

City of Whitehorse submission to Senate Inquiry into Australia's future oil supply and alternative transport fuels

Australia's future oil supply and alternative transport fuels

Introduction

Fuel Policy, as with most Policy issues, has many conflicting requirements. One of them is a public expectation to be able to travel, short or long distances in a private vehicle at an affordable price in privacy. Sufficient road space is a constant need for that desire, and the economy and reality of both of these wishes, even in the medium term, are open to question. That this is the current context and preferred position of the vast majority of the adult Australian population is without question.

Another issue is that of self-reliance. Australia has limited current supplies of petrol (the mix that grew under that name). Australia has some resources that will come on line, but current reliance on imported petrol is at its highest in two decades and the position will worsen - possibly to total reliance in the future, and that is a very poor outcome in a world of rapidly escalating prices and expected escalation of demand, especially in our sector of the world.

Australia has high levels of resources of at least two types of alternative fuels, being LPG and LNG, on which this discussion will focus. Australia also has a variety of other alternative biofuels including ethanol, other grain crops and substances that can be described as cooking oils and fats, such as the oil from fish and chip shops now commonly used to fuel diesel motors in Australia's localised alternative fuel local industry.

The final context for this discussion relates to the Kyoto protocols and the overall social, ethical and economic costs associated with direct and indirect outcomes from the burning of fossil fuels and the resultant escalation of CO₂ concentrations in the atmosphere.

Australia has both a major out of control current account deficit problem, in reality a crisis which has yet to come to a head, and a petrol import/export problem that is contributing noticeably and increasingly to the current account deficit.

Australia has significant stocks of LNG and LPG, most of which are exported without value adding at a very low price per tonne. At the same time Australia imports very large and currently increasing quantities of petrol at very high prices.

Whilst acknowledging that use of any of these fuels contributes to the greenhouse problem both locally and internationally - it must be recognised that Australia, apart from being party to an international push for greater fuel efficiency and some sporadic shifts towards smaller more fuel efficient cars, has made very little impact on the economic production of alternative fuel cars. We should and must address this imbalance. Hybrid cars are beginning, for one manufacturer, to become vaguely economic, but only for those with a high ethical desire for low greenhouse impact lifestyles.

Australia must, in both the short and medium term, focus the ongoing fossil fuel usage in cars to fuels in which we are self sufficient - LPG, LNG and other alternative fossil and non-fossil based fuels.

In order for this to work LPG and LNG pricing must be detached from the current international and easily doctored benchmarks, and link the wholesale and domestic retail pricing of LPG and LNG, once LNG becomes a widely useable fuel.

As the government legitimately requires funding for further petroleum exploration it is reasonable to suggest the LPG or LNG price is always going to be inflated beyond real cost - but an excise or similar would be affordable if the base cost was 10 - 20 cents / litre and the bulk export cost was per tonne not less than half equivalent, then the Government would start to maximise or at least optimise its internal benefits while the petrochemical corporations would do less well.

There would be an on-going LPG conversion market providing many jobs, Australia could become decreasingly dependent on local fuels and the balance of payments position would at least markedly decrease its acceleration.

LPG exports would decrease due to the relative price increase towards local parity. Ideally Australia would minimise or eventually stop LPG exports, as we would wish to maximise our internal use of relatively cheap but limited and irreplaceable fuel stocks - as with LNG.

Implications for availability and pricing of transport fuels

Impact on Local Government

- High fuel prices are already affecting all Council services that are reliant on transport and therefore fuel consumption e.g. waste and recycling collections, Waste Transfer Centre, park maintenance (mowing, street tree maintenance etc.) road construction & maintenance, street sweeping, community bus, building & health inspections etc.
- The ever-increasing rise in the price of fuel therefore has a significant impact on the cost of implementing Council's services. As a result of spending the additional funds needed to cover the higher fuel cost in running Council's existing services, there is consequently less funding available for the delivery of new or improved services. Fuel costs have risen well above CPI levels, and Council's long-term financial plan is based on achieving the lowest rates possible for the delivery of services. The rising cost of fuel impacts Council's ability to deliver existing services and to fund better or new services required by the community. Council's current expenditure on fuel is approximately \$600,000 per annum. The 50% increase in fuel costs over the past three years (and 24% increase between February 2004 and December 2005) has required a 1% increase in total rates, simply to cover the fuel cost of operating current services.
- Higher fuel prices have forced Councils to seek fuel efficiencies and review operational practices and services seeking ways to reduce fuel consumption.
- Local Government has embraced energy-saving programs such as ICLEI's Cities for Climate Protection Program in response to community concerns about climate change and the need for corporations and the community to become more sustainable. Concerns about the future oil supply and ever-increasing price of oil influences the actions that Council implements under this program. The City of Whitehorse is committed to the Cities for Climate Protection Program.
- Council has developed key strategies with an energy focus, namely an organisation-wide sustainability strategy, EcoVision, and a specific 3-year plan to reduce energy consumption and greenhouse gas emissions through its Energy Action Plan. As part of Council's commitment to implementing energy-efficient measures, Council has already reduced the size of its fleet, purchased four-cylinder cars instead of 6-cylinder cars where possible, and converted some vehicles to gas or diesel. In the next 12 months, Council will be considering further fuel-efficiencies and will consider the use of alternative fuels for Council fleet. The rising fuel price and potentially limited oil supply is therefore having a significant influence at a strategic level.

Impact on the Community

- There is a very high reliance on the car, particularly in eastern and outer suburbs of Melbourne, due to limited public transport infrastructure and services. The rising cost of fuel will therefore have a negative impact on households and businesses if they are unable to afford to use their car or vehicle fleet as required. There will be consequent impacts on the amount of disposable income available for other essentials or lifestyle purchases.

- There seems to have been an initial community reaction to high fuel prices in families and households where fuel represents a higher component of disposable income leading to an increased use of public transport and active transport, such as walking and cycling. This trend seems to have levelled off since the rising price of fuel has steadied at prices between \$1.15 and \$1.25 per litre.
- It appears that the community are prepared to consider and trial alternate transport choices, particularly where savings can be achieved. An increase in public transport use has been noted, but the increase has not been sustained in all cases. This is probably because of Melbourne's dysfunctional public transport system where trains, trams and buses are poorly linked. Access from private dwellings to public transport and connectivity between transport modes is a considerable issue of concern in the outer eastern region of Melbourne.
- The frequency and reliability of public transport in the outer eastern region is relatively poor, as public transport users expect a more frequent and reliable service and extension of the system into unserved areas. The span of hours is also poor with several bus services terminating at 6pm, which is a serious issue to City commuters, thereby turning to car use and accepting the increased fuel and parking costs.
- It appears that the community tend to bear the burden of increased fuel costs and continue to use their vehicles due to increased flexibility, reliability and privacy, as currently, private road based travel is superior to the fixed rail and public transport service. Continued use and growth of motor vehicles despite rising fuel costs, will lead to increased road congestion, delay and travel time, resulting in negative economic and environmental outcomes. Rising fuel costs will impact adversely on road transport companies and business, who will pass on the increased cost of their service to users and clients.
- It is considered that the community are too reliant on motor vehicles. This will continue to be a primary option for many, until significant investment and improvements are made to the public transport system so that it compares more favourably to car use. There have already been increased sales of smaller sized vehicles to save on fuel costs.
- Anecdotal evidence suggests that families are cutting costs on food, clothing and recreation only to redirect these savings to operating fuel costs.
- If the community travel behaviour can permanently change to become less reliant on car transport, there could be social and health benefits resulting from the increased use of public and active forms of transport. These include improved fitness levels by walking and cycling, shared travel experiences when car pooling or using public transport, and lower stress levels if fewer cars results in less road rage. There would also be environmental benefits such as cleaner air if there are fewer vehicle exhaust emissions, extended life of oil reserves allowing time for alternative fuel technologies to be further developed, and lower greenhouse gas emissions.
- The sustained high fuel price may lead to opportunities for new businesses, technologies, services and products related to alternative fuel sources.
- The community expects all levels of government to plan ahead and transition to alternative forms of fuel in a systematic, affordable manner. The community will not accept the concept that we must continue to exploit and use oil as the main fuel source at all costs. There are environmental and economic limits to the community's 'willingness to pay'. For example, there is some community resistance to oil exploration and production in the Great Barrier Reef.
- It is suggested that Governments could direct more funds derived from the fuel levy into public transport infrastructure and services to address capacity and efficiency of public transport. The levy could also fund more extensive education campaigns to

encourage more efficient fuel consumption, increased use of public and alternative forms of transport, and a better community understanding of alternative fuels.

- Increased funding from fuel levies could be directed to improving existing transport programs such as the Roads to Recovery Program, with a focus on better integrating expenditure on roads, buses and rail.

b) Potential of new sources of oil and alternative transport fuels

- Australia is currently exporting most of its gas supply, yet Australia has a secure supply of Compressed Natural Gas (CNG) for approximately 90 years, offering a more sustainable fuel supply than oil. To improve the viability and accessibility to CNG, there needs to be a network of fuelling stations and supporting infrastructure before this form of fuel becomes a practical alternative fuel source at the community level. Additional comment and information regarding CNG is provided below and in the appendix of this submission.
- Local government supports the continued research into suitable alternative fuels and measures that would make them accessible for business and community use. In particular, alternatives that can be readily adapted and used in current engines and vehicles should be a priority, such as CNG.
- There is currently a rebate for diesel fuel. The Australian Government should consider a system of rebates and tax incentives for alternative fuels to accelerate take up/conversion to CNG etc.
- Alternative fuels manufactured from waste materials should also be explored, to assist in the diversion of waste materials from landfill and to provide consumer choice & competition in the types of fuel available. The proposed excise on alternative fuels from waste should be removed, and the sector allowed time to mature and become competitive without the burden of additional excise.

ALTERNATIVE FUELS: Compressed Natural Gas

Compressed Natural Gas

Compressed Natural Gas (CNG) is odourless, colourless, non-toxic, and has a limited flammability range. The higher octane rating of CNG makes it a superior fuel to petrol. The absence of lead, benzene and other additives associated with petroleum-based fuels means that there is an overall reduction in greenhouse gas emissions, particulates and other toxic pollutants as evidenced in published research papers.

A report, *The Liverpool Natural Gas Vehicle Project*, by Guy Creber, Corporate Manager Transport, Liverpool City Council, stated that:

“Tests on natural gas buses compared to diesel buses in Sweden indicate 66% fewer nitrogen oxides, 46% less carbon monoxide, 62% less non-methane hydrocarbons, 9% less carbon dioxide, 99% less sulphur dioxide, and 76% less particulate matter. Indications are that CNG can produce up to 50% fewer non-methane hydrocarbons, 50% fewer nitrogen oxides, 50% less carbon monoxide and 20% less carbon dioxide than petrol. It produces no lead, no benzene and no petrol vapours.

Health impacts

According to the report, *Life-Cycle Emissions Analysis of Fuels for Light Vehicles* to the Australian Greenhouse Office:

“Present day health concerns associated with motor vehicle emissions are predominantly focussed on particulate matter (PM10, PM2.5, PM1). LPG (third generation) vehicles have the lowest tailpipe emissions of PM10, but on a life-cycle basis the PM10 emissions from LPG and CNG are comparable, and are less than those from diesel, petrol or even hybrid vehicles.”

The adverse health impacts from diesel exhaust are well documented. Australia is lagging behind other developed nations in reducing the sulphur content of diesel fuel. The new rules governing the sulphur levels in diesel, which came into force in January, have been waived for an unknown period due to the lack of product at the refineries. The oil companies have known for two years about the new standards but still failed to deliver.

Economic impact

The City of Liverpool introduced CNG powered vehicles to their garbage fleet in 2000 and, according to the Deputy Mayor, Cr Waller:

"We are saving more money than we'd expected, and in the process we are helping to clear the air in Western Sydney. While the price of petrol and diesel has risen in the last 18 months, our price for CNG has virtually stayed the same. What's more, we are using a fuel that is 100% Australian sourced. As a matter of policy we choose to use Australian made vehicles where possible, and now we have a fuel to match."

It is reported that motorists would be able to reduce their annual fuel bill by up to 50% each year through the use of natural gas. As CNG is not imported and not linked to world crude oil pricing, the basic price would remain stable.

From a local Council perspective, there is little to be gained by a Council spending \$80,000 to set up its own CNG fuelling station if the facility is not available in the general community. The Council trucks would need to be re-converted at the end of their contract life if there are no other refuelling outlets, further adding to the cost to local government.

There needs to be a slow but constant roll out of CNG fuelling options at all petrol stations, just as they offer LPG. This will allow confidence in converting trucks and cars to CNG if it is known that they can be fuelled conveniently at the general petrol outlets.

Projections of oil production

In its report, *The Future of Energy*, produced by CSIRO Sustainable Ecosystems on the dwindling availability of current oil supplies they note that:

"Analyses presented in this study suggest that domestic supplies of easily available or traditional oil may become constrained around 2020. A large body of work suggests that world production from traditional supplies of oil will soon peak, and that the production decline will force difficult transitions in many modern economies (Blanchard, 2000; Simmons, 2000; Duncan and Youngquist, 1998; World Resources Institute, 2001). In a local context the Australian Geological Survey Organisation (2000) notes that "by 2010 Australia will have produced somewhere between about 64% and 73% of the average estimate of its ultimately recoverable crude oil resources". (*The future of energy From Future Dilemmas: Options to 2050 for Australia's population, technology, resources and environment, October 2002.*)

In Australia, known natural gas reserves constitute more than three times the known equivalent oil reserves. Australia currently has known reserves of natural gas to last 80 years.

The report's authors then discuss the oil to gas transition, emphasizing the ease of transition and the fact that the technology already exists:

"The oil to gas transition is a reasonably easy one as much of the technology exists today and the main actions required to stimulate it are organisational and market based, rather than a requirement for a technology breakthrough. Natural gas as a fuel offers a 26% reduction in carbon dioxide and potentially 70% reduction in other emissions compared to petrol and diesel (Black et al, 1998; Di Pascoli et al., 2000; Maclean and Lave, 2000; Yu et al., 2000; Strickland, 2000). Generally, motor cars can be retrofitted to run on compressed natural gas (CNG) for under \$2000. Volvo markets a wide range of bi-fuelled vehicles, including cars and buses that run on petrol or diesel and compressed natural gas (Volvo, 2000) and most vehicle manufacturers will probably follow this lead in the next decade. Countries such as Argentina

(450,000 vehicles), Italy (320,000) and the USA (90,000) have large CNG powered fleets and New Zealand was once a leader in CNG technology (a number of political and market changes have halved CNG outlets therein the last decade). Liverpool City Council in Sydney, with a number of other organisations, is promoting the use of CNG in an attempt to combat the growing problems of vehicle emissions in Australia's city airsheds (Liverpool City, 1998)."

Natural gas advantages

Australia is a significant producer and consumer of natural gas by international standards. Natural gas vehicles make up a relatively minor proportion of Australia's total natural gas consumption. According to the University of Queensland. School of Information Technology and Electrical Engineering Sustainable Energy Research Group:

- Natural gas is the only fuel that requires almost no processing for automotive use.
- Natural gas has the lowest carbon intensity of all fossil-based fuels.
- Natural gas is a high quality fuel that burns cleanly and offers 10-15% engine efficiency improvement over petrol due to its high octane number.
- CNG is competitive on a "well-to-wheel" basis, displaying good performance in full-cycle energy consumption and greenhouse gas emissions.
- CNG has received substantial federal government backing through the \$7.6 million Compressed Natural Gas Infrastructure Program designed to establish a national network of CNG refuelling stations in Australia.
- Natural gas can play a crucial role as both feedstock and fuel in the transition to a sustainable hydrogen economy, as described by Amory Lovins (1999) in "A Strategy for the Hydrogen Transition".

Security of supply

In its submission to the Fuel Tax Inquiry February 15th 2002, the Australian Natural Gas Vehicle Association (ANGVA), *Supplementary Submission*, commented on the issue of supply security and diversification:

"In the current climate, the importance of this issue cannot be overstated and is in fact taking precedence in other areas around the world. Because Australia has had such reliable supplies of crude oil for a considerably long time, there is a real danger that we may be complacent about this and assume that this will always be the case. The rest of the world does not share this complacency."

In December 2001, the European Union adopted an action plan to ensure that 20% of transport fuels are supplied by alternative fuel sources by 2010. This plan was under consideration even before the events of September 11. The EU proposal states:

"In the coming twenty to thirty years EU production is expected to decline, whereas consumption will increase as substitution possibilities will be exhausted and transport demand is likely to continue to grow. During the coming decades of increased import dependency world oil demand is also expected to show strong growth and the global distribution of known oil reserves leaves the Middle East OPEC members as the only possible suppliers to this increased demand."

In October 2001 President Bush¹ was quoted as saying:

"The less dependent we are on foreign sources of crude oil, the more secure we are at home ... We've spent a lot of time talking about homeland security, and an integral piece of homeland security is energy independence."

This view has been reinforced by the influential Union of Concerned Scientist (UCS) who released a report in January 2002 entitled "*Dangerous Addiction : Ending America's Oil Dependence.*" The report says:

¹ *(It should also be noted that on the 31st January this year President Bush used even stronger language when he stated that, " Americans must break a national "addiction" to oil to preserve their country's prosperity and security.")

"The events of September 11 highlight the danger in continuing to turn a blind eye to our oil dependence. While oil prices are down for the moment, the instability of the Middle East makes for a situation that could change at any moment. New suppliers like Russia and the Caspian region are hardly more stable. Sixty five percent of the world's known oil reserves lie beneath the Persian Gulf."

The report on ending America's dependence on oil also points out:

"Of the nearly 19 million barrels per day increase in world oil demand now forecast between 2010 and 2020, more than 85% will come from Middle East countries..... our reliance on imported fuels is heavy already and increasing further. As we move to low sulphur and ultra low sulphur diesels our diesel fleet will almost be 100% dependent on imported crude oil."

Australia has to import more than 65 per cent of its crude oil and will no longer be immune or isolated from the conflict in the Middle East. We recommend further reading of the ANOVA full and supplementary submissions to the 2002 Inquiry.

Conclusion regarding CNG:

The City of Whitehorse, through its EcoVision Strategy for an ecologically sustainable future, is a strong proponent of the sustainable use of resources. The current use of oil reserves is clearly unsustainable, with world supplies reported to be depleted within 40-50 years, unless actions are taken now to change the way we do business. Alternative fuels, such as CNG, have been demonstrated to be an integral part of the transport energy sector and have been integrated successfully in a number of countries, including India, the U.S. and Argentina.

The health impacts arising from an expanding transport sector, in the form of air pollution is well documented. CNG has been shown to be less polluting than some other fuels, produces far less particulates than diesel and less greenhouse gas than petrol.

There are significant economic benefits in promoting the uptake of CNG. Many Australians would be financially better off as CNG is 50% cheaper than petrol and diesel. The price of CNG would remain stable for many years allowing long term fuel contracts to be put in place, giving greater stability to the transport sector. These financial benefits could then be more evenly distributed into other areas of the economy.

As stated in the report by the Joint Standing Committee Environment, Resources and Development, Parliament of Tasmania 2002 *The Use Of Compressed Natural Gas As A Vehicle Fuel in Tasmania*:

"It is worth emphasising that detailed analysis by the CSIRO, conducted on a wide range of alternative fuels, determined that CNG is the cleanest fuel of all others available, both in terms of greenhouse gases and particulate matter."

The City of Whitehorse acknowledges the future role of other alternative fuels such as biodiesel, electricity, solar, ethanol and hydrogen. These alternatives are yet to be fully exploited and the technology and/or the availability of the fuels is currently limited. The uptake of CNG as an alternative fuel supply has been very slow, mainly due to the lack of adequate refuelling infrastructure and reduced government excise on diesel fuel. Australia has 80-90 years supply of natural gas on current known reserves and usage patterns. The fuel delivery infrastructure is already in place in major cities in Australia. Security of supply is guaranteed and, in the event of another oil crisis in the Middle East, Australia would be far better prepared to cope.

It is recommended that:

- The Federal Government acknowledges the important role that CNG has in the continued environmental, economic and social prosperity of Australia.
- The Federal Government removes the proposed excise on CNG and increases the excise on diesel to compensate.

- The Federal Government extends and increases the subsidies or taxation incentives for CNG uptake into the domestic fleet, the provision of a refuelling infrastructure network, and actively encourages the use of CNG across the transport sector.
- The Federal Government legislates to ensure car manufacturers produce vehicles at a competitive price to petrol and diesel vehicles, capable of running on CNG.
- The Federal Government retains adequate supplies of CNG within Australia for the benefit of present and future generations.

c) Flow-on economic and social impact from continuing rises in fuel prices

A summary of the key issues from a local government perspective:

1. High oil prices have a significant impact on Council's ability to deliver cost-effective services to the community.
2. The community will have less disposable income because an increased proportion of household and business income is being spent on fuel. For some sectors of the community, this may result in financial hardship and consequent social discord.
3. Peak oil issue – getting close to when demand will outstrip supply. Investment and development of alternative forms of fuel, especially compressed natural gas must accelerate and be given higher Government priority.
4. Australia is very reliant on oil, and the reduced security of supply will have a major economic and social impact.
5. There has to be a balance between supply and conservation of our fragile environment e.g. no mining of marine parks where there are “quick fix” sources of oil.
6. Higher fuel prices will impact on outer suburban and regional areas disproportionately, because of the high reliance on cars and limited or no public transport available. This can lead to impacts on lifestyle, family structure and household incomes.
7. The environmental, economic and social costs associated with traffic congestion are already substantial for local communities. Higher fuel costs have not resulted in sustained lower car use, and there is no noticeable decrease in road congestion. The higher fuel costs have simply added to the individual cost of running a vehicle and to the community cost associated with traffic congestion.
8. Impact on independence for sectors of the community, particularly where there are mobility and accessibility issues that require car-based transport.
9. Additional funding is urgently needed to improve public transport infrastructure and services, the availability of alternative fuels and community awareness campaigns on measures to reduce fuel consumption and reliance on car travel.
10. A positive social impact could be a redistribution of wealth (where there is high availability of public transport) reduced car reliance, more available income for lifestyle changes, savings etc.
11. Some positive benefits resulting from high oil prices include the stimulus for energy-saving measures and campaigns, business investment in fuel-saving services and work practices, technological innovation, and the encouragement of alternative fuel development and use.

d) Options for reducing Australia's transport fuel demands

1. Encourage strategic programs such as the Cities for Climate Protection program, that result in measurable and practical actions to reduce energy consumption (including fuel efficiencies)

2. Improve Public Transport Infrastructure and services e.g. increase priority lanes for buses; grade separation of railway crossings; extend bus, rail and tram infrastructure; and improve service and coverage.
3. Encouraging sustainable transport options for the community e.g. Current Council behavioural change programs include Wiser Driver, Energy Action Plan and EcoVision Strategy actions.
4. Federal Government commitment to invest in Public Transport Infrastructure

Provide incentives such as:

- Hybrid and other cleaner vehicles should have cheaper registration and insurance fees, as well as incentives for discount or priority parking.
- Schools, Universities etc. should provide Metcards for students (included in school fees), discount travel on public transport, and measures from programs such as TravelSmart to encourage increased use of public transport, walking, and cycling.

Infrastructure Improvements:

- Increase bicycle paths, pedestrian crossings/areas etc.
- Improved linkages and accessibility to all types of public transport services

Strategic Direction

Need clear Federal Government direction and support for alternative transport fuels

APPENDIX

City of Whitehorse Energy Action Plan

This Plan demonstrates the priority issues and actions that the City of Whitehorse is undertaking to reduce energy consumption within Council's operations and to encourage the community to reduce energy consumption.