

Legislative Council Select Committee



THE IMPACT OF PEAK OIL ON SOUTH AUSTRALIA

August 2008

**Royal Automobile
Association of
South Australia Inc.**

ABN 90 020 001 807

101 Richmond Road.
Mile End SA 5031
Phone (08) 8202 4600
Fax (08) 8202 4520
www.raa.net

Executive Summary

The Royal Automobile Association of SA Inc. (RAA) is the State's peak non-government body representing motorists. Our 570,000-plus members – 27% of whom reside in regional SA – look to the RAA to represent their interests on a broad range of motoring-related issues, in particular fuel.

In the last 18 months, the price of crude oil price has pushed the price of all petroleum products to record highs as the world's spare oil capacity continues to decline as global demand soars, and while global oil supplies become increasingly reliant on less-developed and geopolitically unstable regions.

RAA recognises that Australian and world crude oil reserves are limited and, at this time, no alternative transport fuels are currently available at a reasonable price or quantity to significantly alter the level of dependence on petroleum fuels. Therefore:

- crude oil supplies should be extended through research and development to improve the efficiency of extraction and refining, and the use of renewable fuel extenders to reduce the consumption of petroleum;
- governments need to encourage measures that reduce current vehicle fuel consumption;
- industry should demonstrate leadership in energy conservation by adopting responsible energy use practices and, thereby, minimise its energy consumption levels;
- Government legislation and policy should be directed towards ensuring that all sections of the oil industry in Australia (production, refining, wholesaling, distribution and retailing) operate in a transparent and competitive manner and encourage foreign governments to do the same through relevant diplomatic channels.

While Australia's retail fuel prices continue to follow their relative international pricing benchmarks, Australia is no longer self-sufficient on its own oil resources to meet its transportation needs, and is increasingly reliant on foreign sources of petroleum and gas to meet our growing demands.

As South Australia is the only mainland state without an oil refinery, the State continues to be more reliant on international petroleum sources – a reliance that leaves the State more vulnerable and susceptible to a fuel supply shortage as the current levels of terminal storage provide as little as one week's worth of fuel supply.

Despite rising fuel costs beginning to affect motorists throughout the South Australian community, motorists continue to drive enjoying the flexibility their vehicle provides. The RAA supports the use of public transport as an essential transportation mode that gives people choice, but for public transport to be a viable alternative and assist in reducing motor vehicle dependency, it must be reliable, cost effective and sufficiently frequent for a significant portion of SA motorists to forego their personal vehicle.

In RAA's view, alternative fuels provide motorists with a range of fuel choices, helping to decrease Australia's oil dependency whilst allowing motorists to enjoy the flexibility their cars provide. But alternative fuels are expected to become part of the wider fuel mix, not replace oil as transport's core fuel source.

Governments have an important role to play to ensure South Australians have adequate access to the transport fuels the community and the economy needs.

The RAA encourages all levels of government to take a proactive approach with legislation and policy directed towards ensuring that all sections of the oil industry in Australia (refining, wholesaling, distribution and retailing) operate in a transparent and competitive manner.



Table of Contents

About the RAA	4
RAA Position on ‘Peak Oil’	5
Background on Oil and Fuel Markets.....	6
Global Oil and Gas Prices.....	6
Australia’s Oil & Gas Production and Refineries	7
South Australia’s Petroleum Terminals.....	8
Global Petroleum Demand.....	9
Australian Demand.....	10
SA Demand and Prices.....	10
Effect of Rising Cost of Fuel	12
Public Transport.....	13
Measures to Reduce Petroleum Demand.....	14
Vehicle Fuel Efficiency	14
Traffic Congestion & ITS.....	14
Fuel Tax Reform	15
Public Education	15
Petroleum Supply Issues	16
Reliance on Foreign Imports.....	16
Federal Government’s Liquid Fuel Emergency (LFE) Response Plan.....	16
Alternative fuels	17
Biofuels	17
LPG	17
Natural Gas – CNG & LNG	18
Gas & Coal Seam	18
Hydrogen.....	18



About the RAA

TOR: 1) The need for public education and awareness.

The Royal Automobile Association of SA Inc. (RAA) is the State's peak non-government body representing motorists. Our 570,000-plus members – 27% of whom reside in regional SA – look to the RAA to represent their interests on a broad range of motoring-related issues, in particular fuel.

The RAA believes that market forces should dictate the price of petroleum-based products reflecting their cost of production, the cost of supplying products to different markets, and the degree of competition that exists in those markets. A free and open competitive market for petroleum products best serves the interests of consumers.

Through monitoring, data manipulation and analysis of the fuel industry, RAA provides a comprehensive fuel advisory and information service to RAA members, the general public, media, other motoring clubs around Australia, industry stakeholders and the private sector. Somewhat disappointingly, even government agencies approach the RAA for current and historical data, including the Federal Department of Parliamentary Services, the Australian Tax Office, State Treasury and local government as they are unable to easily source this information elsewhere.

The RAA's aim is to make the retail market as transparent as possible to the motoring public, and through our own comprehensive website provides detailed information on all matters relating to fuel, including:

- The cheapest Adelaide fuel locations (updated daily in the morning and afternoon)
- Daily, weekly, monthly and yearly ULP, Diesel and LPG price data
- Industry background, pricing and taxation fact sheets and FAQ responses
- Detailed fuel supply and demand analysis
- Current issues and breaking news
- Links to relevant industry sites and sources; and
- A direct question function.

As part of the Association's fuel monitoring role, the RAA collects and analyses the following fuel information:

- Daily crude oil price in US and Australian dollars (Tapis and WTI)
- Daily Australian exchange rate
- Adelaide average daily ULP, Diesel, LPG, PULP and E10 prices
- Daily Terminal Gate Prices (TGP) – ULP, PULP and Diesel
- Refining reference price for ULP, PULP and Diesel
- Daily Singapore parity price (MOGAS and Gasoil) in Australian dollars for ULP and Diesel
- National daily average for each fuel type (ULP, Diesel and LPG)
- National monthly average for each fuel type (ULP, PULP, Diesel and LPG)
- Weekly average ULP price for 10 regional South Australian towns
- Monthly average ULP price for 10 regional South Australian towns
- Monthly Saudi Aramco parity price in Australian dollars for Propane and Butane (LPG)
- Monthly LPG wholesale price throughout SA
- International monthly fuel price comparison of OECD nations
- Monthly National and State fuel consumption data
- Monthly Australian petroleum products production, refinement, import and export volumes
- Weekly public shipping movements

On average, the RAA Public Affairs department would field approximately ten phone calls per day from RAA members and the general public on fuel-related issues. During peak periods (periods of intense media coverage and speculation), the Public Affairs department would take one telephone call every 10 minutes and receive 10-15 media and stakeholder enquiries per day.

RAA Position on 'Peak Oil'

The RAA continues to take great interest in the 'Peak Oil' debate.

The RAA monitors both sides of this debate actively to enable the maintenance of a balanced view. Currently, neither side of this debate can be excluded with great certainty, however this situation could change in light of unequivocal data supporting one particular view.

RAA recognises that Australian and world crude oil reserves are limited and, at this time, no alternative transport fuels are currently available at a reasonable price or quantity to significantly alter the level of dependence on petroleum fuels. Therefore:

- crude oil supplies should be extended through research and development to improve the efficiency of extraction and refining, and the use of renewable fuel extenders to reduce the consumption of petroleum;
- governments need to encourage measures that reduce current vehicle fuel consumption;
- industry should demonstrate leadership in energy conservation by adopting responsible energy use practices and, thereby, minimise its energy consumption levels;
- Government legislation and policy should be directed towards ensuring that all sections of the oil industry in Australia (production, refining, wholesaling, distribution and retailing) operate in a transparent and competitive manner and encourage foreign governments to do the same through relevant diplomatic channels.

The RAA believes that market forces should dictate the price of petroleum-based products to reflect the cost of production, the cost of supplying products to different markets, and the level of competition present in those markets.

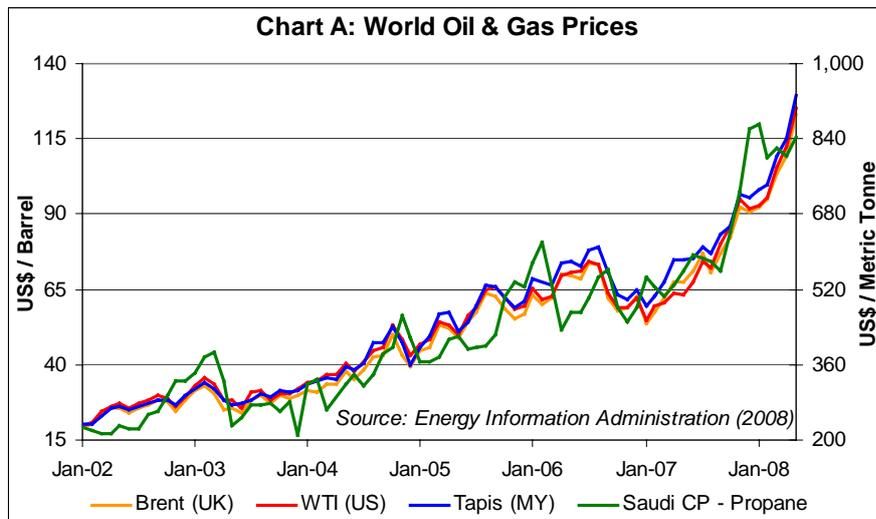
A free and open competitive market for petroleum products best serves the interests of consumers.

Background on Oil and Fuel Markets

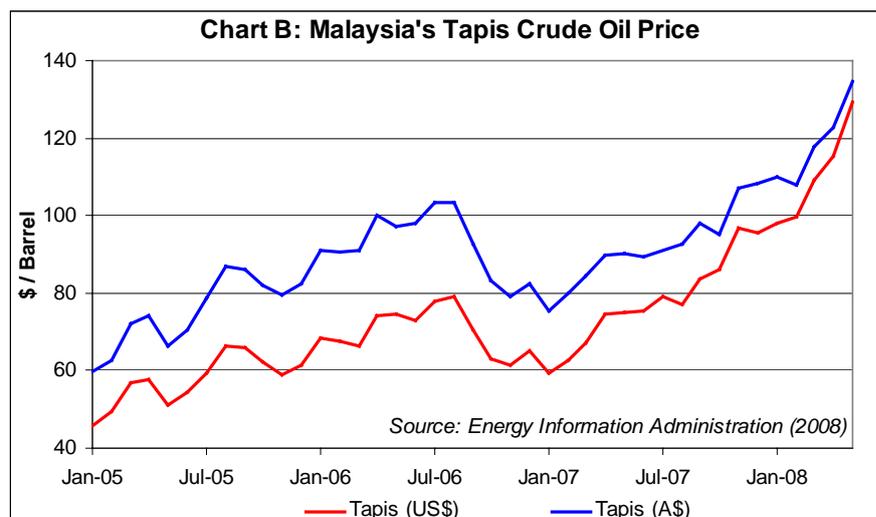
- TOR: F) South Australia's fuel storage capability including:
- i. susceptibility of fuel supply to disruption
 - l) The need for public education and awareness.

Global Oil and Gas Prices

As shown in Chart A, in the 18 months to July 2008, the value of crude oil on the world market has increased significantly as demand for oil-based products in developing countries (such as India and China) continues to grow while global oil supplies become increasingly reliant on less-developed and geopolitically unstable regions. Chart A also illustrates that as oil prices rise, it has had a significant impact on the Saudi Aramco Contract Price for Propane and Butane – Australia's price benchmark for LPG.



In addition to rising demand, recent uncertainty surrounding the United States' economy and a weakening US dollar has impacted the value of many crude oil blends. By way of example, when the US dollar weakens it can artificially affect the value of crude oil in US dollar terms but not change crude's value in another currency¹. As illustrated, Chart B shows an increase of 180% in US Dollar terms compared to 125% increase in Australian dollar terms.



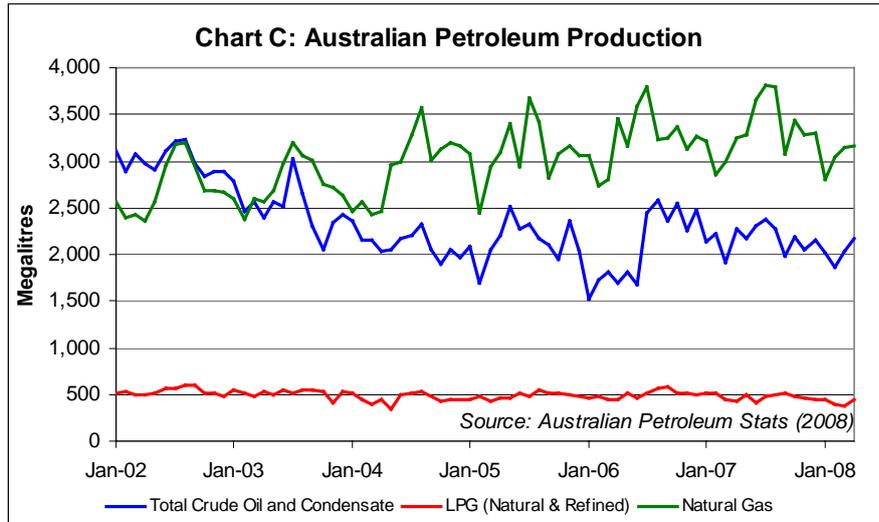
¹ For example, if crude oil was US\$140 (A\$150.5) when the exchange rate is US\$1 = A\$0.93 and oil rose US\$5 and the exchange rate increased to US\$1 = A\$0.962, the crude oil price would remain at A\$150.5.



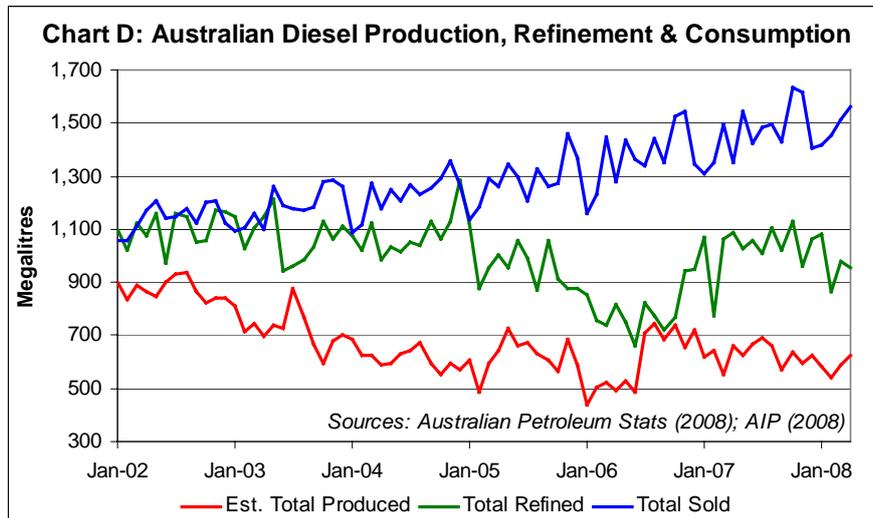
The weakening US Dollar has also seen interest in many dollar-denominated commodities, including oil, increase as foreign buyers are able to purchase more for the same value. As illustrated in Chart B the rising value of the Australian dollar has insulated Australians from the real impact of rising oil prices, and the same situation exists regarding the Saudi CP for Propane and Butane.

Australia's Oil & Gas Production and Refineries

Australia's oil and LPG production has been in decline since September 2002 (Chart C) to the point that Australia now relies more heavily on imported oil to meet its growing demand for refined-petroleum products. In 2007 Australia's refineries used 30% Australian oil, importing the remaining 70%².



Australia's dependence on imported product is illustrated in Chart D. Australia imports it is estimated that one third of all refined diesel into Australia to meet its current demand.



In contrast, the majority of Australia's LPG is not derived from refineries but is naturally occurring³. Current levels of Australian LPG production mean that there appears to be sufficient quantity to meet local demand⁴.

² Australian Petroleum Stats (2008)

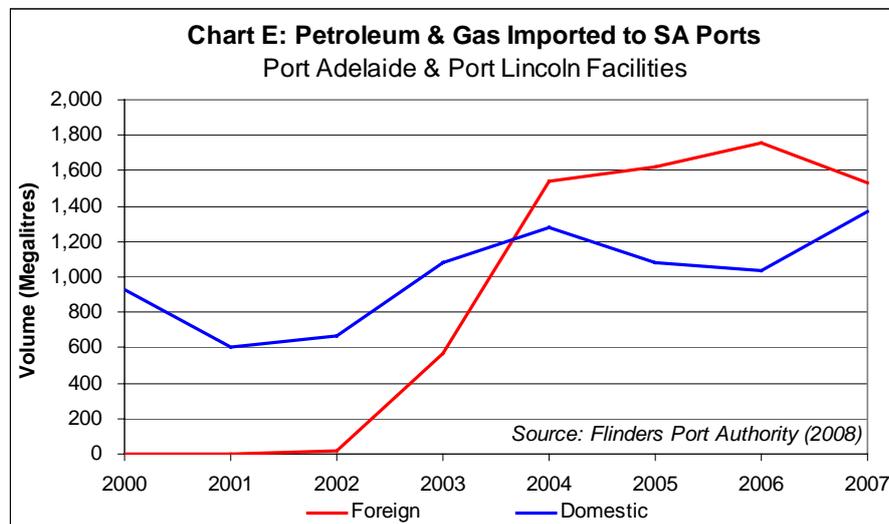
³ Australian Petroleum Stats (2008)

⁴ Australian Petroleum Stats (2008)

As seen in Chart C, the production of natural gas in Australia has consistently risen since 2002. Australia is currently producing significant quantities of this gas, which could provide industry with either LNG or CNG to fuel its needs⁵. However, disadvantages using this fuel must first be overcome and are detailed in the alternative fuels section of this document (see p. 21). In addition, supply barriers exist, as identified by the Senate's 'Australia's Future Oil Security and Alternative Transport Fuels' Inquiry, because the largest proportions of Australia's natural gas product comes from WA's North West Shelf and is closer to Asian demand centres, making it much more economical for producers to export this natural gas⁶.

South Australia's Petroleum Terminals

Since the closure of the Port Stanvac refinery in 2003, South Australia has become more reliant on foreign petroleum imports, with the Birkenhead terminal facility storing the majority of the state's supply. As depicted in Chart E, the quantity of petroleum and gas shipped into South Australia from the other states – mainly Western Australia and Victoria – has also slowly increased since 2000. In 2007, the largest single source of imports was from Singapore, accounting for over 52% of South Australia's total imported petroleum and gas⁷.



Today, Australian refineries are coming under increased pressure from larger overseas refineries producing cheaper petroleum products. In recent months, this pressure has been countered by increased regional benchmark prices (Singapore Parity Price), as demand for refined products across the Asia-Pacific from Singapore's refineries increased, pushing the regional benchmark price higher despite local demand remaining stable.

This situation should be rectified when the Reliance Group opens its Indian refinery in Jamnagar, Gujarat province in December 2008. This refinery is specifically export orientated with the capacity to produce nearly twice Australia's annual refinery capacity⁸. Reliance Group has not indicated whether the refinery will produce fuel grades that meet Australia's Fuel Quality Standards, however, if this is its intent, in theory, Australian producers will have access to a cheaper source of refined fuel.

⁵ Australian Petroleum Stats (2008)

⁶ Senate Rural and Regional Affairs & Transport Committee (2007) 'Australia's Future Oil Supply and Alternative Transport Fuels', Ch 6.

⁷ Flinders Ports Authority (2008) 'Monthly Statistics'

⁸ Reliance Petroleum Limited (2008) 'Progress Report Update: 16 April 2008'

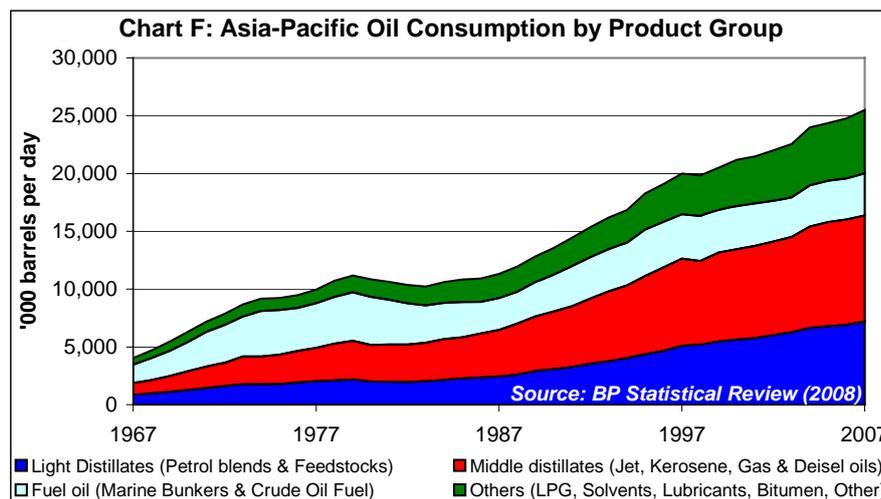
Global Petroleum Demand

As indicated previously, demand for oil-based products is shrinking the world's spare oil capacity. The major drivers of this demand are rapidly developing countries, many of which lie in the Asia-Pacific region. Chart F shows the Asia-Pacific's growing demand for oil-based products. Between 1997 and 2007, consumption of light distillates (petrol and feedstocks) rose 40% and middle distillates (diesel, jet fuel, kerosene and gas) rose 22%, however middle distillates make up the largest portion consumed of all oil-derived products within this region.

As developing countries like China and India continue to demand more petroleum products competition will intensify for the remaining spare oil capacity.

RAA believes that oil reserves are limited and that Australia must reduce its oil dependency by:

- Exploring possible avenues to extend the useful life of current oil supplies
- Research and development to improve the efficiency of extraction and refining
- The use of renewable fuel as extenders
- Reducing the consumption of petroleum, with governments incentivizing measures to reduce vehicle fuel consumption and
- Industry demonstrating leadership in energy conservation by adopting responsible energy use practices.



The RAA monitors fuel prices in many of the OECD nations and tracks them relative to Australia's fuel costs. Currently, Australia has some of the lowest fuel prices in the OECD⁹. Interestingly, even in Western Europe where typically diesel prices are noticeably less than petrol, the price difference has disappeared or is significantly smaller – particularly compared to this time last year¹⁰.

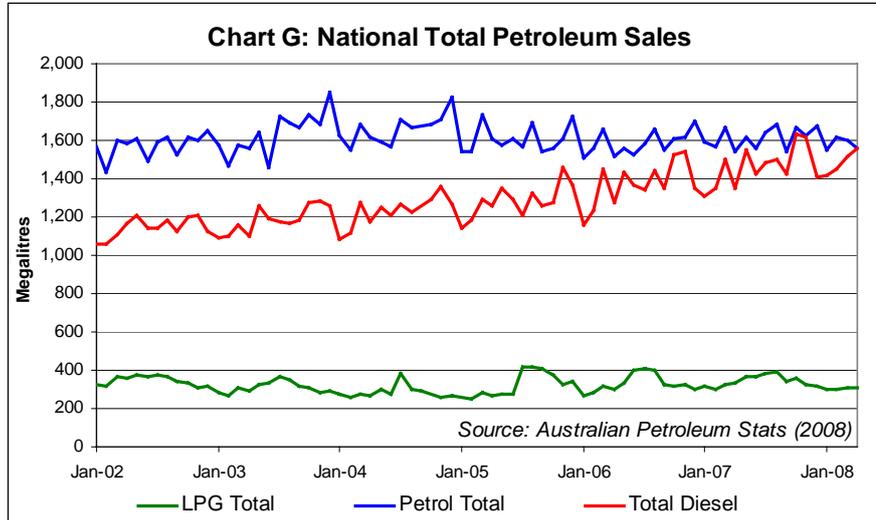
⁹ Australian Petroleum Stats (2008)

¹⁰ AA (2008) 'Monthly UK & Overseas Fuel Prices'



Australian Demand

Australia's demand for oil-based products continues to grow. Chart G depicts Australia's total consumption of petrol, diesel and LPG, which shows petrol and LPG are relatively stable, however demand for diesel has steadily increased since 2004, to the point where if this trend continues, diesel sales will outstrip total petrol sales.

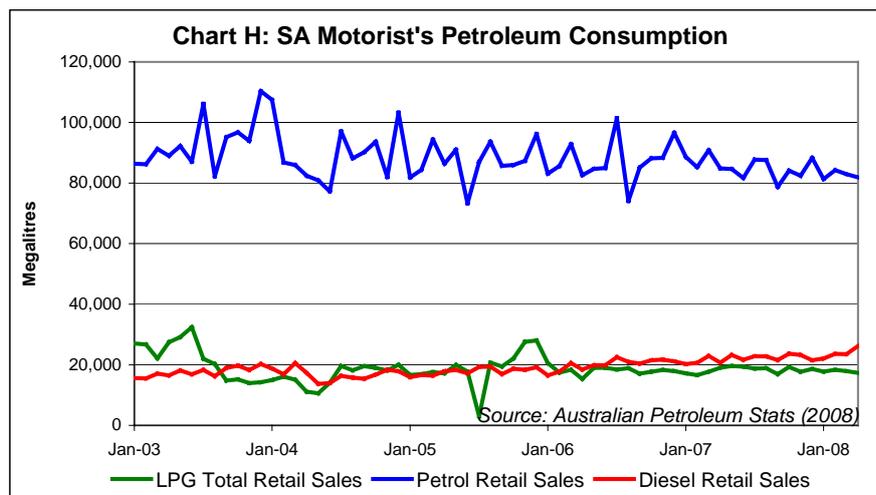


In 2007, retail sales to motorists made up 75% of all unleaded petrol sales, 25% of diesel sales and 56% all LPG sales.

When compared with total petroleum product sales, private motorists are responsible for a small proportion of Australia's increased diesel consumption, while industry and commercial operations are the major driver behind this increase.

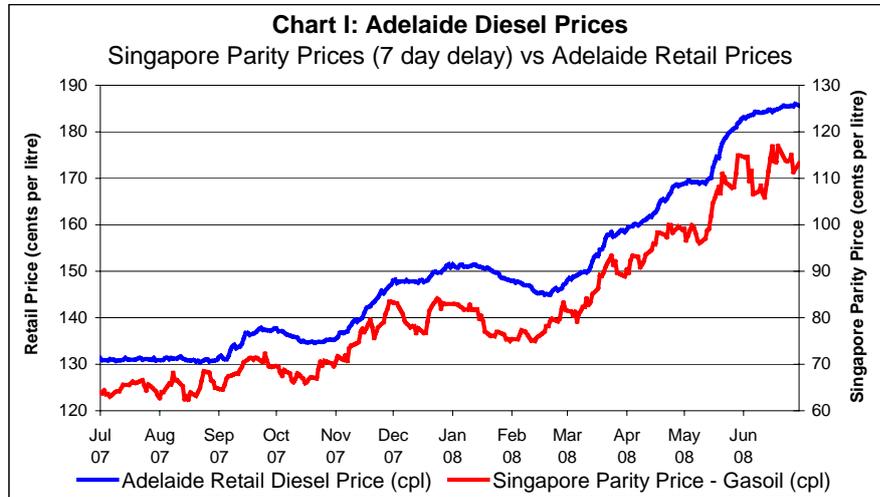
SA Demand and Prices

South Australia's demand for diesel is also increasing, however this growth rate is well below the national trend. As seen in Chart H, while retail diesel demand continues to grow, retail sales of unleaded petrol steadily declined during 2007 and LPG demand stabilised. According to the latest figures, portions of total fuel sold to SA motorists consisted of 65% ULP blends, 21% Diesel and 14% LPG.

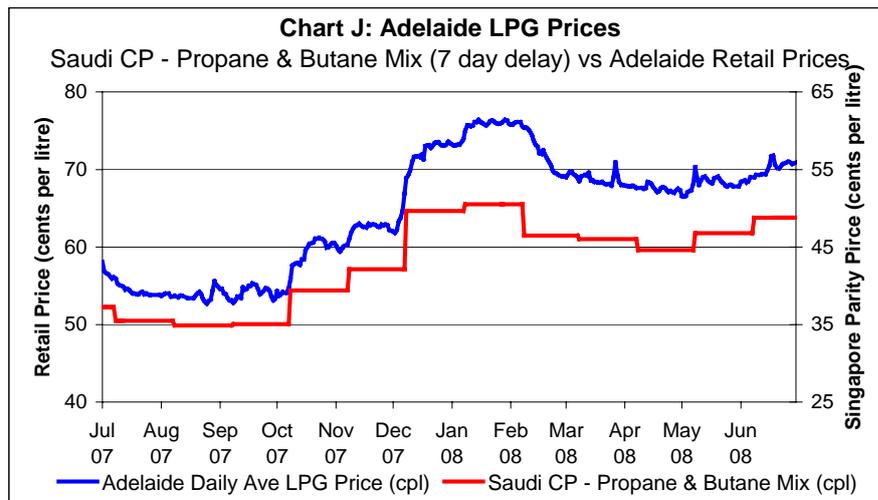




SA's retail petrol and diesel prices continue to track similar to national trends. As illustrated in Chart I, Adelaide's retail diesel price has increased in line with increases in the regional benchmark price (Singapore Parity Price). A similar increase is also evident in the unleaded petrol market.



The price of LPG in South Australia also continues to track its regional price benchmark – the Saudi CP – as seen in Chart J.



Key sectors of South Australia's economy, such as mining, freight and industry provide economic strength through investment and employment opportunities, however, as these economic sectors expand, their demand for petroleum products will increase – particularly diesel. Thus, the economy will continue to rely on oil as the major source of transport-related energy. This has the potential to push demand higher on the back of shortening supplies, increasing the price of all fuels.

Effect of Rising Cost of Fuel

TOR: A) *The movement of people around the State, including:*

- iii. alternative modes of transport; and*
- iv. the need to increase public transport capacity.*

I) *The need for public education and awareness.*

As fuel prices rise, a growing number of RAA members express their concern. At the same time, in a recent RAA online poll, more than 95% of the participants reported they have not altered their driving habits or have only altered their driving habits slightly as a result of rising fuel costs¹¹.

Australian Bureau of Statistics figures show that in the five years to March 2007, average full time weekly earnings rose by 24.7%. Over that period, automotive fuel prices rose at almost double the earnings rate (43.4%), and three times inflation (13.9%). The rise in the price for automotive fuels was second only to the rise in the price of childcare (86.1%).

While it is unclear at what fuel price point motorists will begin to make significant changes to their driving behaviours, South Australian motorists continue to be the most price sensitive motorists in the nation when it comes to purchasing fuel.

Extensive educating of the South Australian public by the RAA now sees more the 76 percent of SA motorists (89% in metropolitan Adelaide) aware that Tuesday is the cheapest day of the week to buy fuel, with motorists changing their purchasing behaviour accordingly¹². This compares favourably with ACCC research which indicates 72% of motorists nationally are price sensitive and buy fuel when it is at its cheapest¹³. South Australian motorists also continue to be more likely to use discount docket most times they buy fuel compared to motorists in other states.

Despite this price sensitivity, 95% of motorists indicated that their personal vehicle was important.

Outside the Adelaide metropolitan area, the dependence on personal vehicles is far higher and rural South Australians are typically exposed to higher fuel prices due to a lower level of retail competition.

¹¹ RAA (2008) 'Online Survey: Fuel', 24 May to 6 June 2008

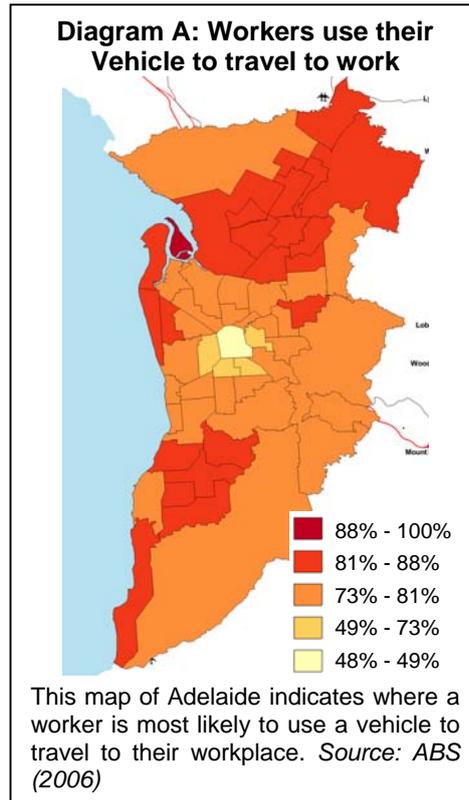
¹² RAA (2008) 'Online Survey: Fuel', 24 May to 6 June 2008

¹³ Report of the ACCC Inquiry into the Price of Unleaded Petrol (Table 1.6 – Extent of Buying When Cheapest, pp 287)

Public Transport

The 2006 ABS Census indicated that of Adelaide's workforce, 78% favour the use of their private motor vehicle as a means of getting to and from work. Only 8.3% indicated the uses of public transport¹⁴. As illustrated in Diagram A, worker's who live in the Northern and Southern suburbs have the greatest dependency on their personal motor vehicle.

RAA supports the use of public transport as an essential transportation mode that gives people choice. However, for public transport to be a truly viable alternative to the car, it must be reliable, cost effective and frequent.



¹⁴ ABS (2006) 'National Census'

Measures to Reduce Petroleum Demand

TOR: A) The movement of people around the State, including:

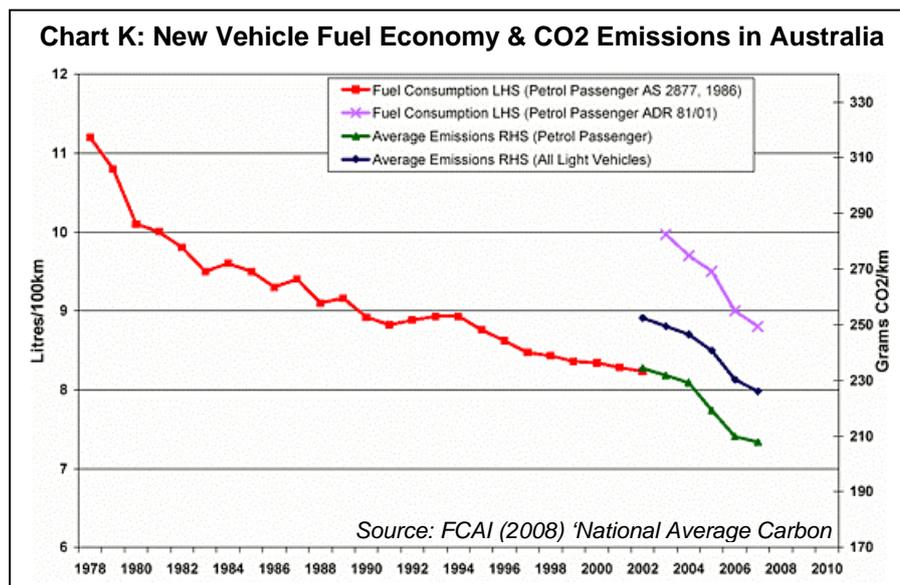
- i. the rising cost of petrol and increasing transport fuel poverty in the outer metropolitan area, the regions and remote communities; and
- ii. ways to encourage the use of more fuel efficient cars.

l) The need for public education and awareness.

Vehicle Fuel Efficiency

Significant reductions in petroleum demand are likely to be realised through improvements in fuel efficiency and vehicle technologies.

In April 2003, the Federal Chamber of Automotive Industries (FCAI) introduced a Voluntary Code of Practice, committing the industry to a progressive reduction in national average fleet consumption targets for passenger cars to 6.8 litres/100km by 2010¹⁵. This code was superseded by the National Average Carbon Emissions (NACE) target in mid 2005 that tracks CO₂ emissions¹⁶. As shown in Chart K, the NACE target for Australia's light vehicles is on track to achieving the FCAI's 2010 goal.



Improvements in the fuel efficiency of government vehicle fleets will also reduce petroleum demand¹⁷ (eg. the State Government's target to make 50% of its vehicle fleet run on alternative fuel sources).

Traffic Congestion & ITS

To complement technology advances in the fuel efficiency of vehicles, investment in road infrastructure is needed to reduce traffic congestion. Congestion causes vehicles to consume higher volumes of fuel and create more emissions. By creating free-flowing road networks the amount of fuel consumed and emissions produced by those using the network (used by both private vehicles and public transport) can be diminished.

¹⁵ FCAI (2003) 'Voluntary Code of Practice: Reducing the Fuel Consumption of New Light Vehicles'.

¹⁶ FCAI (2008) 'National Average Carbon Emissions'.

¹⁷ SA Labour Party (2006) 'Rann Gets Results: Climate Change'.

The introduction of Intelligent Transport Systems (ITS) has the potential to improve transport efficiency and reduce fuel use. ITS includes vehicle navigation systems (identify shortest routes), provision of in-vehicle parking information (reduce parking times), incident detection (reduce congestion delays caused by incidents) and real-time public transport information (to allow motorists greater choice of how best to undertake travel to their destination). By reducing the running time of a motorist's vehicle, less fuel is consumed.

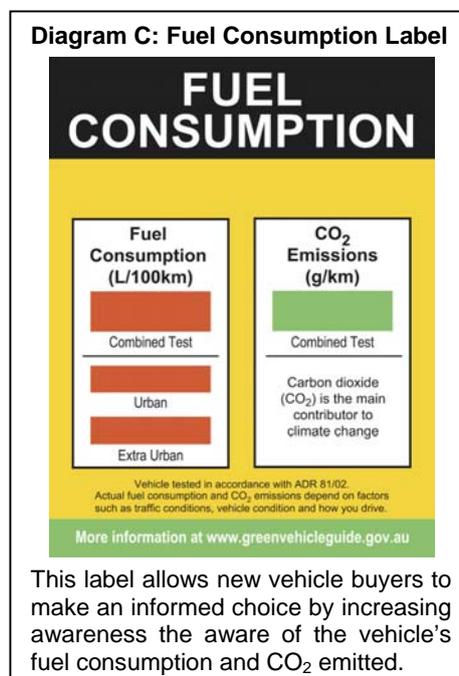
Fuel Tax Reform

Motorists are charged a variety of taxes and charges to use the road network these include: Federal fuel tax; GST on fuel (inclusive of the fuel tax); State and Territory registration charges; stamp duty on registration; and tolls. Currently, public expenditure on roads is not directly linked to the revenue received from road users. The RAA, in conjunction with the Australian Automobile Association (AAA) and its constituent clubs, want a fairer and more efficient system of charging road users.

In representing the views of motorists nationally, the motoring clubs have frequently presented the case for reforming the current fuel taxation system. Recent submissions made to the ACCC Inquiry into Petrol Prices; the NTC'S Heavy Vehicle Charges Determination - Draft Regulatory Impact Statement; the Productivity Commission Inquiry Road and Rail Freight Infrastructure Pricing and subsequent draft discussion documents; and the latest Federal Budget submission have all highlighted the inefficiency of the current fuel tax regime and the need for change.

Public Education

Information to allow motorists to make an informed vehicle purchase will improve overall fuel efficiency. Since January 2001, passenger vehicles sold that use petrol, diesel or LPG have had a fuel consumption label located on their windscreen to advise buyers of the vehicle fuel consumption rate. From 2007, the label (see Diagram C) has been improved to provide a greater degree of information, including the fuel consumption rates for city and rural driving and the amount of CO₂^e emitted per kilometre.



RAA provides a comprehensive information service educating the community on how they can drive in a more fuel efficient manner, save fuel costs by monitoring their vehicle, and by referring members to legitimate information resources.

Petroleum Supply Issues

TOR: F) South Australia's fuel storage capability including:

- i. susceptibility of fuel supply to disruption; and
- ii. resilience of infrastructure and essential services under disruptive conditions.

RAA believes that the Birkenhead fuel storage facility has the ability to meet the ongoing fuel requirements of SA, but understands the facility is not being used to its maximum workable capacity as detailed in the RAA's submission and presentation to the Parliamentary Select Committee on Pricing, Refining, Storage and Supply of Fuel in March 2007.

The RAA is aware that the Birkenhead facility has three operators that supply fuel to the majority of South Australian consumers. The majority of petroleum and gas imports arrive by sea to Birkenhead, however a small percentage is also imported into Port Lincoln. Small amounts of fuel are transported by road from Victoria (South East SA). Unlike other states, no independent fuel retailers in SA operate any fuel storage capacity.

Reliance on Foreign Imports

As recently reported by the Australian Institute of Petroleum (AIP), in those States where a refinery exists, there is approximately 27 days worth of product on hand to cover each refinery's consumer demand¹⁸. The 27 days supply is accounted for with 17 days supply present in each refinery, and the remaining in terminal storage (5 to 7 days) and service stations (3 days). According to this report, the absence of a refinery in South Australia means the state has 5 to 7 days worth of consumption cover in terminal storage (ie. Birkenhead).

Federal Government's Liquid Fuel Emergency (LFE) Response Plan

The Federal Government has an established LFE plan, to be used in the event of national liquid fuel shortage. Under this Act, the federal government derives its powers to deal with a liquid fuel emergency in the national interest.

As a member of the International Energy Agency (IEA), the RAA understands that Australia must maintain 90 days of reserve fuel at any point in time¹⁹.

¹⁸ AIP (2008) 'Maintaining Supply Reliability In Australia'.

¹⁹ IEA (2007) 'IEA Response System for Oil Supply Emergencies'.

Alternative fuels

TOR: G) Alternative fuels and fuel substitutes.

The RAA is supportive of the development of a range of alternative fuels including LPG and biofuels as a means of reducing the dependence on fossil fuels, providing they do not have a detrimental effect for motorists. Ideally governments, industry, vehicle manufacturers, motorists and oil companies should work together to ensure that new vehicle technology is in line with consumer preferences and governments' economic, social and environmental policy.

Biofuels

RAA recognises that biofuels play a vital part in the energy mix. In 2007, ethanol-blended petrol made-up 2.6% of Australia's total consumption of petrol, although in South Australia this was lower²⁰. The RAA expects the consumption of biofuels to continue to grow, but does not expect it to become the major energy source for transport within the next decade.

RAA believes:

- Biofuels should not be mandated – consumers are entitled to choose between blends of fuel;
- The amount of biofuel mixed with regular fuel must be subject to a mandated upper limit. This is necessary because vehicle manufacturers have advised that vehicle warranties might be voided by using biofuels. Vehicle manufacturers maintain a list of vehicles that are able to satisfactorily operate on the 10% ethanol limit already in place;
- There should be clear labelling at point of sale that provides consumers with information on the suitability of the use of biofuels in their vehicle. This labelling should include information on any impact on fuel economy or potential implications on vehicle warranty; and
- The use of biofuels should not increase petrol prices or the cost of motoring (noting in particular the lower energy content of some biofuels – like 10% ethanol in petrol blend (E10) – and the resulting negative impact on fuel economy).

There is growing interest in the use of biofuels, particularly ethanol-blended ULP. Surveying conducted by the RAA indicates that South Australian motorists are becoming increasingly happier to purchase ethanol-blended fuel for their vehicles²¹, highlighting motorists must be adequately informed of the possible risks associated with using the fuel in their vehicle.

Biofuels have their own unique supply side issues that need to be considered, including the long-term sustainability of the fuel source; the energy return on investment (ie. energy input to make the fuel source versus the economic gain); potential competition between the production of biofuel, food and textile on fertile land; and that plant-derived biofuels are produced in an ecologically responsible and sustainable manner.

It should also be noted that second generation biofuels offer the potential to overcome some of these issues and are expected to form part of the wider energy options available to motorists in the future.

LPG

LPG is an essential part of Australia's transport energy mix with local supply sufficient to meet current domestic demand. The RAA welcomed the assistance measures announced by the Federal Government in 2006 and is pleased the \$2,000 rebate remains in place today.

²⁰ Australian Petroleum Stats (2008)

²¹ ANOP (2007) 'Motorists Attitudes & Priorities'

Natural Gas – CNG & LNG

Compressed natural gas is promoted as an alternative given its cleanliness, however disadvantages will need to be overcome before it can be considered a truly viable option for motorists, such as weight and size of gas cylinders; limited range; additional energy costs to compress and liquefy LNG; costs of converting vehicles; and lack of refuelling infrastructure²².

If technological advances can offset these limitations, it has the potential to be a viable energy alternative.

Gas & Coal Seam

Alternative transport fuels produced from natural gas or coal include diesel, methanol, dimethyl/naphtha. Gas and coal derived fuels are essentially free of sulphur and particulates with the resulting CO₂ from these refining processes being able to be sequestered, making the GHG emission from this energy source attractive.

Hydrogen

Hydrogen is seen as a viable future energy source from a greenhouse gas emissions perspective, with many of the major energy companies (BP, Shell) and vehicle manufacturers (BMW, GM) making a considerable investment in developing hydrogen as a future energy source.

For hydrogen to become a realistic option, a clean and economic production process needs to be developed as well as the technology to handle and store hydrogen onboard vehicles. From a greenhouse emissions perspective, assurance must be given that emissions are not simply transferred from the transport sector to stationary energy (ie. electricity power station).

²² Senate Rural and Regional Affairs & Transport Committee (2007) 'Australia's Future Oil Supply and Alternative Transport Fuels', Ch 6.