sweden, have actually said that they want to be oil free by the year 2020. When those targets are set, industry responds, communities respond and the research agenda changes to follow that. We do need some of that leadership. That is a role for government.

Mr Fleay—To reinforce again what I said about the failure of top-down management processes in these circumstances: imposing taxes and a lot of things of that kind have that character about them because they impact on all sorts of people in different ways. In fact, I agree with Mike Upton. That is why this approach is the key to going forward: to learn something from the lessons that the Department of Planning and Infrastructure have applied here, not because they are perfect but because of their potential if we go down that path. I noticed Senator Sterle said he has a background with the Transport Workers Union. I cannot think of one area of

workers who are going to be more seriously impacted in this area. The whole business about mass distance charging for trucks is a classic example of this. That is why you have to have this bottom-up approach where all the stakeholders are involved and you reach just outputs so that they see all the changes that everybody has to make and all the things they have to give up in order to gain something fair and equitable. With all the sorts of issues that we have here, that can only happen by bottom-up participation. Everything that everybody has said has a role to play in this. There is not anything that is totally wrong or totally right. Because of this complexity, you can only handle it in this way.

Mr Beveridge—With regard to the issue of taxation, as a taxpayer and a voter, I can say that additional tax is never very palatable. I think, in this situation, the government could use this as a real and positive advantage. If a very small proportion of the excise duty or an initial 1c tax per litre went to research and if consumers were informed and educated that that 1c per litre was being used to fund either a strategic group of stakeholders or communities to look at the whole oil issue, I think the government could turn that to their advantage and it would be a huge vote winner. As we know, political spin is crucial in all this. Again, if we get the major oil companies on board, they could then promote that 1c of the $1.30 that you are paying for every litre goes back to fund community groups to try to ameliorate and head off the impending oil crisis. That could be a vote winner. Most people who are rational thinkers would be very happy to pay the 1c per litre or whatever the figure was and appreciate that they are making a difference.

Senator MILNE—Obviously, one of the ways to reduce transport fuel demand is for governments to change their fleets to fuel efficient vehicles as a leadership example and because of the significant reduction in fuel use that that would create across the country. There are a few people here involved with vehicle fleets, government infrastructure planning and so on. What has been the main barrier to governments doing that and what is the barrier to legislating for minimum fuel efficiency?

Senator NASH—Could I ask: do you have a particular alternative in mind?

Senator MILNE—Alternative what?

Senator NASH—You are talking about not running on the current fuel. Are you talking about biofuels, gas or electricity, for instance?

Senator MILNE—I was thinking of hybrids, but I am not specifically nominating a particular vehicle or a particular technology. I am just saying that, clearly, governments could take a lead by initiating fuel efficiency in their car fleets and by using a particular vehicle. If I had to nominate a vehicle I would say the Prius, but I will not say that specifically. I am just asking: what are the government's stated barriers?

Mr Head—Within the Department of Planning and Infrastructure we saw this as a major topic several years ago. Our minister took fairly unilateral action and decided that our agency would make all endeavours to increase the number of four-cylinder and fuel efficient vehicles in the fleet. Where there was need for a six-cylinder vehicle, an LPG version would first be considered if available. There was a hierarchy of desirable down to undesirable. Over a very short period—less than a couple of years—that had quite a significant effect on our vehicle fleet composition.

The proportion of four-cylinder vehicles rose from something like 12 or 18 per cent when the trial started to approaching 50 per cent at present.

The minister also suggested that we procure a number of hybrids, and the Toyota Prius was the vehicle available at the time. She set a target of 20 vehicles. Through that exposure to that new technology, we have more than the allocated number of people interested in it, and there are about 27 or 28 such vehicles in the fleet at the moment. There was a push from Treasury in response to that. We made a case for it: we collected a couple of years worth of data and extrapolated our results out to the entire state government fleet and all the government business enterprises. Treasury has since taken it up and adopted a slightly leaner version of our hierarchy of desirability. That has happened in the last six months, so we hope that those changes will take effect and have a dramatic impact on the vehicles that are available to resell into the second-hand market, because apparently government fleets do influence the second-hand market pretty tremendously.

So that is what we are doing. That is what we think can happen, and it can happen when you take unilateral action. But you specifically asked about the barriers. There are two barriers to that. One relates to local cars, which are six-cylinder cars. It is our role to support local Australian industries and we have local car makers who have committed to a six-cylinder vehicle platform for the foreseeable future—in other words, eight to 20 years. They are committed to rolling out models based on that power plant and that drive train. That leaves us at a point where we politically have to stick our hands up and say: 'We're not going to support local manufacturers. We're going to import what we think are the right vehicles. Tough for you guys.' So that is one of the barriers.

Probably the greatest barrier that we anticipated was that a person's vehicle is rolled into their job. It is part of their stature and part of their reward for doing a good job. It is seen as a way of attracting or retaining the appropriate staff, because pay levels within the Public Service are notoriously poor. We cannot run away from that. I think we need to accept that, but if it is our intention as a government to attract and retain the right kinds of people we need to figure out what the appropriate mechanism is to do that, one that will attract people which does not have all of these externalities associated with it. So those are the two main barriers I draw your attention to.

Senator NASH—Very briefly, from the data that you said you collected over a couple of years which then went to Treasury, what sorts of savings did you identify?

Mr Head—Off the top of my head I cannot remember, but if we extrapolated it across the fleet we were talking about several million dollars worth of fuel. At $1.30 a litre, that is many litres of fuel, and I think every litre of fuel that you burn releases 2½ kilos of CO_2. So greenhouse savings were quite astronomical. The average fuel efficiency of the fleet went from 13 litres per 100 kilometres down to in the order of nine litres per 100 kilometres, so again it was significant.

Senator NASH—Not bad for off the top of your head!

Senator MILNE—Has that data been written up and made available? It would be very useful for us to have that as an appendix to the report.

Mr Head—That data formed part of a cabinet submission, so I will have to check, but I do not anticipate big problems. I will get that to you.

Senator MILNE—That would be very useful. Thank you.

Mr Woolerson—I will jump in with Glen on the four-cylinder and the Prius issue, and I believe the data is available. I think Minister MacTiernan is very proactive. She definitely does not put any barriers up when it comes to alternative fuel. Currently one-fifth of our bus fleet is running on CNG, and over the next five years another 300 buses are to be put on CNG, so half of our fleet will be CNG. With the remaining diesel buses that we are currently running, it is pure economics. We cannot just swap overnight, and also the manufacturers say we cannot swap overnight. But the rest of our fleet is going towards biodiesel. So the minister is very proactive about the alternative fuel situation. Reiterating Glen's words, the car is a bit of a status symbol. Coming from the corporate world and having been put into a four-cylinder, I can personally attest that I stood back thinking, 'Oh, wow,' but when I see the savings and the push that the minister is making for this I am very happy with what is going on in that regard.

Mr Head—We anticipated a big backlash from people who were being forced, if you like, to consider a smaller vehicle, but that did not materialise. Everyone used it as a rationale for saying: 'We can't go down this way. We'll lose good people. Everyone will complain.' I think over the course of the program there were two cases out of literally hundreds of employees where people were bailed up in the corridor and asked: 'What's this business going on? Why did you suggest that?' So it was not as big a hassle as we thought it would be. It was a perceived barrier.

CHAIR—I might add that my car is a Prius. I had to get permission from the Special Minister of State to get one, but I tell you what: they are really good for pollies because lots of people come up and ask you about them, so you can engage in discussions. In fact, I think that we should get a discount because I do so much bloody advertising for Toyota now!

Mr Woolerson—I think Toyota lobbied. I know they lobbied the state government when I was in vehicle fleet management, before my current role, to push the Prius down throats and get special dispensation. I do not know what happened there, but the state government did not really take it up until, as Glen said, the minister pushed them.

CHAIR—A lot of people do pay attention to them out in the streets. That is my experience.

Prof. Harries—I am an ex public servant—and I should warn Glen not to get into academia, because we are paid even worse! When in government I was always agitating for smaller cars. A number of reasons that came up were quite interesting. It depends largely on how you get your vehicles—whether you lease, buy outright and so on. One of the arguments that came forward was that the cost of insuring a small vehicle is much higher than for a large vehicle. If they have a collision, the damage done to a small vehicle is much worse per vehicle. Therefore, the resale values are lower.

Going back to what Glen said about supporting the local car-manufacturing industry, there is also the taxi industry. Almost all taxis are ex government fleet vehicles. In the last job I had in government I actually asked for a Prius and was refused on the grounds that they were too

experimental. I therefore asked what car I could have and was told I could have a large grey Ford Falcon. I instead kept my 1983 Subaru and I have always felt glad about the energy savings and the embedded energy I have saved in not flipping over to a new car.

Mr Ireson—I was just going to point out—putting on my LPG Australia hat—that autogas has of course been around for a long time, and the Australian motor vehicle community has got behind autogas in a much more direct sense in the last few years. We have a unique opportunity here with the Australian manufacturers where they can promote a six-cylinder family sedan that will offer the benefits of a four-cylinder car in economy and environmental performance. That should not be overlooked in the suite of options available to government fleets as well—again showing leadership in this particular area. So, where applications are still appropriate for a larger vehicle, at least there is the alternative fuel option.

I am pleased to also confirm that the resale value of these autogas vehicles has climbed considerably. When the excise was first announced on alternative fuels three years ago there was quite a decline in the resale value and it had an impact on the rate of take-up. But currently we are seeing positive resale value on these vehicles, so even local councils, who typically hold on to vehicles for a very short period of time, are able to more than recoup their investment and enjoy fuel savings during that period. I would like to put on record that we do have an industry here in Australia and that the local vehicle manufacturers have a role to play. We would like to see them continue to be encouraged to develop autogas technology.

Mr Upton—With regard to dealing with manufacturers, they do try and resist every change that is imposed on them from outside and you have to drag them kicking and screaming. But, when they can see that the market demands it, it is amazing how quickly they can respond. I will give you the example of vehicle safety. The clubs were involved in ANCAP, which is there to promote vehicle safety and encourage safer vehicles. The legislation requires a vehicle to have a fairly low standard of safety, and that is what the manufacturers used to build to. But with ANCAP, where we publicised how poorly those cars performed, it did not take long for manufacturers to respond to that market demand, and we now have a situation, some 10 years later, where the safety performance of vehicles is 10 times better than the legislation requires. So there is no reason why a similar sort of thing could not happen with fuel consumption and the environmental performance of vehicles.

Senator STERLE—Don’t they have the efficiency stickers on the windscreens of all new cars now?

Mr Upton—They do, but it is not promoted by the manufacturers.

Senator STERLE—Do you think that anyone takes notice of the efficiency stickers on the windscreens?

Mr Upton—They do now, of course. With fuel prices at $1.30 a litre and going up, people are starting to take more notice. Just following on from that: while the six-cylinder Falcons and Commodores and so on are the vehicles that the manufacturers push, they have to recognise that in the private sector 70 per cent of vehicle sales are small four-cylinder vehicles. So there has been a big shift in the market, and there has also been a shift in fleets. I think it is the case that the days of the six-cylinder vehicle are numbered. It will take a while, because the manufacturers

are geared up to produce that sort of vehicle. In the last year the demand for those big six-cylinder vehicles has declined by 10 per cent, and as fuel prices go up that trend is going to continue.

Mr Beveridge—I have a couple of points that might sound quite challenging, but bear with me. It annoys me intensely when companies like Holden complain that their sales of V6 and V8 vehicles are struggling and they say, 'Woe is me; isn't it terrible.' I say: 'Hey, guys, get with the program. Why not develop smaller, more fuel efficient vehicles? Look at where things are happening.' When you drive to work every morning up the freeway in Perth, probably 95 per cent of all the vehicles contain just one person. They have a big four- or six-cylinder four-wheel drive. What about developing one of these two-seat microcars where you can park two in a bay? A Perth council would be very happy to double their parking revenues by having two vehicles per parking bay rather than one! What about a fuel efficient vehicle that does one litre per 10 kilometres rather than three, which is what the Toyota Prius is doing? Why not set the bar a bit higher and get Holden to pull their heads out of the sand and develop vehicles that we really need?

We also have to appreciate from a taxation point of view that the regions are really hurting because of the high price of fuel. We need to skew the fuel duty so that it is location specific and regional communities actually get a tax benefit. If you are in your Toorak taxi in Melbourne you need to pay more tax, but if you go out to the regions you should pay less tax. That would encourage people to explore the regions. It really penalises people in the city for having large vehicles which we do not need, but it supports regional communities where people need larger vehicles for their work, pleasure and exploration. It also helps the tourism industry. I think a smart excise policy which is location specific and also a model which is based on the size of the engine and the fuel efficiency of the vehicle are required.

Dr Bennett—I now have two points to make. In relation to what Andrew has been saying, one of the policies of the Sustainable Transport Coalition is to see how much we can transfer the costs of a motor vehicle into the price of the fuel. Our objective is to produce the registration, third party and insurance costs to zero so that people who park their car in the garage and use it only in emergencies to go to a hospital are going to pay only a small amount rather than the annual fees that they are charged at the moment. I realise that this is exceedingly difficult with our system of government, since the states apply some of these taxes and the Commonwealth the others. But if you think about that then it may well be that that would increase the number of vehicle sales. Under those circumstances, I could imagine owning a fleet of at least three vehicles—a scooter, a one-person vehicle and a four-person vehicle—for different activities.

The other point I want to make is in relation to the use of fuels, and I come back to biofuels. At this conference on biofuels and bioenergy, BP described a horrendous situation in which the ethanol that they buy in Brisbane has to go down to the Westernport refinery in Victoria to be mixed and then carted back to Queensland. The Prime Minister's statement in response to biofuels was to say that the Commonwealth fleet, mainly based in Canberra, will be converted to E10, or a significant proportion of it will be converted to E10. In my view, biofuels are never going to make up a very significant part of the Australian vehicle fuel supply and they should be used in the area where they are manufactured so that they can be used most efficiently. So it seems to me to be quite sensible for farmers to produce biodiesel on their farms and for ethanol to be used around the locations where it is produced such as at Kwinana and in Queensland. But

trying to persuade the people of Tasmania to go to a biofuel by subsidising its movement to Tasmania seems to be very inefficient.

Mr Fleay—I assume that demand management in transport is part of the agenda for the topic we are discussing. I would like to say something here about the TravelSmart program and its potential. As a preface, I spent my life working in the water industry here, where we have been battling for 30 years to deal with the question of resource limitations. It is my view, in the context of what we are talking about, that the Water Corporation here now sets an example for all corporations insofar as its commercial advertising pleads with its customers to buy less of its product. For those senators who are not familiar with the TravelSmart program, which has an international reputation and has been copied around Australia, it uses a direct-marketing approach. People are approached individually in their houses to review the way they use their cars as opposed to the alternatives of public transport, walking and cycling. It is a dialogue to change their pattern. It is, at a modest level, a very positive result for the people who have participated in terms of reduced car use and increased use of public transport, walking and cycling. Not only that but the increased revenue from public transport alone has paid for the cost of the program in about 18 months or two years. It also has a very high cost-benefit ratio, which includes the health benefits of increased exercise.

This is the small beginning of transport management in the transport business which needs to reach the stage that the water industry has reached. However, if the question of future oil supplies were introduced into this, insofar as people go out, talk to others about what can and cannot be done and say, ‘Here is what you can do,’ there is enormous potential for empowering people as a part of this general process of getting understanding and creating the climate for the right sort of change. I do not think we should underestimate this. It is an area where the transport industry is way backward but where the water industry in this country, and particularly here, has created a change of culture due to the drastic impact of climate change.

Mr Robinson—In answer to Senator Milne’s question about the barriers and Senator Sterle’s about anyone taking any notice of the fuel labelling, the people who take notice are the people who are paying for their own fuel. The people who do not take any notice are the people who are not paying for their own fuel, which leads into the fringe benefits tax and a whole raft of other perverse policies. Senator Siewert talked about Priuses, but they have a substantially higher tariff than the big urban assault vehicles. Why should someone, 18 months ago, have paid $5,000 more for a Prius because of the tariff on them? That is a perverse federal government policy. The change to the vehicle ownership cost—that is, from a licence and third-party insurance which you pay annually to a vehicle use charge—was advocated by that well-known greenie, Sir Charles Court from the RAC, in 1979 during the second oil crisis. So there are a whole range of things for a sensible, rational pricing system. We should perhaps follow the New Zealand government and have a universal no-fault insurance policy funded by the fuel tax. It is revenue neutral, so the people who do lots of miles pay more because they are more at risk.

Just briefly, in the broader sense about what can be done to reduce fuel usage and reduce our oil vulnerability, I think community engagement is crucial. Brian Fleay has talked about how we cannot bring in these sorts of policies, whatever they are, without the community understanding them. Brian has also talked about the individualised marketing—the TravelSmart. In Perth, Melbourne and Brisbane you get 12 per cent to 13 per cent reduction in car trip kilometres

without any crises, taxation problems or anything. That is a very powerful role and that can also be used to reduce electricity and water demand.

ASPO is recommending that we again follow another well known left-wing, greenie, conservationist, Margaret Thatcher, who put Britain on a fuel tax escalator. If you look at what happened in the UK, that may be one of her most lasting legacies. People get an impression that the fuel prices are going to rise. You could put this into schools, hospitals and transport systems. From the point of view of just leaving it to the market, if we put the fuel price up gradually most of that money from the increase stays in Australia. If we let OPEC do it, we do not control the rate at which the increase is exported and we do not have any resources left to do all these things and build the safety net. Those sorts of things ought to be particularly looked at. Clearly, Senator Sterle can confirm that this is not a hell of a good thing to go to the next election, but if that is not done then the consequences are seriously worse.

Andrew mentioned location specific fuel taxes. This was done in South Australia when the South Australian government had legislative control of what we call the fuel franchise levy. ASPO Australia is suggesting a smart card—a flexible, tradable, allocation pricing system which can handle emergencies and the location specific things. People who live near a train station and an urban city should get less of the low tax petrol. We are taking a model from the water industry in Perth. Domestic water, the amount for basic household necessities, is quite cheap. As you use more and more in a household, you pay more and more incrementally for the units. Those sorts of things can be done. A lot of those things can be done, rather than just going on with business as usual with the fringe benefits tax whereby everyone in Canberra is driving up and done freeways and lending their cars out so they get over the March rush, or whatever it is called, to get over 40,000 kilometres. Those things are just stupid and perverse and they are no more market distorting than putting the price of petrol up, particularly in an incremental way whereby people can see where it is going. It is going into the health system, it is going into defence, it is going into all these sorts of things that we need. We need to be following Dr Samsam Bakhtiari’s thing. We need to be building Noah’s ark, where people said, ‘There is probably something coming; we need to have the ark well planned and under construction.’ It is bloody hard to build an ark under water. If we wait until peak oil hits us, then we are not going to have the time or the resources to do this.

CHAIR—We have two Davids here. What I am thinking of doing is drawing a line under that particular discussion and going on to concluding remarks, because if everyone is going to have even a minute we are going to go past 6 o’clock. Is that satisfactory to people?

Mr Rice—Can I talk a little bit about infrastructure. I work for the Department for Planning and Infrastructure. My job for the last 15 years or so has been planning major freeways. They are going to be there for the next 100 years or more.

Senator STERLE—What about Leach Highway?

Mr Rice—Yes. That is right. Leach Highway is an issue to us—a huge one. Let me say a few things. First of all, within the time scale that we have been talking about, and in the time scale of political governments, 100 years or so is what we are really dealing in, so any guidance or direction we can get is really useful. For instance, if we are talking about a mixture of personal transport and freight transport, my logic says the trucks are going to get bigger because they will

be more fuel efficient; the cars are going to get smaller because they will be more fuel efficient. There is a safety issue—does that impact on the way we design our roads, for instance? That is a fairly simple one. A more complex one is how we can save fuel in urban freight transport. The answer is not to put more on rail. That is a part of the answer and our government is trying to do that. We have a target of getting from about three per cent to 30 per cent of our containers coming from the Fremantle inner harbour from rail in the past to rail in the future. But that is going to make a small difference.

What they are also doing is looking at using our roads more sensibly and, implicitly, using our fuel more sensibly by booking the trucks that come in and out of the Fremantle terminal relative to the containers, because surveys have found that a lot of trucks are going in empty to pick up a container and bring it out and they are passing trucks that are doing exactly the opposite. Obviously, there are some improvements that can be made. How do you make those improvements? You need data and you need some level of control. The problems that we are getting with data relate to some extent to the free market forces where competition is good and then the data becomes commercial-in-confidence and we cannot get it. So there is a bigger issue there.

I believe that in an intelligent future the government as a whole—call it Big Brother if you like—is going to need to have some influence on the availability of data, whether it is for personal trips so that we can group more trips together or whether it is for the clumping of bits of freight so that we move away from lots of small, just-in-time deliveries to some efficient, medium sized deliveries. This is going to have an impact on warehousing because the central distribution systems that are the current rage, and are logistically reasonably efficient because we have got very cheap fuel, are going to have to change. I believe people are going to have to do more warehousing in their businesses again, like they used to. There are a lot of things that we can do but we have got to get the intelligence about it in order to be able to, and we have got to get some leadership.

There was a very interesting survey that I read some years ago about politicians and leadership and how far in front of the community they were. The thesis was that the politicians were in front of the community, therefore they modified their expectations in parliament and cut them back quite a lot. The survey found that, yes, that was true—but the bite was that the politicians were only a tiny little bit in front of the community and they thought they were a long way in front of the community. So I am saying: have courage, but also be realistic. We can all talk about these things and the greenhouse effect and so on, but if this inquiry is going to have any impact whatsoever you need to build upon some synergies to get through.

One of the synergies that you can build upon is COAG’s interest at the moment in urban congestion and congestion management. If we can better manage congestion we can better manage fuel. We did a survey in Perth recently—it was a statistically valid survey—in which we asked people: what kind of problems do you see coming from traffic in your area? To our surprise the answer was, clearly, congestion. You say if you come from Sydney or Melbourne that we do not have any congestion, but that was the current perception of the voters. So there is something in congestion management that can be combined with environmental improvement, better use of our roads, something that the community wants and fuel saving, all together. So look for those synergies and pick the low-hanging fruit first.

Dr Worth—I want to come back to my hobbyhorse about government involvement. A lot of what we have heard in the last period on this topic has been about what things government can do and the need for that. A lot of it comes back to market failure, that there is just not enough information for markets to operate efficiently. The point I want to make about why governments need to get involved is around the speed of change. Markets take a long time to move. It took us 17 years to move the car fleet in Australia from leaded fuel to unleaded. The price of oil has tripled in three or four years. I get a sense that people think that it will stop, but it could double in the next year or 18 months. That is a real reason for governments to get involved, to look at demand management as the simplest and cheapest way of cutting fuel use.

CHAIR—We will go around the room now with concluding statements. I am going to be really tough: you have a minute, no more. That is it, because I am watching the clock—and if you can say it in less than that, that would be good. What is the key thing you would like us to go away from this hearing with today?

Prof. Harries—Underlying everything I have said is the need for us to get information to do research to be able to manage the uncertainty and, as David Worth has said, the problems. Markets do not happen overnight. You have got to actually help the system happen. What we are on about here is trying to make a smooth transition to alternative markets and alternative ways of doing things—and to do that we need information.

Mr Rice—Grab some inspiration. Govern for sustainability. Why else would you govern?

Mr Robinson—It is highly probable, as people have discussed, that there are lots of things we can do to adapt, particularly if we start thinking in advance. A lot of them are very positive for health and the economy. I would like to congratulate the Senate for starting the process. It is an enormous quantum leap in Australia. We should all be trying, particularly in the opportunity with the Senate, to engage the community and decision makers about peak oil.

Dr Bowran—I would like to see appropriate sectoral strategies so that you have actually got a framework to know which parts are going to go forward with particular types of innovations.

Mr Beveridge—First of all we need a national strategy—and that is where the government can play a really crucial part—but one that can be implemented locally, which is key. I see the government as a catalyst for change. It is clear today that we have got a lot of passion from the stakeholders, which is fantastic. We all ought to be congratulated for providing that passion, which is really good. That should be harnessed. We really need to take decisive action because the clock is ticking.

Mr Fleay—The central theme of your report should be issues I have been hammering about engagement of people, providing leadership and participation and avoiding top-down management approaches. That approach, which has shown some benefit here locally—but it is more a question of what it can potentially become than what it has been so far—is the key to pulling together all the points that people have made and being able to engage with people and to get change. If you can get it to a certain point, positive feedback will take place and it will gain its momentum.

Mr Head—I have a shameless plug. On 10 to 13 September this year the Western Australian government is hosting the Alternative Transport Energies Conference. If our senator friends would like to join us at that, that in itself would send a clear signal to all of the industry people and the community people coming along that this issue is on the agenda. It is a relatively painless move which can have a direct effect on what options we have before us.

Mr Woolerson—I would like to see leadership, with the federal government being able to make the hard decisions with the input of all stakeholders. I would like the federal government to start using different tools that they have access to to steer us towards the way we should be going—that is, looking at the short term and medium term for alternative fuels and going towards the next step of getting a safe future fuel.

Mr Ireson—Just to stay on the short to medium term for a second: we have a unique opportunity in Australia. We have a position where the major transport fleets, major organisations like Wesfarmers and a number of small companies are willing to work together to create an alternative gas or fuel solution for heavy vehicle transport to displace 20 per cent of diesel. All we are looking for from government right now is some certainty and some support around infrastructure development. Then we will have a solution for not only environmental purposes but also sustainability in terms of fuel supply in that short to medium term. Let us turn this into something really positive that is a real turning point so Australia can be used as a showcase. Perhaps we can have time for the committees, the discussions, the review panels, state and federal interaction and all of those other great things. There is a very small window where that investment could become available if the government is prepared to get in and commit.

Mr Upton—I would say, like others, that it is important to do get the information and do the research, to determine what is practical—you have to be pragmatic about these things—and to convince the public. Work with the credible stakeholders that can help you to convince the public what the real issues are and how we can all work together to solve those.

Dr Bennett—I would like to go back to a point that Brian Fleay made: agriculture these days is a process of converting oil to food. Some of the modelling activity by the department of agriculture indicates that in the eastern wheat belt, where there is a significant energy input, it is very likely that, as oil prices rise and climate change proceeds, there will be a process of overshoot and collapse, and that might be the case with a number of other parts of the economy. If you think that, on a world basis, the fact that the use of oil in agriculture has probably allowed the increase of the world population to go from two billion to six billion, then the prospect for the world human population as a consequence of what we are facing is dire.

Mr Rosser—I think the climate is right at the moment for recognition of the cost of carbon. The community is with us on this. I do not think there is a need for extensive further consultation. We know it works. We really need to create the pool for those markets, and to expect it to happen in a vacuum is to go nowhere. There is a need at the moment to shift our tax base to recognise the importance of energy, and it can all be done in a revenue neutral fashion by just shifting away from income tax. There is no pain.

Dr Worth—I thank the Senate for having this inquiry. I think it is one of the few governments around the world that has a focus on this issue at the moment. I would like the inquiry to think about the people who are not around the table today and who have not made submissions—low-

income people living in the outer suburbs of the major cities without good access to public transport; rural communities, once again, who rely on diesel and have rural industries that rely on those oil inputs; and Indigenous communities, who do not have a voice at all but often rely on diesel for power as well as transport. The final point is: things could change for the worse even more rapidly, given a war in Iran, Nigeria going into civil war or whatever. The supply and demand is so evenly balanced that it would not take much to see oil go to over $100 a barrel in six or 12 months.

CHAIR—Do any of the senators have any final questions?

Senator NASH—I would just like to comment on how impressive it is to have such a group of people in one room contributing to this. It has been a very informative 2½ hours, certainly from my point of view. In a lot of ways, at the moment for us it is a bit like trying to put all the pieces of a jigsaw together. To have you all in one room for this length of time and being prepared to contribute has been great. Thank you very much.

Senator MILNE—I am most appreciative. There is a lot more that we need to take up from here, but the specific initiatives are really valuable to us in terms of framing recommendations and where to go. I take the last point—and that was where we were going to go on this reducing transport fuel demand, the issue of the outer suburb and the low-income commuter. It is huge. I take your point about congestion and rolling this into the House of Representatives committee recommendations on cities and sustainability and so on. There are synergies and we will take them on board. It was great. Thank you very much.

Senator STERLE—I think you stole my thunder, Christine, but, Mr Rice, you and I have a lot more in common than we probably think. The most important thing is sustainability. It was one of my favourite words in the late nineties. Your input has been fantastic for us all, but there is still a lot more reading to do. This issue crosses over just about every portfolio in government. It is not just a case of the government having to give us some incentives. We have to provide safety on our public transport. It goes all the way through infrastructure, better roads—and not better roads so we can have bigger and longer trucks and more of them jamming up the highways. So this is really just scratching the surface. Someone said that someone has to have the guts to go forward. Government does have to have the guts to make the hard decisions, and, Tim, it is not very often that PTA and I have been on the same side lately, but that is wonderful. I think we really have a lot more work to do. I think the importance of it has to be driven by the experts. We are not the experts at the front.

Mr Rice—The Welsh government is finding that sustainability is the glue that is keeping governments together.

CHAIR—Thank you to everybody for coming. It was a bit of an experiment doing it this way. I have learned heaps, but we have just scratched the surface. We will see many of you again tomorrow. Hopefully you will have been stimulated to think of other things that you want to say to us tomorrow, particularly what you think we should be recommending in our report—what we should be saying to government as a Senate committee. We would welcome those comments tomorrow. Thank you for giving up so much of your valuable time.

Committee adjourned at 6.00 pm