



12 Webster Street, Sorrento, VIC 3943, AUSTRALIA.
 Ph (03) 5984 3578, Email: alanpar@labyrinth.net.au

Submission in response to the review of the Automotive Industry 2008/09-2010/11

by Alan Parker Design 10-5-08

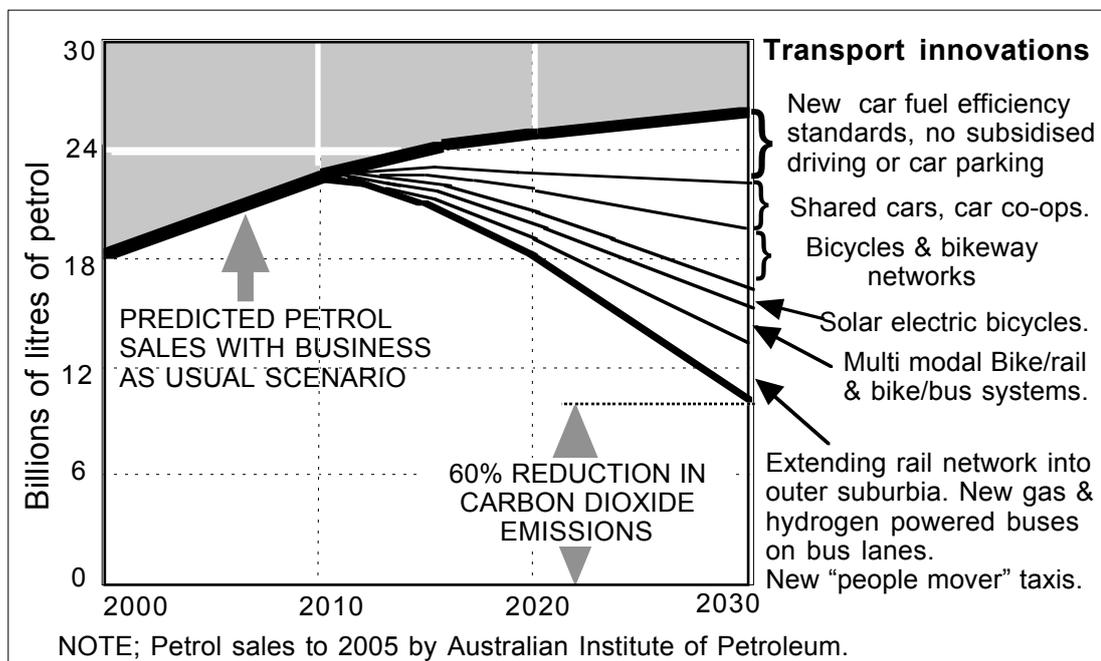


Figure 1 Transport innovations that reduce CO2 emissions by 60%

Submission By Alan Parker Design in response to the review of the Automotive Industry

INTRODUCTION

If the Australian automotive industry is to meet the commitment made by Prime Minister Rudd to reduce CO₂ emissions by producing more energy efficient passenger motor vehicles (PMVs) the national PMV fleet will have to emit 14 million tonnes of CO₂ less in 2050. A very challenging 70 percent reduction over current emission levels is required (see Background Paper).

Figure 1 illustrates a vision of a transport system which is dependent on a national PMV fleet that is much smaller but, in conjunction with other innovations, achieves the goal of a 60 % reduction in greenhouse gas emissions from the passenger transport sector by 2030. This not the same as the target defined in the Background Paper but is near enough to show the type of transport innovations required to achieve a 70% reduction target.

Figure 1 shows how important a smaller and more energy efficient Australian PMV fleet can greatly reduce CO₂ per passenger km of the entire urban passenger transport system. It provides a practical vision of what we want the car industry to produce for use in Australian cities, particularly the car dependent outer suburbs. Most of the transport innovations need not be considered in detail in the Review but the future of the car industry will need to be put into the context of an ecologically sustainable transport system. Such a vision statement will be needed by the Commonwealth new "major cities unit" and state transport planning agencies.

As Sir Nicholas Stern has said, climate change is the result of the biggest market failure in human history. If a "business as usual" approach is allowed to continue by the worlds major PMV and commercial vehicle users it could completely destabilise the climate because the production of clean and easily extracted conventional oil will have declined decades before 2050 and been replaced by carbon intensive sources of high cost non-conventional oil from tar sands, shale, very heavy oils and oil from deep ocean water. A 70% reduction of PMV CO₂ emissions is necessary also because of the large increase in world population which will occur by 2050.

Most urban transport plans assume that the travel habits of capital city dwellers will not change in the next 40 years and that the outer metropolitan regions will remain sprawling and car-dependent with very few of its residents using public transport. Most urban transport planners have given priority to road building making Australians more oil dependent and producing more CO₂ emissions every year.

This "business as usual" approach has to be rejected and replaced with a "risk management approach" by government, the car industry and consumers if CO₂ emissions are to be reduced in the long term. This is necessary because climate change is a threat to national security second only to world war. The Review

should accept that increased fuel prices can help drive technical change and alternative fuel use and that road congestion is desirable because it will induce demand for more public transport and providing funds for better public transport is the most important priority.

In the short term "greening" the tax system, so that small energy efficient cars are cheaper to buy and guzzlers are far more expensive can reduce Australia's reliance on fuels from the, mostly politically unstable, countries in the Middle East or Russia till around 2015 and reduce the demand for imported oil from non-conventional carbon intensive sources in the longer term. Many of the large cars produced today in Australia are exported to these politically unstable countries but that will probably cease when their oil production peaks .

The Australian automotive industry has the skill and the talent to ensure that petrol and diesel hybrid PMVs and plug-in PMVs can reduce CO2 emissions. The Australian car industry must be protected so the it can produce the PMVs that can reduce CO2 in Australia. Producing a Toyota hybrid car in Altona is a welcome start to creating a more efficient car industry that measures its performance not by the number of cars it makes but by how it successfully exploits resources to reduce CO 2 emissions in passenger transport and freight movement in energy efficient light commercial vehicles.

The worst case climate scenario

Planning to cope with climate change needs an "all of government" approach and bipartisan support to confront the reality of the worst case scenario. For example, Climate change expert Sir Nicholas Stern says:-

"he underestimated the threat from global warming in a major report 18 months ago when he compared the economic risk to the Great Depression of the 1930s. Latest climate science showed global emissions of planet-heating gases were rising faster and upsetting the climate more than previously thought" (Reuters interview 17-4-08)

For example, evidence was growing that the planet's oceans - an important "sink" - were increasingly saturated and could not absorb as much as previously of the main greenhouse gas carbon dioxide (CO2),

"Emissions are growing much faster than we'd thought, the absorptive capacity of the planet is less than we'd thought, the risks of greenhouse gases are potentially bigger than more cautious estimates, and the speed of climate change seems to be faster," (Reuters interview 17-4-08)

It is clear that a faster rate of climate change is a very real risk to Australian National Security and that will no doubt be seriously considered in the final Garnaut report on climate change.

The unsound forecasts of the Bureau of Transport and Regional Economics

For Australia climate change and peak oil are serious risk-management problems

that are closely related.

Overnight on 25-4-08 the oil price in New York broke \$US 120 a barrel an event which was not anticipated In studies by Commonwealth agencies who have assumed that the price of oil in 2020 will be around \$US 25 a barrel. In 2005 the Bureau of Transport and Regional Economics (BTRE) produced a grossly inaccurate projection of future oil prices which are shown on Table 1 below.

The unsound forecasts of the International Energy Agency (IEA) and other prestigious overseas energy agencies are assumed to be true by Commonwealth bureaucrats, particularly the Productivity Commission and the BTRE. Some government economists have made serious errors of judgement because they have put their faith in oil reserve estimates that ultimately are derived from the nationalised oil industries of dictatorial regimes. (Economist 2006) These countries do not publish details about how much oil is extracted from each reservoir and what methods are used to extract that oil; nor do they permit external audits. (Economist 2007)

Table 1 Oil price forecasts for the period 2010, 2020 and 2030 (US \$ per barrel)

Government or intergovernmental source	2010	2020	2030
International Energy Agency (IEA).	22	26	29
Energy Information Agency (EIA); US Department of Energy.	23	25	
European Commission (EC)	28	33	40
Organisation of Petroleum Exporting Countries (OPEC)	19	19	
Institute of Energy Economics Japan (IEEAJ)	24	27	
Centre for Global Energy Studies (GGES)	20	15	

Source: (BTRE 2005 working paper 61. p. 24).

The Chief Economist at the IEA is now taking a more realistic approach to future oil prices and states that the price of oil in 2030 will perhaps be US \$121 above the estimate in table 1. He summarises the current situation very well.

We are on the brink of a new energy order. Over the next few decades, our reserves of oil will start to run out and it is imperative that governments in both producing and consuming nations prepare now for that time. We should not cling to crude down to the last drop – we should leave oil before it leaves us. That means new approaches must be found soon. Even now, we are seeing a shift in the balance of power away from publicly listed international oil companies. In areas such as the North Sea and the Gulf of Mexico, production is in decline. Mergers and acquisitions will allow "big oil" to replenish reserves for a while, and new technologies will let them stretch the lives of existing fields and dip into marginal and hard-to-reach pools. But this will not change the underlying problem. Oil production by public companies is reaching its peak. They will have to find new ways to conduct business.....What will all this mean for the price of petrol? The indications are that if the producers don't bring a lot of oil to the markets, we may see very high prices – perhaps oil at \$150 a

barrel by 2030. If the governments do not act quickly, the wheels may fall off even sooner. (Biro, F. 2008)

Some government economists do not accept that oil shortages are inevitable. because low cost clean conventional oil is a finite resource. Nor do they accept that the high quality oil gets used up first and the quality drops off as an oil field becomes exhausted over many years. They believe that by increasing the price of crude oil the market creates more of the good oil, when the all it does is to increase the supply of carbon intensive sour and heavy oils, tar sands and other substitutes with a much lower energy return on energy invested. Indeed, to extract and refine them into fuels costs more and creates more CO2 emissions. (Parker 2007)

The easy way to conserve oil is for a carbon tax to be levied at the point of sale on diesel, petrol and gas and to abolish the use of company cars for nonessential purposes. A carbon tax is needed on the more carbon intensive substitutes for clean and sweet conventional oil. That will encourage the use of vehicles and machines that use less fuel and constrain the demand for fuel.

The Australian car industry needs to act now to reorganise itself. Chronic oil dependence will become critical when world oil production peaks in a few years time and the economy goes 'belly up'; oil for non essential uses will need to be rationed and will not be available to most car owners .

The Review should consider a risk management approach to peak oil

For Australia climate change and peak oil are both serious risk-management issues, linked together by the fact that, in the next ten years, a high proportion of the National PMV fleet will still be reliant on petrol or diesel. This is due to the long lead time, of around 15 years, required to renew the PMV fleet with more energy efficient hybrid, gas or electric powered vehicles.

US researchers state that several future outcomes are possible; what is important for the Commonwealth 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. (see graph 2 which still corresponds to ASPO 2008 forecasts).
- 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. (No sign yet of enough new oil finds for this scenario)
- Oil peaks after 2025 allowing a timely adaptation with mutually agreed supply and demand side oil conservation measures recommended by the International Energy Agency. (Based on Birols analysis; this is m most unlikely to happen.

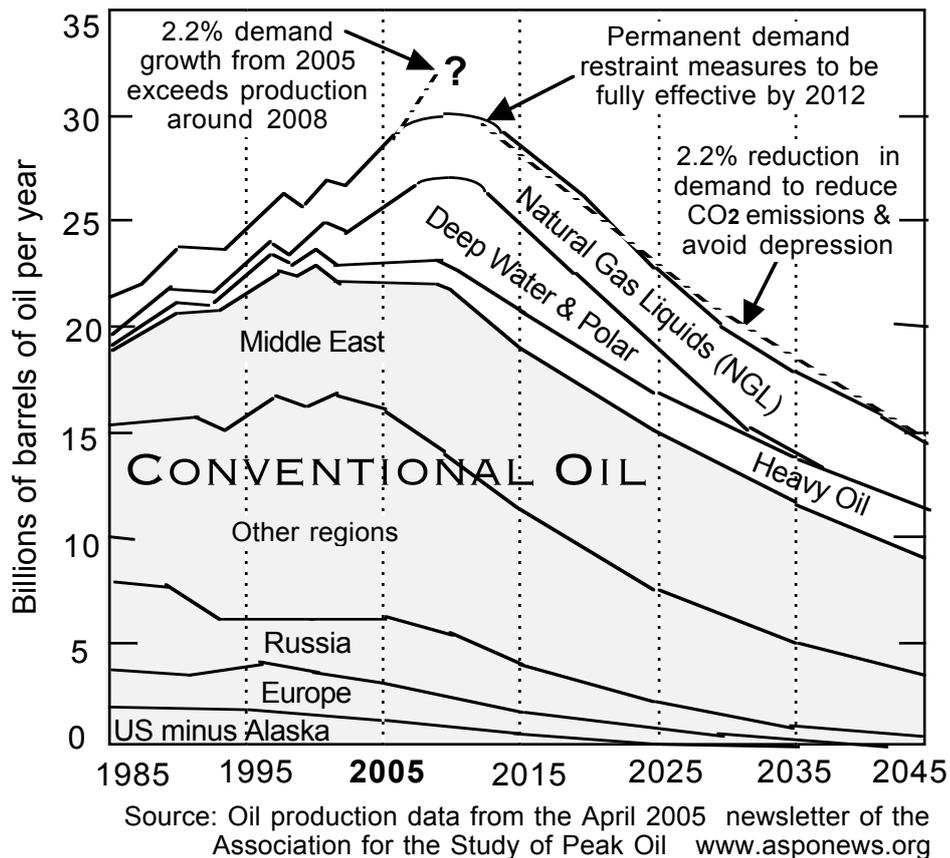


Figure 2. The expected decline in conventional oil production from around 2010

There is need for planners to include the worst case oil depletion scenarios in their long term plans (see figure 2) . Even if world crude oil production peaks late, around 2018, this poses a unique challenge and a very serious risk to the Australian and world economies. Figure 2 shows that the need is to reduce oil consumption by around 2.2% per year by decoupling the growth in oil consumption from the growth of GDP and persuading regional neighbours to do likewise. (Heinburgh 2006)

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) However many politicians fail to realise that peak oil is a very serious risk management problem and that preserving democracy is dependent on conserving oil for essential purposes.

Initially peak oil will cause permanent oil shortages; this will necessitate fuel rationing and serious consideration of the future cost and availability of oil. People living in outer-urban and rural areas will be the most disadvantaged, and within a year or so, the well being of most other people will be under threat. The Review needs to recommend a target of reduced oil consumption of 2.5 % a year as a minimum requirement. (Parker 2007)

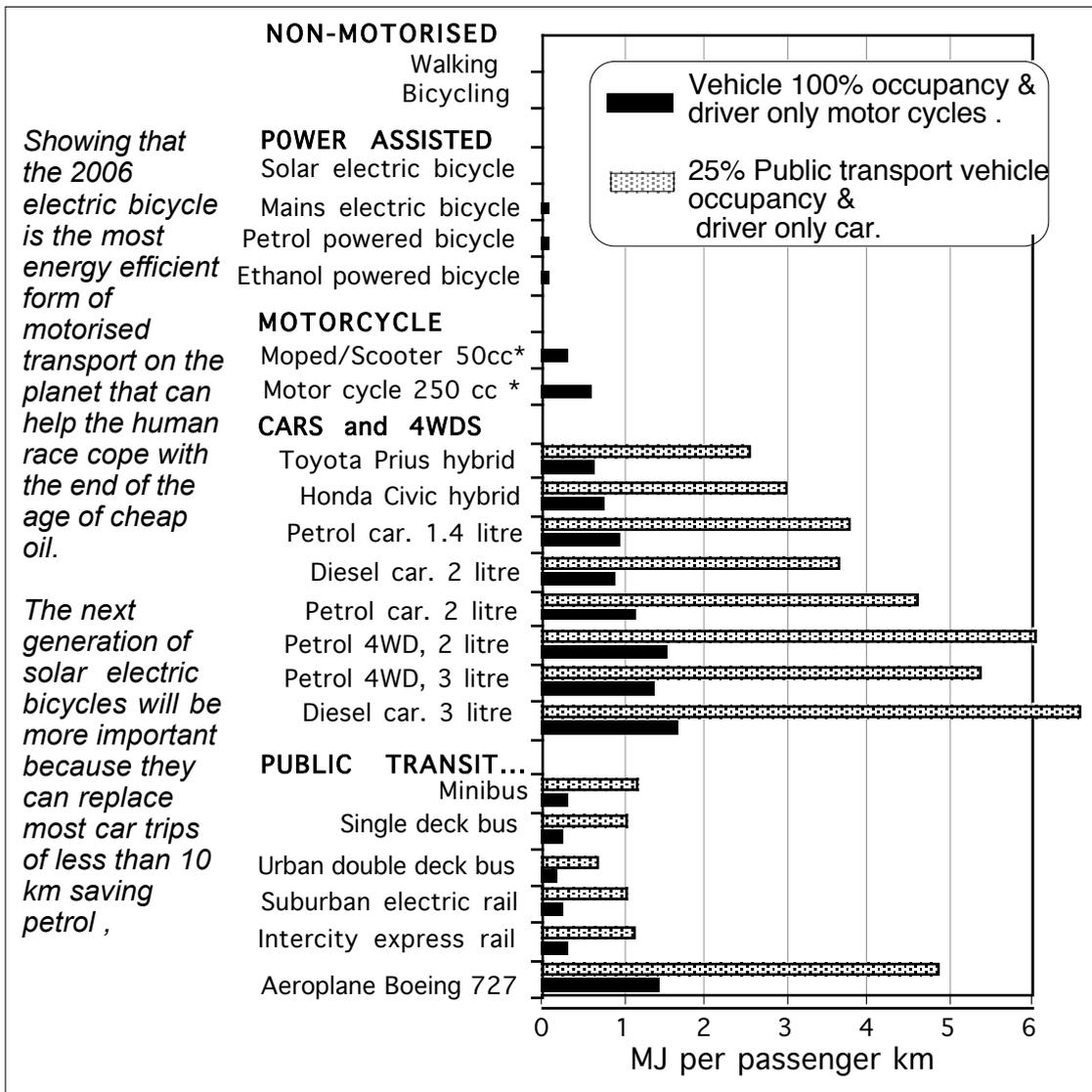


Figure 3 showing the efficiency of transport in terms of passenger km for both single occupant and fully loaded passenger motor vehicles.

The way to reduce CO2 emissions and oil use will require the full co-operation of both the car industry and the community and bipartisan political leadership. The industry will need to create more fuel efficient cars or people movers designed to facilitate car sharing in low density areas. Hybrids and plug in hybrids and light electric vehicles will slowly but surely replace existing vehicles and a high proportion of the car fleet will be converted to run on gas. Electric bicycles and scooters, charged from over night mains electricity or photo voltaic cells mounted on peoples' homes, will proliferate.

Figure 3 shows how much more efficient cars are when transporting the number of passengers they were designed to carry. When the community decides that they must make better use of their cars, by making fewer journeys with only one occupant and by having more flexible forms of vehicle ownership that reduce the level of multiple household car ownership in their households, the ownership of cars will be greatly reduced. When the community decides to use bicycles and

electric bicycles and electric scooters to substitute for short single occupant car trips and to access public transport then large increases in public transport will occur and less fuel will be used. (Parker 2006)

Politicians need to support funding to expand public transport into the outer urban areas and ensure the cleaner PMVs are better integrated into urban and rural passenger transport systems thereby providing a much higher level of 'kiss and ride' trips to rail and trunk bus routes. Travel Smart programs, targeted at multi-car households, are also required. Secure bicycle storage for tens of thousands of bicycles, electric bicycles and scooters needs to be provided at rail stations, modal interchanges and express and trunk bus stops in outer urban areas.

Major change is also needed in the planning and management of the transport sector which has one of the highest levels of per capita car and air travel; road freight carried; greenhouse gas emissions and oil consumption in the world.

Government intervention is necessary

The Automotive Industry Review so far has taken a far too narrow commercial view of the importance of domestic large car production and over emphasised the need to keep on exporting large cars to the Middle East where markets will shrink because of the growing need to conserve oil. Indeed a member of the Saudi Royal family, when asked why the recently discovered small oil fields were not being opened up, stated that "these oil fields are being kept for our grandchildren".

The average Saudi married woman has four children and the population is rapidly growing as it is all over the Middle East. Iran and other oil producers have similar high birth rates and soon they will respond to their own declining oil production by introducing stringent fuel efficiency standards, importing small cars and cutting back on oil exports.

The educated elites in all these countries already know about global warming and peak oil; some of them already see the need to avoid the mistakes we have made and, in time, that minority will become the majority. There is no long term future in exporting large cars to the Middle East (Simmons 2005). The future of the car industry lies in producing efficient well designed high quality small cars and energy efficient vehicles for niche markets in the oil scarce world of tomorrow.

The need in the Middle East and Australia is to reduce oil consumption by decoupling the growth in oil consumption from the growth of gross domestic product much faster in order to combat climate change and the depletion of oil reserves. Australia needs to turn the car industry around so that the national car fleet has fewer PMVs per 1000 population which are more fuel efficient and carry a lot more people. The more fuel efficient PMVs designed for hot conditions in Australia will make them more suitable for the climatic conditions in the Middle East. Some small European cars may be more energy efficient but they are not designed to cope with hot conditions. So the long term prospect of car exports is still good.

The poor energy efficiency of the Australian PMV fleet.

The greenhouse emissions per car sold in Australia were almost 50% higher than those sold in Europe — an average 230 grams of carbon dioxide a kilometre compared with 161 grams.

Table 2 Vehicles sold in Australia with lower emissions only

<u>MODEL</u>	<u>FUEL</u>	<u>CO2 EMISSIONS (G/KM)</u>
Volkswagen BlueMotion Polo (not sold)		99
Peugeot and Citroen planned for 2011		100
Toyota Prius	petrol/electric	106
Toyota Prius I Tech	petrol/electric	106
Honda Civic Hybrid	petrol/electric	109
Audi A3 1.9e TDI Sportback Manual	diesel	119
Hyundai i30 1.6 Diesel Manual	diesel	125
Peugeot 308 XS HDi Manual	diesel	130
Peugeot 207 Touring XT HDi Manual	diesel	131
Mitsubishi Colt ES CVT	petrol	134
Skoda Roomster 1.9 TDI/77kW Manual	diesel	145
Skoda Octavia Elegance		
Wagon 2.0 TDI/103kW Manual	diesel	150
Renault Megane Sedan 6-Spd Manual	diesel	154
Audi A4 2.0 TDI Multitronic (Automatic)	diesel	154
Holden Astra CDTi Hatch	diesel	159
Hyundai i30 1.6 Diesel Auto	diesel	159
European Car fleet average		161
Skoda Octavia Ambiente		
Sedan 1.9 TDI/77kW Manual	diesel	162
Honda Civic VTiL Sedan	petrol	164
Volkswagen Golf 2.0 TDI Auto	diesel	165
Volkswagen Jetta 2.0 TDI Auto	diesel	168
Volkswagen Passat 2.0 TDI Auto	diesel	178
Saab 9-3 Vector 1.9TiD Sedan	diesel	181
Saab 9-3 Vector 1.9TiD Combi	diesel	181
Lexus GS 450h	petrol/electric	186
Audi TT Roadster		
2.0 TFSI S-tronic (Automatic)	petrol	188
Peugeot 407 STHDi Automatic	diesel	189
Lexus RX 400h	petrol/electric	192
Mitsubishi Lancer ES CVT	petrol	196
Holden Captiva SX	diesel	198
Honda Accord Vti	petrol	209
Hyundai Santa Fe 2.2 Diesel Autodiesel		218
Lexus LS 600hL	petrol/electric	219
Honda Odyssey Luxury	petrol	222
Australian car fleet Average		231

More than half the new cars bought last year were part of government or business fleets. Despite dire climate change warnings only 13% of these were rated as low-emission vehicles. None of the low-emitters were Australian made; there are no locally produced vehicles meeting environmentally friendly criteria. In the long term government action could and should guarantee a secure market for more fuel efficient cars

Fuel efficient PMVs will become more popular, helped by \$500 million from the Federal Government to encourage manufacturers to produce them and the cost of petrol increases, once business is forced pay for CO2 emissions from 2010.

Automotive industry policy should be subservient to a national energy security policy that will guarantee that the depletion rate of indigenous oil supplies, the growth of oil imports and the growth in the use of large energy wasteful cars will all be significantly reduced. Sadly energy wasteful Australian cars produced this year will still be on the roads ten years from now or scrapped prematurely because they will become too costly to run.

Government car purchasing policies should be changed to protect the Australian car industry by initially guaranteeing that government car fleets buy the Hybrid Camries that will be made in Altona. Until they are available no fleet replacement vehicles should be bought that emit more 150 gms of CO2 per km

Measuring CO2 emissions and fuel consumption per passenger km

Cars and bicycles have very important roles in increasing the use of public transportation, especially in outer suburban areas where current public transport provision is appalling. Detailed consideration of these other factors is beyond the scope of the Review but it is important to outline how the future PMV fleet will contribute to creating a more energy efficient passenger transport system and how its efficiency should be measured in terms of passenger km. (See figure 3)

The fuel efficiency measure used today is of litres of fuel per vehicle km, which is a good measure of engine efficiency but a misleading measure of the efficiency of the PMV fleet. The efficiency of public transport vehicles fleets is measured in litres of fuel per passenger km; high occupancy rates are planned for public transport and this should also apply to PMV fleets. There is no reason at all why the average fuel consumption of the PMV fleet should not be 2 litres or less per passenger 100 km and occupancy targets set for different classes of PMVs. The car industry needs a vision of future car use that will achieve a low level of fuel use per passenger km and it needs to support all measures to achieve that.

Examples of political leadership in the production of energy efficient PMVs

An effective risk management measure to deal with this threat to Australian economic security is to have a dynamic car industry that makes small fuel efficient cars. Precedent for this comes from the USA, Japan and France in recent times; 70 years ago there was the legendary Volkswagen Beetle.

Sound and effective fuel efficiency standards were mandated in 2005 in the US due to the initiative of President Jimmy Carter and this could be done again. If hybrid petrol/electric, diesel/electric and gas/electric cars and LCVs are built in Australia then fuel economy improvements of 40% or more are possible (Bezdek and Wendling 2005). Increasing vehicle occupancy rates could increase that to 70% per passenger km.

In the USA in September 1993 Vice President Al Gore signed an agreement with the big three car makers to produce cars that emitted less CO₂. Collectively they committed their best efforts, with the help of government technologies and funding, to developing a fuel efficient “clean car” within a decade that would consume only 3 litres of petrol per 100 km. This agreement was called the Partnership for a New Generation of Vehicles and was aimed at creating a leapfrog mentality in Detroit.

Commercial intelligence advisors knew that car manufacturers in Europe and Japan would soon achieve these fuel efficiencies and that Detroit was dragging its feet and briefed Al Gore on what was needed to reduce the risks of future limitations to oil supply. The big three signed up to this partnership but it was never put into practice. The wisdom of the author of *An Inconvenient Truth* is now evident in the latest research. (Bezdek and Wendling 2005) The huge losses of the big three car manufacturers hopefully means that they will have to take action now for the sake of the car industry workers or become bankrupt.

Australian vehicle fuel efficiency standards are needed that will ensure that by 2015 the average fuel consumption of the car fleet including 4WDs will be 5 litres/100 km and for the SUV and light truck fleet to be 6.5 litres/100 km. giving an overall 50% increase in fuel efficiency. If hybrid petrol/electric, diesel/electric and gas/electric cars and LCVs are built in Australia then fuel economy improvements of 40% or more are possible (Bezdek and Wendling 2005) .

The mass production of petrol electric hybrid cars by Toyota and Honda started with 70,000 petrol electric hybrids sold in the USA in 2004. Not only that, but a more efficient version of the small petrol engine for hybrid vehicle is being developed. Toyota is building hybrid PMVs in California and some other US States. Victorian and Commonwealth ministers, inspired by what governor Arnold Schwarzenegger’s mission to Japan has achieved for California, have hopefully persuaded Toyota make these vehicles in Victoria. The Review needs to recommend incentives for people to buy them.

French car makers Peugeot and Citroen have arranged to build a range of 1.0 litre, 3 cylinder engines to power their future passenger cars. Power outputs will range from 52 to 75 kW and will reduce CO₂ emissions below 100 g/km. Their plans include 600,000 engines in France from 2011 and building another factory in Eastern Europe by 2012. (Age Drive 08) BMW has is planning to introduce two litre diesel powered cars that emit only 128 g/kg of CO₂. The power unit of the Lexus petrol electric/hybrid car, now on trial, will be used to power light commercial vehicles in the near future. Petrol/electric hybrid trucks are now being produced in Japan; they also need to be produced in Australia.

Power assisted bicycles and scooters have very low CO₂ emissions

Power-assisted bicycles (PABs) reduce carbon dioxide emissions and enhance the mobility of the elderly. The Australian car and motor cycle industry could have a role in introducing them in Australia as they have had in Japan. Japanese experimental PABs with solar PV battery rechargers enhance mobility with minimum resource depletion. In the near future these solar charged PABs will be

mass produced in China and Japan. The opportunity now exists for Australian industry to develop roof mounted solar cells to charge the batteries of commercially available PABs.

In 2007 16.5 million PABs were produced in China, 210,000 in Japan, 150,000 in Europe and 100,000 in the US. PABs are reducing air pollution, enhancing the mobility of the elderly and, when used by the able bodied, are a practical substitute for many car trips of less than 10 km in congested cities. PABs mostly use DC electric batteries with a maximum 250 watt power output to reduce the effort of cycling on an average journey and weigh only a few kilograms more than bicycles. The safest PABs have electronically controlled power assistance with no throttle. Once an ignition key is inserted there is automatic power assistance when starting, on hills and in head winds and automatic speed limitation, which fades out from 20 to 25 km per hour. They are well suited for use on bike lanes and their silent operation makes them very suitable for use on both shared footways and local residential streets.

The European Union, the U.S., Canada and New Zealand have recently upgraded their transport regulations for PABs. Australian legislation limits power output to 200 watts and denies Australian consumers the right to buy most of the safest electric PABs so there a need to change that legislation.

Australia could adopt New Zealand's regulations for PABs that allows a maximum power output of 300 watts, which is needed in hilly cities like Auckland (and Sydney). The speed control system should be fully automatically actuated with a starting key and power assistance cut out at 25 kph, as is the case in Japan.

To enhance the mobility of the elderly, the lame and the disabled fully powered PABs (600 watts) should be classified as 'bicycles' at the discretion of the road or transport minister, as is done in New Zealand. (Parker 2006)

State and Commonwealth environment agencies should provide marketing incentives for imported PABs to be sold as part of a package, complete with a PV 24 Volt or 36 Volt DC battery charging system coupled to solar panels. Solar PV battery recharging installations should be introduced in new housing schemes, flats, factories and office complexes. This should be part of a strategy to reduce oil use by substituting for single occupant car journeys without increasing the demand for electricity from power stations.

Bicycle/car or train journeys can replace many long urban car trips

In Melbourne's inner and outer suburbs tens of thousands of urban cyclists are choosing to drive because there is no secure bicycle parking at unstaffed stations and there are very few secure bicycle lockers at staffed stations for rush hour commuters travelling with the flow; it will be years before lockers are provided. In many outer urban areas there are no express buses or rail lines and housing is spread out over large areas.

Bicycle access to shared cars or people movers in outer suburbia has the potential to reduce congestion and carbon dioxide emissions from urban passenger

transport and free up road space. As a million more people will be living in outer suburbia by 2030 increasing commuter car occupancy in this way would greatly reduce CO2 emissions and greatly reduce fuel costs.

The benefits of bicycle access to shared PMVs and the rail system is based on ergonomic science which proves that riding a bicycle uses the 'mechanical advantage' of pedalling over walking to go 3.5 times as far as walking and to access around ten times the area for the same physical effort. (See table 3)

Table 3 Station catchment area data for walking & cycling with the same physical effort of 75 watts for 7.6 minutes, within a rectangular street grid

	Walking	Mountain bike	Racing bike
Effort advantage	1	3.1	3.8
Speed km/hour	6.1	20	23
Distance km.	0.8	2.5	3
Catchment area sq km	1.3	12.4	19

In Melbourne's inner and outer suburbs around 70% of potential rail users are within easy cycling distance of a station but only 12 % are within easy walking distance. Time wise bicycle access is more competitive than car, tram or bus access to stations (ECMT 2001)(Parker 2002)

In outer suburbia 90% of commutes are by car, motor cycle or a commercial vehicle and there are very few rail stations so the need is to more efficiently share cars for commuting and / or reduce household multiple car ownership. As housing is more spread out accessing a shared car or people mover by bicycle could make it a lot more convenient for the driver than making a pick up and reduce the time that would be required to walk to the car. The option also exists for the carriage of fold-up bicycles in the boot at the destination end of the commute for people who do not work in the same building. Reducing the CO2 emissions of car commutes per passenger km in this way could in the long term significantly increase the efficiency of the car fleet.

In Melbourne the low cost solution of bicycle access to shared cars, trains or express buses is ignored but car parking is provided at stations, for an average cost of \$15,000, for 25,000 able bodied commuters half of whom could easily walk or cycle to a station. The use of bicycle access to and from shared cars for long commuter trips has never been considered seriously by the Commonwealth but the car industry could consider it as a worthwhile 'green' project. Sharing cars make better use of roads and the vehicle and the fuel it uses than single or dual occupancy.

Cars also need to be safer for unprotected road users.

Cars have soft front ends designed to reduce pedestrian and cyclist injury. Bull bars in particular should not be allowed in urban areas. Banning bullbars will also

reduce CO 2 emissions because bullbars increase aerodynamic drag .

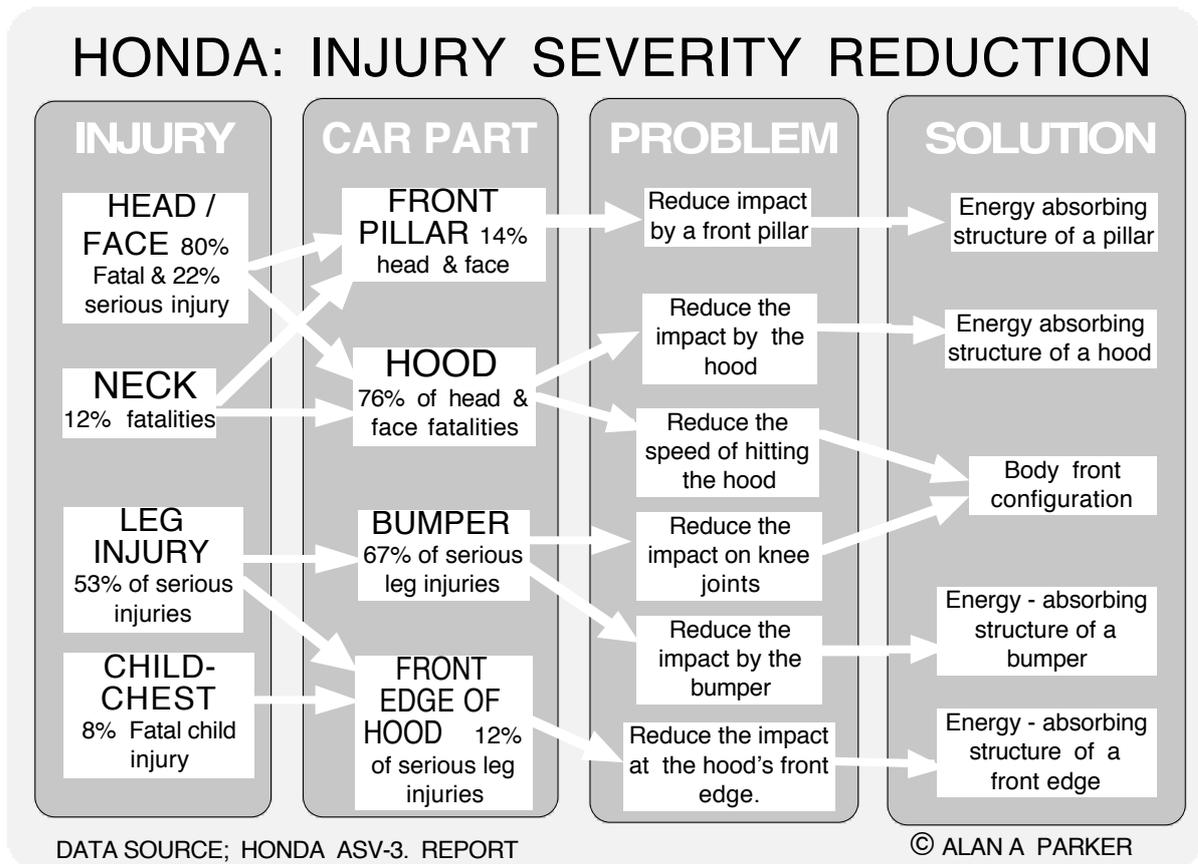


Figure 4

Smaller urban PMV fleets with small fuel efficient cars would be compatible with lower speed limits and allow freeing flowing traffic which generates less road rage and would make motoring much safer generally. Coupled with 30 km/hr speed limits on local roads and 50 km limits on roads with bike lanes it would make it safer for pedestrians, cyclists, scooter riders and motor cyclists. There is no reason why traffic volumes could not be reduced by over half and it would reduce the volume of 'stop, start' driving in the peak hours.

The pattern of pedestrian injuries shown on the "Honda injury severity reduction chart" are for Japan but the pattern will be very similar in Australia. Head, face and neck injuries are what cause most deaths and Honda is trying to deal with this by making the car hood and front pillars more energy absorbing. In some collisions the pedestrian hits the head light area and if that is rounded it will reduce the energy of impact by deflecting the legs sideways.

Making the hood crumple and crush so that it absorbs the energy of impact, like the expanded polystyrene liner in a bicycle helmet, is not difficult, however the front pillars have to be strong enough to resist rollovers and have to be skinny so as not to block the driver's vision; making them more energy absorbing will not be easy. Leg injuries to adults and chest injuries to children can be reduced by having a crumpable front edge on the hood and for the bumper to be crumpable. There should be no problems with doing that but, if bullbars are added, such safety

features will be a waste of time.

Conclusion

The objectives of the Automobile Review should be based on the assumption that frugality and the conservation of oil are essential for the reduction of CO₂ emissions. The Background Paper's assertion that "peak oil is a theory" is unsound because most experienced researchers and geologists are agreed it is only a few years away. Forecasts of future oil prices by the BTRE are grossly in error.

In the year 2000, Australia's production of crude oil and condensate satisfied nearly all its needs but, by 2012, 80% may be imported. The threat of peak oil is that world crude oil production peaks between 2008 and 2012 which will increase imported crude oil prices, perhaps to \$US 200 a barrel. By 2012 the carbon intensity of the oil that is produced from both conventional and unconventional sources will be steadily increasing. The preservation of a democratic way of life and avoidance of mass unemployment is going to be well nigh impossible if the climate is destabilised. There is a need to recognise that planning to cope with climate change needs an "all of government" approach and bipartisan support to confront the worst case climate change scenario. The Review should recommend reducing oil consumption by 2.5 % a year (Parker 2007)

It would be prudent for the review to recommend that Automotive industry policy should be subservient to a national energy security policy that will guarantee that the depletion rate of indigenous oil supplies, the growth of oil imports and the growth in the use of large energy wasteful cars will all be significantly reduced. Major change is also needed in the planning and management of the transport sector which has one of the highest levels of per capita car and air travel, road freight carried, greenhouse gas emissions and oil consumption in the world.

One risk management measure to deal with this threat to Australian economic security is to have a dynamic car industry that makes a small fuel efficient national car. Government car purchasing policies should be changed to protect the Australian car industry by initially guaranteeing that government car fleets buy the Hybrid Camries that will be made in Altona. Until they are available no fleet replacement vehicles should be bought that emit more 150 gms of CO₂ per km.

To this end the Review should accept that increased fuel prices can help drive technical change and alternative fuel use and that providing funds for better public transport and bicycle infrastructure is the most important priority. Road congestion will also induce demand for more public transport and will only be relieved when an alternative means of transport is provided.

The solution is to get drive alone commuters out of cars into public transport or onto bicycles and put many more passengers into cars or people movers for all purposes. There is no reason at all why the average fuel consumption of the PMV fleet should not be 2 litres or less per 100 passenger km if better use is made of cars, by carrying more passengers, of walking, and of riding bicycles and electric bicycles instead of making drive alone short car journeys.

The car industry needs a vision of future car use that will achieve a low level of fuel use per passenger km and government provided funds for measures to achieve that. Many of the transport innovations described here need not be considered in detail in the Review process. The future of the car industry will need to be presented as part of practical vision of an ecologically sustainable transport system that embodies these innovations. Such a vision statement will also be needed by the Commonwealth's new "major cities unit" and state transport planning agencies.

Smaller urban PMV fleets, with small fuel efficient cars, would be compatible with lower speed limits and allow freeing flowing traffic that generates less road rage which would make motoring much generally safer. Coupled with 30 km/hr speed limits on local roads and 50 km limits on roads with bike lanes it would certainly make it safer for pedestrians and cyclists. Bullbars should be banned in urban areas because they increase CO2 emissions by increasing aerodynamic drag and greatly increase the severity of pedestrian and cyclist injuries.

References

- Age Drive (2008)** *Firing on 3 cylinders*, Melbourne Age Drive page 3, 30-4-08.
- Bezdek, R. H (2007)** *Looming world oil Problems: myths and realities*. Keynote Address at the Smart 2007 Conference Sydney, Australia June 21, 2007, Contact rbezdek@misi-net.com
- Bezdek, R H & Wendling, R M (2005)** Fuel efficiency and the economy: Input-output analysis show how proposed changes to automotive fuel efficiency standards would propagate through the economy, p 132/139, *American Scientist* March -April 2005 Vol. 993.
- Birol, F. (2008)** "We can't cling to crude: we should leave oil before it leaves us" The independent Sunday, 2 March 2008
- BTRE (2005)** "Is the world running out of oil? A review of the debate", Bureau of Transport and Regional Economics, Working Paper No 61 p 24 Table 1
- ECMT (2001)** National Peer Review: The Netherlands. Implementing sustainable urban travel policies, European Conference of Ministers of Transport, OECD Publications Service, Paris.
- Economist (2006)** "Oil's dark secret: special report on national oil companies" *Economist* P55 12 August 2006.
- Heinburgh. R. (2006)** The oil depletion protocol: a plan to avert oil wars, terrorism and economic collapse New society Publishers, Canada.
- Hirsch, R L Bezdek, R and Wendling, R (2005)** Peaking of world oil production: impacts, mitigation, & risk management ASPO IV. International workshop on oil and gas depletion 19-20 May 2005, Lisbon, Portugal,
- **Parker, A.A. (2002)** "A case study of bicycle parking at selected Brisbane rail stations" 25th Australasian Transport Research Forum, incorporating the Bureau of Transport and Regional Economics' Transport Colloquium, Canberra 2002
- Parker, A A (2004)** Unsustainable trends in the ABS Census for the journey to work in Australia, Melbourne and other cities in Victoria 27th Australasian Transport Research Forum, Adelaide 29 September - 1 Oct 2004.
- Parker, A.A. (2006)** *Electric Power-Assisted Bicycles Reduce Oil Dependence and Enhance the Mobility of the Elderly* 29th Australasian Transport Research Forum, 27 – 29 September 2006, Crowne Plaza, Surfers Paradise, Gold Coast.
- Parker, A.A. (2007)** *Cutting transport fuel use: the priorities for climate change and uncertain future oil supplies* 30th Australasian Transport Research Forum, 25-27th September Langham Hotel, Melbourne.
- Simmons, M. R. (2005)** *Twilight in the desert*: the coming oil shock and the world economy, John Wiley and Sons, New Jersey U.S. p44,9-11-05

