

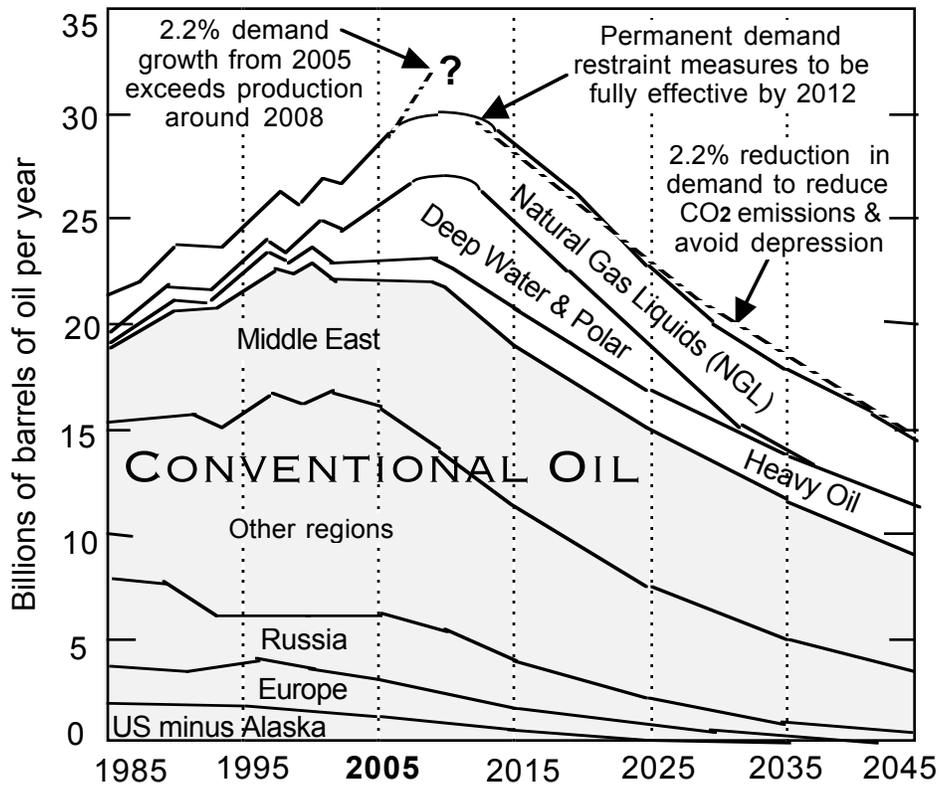


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## Submission in response to the Discussion Paper on NTC Strategic Directions 2008/09-2010/11

by Alan Parker Design 16-9-07



Source: Oil production data from the April 2005 newsletter of the  
Association for the Study of Peak Oil [www.asponews.org](http://www.asponews.org)

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## Introduction

Since the 1960s the transport policy focus has been on roads at the expense of investing in the more energy efficient forms of transport. Consequently Australian states now have some of the highest levels of per capita car travel, air travel and road freighting in the world. Mainstream transport planning has ignored the need to maintain the rail network so it is not surprising that rail and road freight transport planning conducted has reflected this longer term bias towards roads despite the Commonwealths and some State government's motherhood statements about reducing green house gas emissions in the last decade. The recent evolution of the National Road Transport into the National Transport Commission was a sensible initiative for making regulatory and operational reforms necessary for a safe, efficient and sustainable land transport system was welcomed by many transport analysts.

The statement that "*The NTC welcomes comment and discussion on the explicit and implicit assumptions that underpin the NTC's perception of the environment*" is very welcome and is the main focus of this submission. The main concern is that the th statements in the NTC Discussion Document do not reflect the paradigm shift that will be necessary to cope with the coming liquid fuel crisis, which is illustrated on the front cover graph. Discussion Document does not address the limitations of the market mechanism detailed in Stern Report (2006) which stated climate change was the result of the greatest market failure in human history. Nor does it recommend a risk management strategy to free Australia from oil dependence by decoupling the growth in oil consumption from the growth of GDP.

Hopefully these policy contradictions can now be resolved because of the dramatic paradigm shift in the commitment of the Commonwealth Government, the Federal Opposition, some state governments, the Greens, the Democrats and many major companies to combat climate change. Indeed, at the highest level of decision making at APEC there has been a recognition by Australia, its allies and its trading partners of the need to act together to prevent dangerous climatic trends becoming a threat, to their national economic well being and national security.

During the past 12 months there has also been a growing awareness of the risk of crude oil prices increasing to well over US\$100 a barrel in a few years; with oil production peaking around 2010 and world crude oil production declining from around 2012 this would become a threat to the well being of all Australians. (See front cover graph)

The awareness of risk was very evident in the Senate Report on Future Oil Supplies (2007) their main recommendation was to treat peak oil as a risk management problem. Within the 2008-2011 time frame of the final NTC Strategic Directions Report the convergence of the threats of climate change and oil shortages is perhaps inevitable. These two threats certainly needs to regarded as risk management problems that must underpin the NTCs perceptions of the Environment.

Furthermore the the so-called expert view (Twice the Task report) that fuel prices would need to increase by an order of magnitude to change transport behaviour is nonsense. Which is demonstrated by recent experiences in Metropolitan Melbourne. When increased petrol prices resulted in commuters switching from driving to public transport they were frustrated by the lack of rail peak hour capacity available and during 2007 many thousands of potential rail patrons where lost.

There is also a need to create a paradigm shift in how transport plans are made and implemented at local government and state agency level because stake holders are mostly pursuing a 'business as usual' agenda. New national priorities need to penetrate the bureaucracy from top to bottom so that the need to reduce oil dependence as the first major step to reducing both greenhouse gas emissions and oil consumption is seen as a basic objective.

This submission analyses the car dependent commuting trends from 1976 to 2001 for Metropolitan Melbourne which is typical of the trends in other capital. The Census data shows that Melbourne commuters have been locked into a transport system that has become more oil dependent Census after Census. This submission argues that rail freight will have to triple in the next 20 years and take over much more of the freight task, particularly the non-bulk freight. Furthermore In the next ten years when petrol and diesel become very costly and scarce this will pose a very serious threat to the well being of those living in the Capital and major provincial cities with outer suburban lifestyles, which are hinged on two or three car families and constant car trips to work, school and supermarkets. This threat will effect everyone in urban areas a few years later.

This submission argues that now is the time to take on board the inevitable convergence of the threats of climate change and oil shortages together with the concerns of industry and the transport bureaucracy to produce a master transport plan for land transport that will also reduce the demand for passenger and freight air travel in Australia.

For many years there has been a lack of transport vision and the NTC has stated that:-

*"Both industry and government officials have for quite some time indicated their frustration at the lack of a plan or vision for transport."*

There needs to be a hierarchy of integrated transport/environment master plans in Australia which support coordinated decision making between jurisdictions and the NTC should be the agency for the preparation of the Commonwealths master plan.

### **Improved rail freight networks must recieved priority**

It is argued that the enhancement of the rail based freight network in Australia is crucial to reducing carbon dioxide emission and reducing economic vulnerability. Diesel electric locomotives are far more efficient in their use of diesel fuel than trucks. In the longer term there will be serious oil shortages so the use of diesel oil for non essential urban car and light commercial vehicle travel and the 'carrying of coals to Newcastle' by heavy road vehicles will have to be severely constrained. This submission argues that rail freight will have to triple in the next 20 years and take over much more of the freight task, particularly the non-bulk freight.

The following tables set out the energy efficiency of road and rail freight for most of the vehicles in use today. The data reflect the mechanical advantage of a steel wheel running on steel rail over a pneumatic tyre running on a relatively uneven and less smooth road surface.

Every 1 tonne of freight that goes by rail instead of road on the Sydney to Melbourne route saves Australia nearly 17 litres of diesel oil. It is clear that demand for transport services, efficiencies within the transport/logistics task and efficiencies in converting energy into work need to be tackled if further reduction in Australia's oil dependency is to occur. (RTSA 2005)

**TABLE 1 TRANSPORT ENERGY USE - RAIL AND ROAD: 2002-03**

<b>Rail Freight</b>	Diesel ML	Electricity GWatt hrs	Energy (FFC) PetaJoules	
Bulk	459.2	566.6	26.0	
Non Bulk	149.9	4.7	6.4	
<b>Total</b>	<b>609</b>	<b>581</b>	<b>32.4</b>	

<b>Road Freight</b>	Petrol ML	Diesel ML	LPG ML	Energy (FFC) PetaJoules
Light Com Veh	2277	1395	603	159.3
Rigid Trucks	43	2128	14	90.9
Articulated Trucks	-	3161	-	132.0

Note: ML = million litres. FFC = Full fuel cycle. Source

The most positive development so far at national level has been the bipartisan political commitment to the completion of the inland rail freight link from Melbourne to Brisbane and this review should provide the means for building the southern end of that desirable rail link and ensure that all the necessary rail and road links to it and the modal interchanges are provided for.

**TABLE 2 LAND TRANSPORT TASKS AND ENERGY EFFICIENCY: 2002-03**

<b>Freight Rail</b>	billion tonne kms	Net tonne km per MJ
Bulk	136.2	5.24
Non bulk	21.9	3.40
<b>Total</b>	<b>158</b>	<b>4.88</b>

<b>Road</b>	billion tonne kms	Net tonne km per MJ
Articulated trucks	115.66	0.88
Rigid Trucks	30.41	0.33
Subtotal	146	0.66
Light Com Vehicle	6.71	0.04

Source Tables 1 and 2 : The Railway Technical Society of Australasia (RTSA) is a Technical Society of Engineers Australia.

### **Future locomotives will be able to use Australia's clean energy resources**

New gas fields are being opened up in Bass Strait below the existing oil fields and new gas pipelines will be bringing gas from other new gas fields into Victoria. The most promising development in the short term is the use of natural gas as a transitional fuel to buy some time for the development of other sources of clean energy. In the long term there are opportunities to move away from both diesel fuel and from the electricity generated from Brown coal in Victoria.

There are huge geothermal energy resources 1,600 km north of Melbourne and 1,600 km west of Brisbane that could replace all the electricity from all of Australia's coal fired power stations for a 1,000 years with hardly any carbon dioxide emissions. 27 companies are currently trying to establish the commercial viability of drilling into these hot dry rocks a few kilometres below the earth's surface to release the heat and drive turbines to produce electricity. The largest company Geodynamics is completing a large scale demonstration drilling to be complete by 2008 and a

geothermal power stations is planned for 2012 (Toohey 2007) (Cawood 1996)

Around 100 km west of Melbourne there is also a geothermal hot spot that has the long term potential to create clean base load electricity to power the rail network in about 20 years from now with minimum transmission losses.(Cawood 1996)

Current wind farm developments are focused on generating electricity and in a few years the costs will be down to 6c per kilowatt hour. As yet there is no integrated wind farm development in which some wind turbines create electricity and others, by electrolysis of water, produce hydrogen to be used as energy storage for when wind speeds are not usable. However that technology is on its way in some other countries.

The potential for closing down all the brown coal fired power stations is very good in the long term. For the immediate future the name of the game is to conserve existing oil reserves, develop the renewable energy resources and to prudently use gas as a transitional fuel. Rail freight locomotives can make the best use of natural gas and of clean electricity when it becomes available.

All of these developments are needed for Australia to make its contribution to stabilising carbon dioxide levels in the atmosphere. A large strategic reserve of diesel oil must be kept for the mass movement of freight and essential goods by rail, exporting raw materials overseas, producing food and maintaining essential services. The use of natural gas to power locomotives must also be considered as a transition measure until clean sources of electric power become available.

More energy efficient locomotives are now becoming available and in the longer term cleaner renewable energy supplies will be useful for reviving non-bulk rail freight high speed rail freight, urban rail services and high speed intercity trains. Australia will continue to have liquid fuel shortages but the prospects for clean electricity from geothermal, wind and solar resources are very good if the reliance on liquid fuels can be phased out.

There are several new innovations in the design of new hybrid gas/electric, and diesel /electric locomotives being trialled in different countries that are even more efficient than the existing locomotives. No doubt these new locomotives will be competitive with the new engines coming into use on B-double and B-triple trucks and these new locomotives could be used to carry non-bulk freight. Dual fuel locomotives, dual fuel B-double and B-triple trucks using 85% natural gas and 15% diesel are also feasible.

### **Petrol price rises in Melbourne increased the demand for public transport.**

The recent experience in Melbourne of petrol price increases creating demand for public transport shows that creating the demand required that petrol prices were no more than double, but that meeting that demand required long term planning that put infrastructure and rolling stock in place. What made a mockery of transport planning in Melbourne was an economic paradigm that assumed perpetual economic growth, a totally unwarranted sense of certainty about future resources and a lack of understanding about the declining energy return on energy invested in finding and exploiting conventional and non-conventional sources of crude oil. (see figure 1 page 2 Appendix A)

When increased petrol prices resulted in commuters switching from driving to public transport they were frustrated by the lack of rail peak hour capacity available. Thousands of them used

public transport for a few days or a week or so and then got back into their cars after not being able to get seats or being stranded at stations and then being late for work. This huge loss of potential rail patronage has put back by several years the Melbourne 2030 objective to increase rail patronage. This mistake happened for many reasons but primarily because of two things:-

- Firstly the “Melbourne 2030” study team were perhaps incapable of predicting what would happen a few years ahead because they ignored the inconvenient truth about the peaking of world conventional crude oil production and other geopolitical realities that would predictably translate into much higher petrol costs for those driving to work. They failed to plan for the coming liquid fuels crisis which is illustrated on the graph on the front cover. If that crisis had been taken seriously then rail capacity would have probably been increased.
- Secondly, the statements in “Melbourne 2030” about improving the performance of the rail system were never implemented because most senior DoI staff did not believe that the planning target of 20 % public transport by the 2020 was possible. To them it was unthinkable that a major surge in demand would happen so extra seating capacity was not needed. Appendix A analyses the planning implications of peak oil and is attached to show that there has been a lot of work done on thinking the unthinkable and to set out oil depletion in the context of other resource depletion problems occurring in the same time frame.

In 2001 a DoI management committee responsible for the conduct of “Melbourne 2030” decided to exclude any consideration of oil resource depletion. The issue of peak oil was raised with the management committee in a letter written by the Convener of the Association for the Study of Peak Oil (ASPO Australia) which was tabled by Dr John Grant and discussed. A decision was made to ignore the oil issue and as a consequence there are no risk management measures to cope with the impact of higher oil prices on transport behaviour before 2010 or severe oil shortages well before 2020.

### **The NTC should take a risk management approach to possible liquid fuel shortages**

It is not possible to cite Australian research into this area of risk management. However, US researchers state that several future outcomes are possible; what is important is managing the risks by taking action well before world oil production peaks. Action to mitigate the consequences can reduce the inevitable pain. Possible scenarios are:(Hirsch 2005)(Bezdeck 2007)

- Oil production peaks in 2010 then declines from around 2012 inducing a world wide depression, wrecking the Australian economy and producing mass unemployment.
- Oil peaks between 2015 and 2025 making a less painful adaptation possible; provided that most developed nations agree to reduce oil dependence with strong government, market intervention, the introduction of fuel rationing, fuel efficiency standards etc.
- Oil peaks after 2025 allowing a timely adaptation with mutually agreed supply and demand side oil conservation measures recommended by the International Energy Agency

There is need for planners to include the worst cases of climate change and oil depletion scenarios in their long term plans. Even with world crude oil production peaking later around 2018 it is a unique challenge and a very serious risk to the Australian and the world economies. The recent Senate Inquiry into future oil supplies recommended that government take a risk management approach to future oil shortages. (Senate 2006)(US GAO 2007)

Another problem in Victoria (and some of the States) is that state policy documents contradict one another. For example the Victorian government's Energy Policy states that 16% of greenhouse emissions come from the transport sector, which is the second largest source of greenhouse gas emissions. It also states that transport sector emissions will continue to increase. This means that increasing oil dependence needs to be reduced and also suggests that Melbourne 2030 was fundamentally flawed because there was no paradigm shift from the petrol headed attitudes of yesteryear.

Another problem is the perception the Victorian government that it is Commonwealth responsibility. Unfortunately, Commonwealth government agencies, particularly the Bureau of Transport and Regional Economics, and several international oil agencies were predicting that oil would only be around US\$30 a barrel in April 2006 and that it would stay that way for a decade or so later. The Victorian and its senior advisors did not know that the Commonwealth agencies were so out of touch with reality that they have little credibility. (See Appendix A see tables 1 & 2 page 5 & 6 )

Whatever the reason Commonwealth and most state agencies were still ignoring the peak oil issue when oil US\$ 78.40 a barrel on September 12 in 2007.

The statement that "*The NTC welcomes comment and discussion on the explicit and implicit assumptions that underpin the NTC's perception of the environment*" is very welcome.

Hopefully the implicit assumption is not that the price of crude will remain low?. The NTC Discussion Document does not document that in 2007 many private sector researchers are predicting near future oil prices of well over US\$100 a barrel. It is recommended that the NTC makes an explicit statement about what the price of should be assumed to be from a risk management perspective and reject all its assumptions about transport costs for all mode.

### **Consider the small risk of a war to gain control of oil reserves happens?**

We live in an age of uncertainty where energy security is vital for both national and state security and a liquid fuel crisis could reduce the Melbourne economy to chaos and permanent depression. The reality is that most of what remains of the world's oil reserves will come from the Middle East, from wells located in Russia and from what were the Muslim states of the former Soviet Union none of which are stable sources of oil supply.

The risk to the security of Australia's future oil supplies is obvious to anyone who reads quality newspapers and quality TV and film documentaries. The risk of more wars to gain control of oil reserves is not fanciful speculation but a geopolitical reality. For example the US President is Chief of the US Armed Forces and he and White House staff want to attack Iran. He warned the world on television that the US would confront Iran "before it is too late". A headline article in the Australian (Baxter 2007) states that

*"The Pentagon has drawn up plans for a massive air strike against 1,200 targets to annihilate Iran's Military in three days..... US military planners were not preparing for "pinprick strikes" against Iran's Nuclear facilities. They are about taking out the entire Iranian military".....The President of Iran Mr Ahmadinejad had irritated the White House last week by vowing to fill the power vacuum in Iraq. But Washington says that Iran is already fighting a proxy war with the Americans in Iraq."* (Baxter 2007)

This confirms previous rumours that US aircraft carriers are poised to deliver an massive air attack on Iran and that the Iranians have told the Sunni Muslim oil producers, on whom the west is totally reliant, that they will blow up their oil refineries and destroy pipelines if they are attacked. The probability of the US air attack happening maybe low, but the threat of retaliation to the vulnerable oil installations in Arabia, Kuwait. Iraq and the United Arab Emirates from Rockets and commando suicide attacks by the 100,000 strong Revolutionary guards cannot be disregarded. All that has to happen is that crude oil extraction and refining is cut by 10 billion barrels a year for a whole year and the world economy will implode.

The potential consequences to world oil supplies should not be ignored in Canberra or Melbourne because US military action may seriously fail in Iran. Indeed, the failure of former US defence secretary Donald Rumsfeld to ensure sensible detailed planning in post war Iraq has created the current chaos, according to Major General Tim Cross responsible for UK Post war Planning in Iraq. That judgement was confirmed by the former head of British army Sir Mike Jackson who said that Rumsfeld was one of most responsible for current situation and that the approach taken by Rumsfeld to post war planning was "intellectually bankrupt". Rumsfeld may have retired but President Bush is still acting on Rumsfeld's advice and that is really frightening.(Smith and Baxter 2007)

Despite the obvious geopolitical problems and the uncertain future of future of world oil production there is no recognition in the NTC Discussion document that oil conservation is just as essential as protection from an invading force for the preservation of a democratic way of life.

Australia needs the objective of decoupling its growth in oil consumption from the growth of GDP. This would require that oil consumption would be reduced by 2.5 % to 3%per year. (See appendix A, p 4 and 11explaining these percentage figures)

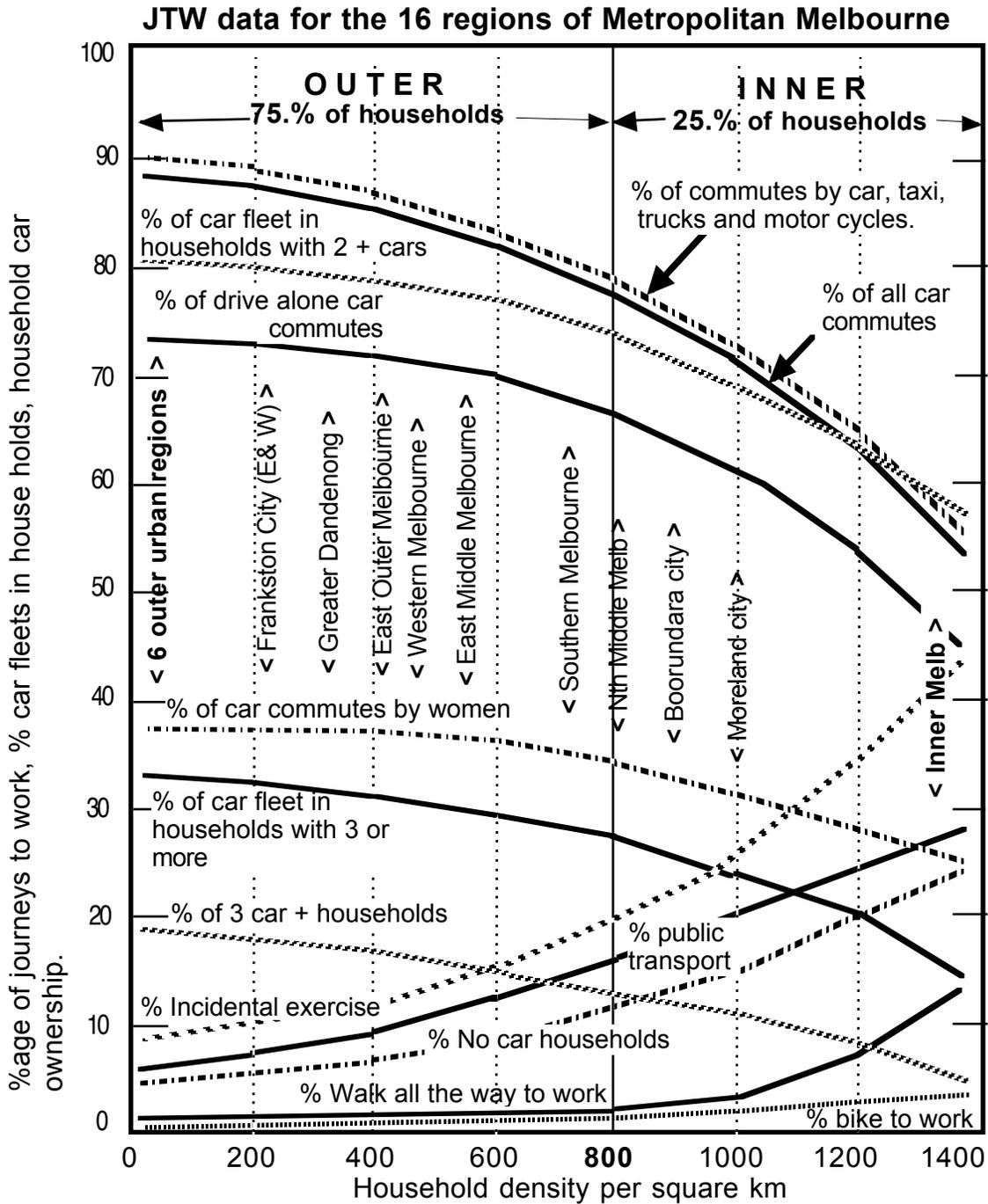
### **Carbon emissions and oil consumption will greatly increase at the urban fringe of Australias capital cities and major provincial cities..**

. The census data on urban commutes is based on a 97% sample size which provides accurate data for all transport modes from 1976 to 2001 even at local government level. The Census data for the journey to work shown on the following graphs and table will need to be updated with the 2006 data and could be included in the final NTC report. Less accurate data indicates that car commutes have increased since 2001. The following data for Melbourne can be regarded as being reasonably typical of what applies in other capital and major provincial cities.

As car journeys to work are responsible for 33% of weekday distance travelled on main roads in Melbourne and most car commutes take place in the rush hours with a high proportion of fuel wasting "stop/start" driving we can assume that increasing congestion costs are the most useful indicator of increasing household oil dependence and carbon dioxide emissions. Data produced by VicRoads for the distance travelled by car commuters in metropolitan Melbourne provide us with a simple formula for indicating the high congestion costs and the growth in oil dependence generated by the 13% of all car trips used for the journey to work.

**Car commutes in 2001 =  
= 13% of all car trips  
= 33% of distance travelled on main roads (Vic roads 2003)  
= 40% or more of carbon emissions and peak hour fuel costs.**

Figure 1. Melbourne Commutes: 16 urban regions and household density



Notes. The %age of incidental exercise = The total % age of all public transport, cycling and walking journeys. The %age of drive alone car commutes = car driver commutes minus car pass commutes. Curves in outer regions have been statistically smoothed.

Most of the congestion creating commutes originate in the sprawling outer suburbs which have between 20 and 800 households per square kilometre and where 75% of the population now reside. In these areas 80% of households own 2 or more cars; around 85% of those who are employed commute by car and they are responsible for 85% of the distance travelled by all commuters and for 70% of the drive alone commutes in the metropolis. (Parker 2004)

Furthermore, 78% of the car fleet resides in households with 2 or more cars. . Walking, cycling and public transport in 2001 only accounted for only 13% of all commutes. The 2006 Census data will confirm that these trends are continuing and growing at a faster rate.

Melbourne commutes are analysed in depth in 2001 for all the 16 regions of Melbourne with a focus on the inner/outer urban trends. Figure 1 shows the dominance of single occupant car commutes and high car ownership levels in outer suburbia. The percentage of walking, cycling and public transport commutes all decline with household density. (Parker 2004)

Figure 1 shows that when petrol is far less affordable those without access to public transport are likely to suffer considerable hardship because 90% of their journeys to work are made by car, truck or motorcycle and there is no easy way of continuing to do that without cheap oil. The greatest difference is between the Inner Melbourne Region, and the six outermost regions.

The Inner Melbourne Region has a density of 1,300 households per square km, commuting is far less car dependent and 43% of commuters benefit from “incidental exercise” incurred in walking, riding a bike or walking to and from public transport. As petrol becomes more expensive most households in this region will be able to dispense with their cars and survive without it as people did from the beginning of World War 2 to around 1950. However, Melbourne was a more compact city in 1950 and it certainly is not in 2007..

Around 640 km of Melbourne’s arterial road network is currently congested at peak times and this could more than double to 1,300 km of roads by 2021. This indicates that oil dependence is growing and as the price and volume of imported oil increases the costs of that growth will be measured in tens of \$ billions.

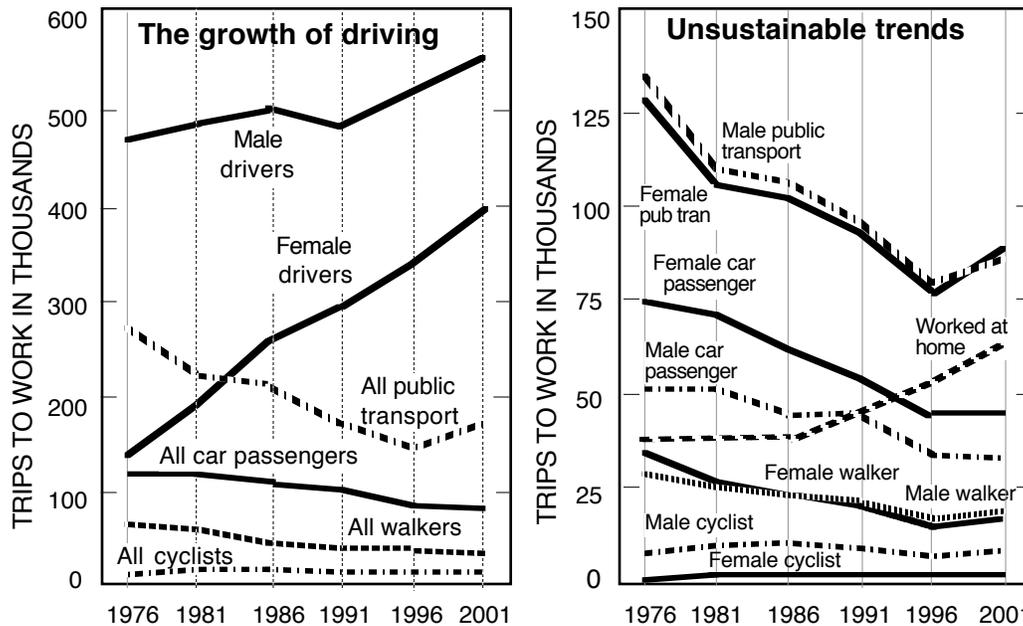
The total costs of congestion could be as high as \$2.6 million per annum in 2006 (VCEC 2006) and this is likely to be a conservative estimate after world oil production peaks and then reduces. This means that oil prices will greatly increase by an indeterminate amount. Given that level of uncertainty it would be prudent to restrain the growth of car dependent outer suburbia and to introduce improved public transport services well in advance of oil price increases.

With current government policies the growth of the oil dependent transport system will inevitably retard urban economic growth not only in the outer suburbs, but also in provincial cities many of which have the same level of car dependence. Australian oil reserves are not being squandered by the minority of commuters who share cars, use public transport, ride a bike or walk to work but by urban developments that are almost totally car dependent.

Melbourne 2030 has the objective of reducing car dependence but has failed to sell that objective to car dependent households who still do not understand that insecure oil supplies are a threat to their way of life. If reduced greenhouse gas emissions are taken into account for both fuel consumption and the embodied fuel used and emissions involved in the manufacture of cars we can see the following benefits of higher density in the inner suburbs. (Perkins and Hamnet 2005)

- Travelling fewer kms with less fuel consumption.
- Having more fuel efficient cars
- Having smaller cars requiring less energy to manufacture them.
- Having a lower household car ownership with far fewer households with 2 , 3, or 4 cars and requiring far less energy to manufacture cars per household.

**Figure 2. Metropolitan Melbourne journey to work 1976 to 2001**



NOTES: The number of public transport journeys includes multi-modal journeys. The main transport modes are shown but motorcycle, truck and taxi modes are omitted to clearly show trends .  
 Walking means “walking all the way to work”, if walking to public transport was added walking trips would increase from 37,486 journeys in 2001 to 209,111.

Census data spanning 25 years for journeys to work (see Figure 2) show that the market share of walking, bicycling, car sharing and public transport has declined, and that long single occupant car commutes are steadily growing in Metropolitan Melbourne.

The most recent study of “Oil vulnerability in the Australian city” (Dodson and Sipe 2005) confirms the trends shown in Figures 1 and 2 but takes the analysis further by the development of an oil vulnerability index for all municipalities in Melbourne, Sydney and Brisbane metropolitan areas , which are mapped and show the most vulnerable outer suburbs. The maps highlight the areas that will suffer the most from the interaction of increased petrol prices, urban transport systems and social geography. It states the need to comprehend the impact of costlier fuel and to effectively plan well in advance to mitigate the inevitable impact of world oil production peaking.

Table 1 is focussed on sustainable commuting modes in the capital cities, including Darwin and Canberra, selected Melbourne metropolitan regions and four Victorian provincial cities. The commuter market shares of public transport, walking, bicycling and car passenger commutes are ranked by the level of incidental exercise involved in commuting.

The level of incidental exercise is conservatively estimated by adding the percentages of walking and cycling commutes (all the way to work) to the percentage of public transport commutes. When accounting for the costs of oil dependence it would be wise take into account the health costs of decreasing levels of incidental exercise. Incidental exercise has greatly declined since petrol ceased to be rationed in Australia. Using 1951 data (Manning 1984), incidental exercise was estimated to be 50.3 % of all commutes in Melbourne. By 1981, this had dropped to 27.1% and dropped to 17.2% by 2001. I

**Table 1 Percentage of 2001 Sustainable Commutes in all the capital cities and selected Victorian cities ranked by the total level of incidental exercise**

Sustainable commutes: Australia, Capital Cities, selected City Regions & 4 Victorian provincial cities	% Incidental exercise	house- holds per sq.km	% of house- holds with No cars	% cycle trips all the way to work	Ratio of male to female cyclists	% of walk trips all the way to work	% of all Public transit. 1,2 & 3 modes	% of car passe- ngers
Inner Melbourne Region #	43.2	1351	24.4	3.4	1.7	12.4	27.5	4.4
Metropolitan Sydney	26.6	118	14.2	0.6	3.8	4.5	21.4	6.6
Moreland City region	26.1	1027	16.2	2.6	1.6	2.6	21	6
Boorundara City Region	23.3	956	9.8	1.3	3.4	3	19	4.5
Metropolitan Brisbane	17.4	129	10.4	1.1	4.2	3	13.1	8
Metropolitan Melbourne	17.2	161	10.2	1	2.5	2.9	13.2	6.1
Australia: all urban & rural	16.8	1.1	10.7	1.2	3.2	4.7	11	7.6
Greater Hobart	14.2	56	11.8	1	3.5	7.1	6.1	9.3
Canberra	13.3	142	7.7	2.3	2.5	4.2	6.8	9.4
Darwin	13.2	12	9.9	3.7	2.1	5.7	3.8	9.9
Metropolitan Perth	13.1	95	8.3	1.1	3.5	2.2	9.8	6.9
Metropolitan Adelaide	12.9	235	11.4	1.2	3.7	2.6	9.1	7.1
Greater Dandenong Reg	12	336	11.8	0.6	7.9	1.9	9.5	8.7
Greater Geelong (Victoria)	10.7	152	10.4	1.5	5.3	3.4	5.8	7.8
Melton & Wyndam Region	10.2	42	5	0.3	4.3	1.6	8.2	7.8
Mildura Rural City (Victoria)	9.4	34	9.1	1.2	3	6.3	1.9	8.5
Frankston City Region	9.1	323	9.2	0.5	2.8	1.6	7	7.2
Greater Bendigo City (Vic)	8.5	59	10	1.8	5.3	4.9	2	8.6
Ballarat City (Victoria)	8.4	41	10	1.5	7.5	4.5	2.5	7.5
Peninsula	8	68	7.1	0.6	4	3.9	3.6	6.7
Sth East Outer Melb Reg	7.8	43	4.5	0.3	4.9	1.6	6	7

*Notes: # Inner Melb. Region = City's of Melbourne, Yarra, Port Phillip & West Stonningham.  
Male to female ratio = % of male bicycle commutes divided by % female bicycle commutes*

Metropolitan Sydney has a much higher level of incidental exercise (26.6% of commutes) than the other capital cities but much less than the 43.2% in the Inner Melbourne Region (ie the municipalities of Melbourne, Port Phillip, Yarra and the west part of Stonnington). When the commutes for Sydney, Perth, Brisbane and Adelaide are broken down by metropolitan regions (as they are on Figure 1 for Melbourne) these are likely show a similar level of incidental exercise in the inner regions.

## **Carbon emissions are driving global warming**

The new international scientific consensus about the need to reduce per capita carbon dioxide emissions has been well publicised in both Sir Nicholas Stern's Report (Stern 2006) and the InterGovernmental Panel on Climate Change's Fourth report by 2,500 of the world's leading climate scientists. It concluded that global warming was "unequivocal" and predicted catastrophe if emissions caused by human activity were not curbed through swift political responses. Representatives of 113 nations endorsed the report's conclusions.(IPCC 2007)

The NTC Discussion Document failed to anticipate the conclusions of the fourth IPCC report because the NRTC ignored the third report of the IPCC. It has been very clear that reducing carbon emissions requires fundamental changes in how people live and financial risks for powerful industries including airlines, car manufacturers, industrial farms and construction companies.

The fourth IPCC report reinforces its previous report and concludes that there is a need to reduce carbon emissions in the next ten years. New developments to date on the ground reveal that the Coalitions parties Greenhouse policy is nothing more than too little too late and the next government Greenhouse policy is little better and fails to appreciate the more recent research in 2007 that suggests that climate change proceeding much faster than was stated in the the fourth IPCC report because it was watered down by the involvement of politicians and government spin doctors in process of finalising the detailed recommendations in the report.

It is concluded that the NTC should adopt the policy of hoping for the best climatic outcomes but actually plan for the worst case scenario. For Australia, a 3 degree temperature increase could mean: Australian net primary production falls by 6%; Flows in the Murray-Darling fall by 6%; 97% of the Great Barrier Reef bleached and 80% of Kakadu's freshwater wetlands lost; 15-70% increase in very high/extreme high fire danger days in southeast."

Hansen and other leading climatologists insist that the new IPCC report fails to provide projections of sea level rise that are consistent with rising global temperature.

As the ocean warms due to increasing global temperature, it also expands, causing the sea level to rise. Melting glaciers and ice sheets are also increasing the volume of water. Destabilization of the ice sheets in Greenland and Antarctica would result in big increases -- to be measured in feet rather than inches -- in sea level. Nonetheless, the new IPCC report estimates an increase in sea level of only 18 to 59 centimeters (0.6-1.9 feet) this century -- an estimate even lower than in its 2001 report. Some experts have voiced strong dissent regarding these calculations (see "Experts Slam Upcoming Global Warming Report," . Hansen (2007) points out that the IPCC center point of 3°C (5.4°F) increase in global average temperature is "inconsistent with the numbers that they gave for sea level," because they do not take into account the contribution of melting ice sheets.

As the temperature increases, a chain reaction is set in motion, amplifying warming tendencies. The ice caps melt and pools of water are formed. Rather than reflecting solar radiation, like the white ice does, the blue water absorbs the heat, further accelerating the rate of melting of the adjacent ice cap. This water also heats the ice below, driving deep holes of warm water within an ice shelf. The water from melting ice over land, such as in Antarctica and Greenland, sinks deep into the ice, cutting tunnels, known as "moulins." When it reaches the land beneath the ice, it both warms the ice underneath and serves as a lubricant that could lead massive amounts of

ice to shift and fall into the sea. The melting of just Greenland could raise the worldwide sea level 20 feet. These positive feedback loops can start out slow, but accelerate in time.

The NTC should seriously consider what the most likely next government of Australian doesn't say about 3-degree global impact on long term climate change

\* Labor's statement in support of a target of a 60% reduction in emissions by 2050 fails to define "dangerous climate change" either in terms of the internationally accepted maximum temperature target (2 degrees C) or atmospheric greenhouse gas levels.

\* Prominence is given to out-of-date research and more recent research on emissions targets to avoid "dangerous climate change" is not considered.

\* there is no understanding of the need to have a liquid fuel conservation policy or the need for a transport master plan to develop a more sustainable transport system.

\* Labor's 60/2050 policy is consistent with a temperature target of 3 degrees C, which would constitute "dangerous anthropogenic interference with the climate system".

The NTC should consider what the most likely next government of Australian doesn't say about 3-degree global impact on long term climate change and how that could destroy both the Australian and world economy. There clearly is a need to spell out *"the explicit and implicit assumptions that underpin the NTC's perception of the environment"*, because the Commonwealth has no such perceptions. See the box below for 1c to 6 c Global warmings.

A panel of retired senior US military personnel has also warned that climate change poses a serious threat to national security and will contribute to instability and tensions across the world (CNA 2007). Declining food production and increased pressure on water supplies will exacerbate conditions that foster conflict, extremism and radical ideologies. Relatively stable regions, such as Australia, are also likely to face increased pressure to accept large refugee and immigrant populations following conflict and extreme weather events. (Christian Aid 2007).

If global warming continues at the current rate, we could be facing extinction. So what exactly is going to happen as the Earth heats up? Chance of avoiding six degrees of global warming: zero if the rise passes five degrees, by which time all feedbacks will be running out of control

**Here is a degree-by-degree guide to global warming . Source(Girling 2007)**

**1c Increase =** Ice-free sea absorbs more heat and accelerates global warming; fresh water lost from a third of the world's surface; low-lying coastlines flooded

**2c Increase =** Europeans dying of heatstroke; forests ravaged by fire; stressed plants beginning to emit carbon rather than absorbing it; a third of all species face extinction

**3c Increase =** Carbon release from vegetation and soils speeds global warming; death of the Amazon rainforest; super-hurricanes hit coastal cities; starvation in Africa

**4c Increase =** Runaway thaw of permafrost makes global warming unstoppable; much of Britain made uninhabitable by severe flooding; Mediterranean region abandoned

**5c increase =** Methane from ocean floor accelerates global warming; ice gone from both poles; humans migrate in search of food and try vainly to live like animals off the land

**6c Increase =** Life on Earth ends with apocalyptic storms, flash floods, hydrogen sulphide gas and methane fireballs racing across the globe with the power of atomic bombs; only fungi survive

## **Providing a sound basis for transport/environment planning in Australia**

Because peak oil is certain to occur it would be prudent for the Commonwealth and state governments to accept the risks involved. Furthermore, whenever transport and urban planning studies are conducted, that the interdependence of effective Commonwealth and state actions are spelt out. If there was a serious attempt to deal with the real threats to Australian energy security the means by which they intend to maintain essential public services, food production and prevent a melt down of the economic system would need to be spelt out. If there was a serious attempt to persuade the public to accept necessary but politically unpopular measures to combat the risks then it would be possible to make the necessary changes in lifestyles and transport behaviours .

The twin threats of climate change and oil depletion are at least as great a threat to the well being of people as was World War 2 and if nothing is done we will all be in for a dose of Churchill's "Blood, sweat and tears." To establish a sound basis for the future needs of Australians the following inter governmental cooperation coupled with full bipartisan political support is needed.

1. Develop a risk management strategy to free Australia from oil dependence by decoupling the growth in oil consumption from the growth of GDP.
2. Unilateral implement the Oil Depletion Protocol by reducing oil consumption by 2.5 % per year and launch an all out diplomatic effort to persuade nations in this region to do likewise. This measure is spelt out in Appendix A (See section 2.5,2.6, and 3.0)
3. Produce an integrated national Energy Security Policy to mitigate oil dependency with both demand and supply side measures, institutional changes, transport innovations, tax incentives and constraints that collectively focus on the synergistic reduction of oil use and carbon dioxide emissions from the transport sector below 2000 level by 2012
4. Establish a strategic reserve of a mix of crude oil and refined oil products.
5. Make a commitment to freeing Australia from oil dependence by 2020, similar to Sweden and Norway, and to opposing the use of military force to gain control of foreign oil reserves.

It needs to spell out how failing to adapt of oil shortages will reduce Australia's ability to cope with worsening climate change, severe water shortages and a world economic depression over the next 30 years.

## **Conclusion**

The Discussion Document needs more than fine tuning it needs a new objective of decoupling the growth in oil consumption from the growth of GDP. This would require that oil consumption would be reduced by 2.5 % to 3%per year and would greatly reduce greenhouse gas emissions.

The Melbourne 2030 audit could however provide some 5 yearly measures that are useful in showing the negative changes that are actually occurring. The ABS data for the journey to work and for trips to school could be analysed to produce a meaningful sense of this wrong direction .

The NTC Discussion Document has many sound planning concepts but lacks a clear and honest vision of the threats to the well being of all Australian,s It needs to spell out the critically

important measures needed in the next 10 years to cope with declining oil supplies and liquid fuel shortages.

The underlying cause of the growth in oil dependence in Australia is the absence of a plan for ecologically sustainable transport that guarantees the growth of market share for the more sustainable modes of transport in the existing and new urban areas.. Details are provided in appendix A of the kind of changes required to encourage the increased use of walking, bicycling (and electric bicycling) public transport and the use of energy efficient vehicles.

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