

FUTURE MELBOURNE

Future Melbourne Forum 3: Meeting the Environmental Shocks

Date: Wednesday 27th June 2007

Time: 6:00pm - 7:30pm

Venue: Bio 21 Theatre, 30 Flemington Rd Parkville

MODERATOR'S WELCOME ADDRESS AND PREFACE – Dr Gael Jennings

Gael Jennings

I think we might get started if you'd like to come in; sit down at the front if you want to be able to talk easily. Hello and welcome. I think you're extremely brave and full of Melburnian fortitude to come out on this typically Melbourne night, Melbourne winter night. My name is Gael Jennings and I'm the moderator for this series of public forums. As a start I'd like to acknowledge the traditional owners of the land upon which we're meeting, the Kulin Nation. We know it as Melbourne of course, it's European name, and for us it's a great place of cultural and sporting and celebratory events and so it was for the Kulin Nation so we acknowledge that they are the traditional owners and we are on their land.

Now tonight is the third of five public forums that are about the future of our beautiful city. You probably know that the City of Melbourne has a ten-year plan for the city of Melbourne and the current plan is called *City Plan 2010* and it's a plan for all aspects of life in Melbourne and it's going to be replaced, it's due for replacement and this is the new plan, Future Melbourne is the new plan and that will take us up to 2020. And so the City of Melbourne and its project partners, including the University of Melbourne, have designed this process whereby all sectors of the community can engage in getting together what they want, what you all want Melbourne to be like in 2020.

And it's a very democratic, open-ended consultative process that started with the first of these forums and it will end when the ink's drying on the plans going towards, going to Council at the end of next year, towards the end of next year.

Can you just put your hands up if you've been to the other forums? Okay, so not that many of you so it's important that I give you this little bit of background. So this has been designed to be a process whereby altogether one way or the other you can have a conversation about the kind of Melbourne you want. And the way it's been designed is that the public forums are the planks where you can actually physically come and you

can hear experts in the particular areas speak briefly and then you can engage in conversation with them or make comments or just listen to other people, build on that knowledge and then it's sort of—there's also the interactive webpage which is really the main portal if you like. It's the main place where you can log on and you can meet other people, you can talk about all the things that are being said, you can bring up new things, you can hear all of the forums, they're all recorded, they'll all be on there.

So there'll be a lot of momentum and on there there's something called an *e-Village*. It's just as simple as logging onto that and following the prompts and you can see that the various bits that have been brought up by members of the public, people from Melbourne, will be recorded there and you can have a conversation by typing in with them; it's like writing letters, lots of letters. And then as the process goes on—that's to sort of get it going—as the process goes on the team for Future Melbourne will get the main things, the key elements and start posting this as, this is further down the track, so that there's going to be some discussion about those. And then we'll get towards some kind of resolution later.

So that's the physical part of discussing and so on and the actual process in brief is we've discussed Melbourne's values and cultural identity; that was the first forum. Of course that discussion is ongoing online. We talked last week about sustaining Melbourne's prosperity and that was a broad definition that we looked at, not just the dollars. Tonight we're looking at how we're going to meet the environmental shocks. Next week it's going to be looking at social inclusion and access and then the last public forum will be how we're going to build the city of the future, not just physically of course but in all the ways that we've just discussed.

And the idea is that when you want to raise issues or you've got important points then they're all raised there and then we're working towards whittling down into visions and scenarios that people can then come to some kind of agreement on, and there's negotiation about which are going to be the major ones that will be brought forward. And when there's negotiation then there'll be agreement and then the agreed major visions and strategies are the ones that will go into the plan for Council. So I hope that wasn't too long-winded but there's no point in having this kind of engagement if you don't know what to do with it so I hope that made it a little bit clear.

The process for tonight though is that we've got four people who know a lot about environmental shocks and how to meet them. They're going to speak for five minutes each and then through me it's your chance to say whatever you want, as long as it's not rude, and engage them and draw on their expertise and so on so that we can progress this a whole lot further.

So let's start with our first speaker tonight, is Professor Peter Newman. He's Professor of City Policy and Director of the Institute for Sustainability and Technology Policy at Murdoch University—sorry, we've brought you over haven't we. In 2006/07 he was in the United States on a Fulbright Scholarship at the University of Virginia at Charlottesville,

examining innovations in sustainability in United States cities, regions and states. And this is based on comparative work he did in Western Australia before that at a political level when he worked with the Premier of Western Australia from 2001-2004 to develop that State's sustainability strategy and that was the first State in the world to do so and it covered 42 different areas of government. So we've certainly got the horse's mouth here tonight. In 2004/05 Peter was the New South Wales Sustainability Commissioner assisting with the production of the metropolitan strategy. So please welcome Professor Peter Newman.

You can sit there if you like and just talk ...

PANELLIST PRESENTATION: Speaker 1: Professor Peter Newman, Director, Institute for Sustainability and Technology Policy

Peter Newman

[...]

Gael Jennings

Oh okay, whatever you want to do.

Peter Newman

Okay. Yeah thanks. Five minutes, I'm going to talk about peak oil as a shock. It's interesting, it's a shock to me to be able to talk about peak oil; I was in this building just a few weeks ago, asked by the Bio21 people to give a seminar on peak oil and two other conferences today and now this third one tonight all on peak oil, it's all coming together. Now I've been wanting to talk about peak oil for 30 years so I'm very pleased.

The Fulbright was a shock because the world changed in that period when I was over there; it was amazing to see the Al Gore effect and the IPCC and the Stern all coming together at a time—you were very aware of it here in Australia but it was right at election time in America so an extraordinary coming together. And the hard right climate sceptics have just been swept away. There was one guy called Pombo who was from the northern California, he was the Chair of the Natural Resources Committee and his main claim to fame was he wanted to get rid of the Endangered Species Act in order to show that climate change was a hoax. And no one would take him on for the election because he was in an unlosable seat but a young person, 28-year old renewable energy nerd, said *I'll take him on*. He got no funding support from the Democrats and he essentially couldn't give a public speech; they used to rush him away every time because he was just impossible to understand. But he had thousands of young people working for him at street level, knocking on doors and he knocked this guy off: 26 per cent swing and Pombo was beaten.

So the world has definitely changed and the word is out to politicians unless I can show that I'm leading in this area I'm out. Now that, it's time isn't it. And clearly the community and the public sector have to come up with options, they have to say what we want. So it's important that we get that clear.

The peak oil story is part of this in the sense that if we respond to climate change in the

transport area we're clearly going to be doing most of what we need to do for peak oil but it's not everything because peak oil has a big impact on our cities immediately. We are going through the peak in production of world oil at the moment and within, by the end of this decade we'll be sliding down at around five per cent per year in the availability of gasoline. Now if you can structure in a society that can cope with that then that's what we have to come up with and that's also the agenda we have to do anyway for climate change. But it is something we're going to have to do and if we don't do it then the wealthy will be fine, they'll, whatever it costs they'll pay for it, but the poor will struggle. And already we're seeing that happen; the outer suburbs of a place like Melbourne consumes about 50 gigajoules per person, the inner suburbs about 20 and the City of Melbourne, five gigajoules per person. So you'll do fine if you live around here, no problem, but out there we've got two thirds of the city that's going to really struggle so we've got to be very serious about the options.

Now the options I presented today were TOD, POD and GOD. TOD is transit-oriented development, it's where you build around rail stations, it's the basis of Melbourne 2030 but you've got to actually do it, not just talk about it and have public meetings about whether to have three storeys or four storeys. It's got to be serious density within walking distance of train stations, don't worry about the rest of the suburbs just get it there. But you've also got to extend rail and there are three or four lines that are being planned, still not built, and I think you're going to be the last city in the world that actually builds a new rail line, certainly the last in Australia: Brisbane's building three new lines; Sydney's got two; Perth is just finishing our \$2 billion rail system and even Adelaide's extending rail. But you just can't seem to do it here.

The second thing is POD, which is pedestrian-oriented development. You've got to make it really attractive on the ground for walking and cycling because that's the way centres work and increasingly that means we've got to take road space away from cars and make it available for people.

And the third thing is GOD, which is green-oriented development. There are so many buildings that can be—every new building really from here on has got to be solar, it's got to be based on an approach which is saving CO2 and oil. And if we can do that we would go a certain of the way but we've also got to develop bioregional localism strategies, ways in which we can get the local economy to work better, and that can occur in the countryside as well as the city. To do that you've got to have local peak oil strategies; there's only about 14 cities in the world I've found that have local peak oil strategies. Melbourne, with all this amazing interest suddenly has got to start doing them. You've got about 70 climate change action groups that have been set up here since the Al Gore thing started; peak oil needs to be added to that and come up with bioregional approaches to that, then you'll be getting somewhere. Thank you.

[applause]

Gael Jennings Our next speaker is Graham Tupper. He's the Canberra-based National Liaison Officer

for the Australian Conservation Foundation. Graham joined ACF in 2005 after serving for 15 years in the international aid and development fields. His main role for the ACF is to manage representations to the Federal Government and to political parties. This includes promotion of the ACF's National Policy for a Sustainable Australia covering climate change, water and healthy rivers. Also sustainable cities and measures to protect our great natural areas including forests and marine parks. Graham holds a Bachelor of Science degree in Ecology and postgraduate qualifications in Environmental Studies so please welcome Graham Tupper. Thank you.

Graham Tupper **PANELLIST PRESENTATION: Speaker 2: Graham Tupper, National Liaison Officer, Australian Conservation Foundation**

I think I'll stay seated so you can see the slides behind me. I want to leave transport to my colleagues on the panel here who know much more about it than I do but I want to start by saying we are on the bus, the bus to potential catastrophe where there is a number of environmental shocks in sight from climate change: water availability for example, increase in intensity and frequency of fires which you'll know well about in Victoria. But also we're on the bus to economic shocks and Sir Nicholas Stern pointed that out in quite stark terms last year.

Greenhouse gas emissions in Australia are rising; by the Government's own estimates, they would have risen 27 per cent by 2020. The rate of increase in greenhouse gas emissions is actually increasing. I was at a seminar six weeks ago at the CSIRO where there were some scientists presenting on the latest findings that science, that's been done since the last IPCC Report, the International Panel on Climate Change. And they were looking at the feedback mechanisms from human forced climate change with the natural systems, the thawing of the tundra and also some of the great headland forests of Indonesia. And it was truly concerning that the rate of increase of CO2 emissions is increasing.

So we're on this bus and we can see the road running out into a goat track but unfortunately the bus drivers, or the bus driver, is pressing harder on, accelerating so we're going even faster. That's the bad news. The good news is, hopefully up on the slide behind me, is that it's possible to stop and reverse this growth in emissions and it's possible to do it affordably.

Energy smart - reinventing the home and the workplace



Image Source: Greenpeace

- **Set world's best practice energy performance standards**
- **Energy smart retrofits of entire housing stock over 20 years**
- **Energy efficiency investments for 5,000 biggest energy use businesses in Australia**
- **Invest in public transport**

A year ago the Conservation Foundation along with six large businesses in Australia—Westpac, IAG, Visy, Swiss Re, BP Australia—released a report on early action on climate change being affordable and we had commissioned Allen Consulting to do analysis of what would be the impact on the Australian economy of a 60 per cent reduction in greenhouse gas emissions and it was a very, very small reduction in annual growth rate. So the good news is we can do it affordably.

How do we do that? A number of measures are required and I won't go into all of those, I want to focus particularly on energy efficiency. Everyone agrees that energy efficiency is a vital and urgent step, and particularly in cities we need to transform our homes, our appliances, our cars, our businesses. On the slide behind me you'll see a rather futuristic looking scene, a photograph of perhaps a building of the future. When I sent this slide down last week I had second thoughts about it; I thought I really should have shown my aunt's weatherboard house in North Fitzroy because the sorts of changes that we really are talking about which would be most cost effective are things like installing gas boosted solar hot water services, installing insulation and so on. It's less sexy but it's doable now and it's affordable and it's very cost effective.

The two things we have to address in this transformation are the barriers of upfront capital cost and also the barrier of information, a hassle-free service to be able to do these things.

This graph behind me shows some of the work that we're about to release in a few weeks time that's been commissioned jointly with ACOSS and with CHOICE, the Australian Consumers Association. And what it shows is the net savings that could be gained from a very aggressive rollout of energy efficiency investments, particularly in our cities. To take an example which the Government has announced on lighting, for a small

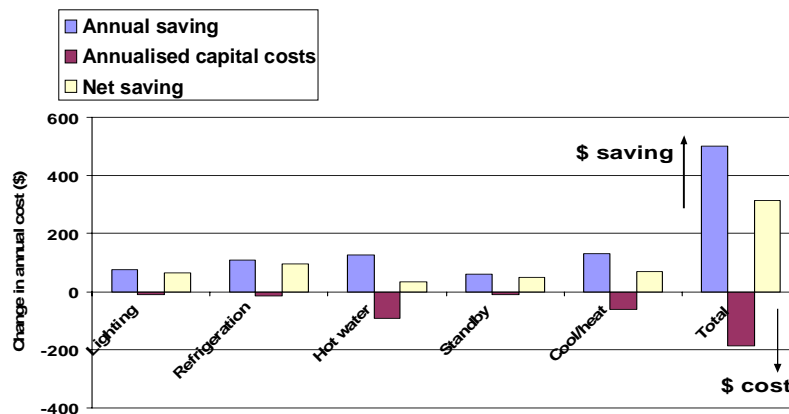
marginal increase in cost of a compact fluoro light over an incandescent light you get a huge net saving. The same applies with fridges. Hot water, it's still a net saving but not so much. Standby power, again, is another one that the Government has moved on with a one-watt standard to come in in a few years time. Cooling and heating is subject to the place you're living and the sorts of technology that are being applied but the bottom line is that for, if you take the additional price you have to pay in the capital cost of an appliance or heating or hot water or so on and annualise it over the life of that product you can generate considerable net savings.

And the reason we wanted to highlight that is that we need to make a transformational shift in our cities and we need to do it most importantly in an equitable way because the upfront barriers of capital for lower income groups are considerable so we need to address that. And we need to address it for owner-occupier homes, particularly lower income groups on the edges of the city, we need to address at the rental market and for our public housing.

Next slide.



Investing in energy smart options



Needs policies to reduce the up-front cost and hassle barriers

I want to conclude with this image and two points. The first point is a bit counter-intuitive for most people and that is that if we take early and strong action such as a strong and aggressive program in energy efficiency it's actually less costly for household budgets. A lot of people think that if you—and I think, assuming also I think that this would include the Prime Minister—that if you start very slow and cautious you get a smoother and gentler transition into our energy future. In fact the opposite is true: if you take early, strong action on energy efficiency combined with strong action on a carbon price you can end up, according to lots of very reputable modelling, with lower household energy costs in the medium term. So you get a good environmental outcome and you get a good

economic outcome for households.

The second point to finish on is that to achieve all this you'll need foresight. We need to be able to get on that bus and look down the track a little further and one of the things that I would assume with city planners is that when you build a huge building or a university or a transport infrastructure that you need to consider the life of that infrastructure over a period of 30, 40, 50 years or more. I want to make a very strong case that the problem we have in public policy in Australia at the moment is the same kind of long-term thinking is not there when it comes to energy policy issues, when it comes to investments in energy efficiency, setting standards and so on; we need to combine those ways of thinking.

And ACF's proposal is that the Federal Government—this is what we're including in our election policy asks to all the parties for this federal election—is that this nation embark on a very ambitious program to retrofit the energy efficiency products, lowering those barriers of capital cost and the hassle factor, retrofit five per cent of housing per year. So over a 20-year lifetime we have truly transformed the nature of our living spaces in the city. Thank you.

[applause]

Gael Jennings

Some nice action plans, we always want an action plan. Our next speaker is Dr Jago Dodson. He's a Research Fellow in the Urban Research Program at Griffith University. Jago's early research examined public housing policy in Australia and New Zealand. In recent years his work has sought to provide critical accounts of the links between housing systems, transport and urban planning. His most recent research has investigated the exposure of Australian cities to petroleum energy shocks and how the socioeconomic vulnerability to fuel prices, fuel price increases and broader economic impacts is distributed in Australian cities. This research has led to the development of the rather wrongly-named *Vampire Index* which is Vulnerability Assessment for Mortgage, Petrol and Inflation Risks and Expenditure, which is basically, it measures the socioeconomic impact of those changes on people. He's currently working on improving methods for assessing transport disadvantage in Australian cities so please welcome Dr Jago Dodson.

Jago Dodson

PANELLIST PRESENTATION: Speaker 3: Dr Jago Dodson, Research Fellow, Griffith University

Thank you Gael. Now we haven't really had a very detailed discussion about exactly what peak oil is so I thought I'd start a bit with that. For those of you who aren't familiar with this term, who haven't been going to these various workshops that have been on in recent days in Melbourne, peak oil is effectively the proposition that there's a finite global quantum of petroleum energy in the ground. And the peak oil proposition suggests that we're approaching the point that, about the halfway point in our consumption of all that

petroleum and that, given the way that oil wells and reservoirs operate, the oil that's left in the ground is much harder and difficult to extract and that will constrain the rate at which we're able to consume it. So in terms of global oil production, our production's been expanding for the last hundred years but that difficulty in extracting the remaining oil is going to, we're going to reach a point of production and then we're going to go into a production decline.

Now as Peter said, he's been studying this issue for 30 years but it's only in the last few years that it's actually become an issue that public policy makers and the broader public has actually started to contemplate. Initially it was very much a minority view that global petroleum supplies might actually be finite and that technology might not necessarily continue to supply us with increasing amounts of cheap and abundant petroleum. But there's now an increasing recognition that this is a serious issue that the world is going to deal with, have to deal with. And in part it's been stimulated by the rise in fuel prices that we've seen in recent years. I mean back in early 2004 the global price of a barrel of oil was around about USD\$25 a barrel, it's now sitting up around USD\$65 a barrel and there's been plenty of price spikes well above that up into the seventies, and these are record highs that we haven't seen since the supply shocks of the 1970's.

This has in turn stimulated more and more interest in the issue and governments are increasingly realising that this is a problem that we need to deal with. The US Auditor General—they call it the Government Accountability Office but it's effectively the Federal Auditor General in the US—came out with a report earlier in the year that said that peak oil is a serious issue and that the majority of analyses that are being done of it point to a peak in global oil production by 2020. The US Department of Energy has produced a couple of reports that have agreed with this point of view and the US Military has also started contemplating what peak oil might imply for them and they're the world's largest institutional user of petroleum, the US Military. They're actually starting to question how they're going to fight wars in the future, some of them probably over the remaining reserves of petroleum with declining supplies.

In Australia, the Australian Senate produced a report earlier in the year; they undertook an inquiry into energy security and alternative fuel supplies. They were a bit cautious about this issue because they wanted to come to a bipartisan consensus view and there's some party political implications once you start to make conclusions about peak oil, but they concluded that yes, peak oil was a valid theory and it's going to happen. It may not happen—they didn't agree on a date but they said it's going to happen effectively by at least 2030 and that we need to start planning for it now.

At the local government level, as Peter said, some cities around the world have started preparing peak oil strategies. I live in Brisbane and the Brisbane City Council actually undertook a peak oil, they prepared a peak oil and climate change taskforce—they see these issues as linked—and that report came out earlier in the year and that produced a whole raft of recommendations about the way that Brisbane city, which is a much larger

local government area than Melbourne City Council but it still contains the CBD area of Brisbane, that taskforce argued that Brisbane drastically needs to start reducing its dependence on oil. And they suggested a 50 per cent reduction in petroleum use within that city by 2020, which is a pretty significant reduction especially when you look at the kind of consumption projections that have been done by governments. In south-east Queensland, the recent regional plan has been prepared on the basis of an expectation of a 50 per cent growth in private motor vehicle use by 2026. So there's a bit of a problem in terms of needing to reduce one's petroleum consumption at a point where one's expecting one's demand to continue increasing. Now I don't think we've quite got to the point where we're starting to change our demand predictions on the basis of declining supply and increasing fuel prices.

The fuel prices we have seen indicate to some extent the kind of future that lies ahead of us of an increasingly insecure petroleum world and rising fuel prices. One of the main things that we've seen has been a shift to public transport. In Brisbane in I think it was May, there was 850 bus services that left people at the bus stop because the buses were so crowded they couldn't get on. In Melbourne you've got similar problems with your trams and your trains. The strain on the public transport systems is now extreme in Australian cities and it's already causing political problems for governments in dealing with it.

So in responding to peak oil—and this was a conclusion of the seminar we had, that ECOSS ran today that I participated in, and Peter was there and Graham as well, that, an almost a step-wise improvement in public transport capacity and service quality was necessary, not so much in the inner cities and central cities but particularly in the outer suburbs. But this also has implications for the central city as well because if you've got increased public transport capacity you've got to put it somewhere, you've got to actually provide the road space for trams and buses so that they can easily access the central city.

And I think the conclusion regarding those demand shifts also apply to private motor vehicle travel. I think we'll continue to see growth in private motor vehicle travel in the near future but if peak oil occurs then I think the outlook for private motor vehicle use is that it's going to start to decline. For a central city zone, like Melbourne City Council operates, this will imply reduced demand for road space by private motor vehicles and, if there's an increasing shift to public transport, it will probably also mean reduced demand for parking. So that provides a number of opportunities for the Council to start to think creatively about how it uses potentially reduced space demands for parking and roads.

There's also important socio-economic dimensions to this. The research that I've done that Gael mentioned in the introduction demonstrates that what we've termed *oil vulnerability*, which is the socioeconomic pressures that households will face in terms of rising fuel prices, is very unevenly distributed in Australian cities. Central city areas with high-quality public transport and wealthy populations tend to fair, you know, reasonably

well or relatively well in the analysis that we've done compared to outer suburban households who are generally of lower income with poorer access to public transport and therefore have fewer alternatives to the motor vehicles upon which they're dependent and the cost of which will rise under a peak oil scenario. So I'm not sure how the Melbourne City Council would want to conceive this, but there is potentially an issue in terms of the Melbourne city area becoming a zone of wealth and sort of ecological sustainability and vitality in the face of peak oil, yet facing a hinterland far beyond its boundaries in which the socioeconomic prospects for the population in that area are much less certain.

It's apparent that there's going to be greater demand on infrastructure and therefore there'll be greater demand on council budgets to improve facilities for walking, cycling, access to trams and buses within the city. And that implies that there's going to be an investment demand on the budget and there's also going to be a management demand in terms of developing good institutional structures and planning systems that are capable of responding to these demands when they arise and in an efficient and co-ordinated way.

The other dimension of the oil vulnerability question is if private motor vehicle demand is likely to decline then the need for large road megaprojects is potentially far less important or significant than it previously was under the, when we were in the age of cheap and abundant petroleum. I understand that Melbourne City Council is currently supporting a tunnel under the inner city of Melbourne and I understand the price that's been attached to that is around \$10 billion. Now if you take a serious view of peak oil, and I think one needs to because the implications are pretty severe, if you've got \$10 billion to spend, under a peak oil scenario building a tunnel is not the way that you go around spending that money. You'd be investing it in your public transport, in your walking and cycling facilities and once you've done that you'd probably have a fair amount left over that you could put into the greening of your buildings and various other policies to improve the actual environmental sustainability of your city. Spending money on road tunnels basically makes the problem worse but it also uses up valuable funds that should be used for mitigation and adaptation strategies.

In terms of densification, I take a slightly more critical view on this issue than Peter. I'm concerned that densification will not occur at a sufficiently high rate throughout Melbourne that it will actually provide the perceived changes in population density that will support some of the investments in public transport infrastructure that are necessary under some of these assumptions that density is important for public transport. The way densification has happened in Melbourne to date is that it's largely been left to the private sector to undertake with some very light regulation through the planning system. That means that because the private sector is involved densification is subject to housing market cycles and investment decisions made by the private sector.

We've currently come off a housing boom: there's less demand for new housing in

Melbourne at the moment in terms of the market for apartments. That has implications for consolidation policy if you're expecting the housing market to supply that. So therefore I'm sceptical whether, given the short timeframes we have facing us in terms of the likely arrival of peak oil, whether the scale of densification that we think is necessary will actually occur within those timeframes. So expecting that to be the mechanism that protects us from the potential impacts of rising fuel prices is, I would suggest, at least uncertain.

There are also some greenhouse implications of that kind of policy. Some of the evidence suggests that very high-rise buildings actually have quite a high environmental load in terms of the embodied energy that's required to, of the energy that goes into building them and in terms of their operational energy. So there's some pretty significant questions that need to be asked about that dimension of environmental sustainability and the way that that densification process is managed.

One more minute perhaps? I'd finally say that Melbourne City Council can't deal with these issues alone, that the State Government needs to be brought onboard and in turn the Federal Government I think needs to develop a policy for Australian cities; currently it has almost no input into urban policy making. Given the importance of the central city zones of our cities for economic development and the vitality of our nation to a large extent, I think the Federal Government needs to take pretty serious account on some of these issues and start to develop policies to address it. I'll leave it there.

[applause]

Gael Jennings

Thank you Jago. The only reason I'm winding you up is because there's so much to now talk about. Our final speaker tonight is George Pappas. George is Chair of the Committee for Melbourne, Vice Chair of BioMelbourne Network, Senior Advisor of The Boston Consulting Group and Chair of the Monash Medical Research Advisory Board. Now George has a Bachelor of Economics, a First Class Honours degree from Monash University and an MBA with Distinction from the Harvard Business School. After being at Harvard he joined The Boston Consulting Group actually in Boston and then came back to Australia, started up his own management consultancy which went from strength to strength. And it was so strong it was acquired by The Boston Consulting Group and he became the Managing Partner of their Australasian offices and a member of the BCG's executive committee. His commercial experience has been developed over 30 years from strategy consulting work for some of the largest companies in the United States, Japan, Asia and Australia. And as Chair for the Committee for Melbourne, he leads a group whose members comprise the city's most influential decision makers so we're all going to lean on you George—you should never have told us this—and he's helped lead the committee's effort to support new and innovative industry development including greater access to expansion capital for high-growth businesses. He's also a Director of the Western Bulldogs Football Club and a Commodore of the Point Leo Boat Club. So please welcome George Pappas.

PANELLIST PRESENTATION: Speaker 4: George Pappas, Chair Committee for Melbourne, Vice Chairman BioMelbourne Network

George Pappas

Thank you very much. I think as you were listening to that abbreviated resume you'll probably ask yourselves what qualifications does this person have to talk about climate change issues and the answer is actually not very many. So I'm not here as an expert on climate change and certainly the experience that I bring to bear is nothing like that of my fellow panel members. I'm here as a member of the reference group for the Future Melbourne project; I'm lucky enough to be one of the 10 or 12 people who is overseeing this project. I feel it's a great privilege to have been asked to do that. I'm also here because the Committee for Melbourne has just initiated a taskforce that looks at, or that will look at the implications of climate change for the city of Melbourne and that will be our contribution to this Future Melbourne project.

So what you'll hear from me this evening actually are my personal views, they're not the views of the Committee for Melbourne nor of Future Melbourne. As I've said, I'm not an expert on climate change but my intuition tells me that there may well be more opportunities here than risks. I've been very concerned as I've listened to discussions about this issue, particularly with the policies emanating from the Federal Government, because I feel we are being bombarded by alarmist messages about the costs to the economy of emissions reduction. And like my colleague from the Australian Conservation Foundation, I believe these are greatly exaggerated. For example, we really don't have many energy intensive export industries, particularly here in Victoria, and notwithstanding the concerns about peak oil, I would point out that notwithstanding the huge increase in petrol prices the economy hasn't actually ground to a halt. And of course, as we've already heard, the economic modelling of various business groups indicates a minimal impact to GDP growth of mitigation strategies and advocates earlier rather than later action.

Indeed I see the move to a carbon constrained global economy as ushering in significant opportunities if we're prepared to take hold of them. We may well be entering another technology driven transformation of our economy which will, as with previous ones, create efficiencies, growth, more and better jobs. Indeed clean energy technologies are already significant in size: wind, solar, biofuels, geothermal and hydropower at a global market of \$74 billion a couple of years ago. Clean energy is one of the hottest commercial sectors in the world projected to quadruple in the next 10 years. And this boom could rival the dot com boom of the previous decade, you know, booms like this have their upsides and their downsides but they do produce pretty fundamental change. But if our responses are driven by policies to protect the fossil fuel industry excessively we may miss out on huge opportunities.

And they're being taken advantage of in other parts of the world: advanced generations

of clean energy technologies continue to improve; the costs are declining with mass production and deployment. Major corporate interests in these technologies include companies like GE, Siemens, BP, Goldman Sachs, Shell and Sharp, not exactly midgets. Individual cities as well as collectives such as the US Mayor's Climate Protection Agreement with 284 cities onboard, and the Clinton Large City Climate Initiative with 22 cities onboard are encouraging renewable energy take-up in large numbers of urban areas.

I'm impressed by the fact that the fastest growing energy technology in the world is grid connected solar photovoltaic cells; in 2005 the industry invested \$8 billion in new plants and equipment. Solar photovoltaics now cover more than 400,000 rooftops in Germany, Japan and the US. The simpler technology of rooftop solar collectors provide hot water to nearly 40 million households worldwide, 60 per cent of which are in China. GE has just been awarded a three-year, \$47 million program or contract from the US Department of Energy to develop low-cost solar photovoltaic technology which is part of an effort to make solar power competitive by 2015.

And these markets create opportunities for employment: in 2004 direct jobs in manufacturing, operations and maintenance were 1.7 million in the renewable sectors worldwide; 400,000 jobs in the Brazilian ethanol sector; 250,000 jobs in the Chinese solar hot water industry and 150,000 renewable energy jobs in Germany just to quote a few examples. Closer to home, I believe we have some massive opportunities that build on our unique strengths in this part of the world. For example, carbon sequestration: Victoria has a unique combination of an energy source that needs to be decarbonised, that's brown coal, adjacent to depleted oil and gas wells in Bass Strait where the carbon can be sequestered. And if you don't like carbon sequestration, you see it as a short-term mitigation approach, there are a variety of approaches that are being taken and explored to take moisture out of brown coal and they have significant money being spent on them. So these technologies could trigger billions of dollars of investment by large international companies, world leadership positions in new technology for this State and city of ours, export opportunities and high-quality jobs.

On a much smaller scale, we see organisations like Easy Being Green, who provide energy saving services to homes, businesses and schools by installing energy efficient light globes and water saving shower heads and yesterday we saw the opening of a very small service station in High Street, Prahran, which will sell only biofuel. So, now businesses respond to all of these opportunities; there are indeed innovative approaches to financing the kind of retrofit that we've been talking about or we heard about earlier. The Clinton Foundation's global Energy Efficiency Building Retrofit Program—a bit of a mouthful—brings together four multinational corporations, five global banks and 16 cities to retrofit building and reduce carbon emissions. I understand the five major banks have each committed \$1 billion each to this particular fund and it's the energy savings of between 20 and 50 per cent from the retrofits that make the program self-funding and profitable for the financiers. Melbourne is actually part of the 16 of the world cities that

are going to participate in this retrofit program.

So I see lots of opportunities; I don't know which are the best ones, I don't think you can actually decide that or have government policy picking winners but I think there are ways in which we can stimulate their development. Firstly I believe as a community we should be mandating significant emission reductions because this creates planning certainty; targets like a 60 per cent cut in greenhouse gas emissions against the 1990 baseline, by 2050 becoming what is described as the *low-norm* around the world. California I would note has an 80 per cent reduction target and I'd also point out that California is in many respects the archtypical innovation economy; we describe ourselves in Victoria occasionally as the innovation economy, well perhaps we should take a bit of a lead from California in this respect.

Secondly I also believe that energy providers should be able to set their own prices which will enable them to meet the costs of mitigating emissions. And thirdly, if we have a carbon trading scheme where the market, and not politicians or bureaucrats, set the price of carbon, we'd be much more likely to achieve the kinds of opportunities that I've been describing because in that way—and that's my fourth point—competition between suppliers will stimulate the most cost efficient technologies to maximise efficiency and at the same time as reducing costs. That's been the history of major technology shifts and there aren't a lot of reasons to believe that this one should be any different.

So my bottom line is a low-carbed future provides opportunities as well as risks. There is a suite of technology approaches, and I've only given you the tip of the iceberg, a suite of technology approaches to deal with lowering emissions and climate change. I think Melbourne is well positioned to pursue many of them if we take the kinds of actions that I described earlier. Thank you very much.

[applause]

OPEN DISCUSSION

Gael Jennings

... and you're probably wondering where the sole woman is, our speaker Cheryl Batagol who's Chair of Melbourne Water, unfortunately she's got the Melbourne flu and she's unwell so she's not here. So with the discussion, there'll be roving mics and when you put your hand up and it's coming to you, please stand up, tell us your name and if you've got any kind of affiliation and then we can go from there.

Just to briefly bring us back into the picture, we've got until 7:30, that's nearly three quarters of an hour. So Peter Newman spoke about peak oil, what's happening in the United States, how we're going to have to come up with a society that can cope with the downside of peak oil; two thirds of the city will struggle. He said there are three, there's TOD, POD and GOD, three different approaches to how we might come to terms with this and we'll need to have bioregional local economies.

Our second speaker—I won't do you in order—Jago Dodson also talked about peak oil,

he defined it for us so you've got your head around that now. He said of course there's going to be a huge strain on our public transport system which is already under strain and talked about different ways in which we can deal with that, but there's an opportunity for councils to think creatively in how they're going to deal with these things. Again said, just as Peter had, that there's going to be an uneven distribution of how people will cope with peak oil; if you're in the city you're going to do well and if you're not, it's going to be much harder. There'll be a hinterland beyond our boundaries. There'll be a huge demand for non-oil activities so there are investment and management opportunities there. He has vastly different plans for that tunnel than does our State Government. He doesn't think that Melbourne will, the densification will work because it's not going to be controlled by the City of Melbourne. And the controversial idea of bringing the Federal Government into planning for our cities, policies for Australian cities.

Graham Tupper talked about the bus analogy where we're accelerating over the cliff with this bus into environmental and economic shocks but we can stop and he had a whole range of extremely interesting and affordable ways in which to slow down that bus and to make it possible which he enumerated. And which interestingly are also on the ABC program that just started last night, *Carbon Cops*, I don't know if you're watching it but it's actually extremely practical ways in which to make all those differences in your life and in your home. And that's not just a free plug because it actually is giving this kind of advice with ways in which you don't feel as powerless, you can actually do something. But we need to have foresight when we're on this bus, with all these things we need to know where we're going down the track, Graham said.

And then George Pappas, as a representative of the reference group for Future Melbourne, also sees lots of opportunities that are being given to us with a restrained carbon economy and has lots of extremely interesting ideas and advice in terms of how we might work with business or allow business to retrofit cities, to work with new technologies and to create different competitive economies which will give us a low-carbon future.

So may I ask you, who would like to ask the first question or make the first comment? Over there on the side.

[Rosco Howler] Thank you. [Roscoe Howler], I trained as a geographer but I don't do that anymore and haven't for some years. Up to the 1980s before we got Jeff-ed we had a Board of Works in Victoria and the Board of Works used to produce flood maps for a 50/75/100 year flood, taking account of things such as storm intensity, which is going to be an issue in climate change. And that showed some scary stuff like for large areas of South Melbourne and Port Melbourne and areas of the city where stormwater would actually run backwards up into low-lying residential areas or through transport infrastructure and so on. So my question is for you guys—and I'm sorry Cheryl's not here but presumably you're across the issues of water rise through storm surge and also through downpours—do we have such maps, are they going to be in the public domain by the

end of the year to give us all time to think about what sort of issues are going to arise for not only residential areas but infrastructure under a couple of scenarios?

Gael Jennings Who'd like to take that one? Will these maps be in the public domain?

[Graham Tupper] That's Cheryl.

Gael Jennings That would be Cheryl.

Rosco Howe I mean if ...

Gael Jennings A pity we don't have her online, perhaps ...

Graham Tupper I can't answer that for Melbourne but I do want to just highlight that it's one of these things that you need to look at various impacts of climate change on cities; sea level rise is definitely a factor long-term and the fear is that we cross a tipping point of some kind, sooner probably rather than later, where the melting of the [...] icecaps and the Antarctic is beyond control if you like. But the effect of that from [what the] scientists are saying is that it'll take many decades and so on to have the kind of rises that people fear. I'm not trying to understate that, I'm just—what I would state is that the more immediate impact, you're quite correct, are storm surges and intensity of storms.

And one of the things that people don't realise, and that's one of the things I've been talking to the tourism sector, particularly in Queensland, is that the figures that IAG Insurance produce, who are one of the partners of our round table, was that once a storm gets above a certain intensity the amount of damage it causes isn't, like if it's a 10 per cent increase in intensity of over a certain wind speed, you get 40 or 50 or 60 per cent increase in damage. So what we'll start to see before some of the more catastrophic events of sea level rise, and in fact storm surges, intense storms, we'll see our insurance premiums go up and we'll see all sorts of these things. So we have to kind of keep a balance of what are the things that are more likely to come in the near term and what we need to definitely try and avoid long-term.

Gael Jennings Just as an aside with that one, I'm sure if you go on the webpage and post that query, the Future Melbourne people will make sure it's answered.

Rosco Howe I think all the same it's not unreasonable to ask for some sort of in principle undertaking that the [study] process will make this information available in a timely way, [... I would put] at the end of this year and [...]. Could we have that?

Gael Jennings Well that would be for you George.

George Pappas I can't answer on behalf of the rest of the reference group but we'll take your question onboard.

Gael Jennings And this is also the right process to do it because you get more people, you recruit more people into that issue and you're able to build it up.

Jago Dodson Might I just point out that the Brisbane City Council has actually undertaken its own flood analysis—they didn't let the water department do it—it actually undertook its own flood

analysis, partly because the Brisbane River has demonstrated a pretty semi-irregular tendency to flood and inundate sort of large areas of inner Brisbane. And they've actually undertaken a strategy of buying up properties where they have decided that the flood risk is too great to allow people to continue to occupy those zones. So I'm not sure whether that needs to be a part of Melbourne's planning but at least some consideration needs to go into that kind of thing, and not simply just the planning but actually perhaps some proactive policies to start pre-mitigating those kind of risks, not simply drawing a line on a map and once the houses have been flooded then not letting them go back there. There needs to be some proactive approach.

Gael Jennings Can I just jump in there and ask you then Jago, do you think that there are many elements of the Brisbane plan that would be very relevant to Melbourne, just very briefly?

Jago Dodson Well this wasn't actually done, this Brisbane scheme was done quite separate to the actual urban planning processes. It was actually done because they'd done their own analysis and gone *oops, this is pretty serious*, they needed to start addressing it as a specific standalone policy question, not simply just as part of the conventional metropolitan planning and review process. So this was a standalone sort of independently announced policy that they undertook.

Rob Hellier My name's Rob Hellier and I run a small business out in the western suburbs. I don't have any problem with any of the speakers, what they've been talking about, except for Jago. I've got big problems with what you have been speaking about. And I've also got a comment about—I wish Cheryl was here because I have a problem with Melbourne City Water's, their new plans or the Government's plans to build this desalination plant. I mean how much wasted power is that going to create or cause, or how much CO2 is that going to cause to take salt out of seawater to make it suitable for drinking?

There was two things: one is they're going to, I thought, well at least they'll have the salt, they can use that, they can sell that and they'll get money out of that but apparently they're not even going to do that. They're going to throw the salt back into the ocean so there's a waste of salt and there's a waste of power when the real problem is the last dam that was built in Melbourne was 1980, that was the Thompson Dam. That was supposed to be for a population of just over two million people. Since that time the population of Melbourne has risen to over 3.2 million, there's over a million people more here now than there was when that dam was built.

Our problem is lack of dams not—and caused by increase in the population. We've got an increase in the population of over a million people since the last dam was built so we're going to need more water. And as for droughts and climate change, sure there's climate change but this country has always had droughts, right from the time the First Fleet came here, the first fleet of people, there was 2,000 people living in Sydney Cove, they almost starved to death because there was a drought and their crops didn't grow. They had to bring food from Lord Howe Island to feed these people, our first 2,000 people in this country. So drought is very common to this country, it's nothing new, it's

something we'll always have but following a drought there is a lot of rainfall. Those are the times we need to keep that, those are the times we need to save that water. We need another dam, we need to save the water that falls, that's my first point and anyone can answer that question.

My second point for Jago is, you talk about don't build any more roads, don't build any more freeways, don't build any more tunnels, it's a waste of money. Did you ever consider the fact that when we have a decent road, and I'm on the road all the time, I run a business, when you're on the road and—I'll ask you this first question—how do I put my toolbox and my three quarters of a tonne of stock on a tram? I can't do that, I have to be in my van, I have to be on the road. So does all the other trucks and all the other businessmen. If we don't have trams—if we don't have freeways, if we don't have tunnels we're using the minor roads, what happens there? CO2 into the air.

Gael Jennings So can I take it, because you've made two points and I think they're very interesting ones and so let's now run with those because they're quite big ones, first of all Jago, what do businesspeople do who need to transport things, in your plan? What's the plan, anyone really, but Jago particularly since you're ...

Jago Dodson Well certainly, I mean I don't think Melbourne is poorly endowed in terms of road space; the problem is that it's just not managed very well. The fact is that you've got a public transport system that's underperforming in terms of its capacity to offer people who would otherwise drive a private motor vehicle with a quality of service that would actually encourage them to get out of their cars, which would take cars off the major roads that we do have and free up space for the freight traffic that of course is needed. But then we also have to take a look at the strategic question, and I'm talking about peak oil and peak oil is going to change the way transport works, if it happens within the next 10 years it's going to drastically change the way transport works and it will impact on your freight networks.

We've been talking about the way business is going to change; you will probably have to change the way that you do your business because of increasing energy security. It's not simply drawing a straight line from now into the future and saying *business as usual*; business isn't going to be as usual, it's going to be quite different. Now you might not be using big, massive trucks driving around the suburbs, you might be using much smaller trucks. There's probably going to be a diversification in the way that the freight fleet operates. There's going to be quite significant changes all throughout that system.

Rob Hellier ... there will be more and more hybrid vehicles on the road. For example, my family's considering buying a hybrid car, right ...

Jago Dodson Go for it.

Rob Hellier So that's 50 per cent electric, 50 per cent petrol.

Jago Dodson Certainly but there's ...

Gael Jennings It's a very fair point because if there are going to be different vehicles we'll still need roads, yeah.

Jago Dodson But there's a very long way before we get our entire vehicle fleet converted to hybrids; if we get a peak oil event, if we get a peak oil event within the next 10 years the amount of investment needed to convert our fleets to hybrids just won't be there. The issue is getting people onto low energy-intensive and low carbon-intensive forms of transport and you can only really do that with public transport augmented by a step-wise change in the level of investment for walking and cycling so that people don't even need to use public transport if they can walk and cycle to local activities.

Gael Jennings Can I just quickly ask you Peter, what are sort of the global plans that are coming up in some of the cities that are more advanced than us in terms of planning for a lower carbon, non-peak oil kind of future? How are other cities dealing with these issues?

Peter Newman Well they're certainly not building roads and it's really an old-fashioned approach to think that somehow that will lead to a better city. It's cargo-cult thinking and it's almost been not the basis, even before this climate change came along, it's not clever because in order to get a city to work better economically, if you build big roads they fill very, very quickly and they don't actually help the freight much because they fill with motor vehicles, with cars. And, so getting a different approach has been experimented with by a lot of cities and the better ones have found that if you invested in quality public transport, so it's actually faster than the cars, then you'll get so many more vehicles off the road; they are just so much more efficient. Then you'll have your, so much more space on the road for you to do your work and, because you don't have an option and you'll definitely need that hybrid vehicle and possibly some other fuel will go in it as well, you'll need all of those options. But if you entirely try to facilitate the private vehicle, the city grinds to a halt and that's not a clever solution.

Other clever cities, well Perth has done it even, we actually put most of our investment into the train system in recent years and it has taken considerable traffic off the road, 100,000 cars last count. Now this is going into regions of the city that were not dense, as Jago was raising, but the density begins to follow it once you do that and that's the big advantage of doing that approach; it is a market-oriented approach. But it is a question of priorities and politics and the reality is that the motor vehicle manufacturers and the oil companies and the road lobby in general still have all the best lobbyists and still get all the money from Canberra to build these things and they have an enormous momentum. And so \$10 billion could go very, very easily in building this East-West Tunnel, it'll do nothing to solve any of these problems we're talking about.

Gael Jennings Of course I know that I've got to let you all talk but I'd like to just put it in the carpark so as to speak at the moment. One of the big things of planning is going to be bringing people who feel threatened along with you. Well Graham, do you want to say something because I mean, you know, you're obviously very agitated about this and many people are.

Graham Tupper I think we have to think outside the square on all these things. I mean we make assumptions about one size fits all or we make assumptions about a shift in policy which will disadvantage some. One of the concepts that I think is very important for the future is fit for purpose. It applies in your questions, to both of them actually, to water, we have to move beyond a potable water that you use to wash the car—or you can't wash the car with it, can you, in Melbourne at the moment—or for gardening, you know, putting on the garden. Fit for purpose water, we have to manage water in new and different ways.

Our view in the ACF is that expensive energy intensive desalination is your last option. It's obviously if you're a political leader and the population expects you to provide water, rain or not, you feel an obligation to be able to do that otherwise you're out of office. But I think there are much smarter long-term ways to address that including creating virtual dams with rainwater tanks and there's a, we did a study to show that 60-70 per cent of housing in Melbourne is suitable for that. But that's not the only solution either; it's also on a neighbourhood scale, recycling, greywater reuse and so on. So fit for purpose there and on transport, fit for purpose.

I think if I was in your shoes I would be getting small business people together to say *we want a transport policy that gives us more room on the road to be more efficient businesses*. And the way that we achieve that is to ensure that, for example, there are dedicated fast-track tram lanes and bus lanes and so if you're sitting in a queue, one person per car, and you're watching this thing whiz past you're going to get a very clear message one morning that that's probably a better option. You get off the road, the businessperson that needs to be on the road has more room to move, more space, there's more [...] between jobs. So we have to think about those things definitely.

Gael Jennings Okay, I think we'll move onto another question now.

George Pappas Another comment ... sorry, another comment.

Gael Jennings Yeah, sure George, yes.

George Pappas I don't know if there's anyone here from the State Government but I sort of feel compelled. Committee for Melbourne is an apolitical organisation so I don't have a particular mandate to do this but if you think back to the transport plan that was released a year ago, there was \$10 billion of spending that was identified there. And that involved triplification of the Dandenong to Caulfield line, so a significant removal of a bottleneck in that public transport system. It involved investment in new buses, the orbital bus network that makes the radial train lines actually work a bit better. And it involved investment in new trams. I think the only major road investment from memory was the widening of the Monash Freeway.

So I think it's a bit unfair to say that transport policy is all about building roads, it's not. I mean have a look at where the money is being spent and there is a balance between public transport and roads. Now, you know, you can argue about whether it's the right balance or whatever—the other thing I'd like to point out is this East-West link that we

have talked about, it's not a, the tunnel is not a fait accompli, there is a lot of controversy about it. There's a lot of discussion about whether we need one at all. There's an issue as to how much public transport should be involved in that crossing. That's why there is a fairly expensive, detailed and long inquiry that is being undertaken by Sir Rod Eddington to have a look at these kind of issues. And I think that's the sort of process we ought to go through and whoever has views in terms of making submissions to that inquiry, as we have at the Committee for Melbourne, ought to do so.

Gael Jennings Thank you. Yes, here.

Donald Coventry Donald Coventry, I'm from the Association and Study of Peak Oil and Gas. It seems very much that we're envisaging, well there's two futures: the one we'd like to envisage for ourselves and probably the one we'll get. And I think we need to develop a greater sophistication in terms of thinking about the relationship of energy technology and culture but Roger [Bastec] who we've been touring and poking in front of State ministers talks about peak being, he mentioned, last night possibly as close as 20 months away. We're looking, you know, we're looking at fields like Cantarell, the third-largest, depleting at about 25 per cent per annum at the moment. Peter you mentioned five per cent depletion as a possibility and I think it may be higher. I was just wondering if you could give us a greater feel for what you think that actually means in economic terms because I really do think we're, as [...] say, we want people to talk tough but we want weaker actions because we like affluence.

Peter Newman Well I'm very much with George on this one, that the more immediate action you take up front—or was it you Graham, who talked about the quick action against the—that's yours, okay. But they were pretty much the same approach, I think you agreed, yeah. If you take the action now you'll get much better economic outcomes because if we're taking it quietly and slowly it's going to catch up to us very quickly and we won't be ready. I can imagine that there will be all kinds of collapses of financial institutions who are based around the continued expansion of what is in terms of land development and in terms of the mortgages of houses that are highly car dependent at the moment and just won't be able to continue to have people living in them. There are many ways in which you can see that happening.

It's the same that's beginning now with the insurance companies not putting, seeing that there's a genuine risk associated with coal. I think that anything that is highly oil dependent in the future is going to have that same applied to it. And we have to start oil proofing the city so that we can make transitions and have options available to us. If we don't have those options then it just starts to unravel rather quickly and I can see all kinds of scenarios like that. I think the [peakers'] websites are made up of people who can actually see that, they can see what can really unravel very quickly and when you read the kind of scenarios they are talking about, they're not so incredible. I personally don't like to take that line because I think we don't do serious policy based on fear; it's much better to say *What would be a much better future for us? What is the hopeful future?*

And you'd want to do this anyway, I was just thinking about this with Jago, and the planning around rivers.

You see 50 years ago we started setting aside all the foreshore areas in Perth because it was good planning to do that; you just don't have foreshore areas of rivers and beaches in private ownership, that should be public. And it was done for good planning reasons. We've now got nearly 90 per cent of all the river foreshores in public ownership. Suddenly it's good sense to do it for climate change because this is the area that floods and it's estuarine so it's coming upriver with storm surges. It makes sense to have done it but, you know, we fortunately had it done. And in many ways a lot of this is just good planning, good sensible planning, having other options and having good public transport and sensible distribution of land uses so local services are available. Planners have been talking about this for years, now we have to do it.

Gael Jennings A question up there.

Michael Isakson Michael Isakson from Ballard Research and my particular question is about the growth of the transport, total of cars. Assuming that there will be some decline in motorised transport growth because of people walking and doing other healthy ways of doing their business, nevertheless I suppose it's expected there will still be some [cars] which means eventually the total cars will double and it might be in 30 years or 50 years, and it may double again in 100 years. If society didn't want roads to grow and it became politically possible to say *okay, roads will congest at the busiest times but there's good public transport and that should be acceptable*, and supposing it was possible by that to have no road growth, that the transport on the road in 100 years is about the same level as today and all the extra was taken on public transport, roughly speaking, doing the arithmetic, this could be between 10 times and 30 times the amount of public transport [...]. The question is how would the transport network ever be able to cope or even think about such levels of transport?

Peter Newman I can answer that one because that's some research we've actually done. There's a thing called *transit leverage* and it's a very important concept at the moment because we're trying to see how much, if you built good public transport, how many cars would it get off the road? And we've collected data on this sort of thing over the years because what you find is that the, if a city's got 20 per cent public transport compared to one that's got one per cent, the car usage is far more than that extra 19 per cent, it's, and it's in fact about seven times as much. So the transit leverage is a very useful thing because what it means is if you build a good public transport system in a corridor that's filled with cars at the moment, you don't just get one for each passenger kilometre on that public transport, you don't just transfer one passenger kilometre from cars, you get seven times that, seven passenger kilometres off the road. And the reason is this: first of all the trains are running directly and cars go all around the place it so it takes longer to go from A to B, that's a small factor.

The second factor is that people put various journeys together so if you're going to go on

the train you go and pick up something at the shop on the way and you pick up your dry cleaning or you might use a childcare centre that's near because you can pick them up on the way home. So you combine trips.

But the third and very important factor is, if it's a reasonable service for you, you give up a car and that is found all over the place, that in those suburbs people, when you put in a good service, they give up a car and then a whole range of other journeys disappear and you walk more and you bike more and you take a local bus. And it starts to compound. And the fourth thing that happens is land use begins to focus and concentrate around that public transport service so the distance is shortened.

Now all of that builds up so that in fact as you put in this good public transport system you will find very substantial reductions in car usage and it can build quite rapidly. So you could actually see VKT, which is the vehicle kilometres travelled, in the city reversing and going backwards constantly for the next 50 years, that is entirely feasible.

Josh Floyd

Josh Floyd, my main organisation affiliations are with the National Centre for Sustainability and the Strategic Foresight Program at Swinburne University. Just a comment, and observation and a question coming out of that. Most of the focus this evening has been on the infrastructural and perhaps the resource responses to peak oil and to climate change but in particular to peak oil and that's a really important side of the equation if you like. There's another side to it and that's the identity side that our individual identities and our collective cultural identity has in fact arisen in the context of the availability of cheap and abundant oil and gas. So the observation is that the focus has been mainly on that infrastructure side and there's some really great ideas there. We've heard from the gentleman earlier who mentioned the impacts that this is likely to have on his business, for example. There's been a—the first session was looking at cultural identity, Melbourne's identity, so the question that comes from that is how are these areas going to be tied together in the planning process? How can this awareness of the environmental and resource constraints that we're living under, how can they be integrated with this question of value and identity in a way that helps to or starts to address some of those questions that are coming up about the way that people see themselves and the way that that might need to change if these sorts of changes are to be effective and to allow us to bring about a better quality of life under these constraints?

Gael Jennings

Thank you. Was that a rhetorical question or are you asking how is the Future Melbourne team going to do it?

Josh Floyd

I would be interested in how that's going to be done. If it's an unreasonable question at this point though it is a rhetorical question also and perhaps something to feed into the process as it goes forward.

Gael Jennings

Mhmm, okay thank you. Well I'll throw that to you George to start, if I may?

George Pappas

Look I think it's a very good question although it probably is a little bit premature at this stage because we're in the, through this kind of exercise we're in the fact-finding,

consultative, idea gathering stage. But again, just a personal view, I think, you know, it's very hard to actually plan for identities and values; they grow out of the sort of place that you are. And if we're going to be constrained because the cost of particular kinds of fuels and the sorts of transport systems we have that changes our lifestyle, I think an identity emerges. I actually have seen it from a different point of view because when I was doing some work with the State Government a few years ago, one of the questions I asked was why, in terms of our trams, do we not have more clearways and ways for the trams to actually move faster through bottleneck areas like for example where I live near Bridge Road in Hawthorn, if you're familiar with it. Or Swan Street in Richmond or all of those places.

[Graham Tupper] That's a question we've asked for 20 years.

George Pappas Well I'll tell you the answer I got. The answer I got was if you actually made those clearways, I mean the solution is get the cars off the streets and don't let them park there; build off-street parking and actually you'll accommodate more shoppers I think, even though I'm not a public transport expert. But the answer I got was that that kind of congested village-type atmosphere in those streets is central to the way Melbourne think about themselves so you can't touch it, you can't change it. Now we're all so wanting to have—and that was actually based on opinion surveys and research so it wasn't someone pulling it out of the air and local councils were actually terrified to do anything about it let alone fund the cost. So here we are, we're talking about more energy efficient on the one hand, more people efficient and transport efficient means of transport but we are very reluctant as a community I believe to make some of those changes that would actually expedite the process.

We had a super—sorry to harp on on this subject—we had a super tram stop put outside the building where I worked in Collins Street. I thought it was a wonderful idea and I use it quite a bit to get through the city. The retailers in Collins Street, you know, the high-end menswear and other shopkeepers hated the idea. You know why? Because they said it's going to take away two or three parking spots for their customers, you know, just imagine this in Collins Street, you know, people actually go and park so they can go and shop for an expensive present. People get into these habits and I think it actually works, I think our perceptions about how we've got to live and what we're used to get in the way of innovative solutions.

Gael Jennings Now I'm very mindful we've only got ...

George Pappas Sorry about that ...

Gael Jennings No, no, that's fine. We only got five minutes and I've got already dedicated one, two questions and I know that you two both want to say something, starting with Graham.

Graham Tupper A quick one. I think your question actually gets to a very important concept of how we make the transformation. I think it was Peter who said before, not being motivated by fear but being motivated by a positive vision and I'm very impressed with, um, David

Suzuki came to the Press Club last year and talked about the process they went through in Canada of developing sustainability within a generation vision. And what it was was taking your identity as a person, as a family, as a community from inside the home, or that space, out into public space. What sort of place would you like to live in? Is it the place where you have bike paths, pedestrian ways to the school, to a transport node?

Let's think big. What if public transport was free in Melbourne as in you didn't have to buy a ticket; what you were charged was a levy if you were in a public transport catchment, right? So you get on and off whenever you like but you had to pay for it through another mechanism so you kind of felt that this was your space, you know, you could move around without—so let's think outside that box and think about that vision, and not so much about the sort of procedural processes perhaps that go with it but this, and let's be motivated by that. And I think one of the big things that we're hearing in terms of our work and our campaign work with climate change is that people are very motivated by this for the future of their children. They do want a better place to live for their children and I think that should be pushing this along.

Peter Newman Yeah, just very quickly on the sense of place, identity, cultures, my co-author on a book that I've done on peak oil is called Tim Beatley, he's written a wonderful book called *Native to Nowhere*, which is all about how we need to identify and regain that local culture. So much of the issues that we're dealing with, I think if we leave it to big multinational corporations to fix it may not. I know George has got a great picture there that, you know, the market will look after it but I think local cultures are going to have to be important in this, and regaining local cultures. It's essentially regaining the elders who all knew about local cultures—Alan Roger is nodding there, he's an elder in our community, he, I'm sure you can remember Alan what it was like growing up when local cultures really mattered, it's not that long ago. I grew up in Upwey and we would never have dreamed of anything other than very local things there and I'm not that old. But going to migrants, going to indigenous people, going to those in the community who actually have experience and know what local cultures are all about, they're there too not just car-based yuppies who have always grown up with, you know, without that kind of local culture. Very important that that is part of the story so I'm really glad you raised it.

Gael Jennings So forum number six is for elders, you know. And here in the back [...].

Colin [C...] I'm Colin [C...], postgraduate at Swinburne. Mr Costello a couple of years ago said we all should have three children because you've got to have all these extra people to promote the economy otherwise the economy will collapse. I mean economy is an article of artificial extraction and we're running out of water in [...] land and [all the other] and everything so I think, you know, population control, I mean it should be limited to like one child, you know. If we reduce the population there'd be less strain on oil, water, fish, transport and all that sort of thing so could you comment please?

Gael Jennings Who would like to say we should have population control? I thought we already did.

[Graham Tupper] Yes I think we should have a population policy no doubt. I think, because being trained as a population ecologist you know that it's not possible to increase population to the point where, you know, it's got to be contained at some point so it might as well be contained at the point where it's sustainable. But there's two factors involved: number of people and impact per person. The fact of the matter is impact per person in Australia at the moment is way over the top and we have to address that first.

Michael Gunter I'm the suspicious guy with the beard, my name's Michael Gunter and I used to run the Breamlea Wind Generator and sell green power a few years ago but I'm just an interested observer in the energy market now. I just so happened to check the NEMMCO website before I came here and discovered that electricity prices have skyrocketed to something like, in the hour and a half while we've been sitting here the electricity price has been close to maximum at around \$8,000 a megawatt hour because of demand. Even if the convenors here are running, they think, on 100 per cent green power, I've counted about seven kilowatts of incandescent lighting unnecessarily in illuminating this space and the question is—oh and the other thing is the background there is, but that's about \$90 million windfall profits to the generators, they will use that to make more power stations and increase the greenhouse problem. So can I have an undertaking from George perhaps that next time you have a public meeting you will not bother with necessarily buying green power but you will just have a venue that doesn't have any incandescent lighting please?

[applause]

George Pappas I'll pass that onto the organisers.

Gael Jennings Well it is changing venue to the Carrillo Gantner Theatre at the Sidney Myer Asia Centre of Melbourne University, you know, there at the tram stops in Swanston Street, the top of Swanston Street. I don't know about the lighting there, we'll have to look into that I'm sure.

Male Everybody bring a candle.

Gael Jennings Look there are so many of you who have wanted to have questions and I'm sorry that we've run out of time but I think the really important thing to note, this is just the beginning, that all of this is captured on the webpage. You should have a questionnaire in your seat, I think, that you can fill in. You've also got the opportunity to—do we still have the Verity ... Crystal?

Male Yes.

Gael Jennings We have someone downstairs from Melbourne University who's doing some kind of research, they're working out whether or not this communication is working so if you'd like to be part of that study to test this kind of communication talk to her. She's downstairs at the reception desk. But please keep coming to the forums and also to go through the webpage to put more of your thoughts down and to drive it along further so that it actually gets to the council level where something will be done. And I want to

thank our panellists very much for coming out and to all of you for being involved.