Australian Institute of Petroleum

Submission to the Impact of Petrol Pricing Select Committee Inquiry (Queensland Parliament)

by

Australian Institute of Petroleum

2 December 2005

BACKGROUND

About AIP

The Australian Institute of Petroleum (AIP) was established in 1976 as a non-profit making industry association. AIP's mission is to promote and assist in the development of a sustainable, internationally competitive petroleum products industry, operating efficiently, economically and safely, and in harmony with the environment and community standards.

AIP is pleased to present this submission on behalf of the AIP's four core member companies:

BP Australia Pty Ltd
Caltex Australia Ltd
Mobil Oil Australia Pty Ltd
The Shell Company of Australia Ltd.

AIP member companies play various roles in each segment of the fuel supply chain. They operate all of the petroleum refineries in Australia and handle a large proportion of the wholesale fuel market. However, AIP member companies directly operate and control only a relatively limited part of the retail market.

Contact Details

Should you have any questions in relation to this submission, or require additional information from AIP, the relevant contact details are outlined below.

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(1) INTRODUCTION

This submission has been developed to assist the Select Committee in its consideration of the range of petrol pricing issues identified under its current Inquiry - established by the Queensland Parliament on 25 August 2005.

The submission provides a range of information and data related to the downstream petroleum sector. In summary, this submission's structure and discussion generally follows a 'structure-conduct-performance' framework and covers the following subject areas:

- the Transport fuel market;
- the Structure of the fuel market in Australia;
- fuel prices, price cycles and competition; and
- the role of Biofuels in the transport fuel mix.

A particular focus of the Submission is the supply chain and the structure and dynamics of the domestic retail market, including petrol prices and pricing. In this regard, some key characteristics of the Queensland fuel market are presented.

AIP has drawn on a wide range of reports, papers and analysis in the preparation of this submission. Details of the various documents and sources are set out in Attachment A.

AIP member companies will also make submissions to this Inquiry, and these submissions will address specific items on the terms-of-reference and deal with commercial and other issues related to those companies.

(2) THE TRANSPORT FUEL MARKET

This section provides a brief overview of the transport task, the transport fuel market and broad trends in fuel demand in the sector, including in relation to motor vehicle technological developments.

The Transport Task

The downstream petroleum industry is an important part of the Australian economy through its direct contribution to economic growth as well as through support for the development of fuel intensive industries such as transport, mining and agriculture.

It also provides other benefits through the reliable supply of high quality petroleum products that underpin the lifestyle of Australian communities, significant employment across the nation, and technical expertise to the Australian community generally.

Some illustrations of the influence of the petroleum industry in the general economy, particularly in relation to the transport task, include:

- Australians drive an estimated 192 billion kilometres each year.
- There are almost 13 million vehicles on the Australian roads. Cars account for just over 10 million of these, and for about 75% of vehicle kilometres.
- Transport specific businesses accounted for 5% of GDP in 2002/3, and the transport sector accounted for 4.5% of total employment;
- About 2.3 billion tonnes of freight are transported around Australia each year. Of this almost 1.7 billion tonnes were carried by road.

The Transport Fuel Market

In 2004/05, the demand for petroleum-based transport fuels was about 43,000 ML (Megalitres) or around 747,000 barrels per day. This represents over 91% of Australia's total consumption of petroleum products (of around 47,000 ML).

Within this total for petroleum-based transport fuels, the key components in 2004/05 were:

- Automotive gasoline: 46%
- Automotive diesel: 35%
- Jet fuel: 11%
- LPG – automotive use: 5%
- Others, including lubricants: 3%

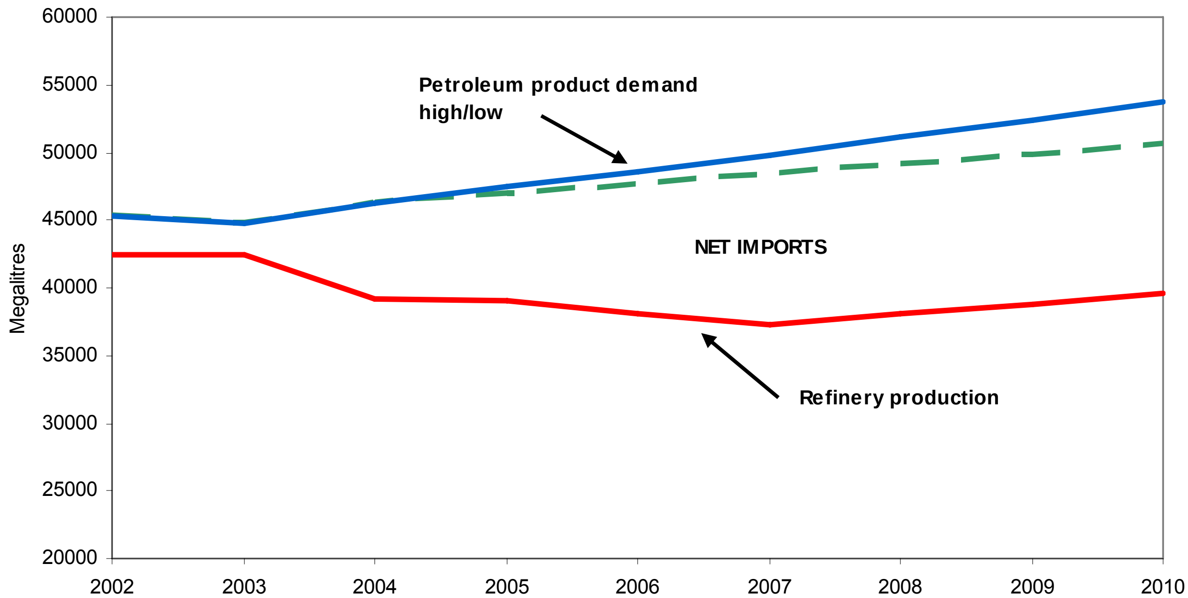
Biofuels – ethanol and biodiesel – made up about one-quarter of 1% of the total.

Total demand for finished petroleum products is growing at 1-2% a year, and by 2010 we expect demand to have increased to around 50,000 megalitres a year (see Chart 1 below).

In the last three financial years, we have seen growth in diesel demand averaging 4.2% a year (probably reflecting growth in commercial activity), compared to much slower growth in demand for automotive gasoline - averaging around 2.1% a year.

As can be seen from the data above, the Australian passenger transport fuel market is still dominated by petrol. This is similar to US demand but unlike that of Europe, where diesel now accounts for 43% of fuel sales and where 71% of new car sales are diesel cars.

CHART 1 – AUSTRALIAN PETROLEUM PRODUCT DEMAND & SUPPLY



Trends in Transport Fuel Demand

As we move forward to 2010 and beyond, we expect a number of factors to influence the rate of growth in demand for these fuels. Four key influences are outlined below.

__Crude Oil and Petroleum Product Prices__

Changes in international crude oil and product prices over 2004-05 have confirmed the relative price inelasticity of petroleum products demand over the short term. Despite around a 13% increase in national average petrol and diesel prices over 2004-05, total demand for these fuels actually increased as a result of economic growth. This reflects the limited opportunities in Australia to quickly shift to other modes of transport. However, during the second half of 2005, there have been significant further prices rises, largely as a result of the disruption to US refining because of Hurricane Katrina and an export embargo in China. These recent price rises have had a more pronounced impact on demand. For example, for the month of September 2005, there was a reduction in fuel consumption in Australia of around 6.3% in comparison to the average weekly fuel consumption of August 2005.

Nevertheless, despite recent price rises, Australian petrol and diesel prices remain among the lowest in the OECD according to the International Energy Agency (Attachment B).

The factors behind this favourable price comparison include the existence of a fiercely competitive market, the need for local fuel suppliers to compete with imports out of Asia, and a consumer demand that is well-informed on fuel prices.

Nevertheless, there are some signs that higher fuel prices are encouraging motorists to purchase more fuel efficient vehicles. For example, of the 5000 passenger cars sold in August 2005, 4600 cars were in the ‘small car segment’.

A continuation of this trend will have implications for overall fuel demand as well as for the different fuels. For example, since diesel is a much more efficient fuel than petrol we may see diesel cars capture a much higher share of new vehicle sales, as in Europe (where diesel also tends to receive concessional tax treatment).

Vehicle Fuel Efficiency Targets

Fuel efficiency targets for passenger and commercial vehicles will also play a significant role in shaping future fuel demand. The vehicle industry is currently negotiating the fuel efficiency target framework for passenger vehicles.

As part of this drive to increase fuel efficiency, we are seeing a growing demand for higher grades of petrol – ie 95 and 98 RON petrol. Premium unleaded fuels accounted for around 15% of petrol demand in 2004-05, but as the new car fleet increasingly moves to require 95 RON petrol, this proportion is expected to rise to over 50% early in the next decade.

Cleaner Transport Fuels

The government and community drive for improved urban air quality and reduced greenhouse gas emissions has led to significant recent changes in transport fuels standards in Australia.

Reductions in vehicle emissions are being achieved through major complementary changes in engine and vehicle technologies and in the use of cleaner transport fuels. The impacts of these changes are quite dramatic and the benefits should not be underestimated.

Legislated changes in the fuel standards will progressively lead to the virtual elimination of sulfur in diesel, and to large reductions in the amount of benzene in petrol. Sulfur levels in premium unleaded petrol will also be greatly reduced. This has a number of implications including: existing vehicle and fuel standards will greatly reduce air pollution; and engines will be designed to operate on tightly specified fuels, and fuels will need to be produced consistent with these tight specifications.

With tighter fuel quality standards and new vehicle technologies in place, there will be relatively little difference between the emissions performance of conventional and alternative fuels in Australia. All fuels will produce very low levels of emissions.

Australian Refinery Output

To meet the new fuel standards, Australian refineries are making major investments. It is estimated that about $2 billion will be invested over the decade to 2010.

However, these investments will not result in any increase in Australian refining capacity.
In 2004-05, about 16% of petrol demand was imported, 26% of diesel and about 21% of jet fuel.

On the basis of projected demand and refinery capacity, it is reasonable to conclude that the overall structural import demand for petroleum products will rise to around 25% or more early in the next decade.

The Role of Biofuels in the Transport Fuel Mix

This is discussed in detail in Section 5.

(3) THE STRUCTURE OF THE FUEL MARKET

This section provides an overview of the Australian liquid fuel supply chain and the structure of the fuel market, particularly at the retail level. Key elements of the Queensland supply chain and market are also identified.

The Fuel Supply Chain

Overview

The Australian liquid fuel supply chain has considerable span and diversity – from crude and product shipments, refinery throughput, extensive terminal and distribution networks, and around 6650 retail outlets.

Importantly, there have been significant changes to the supply chain over the last decade or so.

The financial underperformance of the downstream petroleum sector during the 1990s led to a rationalisation of the supply chain to improve efficiency. At the same time, excess production capacity in Asia meant that spot cargoes, particularly of petrol, were readily available at low cost to importers.

This situation has changed since 2002, with growing demand for products across the Asian region and with the mothballing of the Port Stanvac refinery in South Australia in July 2003. As a consequence, the Australian liquid fuels market is now a 'structural importer' with any additional demand, such as normal growth in demand and demand spikes, being met from increased levels of imports.

The reliability of our fuel supply system is outstanding given the unique logistical and geographic challenges in Australia.

The length of the crude oil supply lines is on average around 4 weeks for crude supplied from the Middle East, around 10 days for crude supplied from Asia and anywhere from a few days to a week for indigenous crude oil. There is additional lead time required for ordering/purchasing the crude oil and securing the ships to bring it to Australia. This raises the overall supply time to around 3 months for the longest lead time.

Supply & Demand

Petroleum products are a critical part of energy consumption in Australia. Petroleum products accounts for around 51% of final energy consumed in Australia in 2003-04. However, this belies its importance to the transport sector where petroleum-based fuels supply more than 97% of Australia's total transport needs.

The most important petroleum products in the Australian context are petrol, diesel, jet fuel and LPG. These products make up around 90% of the consumption of petroleum in the Australian economy. The remaining 10% is made up of heavier products such as fuel oil and various lubricating oils and greases and other specialty products.

In 2004-05, Australia consumed around 47,000 ML of petroleum products. Australian refineries produced around 40,000 ML, of which around 4 per cent was exported (excluding LPG).

In 2004-05, imports accounted for 23% (or around 11 000 ML) of total consumption. A proportion of this imported volume is supplied to northern and north western areas of Australia where domestic refineries generally are unable to competitively supply the needs of those markets because of freight costs. Import terminals are located throughout Australia. The bulk of imported gasoline was from Singapore (around 75 %).

While Australia has substantial crude oil production, around 62% of this oil was exported in 2004-05. The crude oils required to meet the product demand mix in Australia are imported by domestic refineries mainly from Asia and the Middle East.

Different crude oils have different inherent yields of products. Australian crudes, for instance, tend to be lighter (lower density) and sweeter (lower sulfur) than most crude oils. This leads to generally higher prices for our crudes and Australian refiners can find cheaper alternatives elsewhere. It also means they do not exactly match the products demanded in Australia – that is, LPG (2%), petrol (44%), jet fuel (13%), diesel (32%), fuel oil (3%) and other products (6%). In addition, Australian crudes are not suitable for producing the heavier products such as bitumen, lubricating oils and greases. These heavier products accounted for around 4% of refinery output in 2004-05.

In September 2005, demand for final petroleum products in Queensland was 24% of total national demand. Demand for automotive gasoline was 22% of national demand, and demand for automotive diesel was 31% of national demand.

Refineries

Australia has eight refineries (only seven now operating following the mothballing of Port Stanvac) that were generally constructed in the 1950s and 1960s, although they have been extensively modified since then.

Two of the refineries are located in south east Queensland at Lytton (Caltex) and Bulwer Island (BP) - refer to Table 1 below.

Domestic refineries supply around 77 per cent of the petroleum products required by major industries and the fuel distribution network of 6650 service stations.

These refineries are relatively small with the largest having a capacity of 8,000 ML pa (Megalitres per year), compared with the four largest Asian refineries which produce between 31,000 to 67,000 ML pa. Proposed greenfield investments in Asia have a minimum capacity of around 26,000 ML per annum.

Australian refineries price their output to be competitive with imports (ie import parity) from the Asia Pacific region (see Section 4). Profitability of the Australian refining industry is therefore largely determined by refining margins in Asia, and by our competitiveness with Asian refiners.

In future, structural imports will meet growing demand in Australia, further strengthening the price relationship with Asian product prices.

TABLE 1 – AUSTRALIAN REFINERIES

REFINERY	CAPACITY: Megalitres per annum	
Bulwer Island (BP – Brisbane)	**5,100**	
Lytton (Caltex – Brisbane)	**6,110**	
Clyde (Shell – Sydney)	4,980	
Kurnell (Caltex – Sydney)	7,210	
Altona (Mobil – Melbourne)	4,640	*(recently re-rated)*
Geelong (Shell – Geelong)	6,900	
Kwinana (BP – Kwinana WA)	8,030	
TOTAL	**42,970**	
Port Stanvac (Mobil - Adelaide)	*4,520*	*(currently mothballed)*

Distribution

The structure of distribution has been changing over the past few years in the search for greater efficiencies.

The major change has been the removal of intermediate steps/handling wherever possible.

That is, there is an increasing trend for fuel distributors to supply their customers directly from large terminals or other seaboard facilities, rather than handling product through inland depots as in the past. For example, on the eastern seaboard 80% of product is delivered directly from major refinery or import terminals to service stations or other end-consumers.

As a result of this trend, depots now tend to be restricted to some country areas where the delivery of smaller loads is required for farm use or other needs.

Currently, there are a number of terminals supplying the Queensland fuel market – see Table 2 below.

These terminals supply a wide range of distributors, who deliver fuels and lubricants to most regional and remote areas of Queensland and the Northern Territory. Customers include small to medium transport operators, industrial and commercial businesses, primary producers and retail outlets.

Given the longer supply lines and lower volumes in rural and regional areas, distributors in these areas typically have higher costs structures than in metropolitan areas largely accounting for higher retail prices in non-metropolitan areas.

TABLE 2 – QUEENSLAND FUEL TERMINALS

COMPANY	TERMINAL LOCATION
Caltex	Caltex Lytton Terminal Caltex-Shell Townsville Terminal Caltex-Mobil Gladstone Terminal Caltex Mackay Terminal Caltex Cairns Terminal
BP	Gladstone Mackay Townsville (Joint Venture with Mobil) Brisbane (Joint venture with Mobil)
Shell	Cairns Townsville Mackay Gladstone Brisbane
Mobil	Cairns (Joint Venture with BP) Mackay
Neumann Petroleum	Brisbane

Structure of the Retail Market

The downstream petroleum retail sector has undergone significant changes in the last ten years in almost every aspect of its operations.

Types of Ownership & Management

Ownership and management structures have changed significantly with the economic drivers of the business. The various types of commercial arrangements existing now are outlined in the Box 1 below.

It is important to understand the differences in these operations, since they indicate who is the key decision maker, including in relation to pricing decisions (see Section 4).

BOX 1 – TYPES OF SERVICE STATION OPERATIONS IN AUSTRALIA

Outlined below is an explanation of the main types of service station operations:

- **Oil Company operated (sites may be owned or leased)**
  - Numbers restricted by the Sites Act
  - Tied fuel supplies
  - Convenience store options

- **Supermarkets**
  - No mandated restrictions on operations
  - Tied fuel supplies
  - Convenience store options controlled by supermarket

- **Franchisee and Commission Agents**
  - Franchisee operated (declining in numbers)
  - Commission Agents (limited tenure if not franchised but guaranteed returns)
  - Full marketing programme support by supplying oil company
  - Tied fuel supplies
  - Convenience store options controlled by franchisee or CA

- **AIP Company Branded Independents**
  - Branded independents (major oil company brands) – account for almost half the total number of service stations
  - May be operated by distributors or independent retailers (in some cases may be franchised by distributors or multi-site owners)
  - Subject to branding agreement with fuel supplier
  - Agreement may or may not include marketing programme support
  - Tied fuel supplies
  - Convenience store options controlled by owner/operator

- **Non Branded Independents**
  - May be operated by distributors or independent retailers (in some cases may be franchised by distributors or multi-site owners)
  - Fuel supplies not tied to single oil major
  - Convenience store options controlled by owner/operator

NOTE: Within this structure, <u>sites may be owned</u> by oil majors, supermarkets, franchisees/CAs acting as investors, distributors, branded or non branded independent retailers, or unrelated investors. Sites may be operated by the owners or leased to other operators.

Industry Structural Changes

A key structural change in the industry is highlighted in Table 3 below. This shows that AIP member companies now have a much more limited role in petrol retailing and there is now much less vertical integration within the industry. The table below shows that the estimated number of Australian service stations has reduced from around 8200 in 2000 to around 6650 in June 2004 - a drop of around 19% in total service stations.

- Since 2000, the number of independently operated, branded service stations has declined by 23%.
- The number of AIP company branded service stations operated under franchise arrangements has dropped by 53% over the same period (to 958 sites in 2004). The majority of these service stations are now in the supermarket alliances.

While the general trends are evident across Australia the changes have been most marked in Victoria, South Australia and New South Wales – with a greater impact in metropolitan rather rural and regional areas.

TABLE 3 – SERVICE STATION NUMBERS & TYPES: AUSTRALIA & QUEENSLAND

	QUEENSLAND			AUSTRALIA			QLD Proportion of National
	2000	**2004**	**Change**	**2000**	**2004**	**Change**	**2004**
AIP Related Service Stations:							
Company operated	71	61	-10	296	316	20	19%
Franchises	378	205	-173	2019	958	-1061	21%
Supermarket	22	166	144	156	872	716	19%
Other - AIP branded independ. & other related brands	907	775	-132	5047	3895	-1152	20%
Total	**1378**	**1207**	**-171**	**7518**	**6041**	**-1477**	20%
Non-AIP Service Stations:	145	156	11	659	608	-51	26%
TOTAL ALL SERVICE STATIONS	**1523**	**1363**	-160	**8177**	**6649**	-1528	

At the National level, as at June 2004:

- the four major oil companies directly operate (<u>and/or set prices for</u>) only 316 service stations around the country; this is less than 5% of the total number of service stations;
    - since the 2004 survey was conducted, however, these sites have reduced further.
- franchisees of the major oil companies account for around 958 sites or around 14% of total service stations; these sites have varying commercial arrangements with prices in most cases being set by the franchisee and in others being set by the franchisor;
- branded and unbranded independents operate and make retail pricing decisions for their sites; these sites account for around 68% of the retail sites in Australia; and
- the remaining 13% of sites are part of the supermarket alliances, which operate and control the pricing decisions at those sites.

In Queensland (as at June 2004), the national trends are almost mirrored with:

- the four major oil companies directly operate (and/or set prices for) only 61 service stations in Queensland - less than 5% of the total number of service stations;
- franchisees of the major oil companies account for around 205 sites or around 15% of Queensland's service stations;
- branded and unbranded independents in Queensland operate and control retail pricing for their sites; these sites account for around 68% of sites in the State; and
- the remaining 12% of sites in Queensland are part of the supermarket alliances, which operate and control the pricing decisions at those sites.

In comparison to NSW and Victoria, Queensland has a higher proportion of branded and unbranded independents.

BOX 2 - CASE STUDY: WHO CONTROLS PUMP PRICES?

An Example from Caltex

About 2100 service stations in Australia carry the Caltex or Ampol brands.

Under the *Petroleum Retail Marketing Sites Act*, Caltex can set pump prices at a maximum of 136 sites at any given time.

At Caltex contributed Caltex-Woolworths jointly branded sites, pricing is set by Australian Independent Retailers Pty Limited according to directions from Woolworths with absolutely no involvement from Caltex.

At all other Caltex and Ampol sites, the pump price is the legal responsibility of the franchisee or independent operator.

Source: Caltex Website (www.caltex.com.au)

Service Station Competitive Advantage

The changes in service station numbers noted above reflects the move toward larger, more efficient sites offering a variety of fuel, products and services.

These multi-service sites have large volumes, high exposure and multiple business activities such as convenience stores, car wash, bottled gas, fast food etc. Multi-service sites enjoy cost competitiveness and a diversified income base supported by a highly developed business plan. These sites typically set the competitive benchmark in particular geographic areas on price and service.

Traditional sites may need to overcome competitive disadvantages (eg. low volumes, limited supply chain integration, site limitations, and ageing capital) to compete with more efficient multi-service sites in their local area.

Successful operators are focusing on their unique competitive advantages to attract and retain customers by the distinct small business advantages of customer service, local knowledge and lower overheads. For example, corner store sites may have inherent competitive advantages such as a remote location or an affiliated business of value to the local community.

The convergence of fuel retailing and convenience store shopping has advanced through the supermarket alliances which have emerged since 2003 between Shell and Coles Myer and between Caltex and Woolworths.

The supermarket alliances now handle almost 50 per cent of petrol sales in metropolitan areas.

There have been very strong consumer responses to the supermarket shopper docket discounts and there are now over 200 shopper docket fuel discount schemes in place.

Conclusions

The trends above show that the Australian petrol market is highly diverse and competitive at the retail level.

The entry of the supermarkets into retail markets has reduced the degree of vertical integration in the market and has reduced the ability of oil companies to influence retail prices.

The changes to the structure of the fuel market, particularly at the retail level, are important context to petrol pricing and pricing cycles in the next section.

(4) PRICES, PRICING CYCLES & COMPETITION

This section provides an overview of prices and petrol pricing cycles. Petrol pricing is a complex interaction of international crude oil and petroleum product prices, the structure and dynamics of the domestic wholesale and retail markets, and Government taxation policies.

International & domestic factors influencing our fuel prices

International Impacts & Benchmarks

Crude oil and refined petroleum products are traded on international markets.

There are separate, but related, markets for both crude oil (the crude oil market) and for refined petroleum products like petrol and diesel (the product market).

Australia, like other countries, can be affected by movements in either or both of these markets.

- For example, in the second half of 2005, international shortages of petrol due to the export embargo in China and the US refinery closures as a result of Hurricanes Katrina and Rita drove up petrol prices across the globe – in the US, Europe, Asia and Australia.

For refined petroleum products like petrol and diesel, Australian prices are closely related to price movements in the petroleum market in the Asia-Pacific region.

- For example, in recent times strong demand for petrol and diesel in China has put pressures on refinery supply in China and Asia as a whole, resulting in higher prices.

- These supply pressures have come on top of high crude oil prices in 2005.

For crude oil, the relevant regional benchmark is Tapis Crude Oil (produced in Malaysia).

- The Platts Tapis quote is a representative regional crude oil price marker and is based on the expected price of cargoes loading 15 to 45 days in the future.

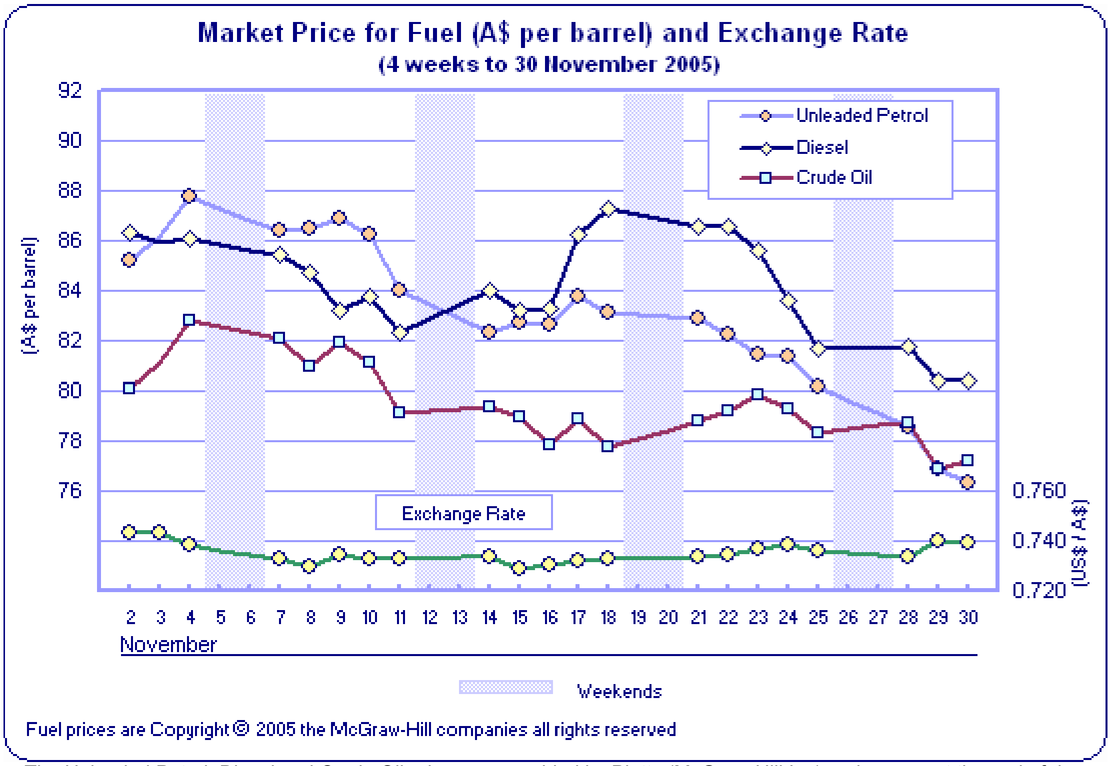
Singapore is a regional refining centre - an exchange point for refined petroleum products - and the benchmark for unleaded petrol is the spot price of petrol in Singapore.

- "MOPS95" (technically, the mean of Platts Singapore price quote for Premium Unleaded – 95 Octane) is a common benchmark for commercially traded Australian-grade unleaded petrol, because this benchmark more closely reflects Australian standards.

The prices for Tapis and MOPS95 are charted daily on the AIP website.

- For example, Chart 2 below shows that since the hurricanes in the US in September, prices have continued to fall over October and November.

CHART 2 – MARKET WATCH CHART FROM AIP WEBSITE



The Unleaded Petrol, Diesel and Crude Oil prices are provided by Platts (McGraw-Hill Inc) and represent the end of day assessment for the price of Mogas 95 Octane Unleaded, Gasoil and Tapis.

Terminal Gate Prices (Wholesale)

Australian Terminal Gate Prices (TGP) – the wholesale price of petrol including tax – are largely determined by the wholesale petrol price in Singapore.

Australian petrol prices follow Singapore petrol prices because Australian refiners compete against petrol imports (Australia imported around 20% of the total petrol and diesel consumed in 2004-05) and Singapore is the major source of our imports.

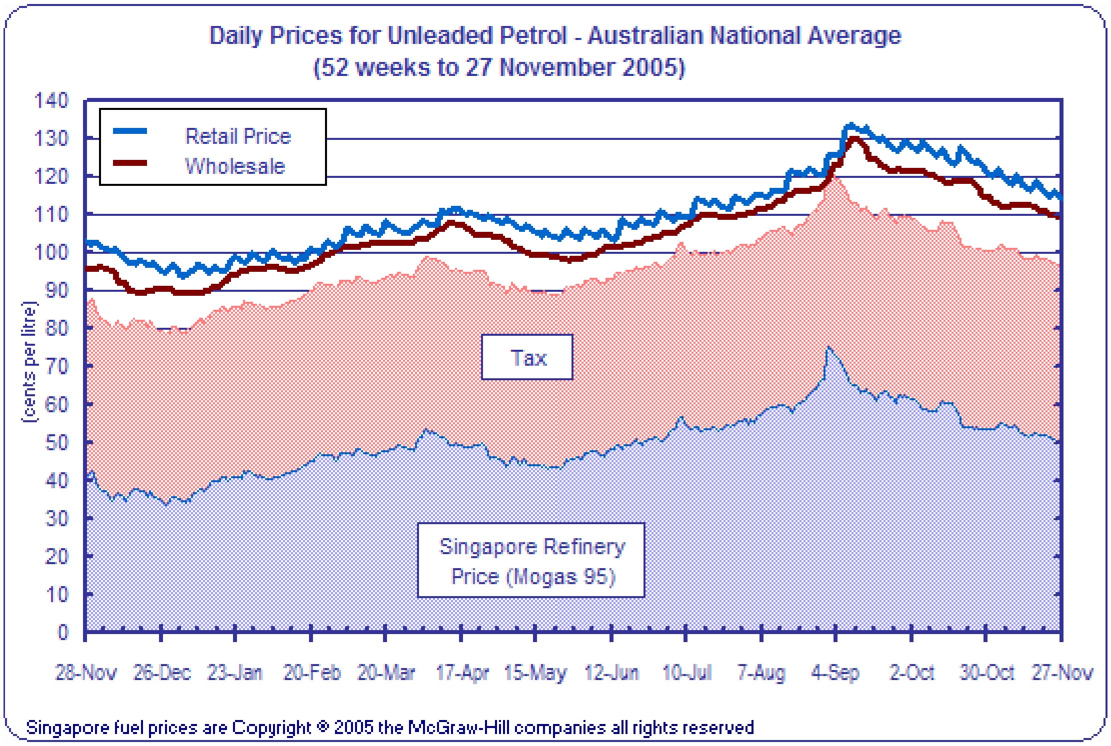
- For example, in the month of August 2005, Australia imported around 23% of the petrol and diesel sold, and Singapore was the source of 87% of those imports.

If petrol prices in Australia were below international benchmarks, there would be no commercial incentive to import petroleum products (since sales of this petrol would be at a loss), and Australian refiners would have an incentive to export their production.

TGP prices are calculated on the basis of what it would cost to import products into Australia including freight and insurance, exchange rate adjustments, terminal costs, net tax (excise and GST less any state subsidy) and, to the extent possible competitively, allow for a small wholesale marketing margin.

TGP data is therefore a good guide to how changes in international crude oil and product prices flow through to wholesale prices (ex-terminal) in Australia. Recent movements in TGP show that Australian petrol TGP peaked on 9 September, as shown in the chart below.

CHART 3 – MARKET SNAPSHOT CHART FROM AIP WEBSITE



TGP data is also published daily on the AIP website. As an example, a table from the AIP website is replicated below.

TABLE 4 – TERMINAL GATE PRICES: UNLEADED PETROL & DIESEL (CENTS PER LITRE)
(Wholesale price for bulk purchase at the terminal)

		Tuesday 29 November	Wednesday 30 November	Thursday 1 December
Sydney	ULP	109.38	109.24	109.07
	DIESEL	116.13	115.92	115.66
Melbourne	ULP	108.11	107.84	107.75
	DIESEL	114.40	114.00	113.57
Brisbane	ULP	109.19	109.19	109.19
	DIESEL	116.02	116.02	116.02
Adelaide	ULP	110.13	110.13	110.13
	DIESEL	116.48	116.48	116.48
Darwin	ULP	113.55	113.55	113.55
	DIESEL	120.23	120.23	120.23
Hobart	ULP	110.91	110.91	110.91
	DIESEL	120.23	120.23	120.23

All values are in cents per litre and are inclusive of GST

From an operational perspective, TGP is the price at which any person with the necessary safety clearances can purchase fuel from fuel supply terminals by the tanker load. While TGPs are a requirement of Western Australian and Victorian legislation, TGPs are also published voluntarily for most products available from fuel supply terminals across Australia including Queensland. The Australian Government's proposed Oil Code regulations provide for a TGP to be published by all petrol resellers.

Pump Prices (Retail) & Pricing Cycles

In understanding petrol prices, it is important to distinguish between the factors that contribute to the overall price level and the factors that drive retail price volatility. The overall price level is largely determined by the international factors noted above and the domestic on-costs noted below. In contrast, retail price volatility is caused by the structure of the retail market and by local area factors and cycles which will vary.

As a general rule, it may take up to 1 to 2 weeks for changes in Singapore petrol prices to be reflected in Australian pump prices, and this time lag occurs whether prices are going up or down.

Apart from TGP, the retail or pump price in Australia also reflects all the costs of getting the fuel from the refinery to the consumer. This includes transport costs, administration and marketing costs, and the costs of running service stations like wages, rent, utilities etc.

As well as reflecting changes in TGP or wholesale prices, retail prices in metropolitan areas also follow a discounting cycle (ie. a sawtooth pattern) which historically has ranged up to ten cents from the peak to the trough. The sawtooth pattern describes the situation of prices rising rapidly over a short period and then steadily decreasing.

This price volatility is indicative of a highly competitive market where participants use aggressive discounting to capture market share. Highly visible petrol pricing boards allow both customers and competitors to observe these price changes.

While a cause for concern for some consumers, it is clear that the majority of consumers benefit from the discount cycle and all consumers benefit from the competition.

For example, in response to community concerns about price variability, the ACCC report *"Reducing Fuel Price Variability:"* (December 2001) concluded that these discount cycles favour the consumer, with over 60% of petrol sales below the average price of the price cycle. Thus, the implementation of any options to limit price cycles may lead to higher average prices for consumers.

In addition, the benefits of the discounting cycle are highlighted by the number of websites (including the ACCC's) providing information on these cycles to help consumers determine when to buy petrol.

AIP encourages motorists to take advantage of the disounting cycle and buy at the bottom of the cycle when prices are low.

Overall, the retail pricing framework in Australia reflects the competitive and diverse nature of this market.

Government Taxation

Almost half the final price of petrol at the pump is made up of tax. For example, over 2005 the tax component of the final price of petrol has been between 40% to 50%. Excise is 38.14 cents per litre and GST is paid on the total price of fuel including excise.

In Queensland, there is a Government subsidy of 8.354 cents per litre (for both petrol and on-road diesel), which reduces the pump price by 9.2 cents per litre including GST for fuel purchasers in Queensland. Lesser subsidies apply in some other states.

Despite this taxation share, and the price of petrol and diesel increasing recently, Australian customers continue to enjoy very competitive petrol and diesel prices by international standards. The most recent figures available from the International Energy Agency presented in Attachment B show the retail prices of petrol and diesel for non-commercial use in Australia continues to be among the lowest in the OECD (in the June quarter 2005).

This is both on a pre-tax and post-tax basis, underlining that although taxation forms a significant part of the price, our fuel tax burden is significantly lower than for many other nations.

City versus country pricing

AIP publishes weekly data on country and city petrol prices. There are a number of other organizations (eg. state motorists' organizations) who also publish this price data.

In metropolitan areas, intense competition may mean that margins are generally insufficient to earn a reasonable rate of return on capital invested in the business.

In country areas, however, returns may be more reasonable. This is because, among other things, discounting is less common and land values are lower - for both service stations and wholesalers.

Country consumers therefore do not subsidise city motorists, as is often claimed. Rather, city prices are often below what they should be to give a fair return to fuel suppliers and service station operators.

City-country differentials may occur for the following reasons.

- Retail margins are typically higher in the country compared with major capital cities, mainly due to lower fuel volumes and shop sales over which to spread service station operating costs.

- Freight is typically 1.5 cents to 3 cents per litre greater for country than city delivery.

- Distribution costs may be significant for some country areas where fuel must be stored in depots and double-handled, rather than being delivered directly from coastal terminals.

- Average net wholesale prices have typically been lower in major capital cities than most country areas because of greater competition in more heavily populated urban areas but the gap has been narrowing over time due to increased competition in country areas.

This explanation is supported in the Report of the NT Pricing Inquiry. For example, the Report identified that in the case of Northern Teritory:

- *'pump price discounting is limited by the inherent diseconomies of fuel supply to a small market';*

- *'the relatively low volume of fuel sold by most Territory service stations is the most important factor explaining the relatively higher price for fuel in the Territory'*; and

- *'the transport costs of distribution to remote areas adds to the higher costs and price structure in the Territory'*.

Competitive forces and costs also vary greatly between country towns, so that pump prices do not just reflect freight and handling differences. In addition, an important factor explaining price differences across state boundaries is that most state governments provide different levels of subsidies to reduce petrol prices. For example, subsidies are either statewide (Queensland, Victoria, Tasmania, Northern Territory) or in some country areas (NSW and South Australia). The largest subsidy, as noted above, is the Queensland Government's subsidy.

Summary

AIP has long held the position that the Australian petroleum market is highly competitive at both a retail and wholesale level. However, the industry also recognises the large divergence of market structures operating across Australia and how different structures can affect competitive outcomes. As the retail petrol market continues to develop under competitive pressures, operating structures will evolve to better meet the needs of consumers.

Apart from the aggressive retail discounting noted above, the competitive pressures in the market are well demonstrated by the following facts.

- For many consumers, petrol (particularly Unleaded Petrol or ULP) is generally a homogenous product with some brand loyalty, meaning competition is largely based on price. These consumers are strongly price conscious. For other consumers in the market, for example users of Premium Unleaded Petrol or PULP, petrol is a differentiated product (based on a strong marketing emphasis on premium petrol brands) with more significant brand loyalty.

- Petrol prices are highly visible to consumers at the point of business entry (ie. on price boards).

- Australia consistently has among the lowest petrol and diesel prices in the OECD, on both a pre-tax and post-tax basis (according to official statistics from the International Energy Agency) - see the charts in Attachment B.

- Australian refineries are price takers competing with imports from the Asia- Pacific region. There are no barriers to entry in the Australian fuel market as there are in many Asian countries. Australian wholesale petrol prices are set in comparison to Singapore ex-refinery prices.

- Petrol (excluding tax) is one of only a few staple commodities to have reduced in price in real terms over the last two decades. Almost the entire increase in nominal terms is due to increases in excise taxes.

- Despite an increase in profits in 2004 and 2005, returns to Australian refiner-marketers have largely been below the long term bond rate for the last twenty years and well below international benchmarks for the industry.

- The entry of the supermarkets into retail markets has reduced the degree of vertical integration in the market (and has reduced the ability of oil companies to influence retail prices) - see Section 4.

- The ACCC examined the shopper docket arrangements in late 2003 and concluded that: ‘shopper docket petrol discount arrangements were likely to result in lower petrol prices for consumers, generation of a culture of discounting, and increased non-price competition.

    - The ACCC concluded in August 2005 that ‘developments in the petrol retailing market over the last two years indicate that these results have in fact occurred’.

AIP members strongly advocate a competitive market for fuel.

(5) THE ROLE OF BIOFUELS IN THE TRANSPORT FUEL MIX

Summary: AIP Policy Position on Biofuels

AIP member companies believe that biofuels can play a role in the Australian transport fuel market. AIP member companies acknowledge that the Australian Government has identified a target for the use of 350 megalitres of biofuels a year by 2010, and a number of member companies are currently marketing (or propose to market) ethanol blends and also considering other biofuels opportunities that will assist in meeting this goal.

AIP members are working with the Government to build the biofuels market on a sustainable commercial basis. In this regard, AIP welcomes the recent announcement by the Australian Government of a package of initiatives to help address market barriers and build consumer confidence. AIP member companies are also working closely with Australian Government officials to improve market uptake of ethanol blends, including through business action plans where appropriate. Recently, the CEOs of AIP member companies met with the Prime Minister and the Deputy Prime Minister to discuss their business plans and how these help achieve the Government's target.

At the broad level, it is AIP's view that there should be no guaranteed role for any particular fuel in the market, whether conventional or alternative fuels. Each fuel must establish and maintain itself in the market by being: cost competitive; readily available on a reliable basis; of consistent high quality and complying with fuel quality and other environmental standards; and acceptable to the customer.

AIP notes that the Australian Government has established a policy framework for transport fuels in which the role of each fuel – conventional and alternative - will be determined by its cost competitiveness and market forces over the longer term. Therefore, the role that biofuels and other alternative fuels will play will largely depend on their competitiveness as fuels and on consumer demand.

AIP member companies believe biofuels can meet these requirements.

- With the excise concessions and other fiscal support now in place, biofuels can be cost competitive, although significant R,D & D is still needed to bring the production costs down, particularly for ethanol, so as to remain competitive when the concessions are reduced from 2011.
- Increasing volumes of biofuels are expected to become available as new plants, assisted by government grants, come on stream; while current high oil prices may make these ventures more attractive, key factors will be perceptions of longer term oil prices and biofuels feedstock costs. Seasonal aspects of biofuels production still remain to be addressed so as to ensure consistency and reliability of supply.
- Potential fuel quality and handling concerns are being addressed through government determined fuel quality standards for ethanol, and possibly diesohol, and AIP's comprehensive fuel handling guidelines.

When judged against these factors, AIP member companies can see a role for biofuels replacing some fuel imports and helping to meet the growth in overall fuel demand. Due to its high octane, AIP member companies can also see a potential role for ethanol as one of the options for some refiners to meet the growing demand for higher octane fuels.

Clearly a critical factor remains the acceptability of biofuels to customers.

AIP member companies believe it is essential that all biofuels policy should be strongly based on sound science and practice, to ensure that the development of the biofuels industry is sustainable well into the future.

Detailed information on the air quality impacts of the introduction of biofuels is contained in the relevant chapter from AIP's submission to the *Australian Government Biofuels Taskforce* (see Attachment C). These impacts have been reviewed extensively by the Biofuels Taskforce and the latest evaluation is contained in the Taskforce's final report (see Chapter 5).

AIP also welcomes the further analysis and testing which is being undertaken by the Australian Government to clarify these impacts, particularly in an Australian context.

Specifically, the Australian Government has committed to:

- commission a study on the health impact of ethanol to validate overseas research under Australian conditions; and
- promote biodiesel's beneficial environmental properties such as its biodegradability through a B5 biodiesel trial in Kakadu National Park.

Supply Chain Costs for Fuel Distributors and Retailers

There are significant costs to the petroleum industry in reliably and safely blending and distributing ethanol blend fuels. In addition there are also significant costs associated with providing appropriate storage and safe handling facilities at retail sites.

Special attention is required throughout the supply and distribution chain to ensure that the quality of the ethanol blend fuel is maintained. The costs associated with the introduction of ethanol blend fuels will be company and site specific.

Ethanol suppliers should expect that refiners and fuel distributors will wish to recover these additional costs to their operations as well seek to cover the margin they would have otherwise made on the proportion of fuel being replaced by ethanol.

Octane Demand and Ethanol

The potential role of ethanol as an octane enhancer in petrol is frequently raised as a basis for projecting a significant demand for ethanol. This issue needs to be assessed in terms of the impacts of legislated and potential future vehicle and fuel standards on demand for particular fuels at particular qualities, as well as the economics of current and future refinery operations. Since each refinery in Australia has a different configuration, the timing of the need for and economics of options to build octane in petrols is complex and difficult to estimate.

The technical options for refineries for octane enhancement that comply with Australian fuel standards are: refinery capital investment, primarily in isomerisation; ethanol; ETBE; MTBE and ferrocene. For practical reasons, ETBE (similar problems to MTBE) and MMT and Ferrocene are not serious options.

The only two currently identified and viable options for octane enhancement in Australian refineries as being: refinery solutions - capital investment and/or the import of selected crude oils or high octane blendstocks; and ethanol.

Refinery solutions are a viable option. The usual route is investment in isomerisation capacity. However each refinery has different configurations and octane capabilities, and so each refinery will have a different technical and commercial solution. Imports of high octane blendstocks such as reformate also present an option.

Ethanol is a viable octane enhancer, and may well be an attractive option for some refiners.

A key issue is the economics and availability of ethanol. If a refiner locks into ethanol as its primary route to enhance octane, its cost to produce petrol will depend partly on the ethanol economics. For example, if the cost of ethanol rises above the cost of other blendstocks, the resulting blend will be that much less competitive against other petrols. RVP regulation relating to ethanol blends also affects refinery economics.

In this context, possible outcomes could be the general level of petrol prices rising higher than would be justified by normal market conditions or losses being suffered by an ethanol blender.

Similarly, if the ethanol supply is lower than planned, refiners relying on ethanol to produce the required octane enhancement would be constrained in their ability to supply fuel complying with Australian standards.

Customer Demand for Biofuels

A key factor in assessing the potential demand for biofuels, is the likely level of consumer demand. Apart from vehicle fleet use, where management decisions can effectively impose a required or preferred fuel option, retail fuel demand is very dependent on customer preference and personal views of motorists about the suitability of the fuel for use in their vehicle.

At present, biodiesel and diesel blends are being used by fleet operators and agricultural users. Biodiesel and diesel blends are not generally available for retail sale.

Most recent data indicates that E10 blends are available at around 300 service station sites across Queensland, NSW, ACT and South Australia. In terms of AIP members:

- Caltex and BP are currently marketing E10 blends in Queensland and in Northern NSW;
- BP are marketing E10 blends in the ACT region; and
- Shell has recently released a new 100 Octane fuel containing 5% ethanol and this fuel is available in Sydney, Melbourne, Brisbane and Canberra.

Despite increased penetration, there still appears to be significant consumer resistance to using E10. Understanding the reasons for this will be critical to understanding the possible future demand for E10. Such reasons are illustrated in Box 3 below.

BOX 3 – SURVEY OF E10 USE

An ANOP survey of motorists in February 2005, conducted for the Australian Automobile Association, indicated:

- 25% were happy to buy petrol containing ethanol
- 21% have reservations about buying petrol with ethanol in it
- 35% were unhappy to buy petrol containing ethanol
- 19% were unsure about buying petrol with ethanol in it

In the ANOP survey, over 50% of motorists who were happy to buy E10 saw it as no different to regular petrol (ULP). Only some 20% of E10 buyers would choose E10 because of its perceived environmental benefits, although this proportion has grown over the past two years and is somewhat higher in Queensland where the issue has been emphasised in promotional material.

On the other hand, of the motorists who were not happy or have reservations about buying E10:

- over half continued to be concerned about damage to their vehicle engine or the safety of using E10 in their vehicle, but only about 10% were concerned about the impact of E10 on vehicle performance or knew that it is unsuitable for their vehicle; and
- some 25% of the group believed they don't know enough and wanted more information and facts, even in Queensland where a significantly higher proportion of motorists were happy to buy E10.

The proportion of motorists who were unsure about the ethanol issue was relatively consistent across the country.

These results are consistent with the results of separate market research undertaken by Caltex and BP on the views of fuel purchasers. Both companies are trying to get a better understanding of these attitudes, particularly why some 40% of motorists are unsure or have doubts about whether E10 is good or bad for their cars, and what information or action will change their purchasing intentions.

Responding to these issues, the Australian Government announced on 22 September 2005 a package of measures to help address market barriers and restore consumer confidence in the biofuels industry.

The Australian Government has committed to:

- demonstrate its confidence in ethanol blended fuel by encouraging users of Commonwealth vehicles to purchase E10 where possible;
- undertake vehicle testing of vehicles in the Australian market to validate their operation with E5 and E10 ethanol blends and work with the Federal Chamber of Automotive Industries to ensure that consumers receive accurate and up-to-date information;
- increase fuel quality compliance inspections to ensure ethanol blends meet fuel quality standards;
- simplify the E10 label, which inadvertently acts as a warning to consumers against using ethanol;
- subject to the results of vehicle testing, allow E5 blends to be sold without a label, as in Europe, giving fuel companies greater commercial flexibility to increase supply;
- work with Australian fuels and transport industries to establish standard forms of biodiesel to provide certainty to the market; and

- work with the States and Territories to adopt fuel volatility standards (an existing market barrier) that are transparent, nationally consistent and take full account of the latest information on the impacts of ethanol blends on air quality.

The Australian Government has also recently secured agreement from vehicle manufacturers to develop a label stating the suitability of Australian-made vehicles to use ethanol-blended fuels.

AIP considers that these initiatives will help improve consumer confidence. AIP member companies are also working closely with Australian Government officials to improve market uptake of ethanol blends, including through business action plans where appropriate.

Energy Security and the Role for Biofuels

There are a number of dimensions of the energy security issue that need to be assessed when considering whether there are energy security reasons for advancing the role of biofuels. A number of these dimensions are considered in recent Australian studies, including the Energy White Paper, the Report of the Biofuels Taskforce to the Prime Minister, and the Review of the Liquid Fuels Emergency (LFE) Legislation. The findings of these studies are outlined below.

<u>The Energy White Paper</u>

Energy security issues were considered in detail in the preparation of the Australian Government's Energy White Paper in which the Australian Government concluded that the level of supply security in transport fuels is not currently under threat.

The political instability of some countries in the Middle East has been a major factor behind concerns about transport fuel security. In the longer term concerns also exist about the longevity of oil supplies. These concerns need to be placed into context. Past disruptions have had a relatively small impact on world oil flows and have not had a major impact on the reliability of oil supplies to Australia.

Australia, like other countries, has had to face increases in oil prices, often with significant economic impacts. There is no reason to believe this situation will change as the level of crude oil self-sufficiency declines in Australia over the next two decades.

As the Energy White Paper indicated, multilateral efforts to ensure that world markets remain open, and effective response mechanisms to mitigate the impact of short term supply disruptions, remain Australia's best path to provide for the continuity of oil supplies.

The operation of a strong market for transport fuels, robust mitigation strategies by industry, and emergency response arrangements provide confidence in Australia's ability to provide reliable supplies and competitively priced fuels into the future.

In looking at longer term alternative sources of supply of transport fuels, the Energy White paper noted that Australia has access to potentially large sources of alternative fuels: technology exists to convert coal and gas to liquid fuels; Australia has enormous shale resources; Australia has significant resources of naturally occurring LPG, and can use CNG in transport applications.

These resources are all in addition to the potential sources of biofuels. The existence of these resources provides comfort that Australia is well positioned to respond to any longer term changes in oil supply conditions, particularly the outlook for crude oil production in Australia.

As the Energy White Paper concluded, ‘there is currently no case for the Government to accelerate the uptake of these fuels on energy security grounds. To do so would involve additional costs to consumers, with few energy security benefits.’

<u>Report of the Biofuels Taskforce to the Prime Minister</u>

The recent *Report of the Biofuels Taskforce to the Prime Minister* (August 2005) concluded ‘there are no valid arguments to suggest the Australian Government’s position on energy security (as outlined in the Energy White Paper) is not appropriate’.

<u>Review of the Liquid Fuels Emergency (LFE) Legislation</u>

These issues were also considered in further detail in the recent review of the LFE legislation by ACIL Tasman. While Governments have yet to respond formally to the review recommendations, there is a clear recognition in the review recommendations that shorter term supply disruptions can be managed through the current fuel supply chain management arrangements in Australia. Multilateral arrangements are in place to provide a strong level of support for Australia in the event of a more substantial supply disruption.

Decisions by Other Countries to Support Biofuels in the Transport Fuel Market

Many countries have adopted policies to assist the production and use of biofuels. Extensive information is available from the governments of these countries that explains the policy rationale for decisions to support the introduction of biofuels, by way of financial incentives and subsidies, as well as market mandates for these fuels.

The most recent assessment and overview of the main policy drivers in other countries is set out in Chapter 4 of the *‘Report of the Biofuels Taskforce to the Prime Minister’* (August 2005).

In summary, the final Report of the Biofuels Taskforce made the following conclusions.

- The Taskforce notes that many countries have adopted policies to assist the production and use of biofuels. While national circumstances vary widely, in every case biofuel production has required significant government assistance. The reasons given by governments for adopting these policies are essentially the same as the possible benefits for Australia: air quality and greenhouse benefits; economic benefit through import replacement; energy security, and regional, particularly agricultural, support.

- In the assessment of the Taskforce it is regional, particularly agricultural, support that emerges as the primary driver of biofuel assistance in all cases except in countries with a very limited capacity to increase agricultural production.

- For some European countries, the Taskforce gained the impression that their biofuel policies are driven by EU decisions that they do not see as being in their immediate national interest. This tends to explain differentiated uptake of biofuels within the EU.

Regional Economic Impacts

Several studies have analysed the regional economic impacts of the development of a biofuels industry in Australia. The conclusions of these studies suggest substantially different outcomes in regional economies from an expansion of the biofuels industry in Australia.

- In reviewing the various economic analyses (particularly regional economic analyses), AIP believes it is important to ensure that any comparisons of the cost of production of ethanol and biodiesel with current or projected petrol and diesel prices are based on the full costs of the biofuels production (ie fixed and variable costs). The reason for this is that petrol and diesel fuel prices implicitly include a component for capital cost recovery.

AIP notes that the most recent and comprehensive study of regional economic impacts in an Australian context, is contained in the *'Report of the Biofuels Taskforce to the Prime Minister'* (August 2005). In summary, the final Report of the Biofuels Taskforce (including analysis conducted by ABARE) made the following conclusions in relation to regional development.

- Biofuel production has the potential to affect regional economies by stimulating commodity prices (where these are not set by the world market) and investment in production facilities. Even if increased biofuels production is uneconomic in the absence of government assistance, submissions have argued that increased biofuels production is desirable from a regional development perspective.

- To the extent that this production is stimulated artificially by government assistance, there will be other possibly unforeseen regional impacts. For example, an assisted biofuels industry may increase grain prices at a cost to some domestic livestock industries, which are heavily dependent on these feedstocks. This may be especially so around times of shortage due to drought, given the difficulty or cost of importing grain under strict quarantine requirements.

- Under current policy settings, the high rates of return that can be obtained by the subsidised fuel-ethanol industry in the short term would allow it to bid strongly against the livestock industry for grain feedstock where necessary.

- The Taskforce considers that, on current policy settings, there is real potential for subsidised grain ethanol plants to have a local impact on feedgrain prices in the short to medium term. In the longer term, fuel ethanol rates of return are likely to drop as the policy settings reduce the subsidies—and as ethanol import competition is allowed in 2011. The fuel ethanol industry will then be placed on a more even footing in its ability to bid for grain against the livestock industry.

- Even assuming that the distributional benefits to regions of biofuel production outweigh the effect on other industries, there is still the question of whether assistance to biofuels represents the most cost-effective and best-targeted option for assisting regional development.

- ABARE estimated that reaching the 350 ML target could result in 216 direct jobs. A multiplier of two was used to calculate indirect jobs. This multiplier is supported by independent advice from ACIL Tasman. The total number of jobs (direct and indirect) potentially created by current biofuels policy settings to reach the 350 ML target by 2010 is therefore 648.

- The cost of each job (in 2004–05 dollars) would be $182,000 p.a. in government expenditure in 2009–10, or $139,000 p.a. in economic costs. These costs appear high, but could be offset by other benefits such as emission reductions. In 2015-16, the cost of each job (2004–05 dollars) would fall to $68,000 p.a. for government expenditure or around $111,000 p.a. loss to GDP.

- The Taskforce recognises that a multiplier of two is conservative, but notes that this may be offset by the fact that jobs may in fact be transferred from other areas and industries in net terms, particularly in a time of near full employment.

o The Taskforce notes that an ethanol industry based on sugarcane is unlikely to assist the more marginal areas of sugar production. It would centre on areas of high productivity such as the Burdekin district in north Queensland. In addition, the degree to which a developing ethanol industry would deliver higher returns to cane growers (that is, significantly higher than world parity prices) would depend wholly on income splitting arrangements between millers, ethanol producers and cane growers.

ATTACHMENT A

REFERENCE MATERIAL

AIP has drawn on a wide range of reports, papers and analysis in the preparation of this submission. Details of the various documents and resources are set out below.

Pricing Information

This submission draws from pricing and other material presented on the following websites:
www.aip.com.au
www.bp.com.au
www.caltex.com.au
www.exxonmobil.com.au
www.shell.com.au
www.industry.gov.au
www.accc.gov.au
www.fuelwatch.wa.gov.au

Data – Supply & Demand, Pricing & Service Stations

In addition to the pricing information/data contained on the websites above, other primary sources are:

(1) *Australian Petroleum Statistics*, Department of Industry, Tourism & Resources, Australian Government.
(2) Platts (McGraw-Hill Inc) crude oil and product quotes which AIP publishes on its website (under Copyright © 2005 the McGraw-Hill companies);
(3) Petrol pricing information prepared by ORIMA Research Pty Ltd (on behalf of AIP);
(4) TGP data based on information provided by AIP members and Trafigura Fuels Australia; and
(5) AIP Service Station Survey, June 2004

Previous Inquiries, Submissions & Pricing Reports

NT Government, 'Inquiry into Fuel Prices in the Northern Territory', May 2005
ACCC, 'Reducing fuel price variability' Report, December 2001
AIP, 'Submission to the Australian Government Biofuels Taskforce', 24 June 2005
ACCC, 'Understanding petrol pricing in Australia', August 2005

Economic & Energy Security References

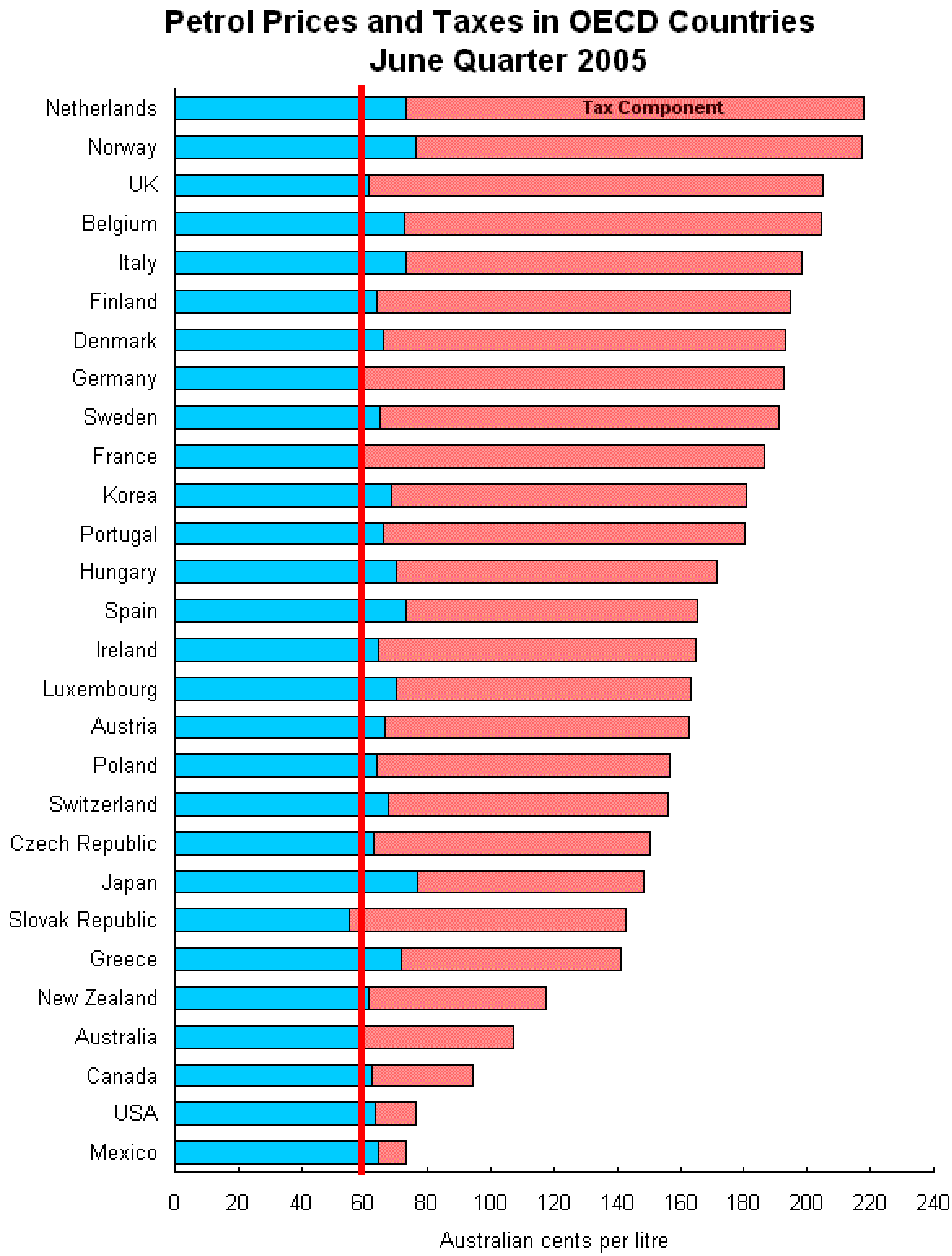
Australian Government, *Energy White Paper – Securing Australia's Energy Future*, June 2004
ACIL Tasman *Review of the Liquid Fuel Emergency Act 1984*, December 2004
BTRE, *Is Australia Running Out of Oil?,* DoTARS website, 2005

Biofuels References

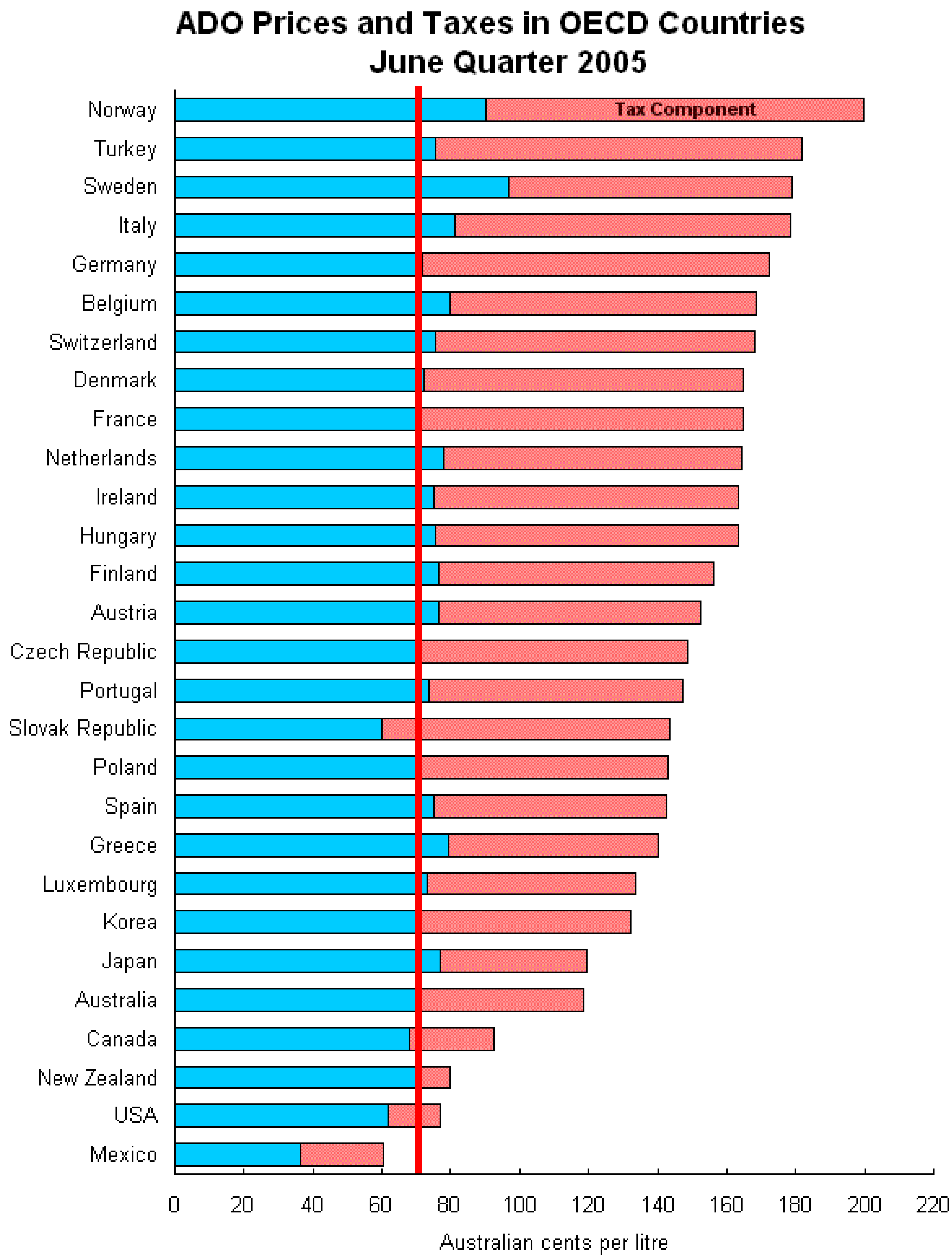
Australian Government Biofuels Taskforce, 'Report of the Biofuels Taskforce to the Prime Minister', August 2005.
Coffey Geosciences Pty Ltd, *Fuel Quality and Vehicle Emissions Standards Cost Benefit Analysis*, October 2003
IEA, *Biofuels for Transport: An International Perspective*, 2005
IPIECA *, Various Presentations at Buenos Aires Workshop on Biofuels,* April 2005
BTRE, *Urban Pollutant Emissions from Motor Vehicles; Australian Trends to 2020,* June 2003
CSIRO, BTRE, ABARE, *The Appropriateness of a 350 million litre Biofuels Target, December* 2003
ABARE, *Revised Assessment of Biofuels industry Viability*, April 2004
MathPro for API, *Effects of an RFS on U.S. Energy Savings, National Costs of Gasoline Production, and the Regional Pattern of Ethanol Use*, May 2005
LECG *Economics of a Queensland Ethanol Industry* 8 May 2005
Global Insight for API, *Winners and Losers of Ethanol Mandates*, 2005

ATTACHMENT B

INTERNATIONAL PRICES & TAXES: PETROL & AUTOMOTIVE DIESEL



Source: Australian Petroleum Statistics



Source: Australian Petroleum Statistics

ATTACHMENT C

EXTRACT FROM THE AIP SUBMISSION TO THE AUSTRALIAN GOVERNMENT BIOFUELS TASKFORCE (RE: AIR QUALITY IMPACTS)

AIR QUALITY

AIP believes that the assessment of the air quality benefits flowing from the introduction of biofuels need to be considered in the context of ambient air quality and legislated future changes in fuel and vehicle standards ie how emission changes will impact on actual levels of pollutants in urban areas and how air quality compares with established air quality NEPM standards.

For this purpose, appropriate recognition needs to be given to fuel standards legislated for 1 January 2006 and beyond, and the related vehicle emission standards that apply to the current and future fleet. This data is presented in the 2003 Coffey Report. These reference case emissions data are further augmented by legislated future emissions reductions flowing from introduction of Euro 4 equivalent standards for petrol and petrol vehicles, and Euro 5 diesel and diesel vehicles. Studies in the literature often refer to vehicle technologies that are already old in the Australian fleet and care must be taken to give weight to more recent studies that take into account the dramatic emission reductions in recent vehicles and projected over the next few years.

A number of claims have been made about the effects of ethanol in reducing the emissions of the pollutants discussed in this section of the submission. These claims are well known to the Taskforce and we understand are being evaluated by CSIRO to fully understand the scientific basis of the claims and their applicability and relevance to the Australian situation. This submission does not attempt to replicate this work by CSIRO.

Carbon Monoxide (CO)

CO is one of the criteria air pollutants, and a CO standard is prescribed under the Ambient Air Quality NEPM. The standard is 9.0 ppm (8 hours).

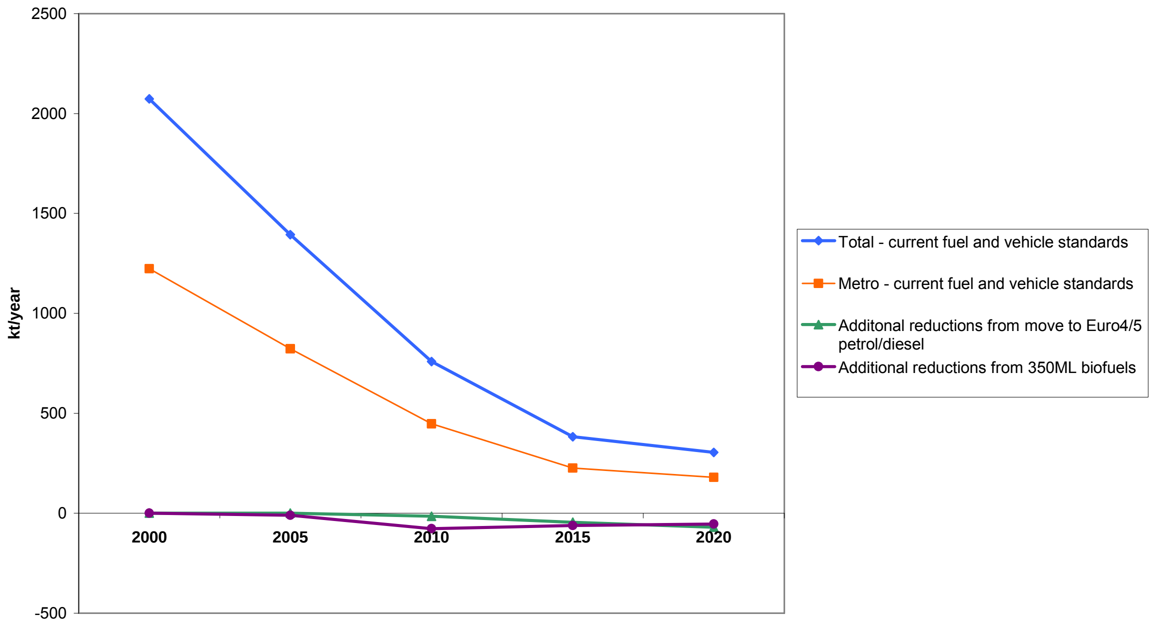
CO emissions have not been a major concern in Australian cities for some years, with no exceedances of the standard recorded since 1998. The actual decline in CO levels has been proceeding at a steady pace of about an 8% reduction per year since 1990. Data provided in the Coffey Report, 2003 indicated that there has been a declining trend in the carbon monoxide concentrations in Australian capital cities from 1990 to 2001, with all Australian capital cities well within the NEPM. The 2003 figures reinforce the trend:

Carbon Monoxide (24 hour) Concentration (ppm) Australian Cities 2003

Brisbane	2.7
Sydney	4.7
Canberra	3.7
Melbourne	4.9
Adelaide	6.0
Hobart	2.4
Perth	4.1

CO emissions are projected to decline significantly by 2020 as a result of the introduction of new vehicle technology combined with the introduction of cleaner conventional fuels and the retirement of older vehicles from the fleet, particularly pre-catalyst vehicles. In urban areas, CO emissions are expected to reduce by some 63% on average by 2010. The results will mean that CO levels will remain well within the NEPM standard.

CO emissions - current and legislated future fuel and vehicle standards



Sources: *Coffey (2003)* - base, metro, Euro4/5 trends
ABARE, BTRE, CSIRO (2003) - E10 trends

The addition of 350ML to the fuel mix by 2010 would have no significant impact on urban CO emissions, given the level of actual emissions relative to the air quality NEPM.

In summary, CO levels are currently well within NEPM air quality standards, and are forecast to further reduce markedly with the increasing effect of new fuel standards and vehicle ADRs. Ethanol is not necessary to achieve NEPM compliance, unlike the US where a winter oxygenate program was introduced in 1992 in severe CO non-attainment areas. There is no justification for bringing biofuel levels in the fuel mix to 350ML in 2010 on the basis of the impact on carbon monoxide emissions.

Oxides of Nitrogen (NOx)

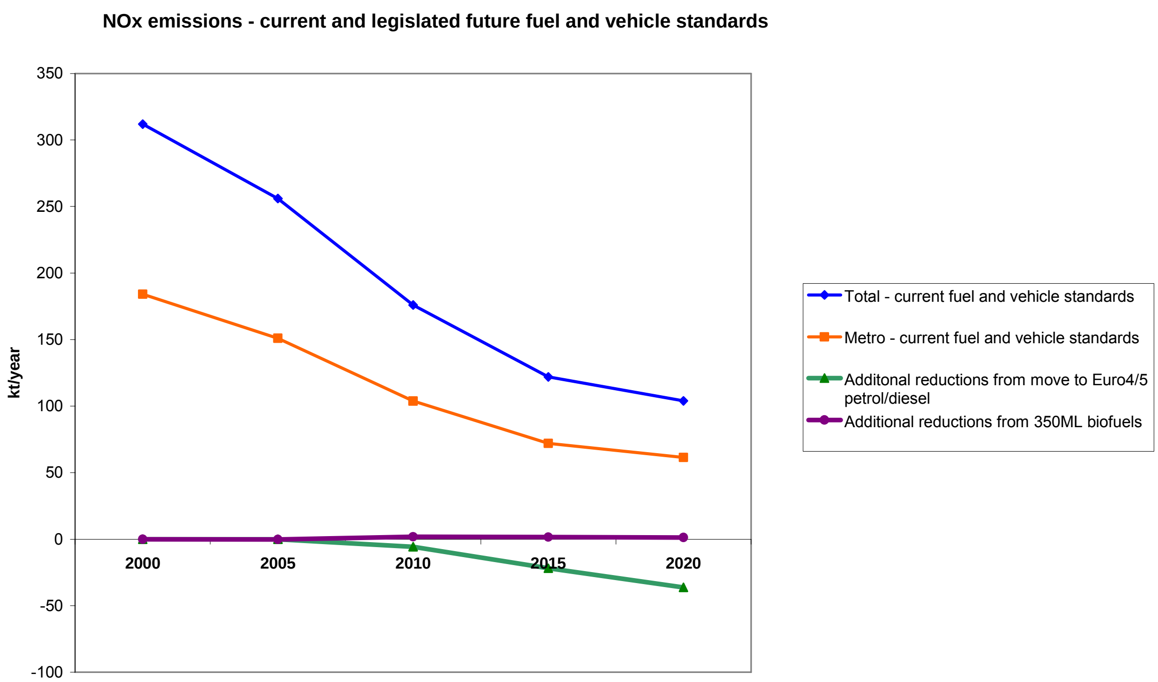
NOx is one of the criteria air pollutants. Accordingly, there are standards for NOx levels in ambient air, established in the Ambient Air Quality NEPM. These standards are: 0.12 ppm (1 hour) and 0.03 ppm (1 year).

NOx is one of the key precursors for urban photochemical smog (see section on photochemical smog/ozone). There were no exceedances of the NOx standards in the last reporting year. However, there were exceedances of the ozone standard, notably in the Sydney metropolitan airshed. Thus NOx emissions remain a priority issue for management.

There are a number of sources of NOx emissions – the two key ones being stationary sources such as power stations, and motor vehicles. Motor vehicles account for the majority of NOx emissions in urban areas – typically around 70%.

Reduction of NOx motor vehicle tailpipe emissions requires sophisticated emission control systems, complemented by cleaner fuel quality – particularly reductions in sulphur content. In 2006, the maximum allowable NOx tailpipe emissions under the vehicle Australian Design Rules (ADRs) will be 0.15 g/km. This will further reduce to 0.08 g/km in 2008.

The combined effects of the changes in the ADRs and fuel quality were modelled in the 2003 Coffey Report. The modelling showed that NOx emissions from motor vehicles, compared to the levels in 2000, would decline by 40% by the year 2010, and by 60% by the year 2020.



Sources: *Coffey (2003)* - base, metro, Euro4/5 trends
ABARE, BTRE, CSIRO (2003) - E10 trends

The effect of E10 blend petrol on NOx emissions is very dependent on vehicle technology. However, the general effect of E10 is zero to a small increase in NOx emissions. In Australia, the Orbital study found that, for ethanol blends under 12 %, NOx emissions were virtually unchanged from those of the base petrol. The APACE 1998 study found an average 1% increase in NOx.

In summary, introduction of an E10 blend petrol would not be expected to have a significant effect on motor vehicle NOx tailpipe emissions. The overall levels of motor vehicle NOx tailpipe emissions are modelled to further reduce from the levels applying in 2000, by 40% by 2010, and by 60% by 2020 as a result of the introduction of tighter fuel standards and vehicle ADRs.

Hydrocarbons (HC) / Volatile Organic Compounds (VOC)

There are no ambient air quality standards for HC, usually measured in air as VOCs. However, VOCs are one of the key precursors of urban photochemical smog (see section on photochemical smog/ozone).

Motor vehicles are a major source of VOC emissions, primarily petrol vehicles. In Sydney, motor vehicles accounted for 39% of anthropogenic VOC emissions, and about 20% of total VOC emissions. Similar proportions have been recorded in other major Australian urban areas.

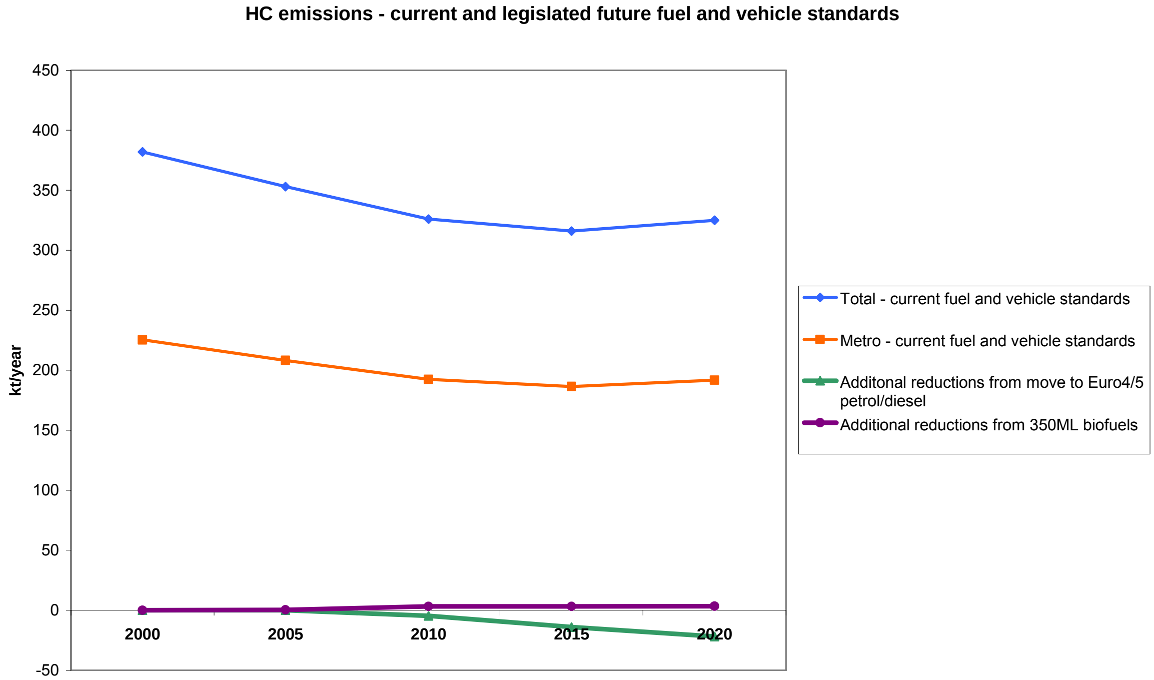
There are two sources of motor vehicle emissions of VOCs: exhaust tailpipe emissions; and evaporative emissions. In 2000, exhaust emissions accounted for 56% of vehicle VOC emissions.

There are standards under the vehicle ADRs for exhaust tailpipe emissions of HC. In 2006, this standard will be 0.2 g/km. In 2008, the standard will reduce further to 0.1 g/km. This reduction will be achieved by complementary developments in vehicle technologies and fuel standards (primarily reductions in the levels of sulfur). The effect of these developments will be:

- A reduction in exhaust tailpipe emissions of HCs by 50% in 2010, and 60% by 2020.
- a reduction in the proportion of overall HC emissions accounted for by exhaust tailpipe emissions; this proportion will fall to 24% by 2020 (DEH Setting for Fuel Quality Standards 2000).

Evaporative emissions from vehicles are a function of vehicle fuel system design and fuel vapour pressure. The primary management focus has been on fuel vapour pressure in the warmer summer months (when the risk of photochemical smog is highest) and vapour recovery. Most States have established maximum summer petrol vapour pressure standards, set at levels consistent with particular urban airshed requirements. Vapour recovery systems for tanker discharge (Stage 1 Vapour Recovery) are now required in most States, and are becoming general practice in almost all areas, which reduces VOC loads into the airshed.

Current fuel and vehicle emissions standards are projected (Coffey report) to result in a reduction in HC emissions of 10% in 2010, and 20% in 2020. This reduction does not take into account the reductions in evaporative emissions due to petrol vapour pressure controls and vapour recovery systems. Thus the overall reduction in HC emissions will be greater than that modelled by Coffey.



Sources: *Coffey (2003)* - base, metro, Euro4/5 trends
ABARE, BTRE, CSIRO (2003) - E10 trends

When ethanol is blended with petrol, there are converse effects on VOC emissions between exhaust tailpipe emissions and evaporative emissions:

- Exhaust tailpipe emissions will be reduced. The effect of ethanol is to 'lean' the fuel mixture in older vehicles (primarily those with carburettors), and so reduce tailpipe VOC emissions. Orbital found reductions of 14% with ethanol blends under 12%. Similar results have been shown in overseas studies; internal testing by BP in Germany on E5 blends showed a reduction of 10%.
- Evaporative emissions will increase, due to two factors, increased vapour pressure of the blend, and increased permeation of elastomers in the fuel systems
  - Ethanol has a higher vapour pressure than petrol (typical values are 130 RVP for ethanol compared to 70 RVP for petrol). This increases the potential for fugitive vapours of VOCs.
  - Ethanol increases the release of VOC vapours through the permeation of elastomers in fuel systems. A recent US study prepared by the Air Resources Board and Coordinating Research Council for the Californian Environment Protection Agency, *Fuel Permeation from Automotive Systems (CRC-65),* found that ethanol significantly increased evaporative emissions through permeation through elastomers by an average of 45%.
- The composition of the VOC changes. With E10 blends, there is a reduction in the tailpipe emissions of the air toxics toluene and xylene but an increase in the emission of the air toxics acetaldehyde and formaldehyde.
- The overall effect of an E10 blend will be to increase emissions of VOCs. The CRC-65 study found that the increase in evaporative emissions more than offset the slight reduction in tail pipe emissions. Another US study, by the National Research Council, *Ozone-forming Potential of Reformulated Gasoline* also found that 'the increase in evaporative emissions from ethanol containing fuels was significantly larger than the

slight benefit obtained from lowering the CO exhaust emissions using ethanol containing fuels.' The report concluded that the use of oxygenates such as ethanol and MTBE in reformulated gasoline had little impact on air quality and some disadvantages.

Overall, emissions of HCs / VOCs are a significant air quality management issue. The level of motor vehicle HC emissions are expected to reduce with the mandated introduction of tighter fuel standards and vehicle ADRs, combined with controls on summer petrol vapour pressure and vapour recovery systems. The introduction of E10 blends has both positive and negative effects on emissions of VOCs, however the overall effect will be to significantly increase emissions of VOCs.

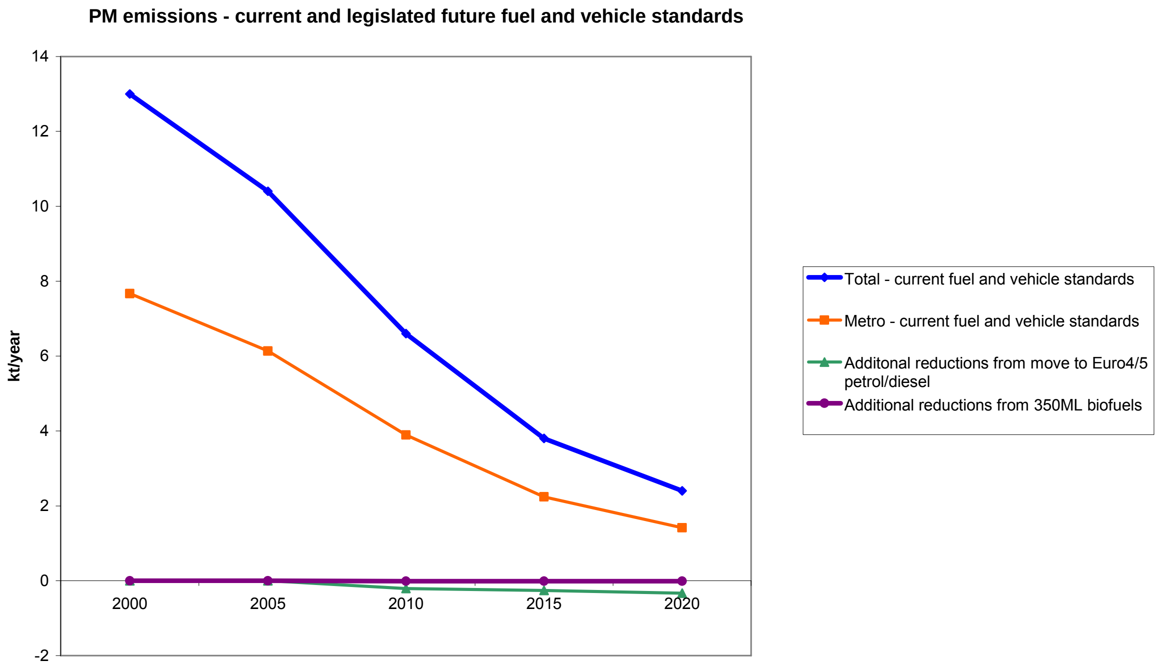
Particulate Matter (PM)

Particulate matter is a criteria air pollutant, and a PM10 standard is prescribed under the Ambient Air Quality NEPM. The PM10 standard is 50 $\mu g/m^3$ (daily). There is no standard for PM2.5, though one is under consideration.

There have been a number of studies in recent years of particulate matter from vehicle emissions under different vehicle and petrol standard scenarios throughout the world. The results differ considerably according to local vehicle technology. The effect of vehicle emissions on atmospheric concentrations of PM is also airshed specific.

The estimates modelled by Coffey (2003) (the basis for decisions about the introduction of new vehicle standards and fuel standards in Australia), show very large reductions in PM emissions from vehicles. Emission control standards are in place for diesel vehicles as these have particulate emissions that are orders of magnitude greater than petrol vehicles. There are no emission standards anywhere in the world for PM emissions from petrol vehicles.

The figure below indicates the estimated reduction in PM emissions from the 2000 base case used by Coffey, including the impact of introducing Euro 3/4 fuel standards and vehicle ADRs in 2005/2006. Current fuels and vehicle standards are projected to result in a 50% reduction in particulate emissions from 2000 to 2010. Neither the introduction of future legislated conventional petrol and diesel standards (ie Euro 4/5 fuel standards and vehicle ADRs) in 2008/2009, or the addition of 350ML of ethanol to the 2020 fuel mix) is expected to have a significant impact on PM reduction in Australian urban areas.



Sources: *Coffey (2003)* - base, metro, Euro4/5 trends
ABARE, BTRE, CSIRO (2003) - E10 trends

The key points for consideration are that:

- *there are no particulate emissions standards for petrol engines anywhere in the world, only for diesel engines which are recognised as the major source of particulates.*
- *the Coffey Report (2003) concluded that peak 24 hour concentrations were generally well within the NEPM standard of 50 µg/m^3 although this standard was exceeded in most Australian capital cities at least once a year mainly due to bushfires and dust storms. The NEPM goal allows five occurrences per year in excess of the standard and this goal was met by all Australian capital cities in 2001. A review of both PM standards and performance is expected this year.*
- *vehicle emissions of particulates are forecast to decline markedly with the mandated introduction of tighter vehicle ADRs and cleaner fuels*

In summary, any impact of E10 on fine particulate emissions is not significant in the Australian context.

Photochemical Smog / Ozone

Photochemical smog (ozone) is a criteria air pollutant. Australian air quality standards have been established for ozone under the Ambient Air Quality NEPM. The standards are: 0.10 ppm (1 hour) and 0.08 (4 hours), with an allowed exceedance of 1 day per year.

Photochemical smog is the result of a chemical reaction of oxides of nitrogen (NOx) and reactive Volatile Organic Compounds (VOC) in the presence of sunlight.

Carbon monoxide (CO) can also be a smog precursor, but has much lower effect than VOCs. CO has very low reactivity, compared to VOCs. The Carter Maximum Incremental Reactivity (MIR) scale is used to estimate grams of ozone produced per gram of organic molecule; the MIR for CO is 0.057, compared with 3.35 average for tailpipe exhaust hydrocarbons – ie CO is 59 times less reactive than exhaust hydrocarbons (VOCs).

Given the low and declining levels of CO in Australian air quality (see section on CO), CO is not considered to be a significant factor in ozone formation in Australian airsheds.

While CO is not a significant ozone precursor in Australia, the effects of developments in vehicle ADRs and cleaner fuels will lead to major reductions to motor vehicle emissions of CO (see section on CO). This will further ensure that CO does not have a material impact on ozone formation in Australia.

There have been exceedances above the allowed ozone level in recent years, particularly in the Sydney airshed. NSW DEC has stated that the reduction of ozone is the primary air quality objective for the Sydney metropolitan region. Major programs are in place, at Commonwealth level and in most States, to achieve reductions in ozone levels. These include:

- NOx: reductions in emissions of NOx from motor vehicles (see section on NOx) and from stationary sources such as power stations.
- VOCs: reductions in emissions of VOCs from motor vehicles (see sections on HC/ VOCs) and from woodfires, the other major anthropogenic source.

The potential effect of ethanol/ petrol blends on ozone formation depends on the impact of ethanol on VOC emissions and on any change in the reactivity of VOC emissions from ethanol compared to petrol. As outlined in the section on HC/VOCs, ethanol generally will reduce tailpipe emissions and increase evaporative emissions of VOCs.

Modelling by CSIRO for the NSW (then) EPA in 2003 and by the Queensland EPA found that E10 blends would not increase or decrease ozone formation significantly. However, these studies did not consider a major increase in ethanol usage. Recent comprehensive US studies by the CRC and NRC (see section on HC/VOCs) found that ethanol blend fuels significantly increased emissions of VOCs, one of the two key smog precursors, which more than outweighed the relatively slight benefit from reducing aggregate CO emissions. This would indicate that any significant increase in the use of E10 blends would increase the potential for photochemical smog.

In summary, ozone is a significant air quality issue in Australia. Ethanol blend fuels have both positive and negative effects on emissions of ozone precursors. Modelling in two States has shown that E10 blends would not increase or decrease ozone formation significantly. However, recent US studies have shown that E10 blends will increase the potential for smog occurrences.

AIR TOXICS

The air toxics usually considered in relation to vehicle emissions are formaldehyde, acetaldehyde, benzene and 1,3 butadiene. Data on annual urban emissions of these substances in 2000 provides a reference for considering how changes in the use of E10 are expected to impact on these aggregate emissions.

	Vehicle tailpipe urban emissions in 2000 (kt/y)	E10 % changes in tailpipe emissions	Air Toxic Index (Cal EPA)
Formaldehyde	2.69	19	0.035
Acetaldehyde	3.06	159	0.016
Benzene	5.36	-13	0.17
1,3 Butadiene	0.53	-6	1
PAH	0.288		

As of 1 January 2006, Australian fuel quality standards require a maximum of 1% benzene in petrol, in line with best practice standards internationally. All refineries have now committed to investment in equipment and processes to achieve this standard.

This reduction in the quantities of benzene in petrol is expected to result in a reduction in benzene emissions from petrol since 2000 of 29% by 2010 (DEH Setting National Fuel Quality Standards, based on USEPA formula for the modelling of the reduction of benzene content from 3% to 1%). This is comprised of a 20% reduction in tailpipe emissions and 67% reduction in evaporative emissions. When combined with the new vehicle emission standards technology, vehicle emissions of benzene are forecast to reduce by 52% in 2010 and by 73% in 2020, compared to emissions in 2000.

However, these reductions in benzene emissions through the use of E10 will have a significantly lesser impact on aggregate emissions given the changes which have been made to the fuel standards

As well as considering the relative levels of benzene emissions from the use of different petrols, an assessment also needs to be made about expected ambient benzene concentrations in metropolitan airsheds in Australia, and whether these are close to or exceed recommended exposure levels identified by health authorities (NEPM Investigation level 0.003ppm). Monitoring data from State EPAs shows that air quality levels are generally well below this, for example, (NSW EPA 2002):

- High traffic areas: 0.0009 ppm - 0.0028 ppm
- Residential areas: 0.0004 ppm – 0.0012 ppm.

Given the modelled reductions in benzene emissions, the 2006 benzene fuel standards will result in maximum benzene concentrations in metropolitan areas continuing to be well below the Investigations Levels in the Air Toxic NEPM.

In the case of formaldehyde and acetaldehyde emissions, there are an increasing number of reports of studies showing increases in the level of emissions of these substances from vehicle using E10, sufficient to warrant closer attention to this aspect of the data.

In summary, current levels of ambient benzene concentrations are below the Air Toxic NEPM Investigation Level. Vehicle benzene emissions are set to decline further with the introduction of a maximum 1% benzene fuel standard in 2006. The introduction of an E10 blend petrol using a base fuel complying with the benzene standards to apply in Australia from 1 January 2006, as part of the 350ML biofuels target would only lead to a marginal further reduction of benzene emission below that already achieved through the introduction of the new fuel and vehicle emission standards.

In the absence of any Australian data to substantiate actual higher concentrations, or a scientifically established need for a lower ambient concentration limit, there is no case for mandatory use of E10 blend petrol to achieve benzene concentration targets for health reasons. The potential for formaldehyde and acetaldehyde emissions to increase as a result of use of E10 warrants further consideration.

GREENHOUSE GASES (GHGs)

The impact on GHGs of adding biofuels to the conventional fuel mix varies according to the feedstock used, the fuels used in the production of the biofuels, transport costs, expected improvements in vehicle technology and the composition of the fleet. This impact should be assessed on full life-cycle, well to wheels basis.

The 2004 IEA publication *Biofuels for Transport* provides a useful summary of various studies into the GHG emission reductions from biofuel production and use as transport fuels

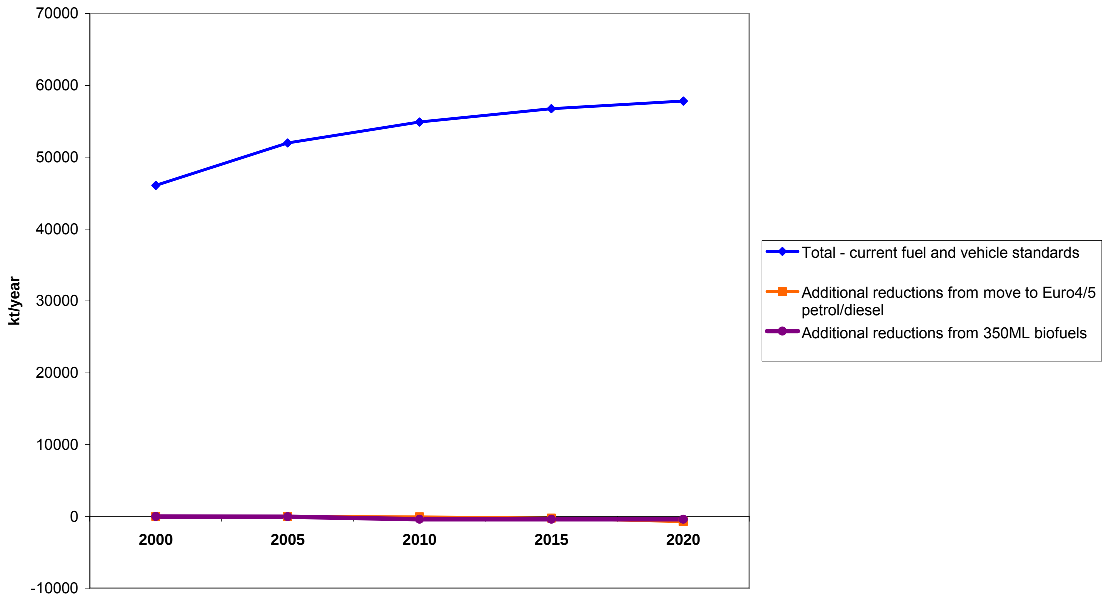
A 1999 study by the US Argonne National Laboratory found that, in the USA, GHGs resulting from the use of ethanol from corn were reduced by 1% (measured against vehicles miles traveled) under current production techniques, with a 2% reduction possible with near future techniques. The use of near future cellulosic source technology would reduce GHG emissions by 6-9%.

The Argonne findings correlate reasonably with estimates from Europe and Australia. In Europe, testing by BP in Germany has found that the use of an E5 blend will reduce GHG emissions by 1.9%. The Concawe well-to-wheels study in 2003 found similar levels of greenhouse gas abatement.

The CSIRO/BTRE/ABARE study reported GHG emission reductions of between 1.7% and 5.1%, depending on the source of the ethanol. The lowest abatement came from wheat-sourced ethanol, the highest from molasses with cogeneration energy.

This report also estimated the expected level of greenhouse gas emissions from the vehicle fleet and the emission reductions expected from the introduction of the 350ML biofuels target. These effects are shown in the table below where the adoption of the 350 ML biofuels target results in a reduction of CO_2 emission in 2020 of 0.46% of the base case total emissions from vehicles in 2020. It should be noted that the data in the report has been adjusted to remove the effect of a reduction in refinery emissions, as it would be expected under the current refinery operations in Australia that the ethanol used to create the E10 blend would replace imported petroleum products rather than domestic production.

GHG emissions - current and legislated future fuel and vehicle standards



Sources: *Coffey (2003)* - base, Euro4/5 trends
ABARE, BTRE, CSIRO (2003) - E10 trends

A recent study by CSIRO on GHG emissions impacts from the Primary Energy project at Gunnedah found the GHG abatement from the project consistent with those of the CSIRO/BTRE/ABARE study. The highest savings (ie around the 5% level) were achieved through the use of renewable energy, such as bagasse based cogeneration. Additional greenhouse gas abatement of around 4-5% (compared to ULP) has been identified by CSIRO as arising from the non-ethanol co-products associated with this project. The study also stressed that the findings were very project-specific, and should not be extrapolated more broadly.

The majority of the studies that compare biofuel project costs with greenhouse gas abatement highlight the high cost of this means of abatement. In reaching a view on the greenhouse gas emission abatement cost for biofuels, AIP strongly believes that the Taskforce must compare at least the level of subsidy and concession provided to the industry with the level of abatement achieved, which is at best A$ 150 per tonne. This should be compared with the performance of the Greenhouse Gas Abatement Program (GGAP) which achieved an average abatement cost of under A$10 per tonne. Other emissions abatement options have also been identified in a number of sectors in the range A$10-30 per tonne.

In the light of the available research, the AIP agrees that increasing the proportion of biofuels in the fuel mix does have a positive impact on greenhouse gases, especially to the extent that biofuel production is treated as a sink under the Kyoto protocol, but that such reduction will not be significant in terms of the overall level of emissions from the transport sector . In addition, the cost of this abatement is substantially higher than that being achieved under other Government financial incentive programs.