

AWU Submission

Draft Energy White Paper 2011

March 2012



The Draft Energy White Paper 2011: *Strengthening the foundations for Australia's energy future* has seemingly ignored that Australia is headed towards a potential energy crisis.

It is clear that Australia is becoming increasingly reliant on foreign crude oil and refined petroleum to meet its liquid fuels needs. This increased reliance on foreign oil is being exacerbated by the following factors:

1. **Reduced oil-refining capacity** – Shell has recently closed its Clyde refinery; Caltex is formally reviewing its 2 refineries – one in Kurnell and another in QLD.
2. **Ethanol mandates** – The NSW O'Farrell Government's decision to reverse its policy on ethanol mandates in fuel has recently received large attention. This decision has the potential to force closure or reduction of NSW's ethanol production capacity. The policy was to mandate that all unleaded transportation fuels in NSW include a 6% level of ethanol in all fuel sales. This is commonly sold to the consumer in what is known as an E-10 blend.

Both of these outcomes have will lead to the likely increase of Australia's reliance on foreign oil and refined petroleum. Any increase in net petroleum and oil importation exposes Australia's economy to external shocks in the global supply of oil.

It is clear that Australia's fuel manufacturing sector is suffering from the same stresses of the manufacturing sector broadly. The high Australian dollar is providing the stress point for many Australian manufacturers and is sending many industries to the brink of failure e.g. aluminium, steel, automotive, pulp and paper. The issues driving competitiveness are complex and require significant government attention and response, but it is clear that Australian manufacturers are suffering from an immediate crisis of demand due to a collapse in export price competitiveness as a result of the \$AUD appreciation.

The fuel-manufacturing sector warrants specific attention due to its strategic importance to Australia's energy and economic security.

This paper will identify:

1. The drivers of refinery closures;
2. The risks to Australia's energy security;
3. The case for ethanol mandates; and
4. Potential government responses to the emerging crisis.

1. THE DRIVERS OF REFINERY CLOSURES

Background

- Australia has historically had 8 oil refineries:
 - Kurnell 7810ML (Sydney);
 - Clyde 4740ML (Sydney);
 - Lytton 6300ML (Brisbane);
 - Bulwer Island 5910ML (Brisbane);
 - Altona 4640ML (Melbourne);
 - Geelong 6530ML;
 - Kwinana 8280ML (Perth); and
 - Port Stanvac (now closed – Adelaide).
- Until 2000/01 Australia was a net exporter of oil and refined petroleum – since this time, Australia's production has peaked and the gap between imports and domestic production has grown exponentially.
- Australia now imports 20-25% of its petroleum.
- Australia imports roughly 80% of its crude oil.
- The total demand for petroleum products in Australia is 941,000 bpd. Consumption of refined petroleum products is projected to grow 1.2 per cent a year over the long term.
- Since the closure of Shell's Clyde facility Australia now has 6 refineries. This has the potential to drop to 4 if Caltex – Australia's largest refiner – closes its 2 facilities. This will be half the amount since 2003.
- Future reductions in refining capacity in Australia (from current 761,500 bpd to 433,000 bpd if only four refineries remain operational) and growth in demand imply imports will play an increasingly greater role in meeting domestic demand.
- Caltex Australia has written down the value of its two oil refineries (Kurnell in NSW and Lytton in Queensland) by A\$1.5 billion
- Clyde supplied 40% of NSW's refined petroleum needs. It will now be an import facility only.
- Caltex has been constantly attempting to improve the performance of its operations through its ongoing refining improvement initiative. This has the goal of reducing net costs in operations by \$100m.

- Caltex has indicated it will make a final decision on the future of its operation in approximately 6 months time. All options – including closure – are on the table. It is worth noting that Caltex's distribution arm provides 30% of Australia's liquid fuel needs. Caltex – despite being 50% owned by Chevron – is not vertically integrated into global supply chains. Therefore, a closure of its refining arm would leave it highly exposed to any loss of refining capacity.
- Unemployment can be expected to increase through the closure of any Australian refineries:
 - 500 lost at Clyde; and
 - 1500 in jeopardy at Caltex.

Drivers of closure

It has become increasingly obvious that there is a new dimension to the economic crisis crippling manufacturing: it has the very real potential to threaten our national fuel security.

The NSW fuel-manufacturing sector faces the same pressures as the broader manufacturing sector, as well as other sectors in the 'slow lane' of the dual-speed economy.

The specific common issues that relate to fuel refineries are:

- 1. The high Australian dollar** – The high Australian dollar is making the business case to invest and produce in Australia more difficult to justify, particularly for import competing commodity manufactures such as refined petroleum. The propensity the \$AUD has to be 'stronger for longer' would likely impact on the long-term business case for refiners. The causes of the \$AUD are well known and will not be discussed in this paper.
- 2. Scale of enterprise** – NSW and other Australian refiners are struggling to match the marginal output and cost advantages associated with large Asian mega-refineries such as in Singapore. It is also an issue for domestic refineries that these Asian mega-refineries generally produce petrol as a by-product; given the primary demand for transport fuel in the region is diesel.
- 3. Capital age** – The age of facilities in Australian fuel refineries is significant issue. Older and smaller equipment significantly reduce the competitiveness of Australian refineries. For example, Clyde was built in 1928; Kurnell in 1956. Australia's newest refineries were built in 1965.
- 4. Global excess capacity** – A specific issue related to refineries is global capacity. Currently, there is 10% excess global capacity in oil refining. It is expected this will

grow, with much of it in China. This makes the cases for Australian refineries more difficult to justify – i.e. high global capacity, high Australian dollar. The resounding conclusion this leads to is: why not just import? The largest advantage the domestic refineries still retain is in transport cost – that is, trucks v ships. However, this marginal advantage would be instantly negated by a large Chinese/Asian expansion in capacity.

Caltex's recent announcement confirms the above assessment.

Caltex Statement 16 February 2012

Recent deterioration in performance of refining business unit due to challenging external environment (including the ongoing strength of the Australian dollar, lower Caltex refiner margins and increasing costs) now expected to be sustained for prolonged period.

The refiner margin is an assessment of the competitiveness of a refinery – it builds in a number of complex factors. The calculation method is described below.

In order to calculate a refining margin, the weighted average value of all refined product components (less an allowance for refinery fuel and loss) of a barrel of the marker crude, known as the gross product worth (GPW), has to be computed by multiplying the spot price of each product by its percentage share in the yield of the total barrel of crude.

The refining margin is then defined as Gross Product Worth: Less Transport costs; marginal crude freight, insurance and ocean loss (in case of an FOB crude), and applicable fees and duties, assuming a single voyage for an appropriately sized tanker chartered on the spot market. Less Credit allowance; representing the financial effect of the time delay between paying for crude versus when it is received in the refinery (crude credit, crude transit time). Less Variable refinery operating costs; defined to include the feed-dependent costs for power, water, chemicals, additives, catalyst and refinery fuels beyond own production. Less Fixed refinery operating costs; defined to include labour, maintenance, taxes and overhead costs adjusted monthly to take account of escalations based on industry cost indices.

2. THE RISK TO AUSTRALIA'S ENERGY SECURITY

Australia cannot simply ignore any potential emerging energy crisis.

A reduction in Australia's domestic refining capacity would be hugely dangerous, particularly having regard to global energy supply and markets:

- The world is increasingly becoming dependent on energy sourced of hydrocarbons that are finite, dirty and damaging to extract. Demand can be expected to soar between now and 2050 as global incomes increase and population numbers and density increase.
- Growth is heavily linked to energy supply – Australia as a large continent nation with a sparse population relies on cheap and reliable liquid fuels to maintain economic functions.
- Geopolitics and oil supply are closely inter-related. There are a number of potential flashpoints that will affect the oil supply chain globally. As Australia's reliance on imported liquid energy increases, so too will the risks to the economy of any sudden shocks to oil supply.
- Biofuels such as ethanol can play a vital role in the sustainability of existing energy supplies such as oil, by extending the life of reserves through blended fuels. Furthermore, given that Ethanol is derived from agricultural products – waste products from sugar cane, the waste from starch production, and red sorghum – it is inherently renewable. Importantly, these waste products do not impinge on the food production process. Technological advancements are currently being researched that would allow other cellulosic biomass, trees and grasses to be utilised in the manufacturing of ethanol.

Global oil price pressures

The links between economic growth and energy demand are well known. This is largely a symbiotic relationship.

Historical context: 1970's oil shocks

The 1970s energy crisis was a period in which the major industrial countries of the world faced substantial shortages of petroleum. The two worst crises of this period were the 1973 oil crisis, caused by the Arab Oil Embargo of OAPEC, and the 1979 energy crisis, caused by the Iranian Revolution.

The crisis period, however, began to unfold as a result of events at the end of the 1960s. It was during this time that petroleum production in the United States and some other parts of the world peaked. Subsequently, during the 1970s, world oil production per capita peaked.

It is worth noting Australia's domestic oil production peaked in 2000-01. Until 2000, the year in which its domestic crude production peaked, Australia was either a net oil exporter or relied only marginally on oil imports to meet domestic demand. Since then, as domestic production has declined and domestic oil demand grown, Australia has become a growing net oil importer.

The major industrial centers of the world were forced to contend with escalating issues related to petroleum supply. The fact that Western countries had to deal with potentially unfriendly sources in the Middle East and other parts of the world to maintain supply made the situation especially complex.

The crisis led to stagnant economic growth in many countries as oil prices climbed. Though there were genuine issues with supply, part of the run-up in prices resulted from the perception of a crisis. The combination of stagnant growth, high unemployment and price inflation during this era coined the term stagflation. Before this period, it was believed that economies would either have high unemployment or high inflation – not both.

The oil crisis is an example of a 'supply side shock' where lack of a key input (oil or energy) drives up prices but also restricts the economies capacity to grow.

The situation now

Oil prices are linked to economic growth. As growth increases, so does demand for energy. Oil therefore naturally becomes scarcer and the price increases.

- **Pre-GFC, crude oil prices dropped to ~\$35 a barrel.**
- **Global oil prices have now rebounded to ~\$125 a barrel.**

It is crucial to note that this price increase has occurred despite US and EU growth being below trend. The EU is arguably about to reenter recession.

Historically, OECD growth has driven the demand – and therefore price of – crude oil.

N.B. Oil has also been historically influenced by the oil producing nation cartel OPEC who are known to restrict supply to maintain price levels.

Oil prices therefore could go as high as \$200 a barrel on some projections as OECD nations return to trend growth.

It is therefore clear that high oil prices are likely to remain a part of the global economic setting. This will act as an inflationary straight jacket on prosperity.

Australia's liquid fuel demand and supply

- In Australia, total petrol consumption in 2009 was 19 gegalitres of which 22% was imported.
- Crude oil – Australia produces roughly 20% of its needs domestically – the remainder is sourced from a combination of nations.
- Domestic refined petroleum production is uncertain based on the future Australia's refinery capacity. Shell has recently announced the closure of its Clyde facility and Caltex – Australia's largest oil refiner – has stated it is reviewing its 2 Australian plants.
- **If oil refinery ceases at these plants, Australia's foreign oil dependency may rise to over 30%.** It is anticipated Australia's productive capacity will be pressured by 'mega-refineries' in Asia as well as the general age of Australia's refinery infrastructure.
- **Closure would lead to 1500 job losses on top of 500 lost at Clyde.** Caltex cited high Australian dollar, increased costs and reduced refiner margins as a reason to place sites on review. It is also important to note that age of the plants that are extremely old. Global refineries also have 10% over-capacity, which makes the business case in Australia with the high dollar harder to justify.
- While Australian refineries currently produce around 70-75% of Australia's petroleum needs, planned reductions in domestic refining capacity as well as increasing demand, will see additional reliance on imports for refined product. This has the potential to expand exponentially if refining capacity is not expanded or shut and fuel demand grows. The Draft Energy White Paper 2011 points out that regional excess capacity from Asian 'mega refineries' will place further pressure on small marginal Australian refiners.
- In Australia, demand for liquid fuels has steadily risen over the past decade and consumption of refined petroleum products is projected to grow 1.2 per cent a year over the long term, reaching just under 2500 petajoules in 2034–35.5
- The transport sector is the largest final consumer of liquid fuels, accounting for around three-quarters of Australia's final use.

- Scenario modelling by CSIRO indicates that by 2030 alternative transport fuels could, under a range of scenarios, make up about 23 to 46 per cent of Australian transport fuels, and this could rise to as much as 30 to 54 per cent by 2050.
- The prospect of rising oil prices will provide economic incentive for the development of alternative fuels to complement conventional petroleum products. Government and industry will need to work together to address market failures associated with the development and uptake of alternative transport fuels.¹

Based on the level of imports, Australia's transportation fuel is exposed to any external shocks of supply. An external shock to Australia's oil supply would be highly disruptive to economic activity in Australia.

The Federal Government's Draft Energy White Paper 2011 and Energy Security Framework have both rejected that energy independence or self-sufficiency are important for energy security; claiming markets respond swiftly to deal with any shortages in supply, that Australia has access to robust markets and is also a member of the International Energy Agency that provides additional security.

The government response points to excess capacity in Asian refinery – despite its negative effects on Australian refiners – as a safety measure to meet any Australian supply constraint in refined petroleum. This is highly questionable as these Asian refiners may themselves be cut off from global supply chains of crude oil (discussed further in paper).

This market based approach takes a historic view of how the world has responded to oil and fuel shortages – however it could reasonably be expected that with demand extending far beyond the traditional OECD nations to emerging economies, markets may struggle to rapidly bring on new sources of oil rapidly due to already stretched supply chains. Such an approach also ignores the very real geopolitics that afflicts oil supply (discussed further in paper).

Australia's emergency reserves

Since the oil shocks of the 1970s, the IEA has mandated that nations have 90 days worth of emergency reserves to deal with shortages.

Unlike many other IEA countries, Australia does not hold government-owned strategic stock to manage supply during a short-term shortage, preferring to rely on the flexibilities markets offer to manage liquid fuel supply constraints without government intervention and to allow price increases to dampen or reduce demand.

Essentially, Australia mandates that the private suppliers hold this 90-day limit – the Minister can then take control of the reserves if required. This policy was a valid response when Australia was a net exporter of oil products (pre 2001). However since that time Australia has struggled to meet its obligations. Since 2010, the level of oil stocks in Australia have equated to less than 90 days of net imports. **Recently, Australia's emergency reserves have fallen to 88 days.**

In the event of a fuel shortage with national implications or the need for Australia to meet its commitments to the IEA under existing treaty obligations, the Governor-General of Australia may, upon prior consultation with the Commonwealth Resources and Energy Minister, declare a national liquid fuel emergency under the *Liquid Fuel Emergency Act 1984*. This provides the Commonwealth Resources and Energy Minister with wide-ranging powers to control the drawdown, transfer and sale of industry stocks of crude oil and liquid fuels, to control the range of products produced by Australian refineries and to direct bulk and retail sales of fuel across Australia.

The White Paper and Security Framework have both dismissed this failure to comply as a threat to Australia's energy security. The IEA is an important network for Australia's energy security. It is important that Australia complies with this network to ensure there is a credible global framework to deal with oil shortfalls. Australia's failure to comply with the mandate ensures that the system is undermined to a degree.

It also calls into question Australia's ability to point to the IEA as a safeguard to its growing dependence on foreign liquid fuels – given it is failing to follow the IEA's guidelines.

Australia's strategic needs

Australia is strategically dependant on transport due to the vast size of the country and the low population density that is clustered in urban capitals. Access to cheap, renewable transport energy will continue to provide a strategic advantage to Australia's economy – **ethanol can play a role in sustaining Australia's domestic supply of oil and extending the life of reserves.**

The White Paper and Security Framework have both identified the important role that diversity will play in energy security. Alternative fuels such as ethanol can play an important role in Australia's energy consumption portfolio. Scenario modelling by CSIRO indicates that by 2030 alternative transport fuels could, under a range of scenarios, make up about 23 to 46 per cent of Australian transport fuels, and this could rise to as much as 30 to 54 per cent by 2050. Ethanol will play a role Australia's alternative transport fuels portfolio.

However in order to achieve this policy outcome the Draft White Paper has noted that investment certainty will be required – “A stable, predictable domestic policy environment will support the development, production, distribution and deployment of alternative transport fuels.”

The Paper further stresses the importance of leadership and certainty at an industry-government level to ensure appropriate levels of investment.

It is clear that the continued uncertainty in Government policy created recently by the O’Farrell Government can only hurt Australia’s investment in alternative fuels – and consequently its energy security.

Global threats to international fuel and oil supplies

Geopolitical instability – oil is heavily sourced from areas such as the Middle East, which are home to some of the most unstable and unpredictable regimes and ongoing conflicts.

- **Iraq** – It is uncertain how stable Iraq will be post US troop withdrawal.
- **Iran-Israel** – Israel has increased the urgency of its campaign against Iran’s nuclear programme. It is impossible to rule out a pre-emptive military strike from the Israeli’s against Iran. Iran has stated that any military incursion will result in Iran closing access to the Strait of Hormuz – a rout that is responsible for roughly 40% of seaborne oil trade and 20% of global supply. If Australia is to become dependent on Singaporean petroleum it is important to note that Singapore sources 90% of its crude from the Middle East. Any Israeli incursion therefore would have the potential to disrupt Australia’s energy supplies.
- **Arab Spring** – Uncertain how these events will resolve themselves and what affect they will have on neighbouring regimes that are oil supplies such as Syria and Saudi Arabia.
- **China-Taiwan tensions** – These are ongoing and inherently uncertain. China has also been more forceful in global shipping routes and claims over the China Sea. Any escalation in tensions in this region have the potential to involve the United States and heavily disrupt the supply of energy.
- **Extreme Weather** – Events such as Hurricane Katrina have the potential to cause massive disruption to global supply chains of oil.

There are a vast number of potential risks to Australia’s supply chain – which would be entirely sea based – and cannot be listed in their entirety due to the unpredictability of global events.

The Federal Government has modeled a 30-day loss of petrol from Singapore. It is suggested that prices may spike in the near term, but that the market should adjust swiftly. However, it is not clear what would result from an ongoing crisis.

3. KEY ARGUMENTS FOR ETHANOL

- **Job Creation and the Economy** – NSW is currently experiencing the side effects of the mining boom that is hurting trade exposed industries through a high Australian dollar, high cost of inputs and competition for labour. Fuel manufacturing supports jobs and other industries in regional and rural NSW. A mandate of ethanol can help to create jobs and ensure that manufacturing has a future in NSW.
- **Global Action** – Currently over 50 nations worldwide are promoting or mandating the use of ethanol as part of a renewable energy solution.
- **Emissions Reduction** – Ethanol blended fuel burns cleaner and can reduce transport emissions by as much as 25%.
- **Health Considerations** – Ethanol blended fuel contains oxygen and therefore burns cleaner than pure petrol. Ethanol can play a large role in reducing the negative health impacts of air pollution. This has large benefits to community health, as well as reducing the impact on health budgets and resources.
- **Misinformation** – There are a number of what can be called ‘fear campaigns’ regarding the use of ethanol by vested interests. These are all worthy of being mentioned and discredited to ensure that public discussion of ethanol fuel is fully informed.
- **Sustainability and Energy Security** – Australia currently imports over 20+% of its refined fuel needs for transportation. This is a growing phenomenon since 2000-01 and has vast implications for Australia’s economic security, Ethanol can help reduce the levels of reliance on foreign oil and extend the life of present Australian reserves. The closure of Shell’s facility and the potential closure of Caltex’s facility will have vast implications on Australia’s energy independence.

Job Creation and the Economy

The ethanol industry in NSW is a large employer and investor, with the main player being Manildra Group.

- Since 1985, Manildra has invested \$800 million in the fuel manufacturing industry.

- Manildra employs 800 people that are involved in the ethanol production process.
- Manildra Group earned 1 billion in revenues during 2010-11 of which \$220m was from industrial production and ethanol.
- Year ended 30-6-11 total production of ethanol was 250 million litres. Manildra planned construction on plant expansion to accommodate the 10% policy mandate – this is now under review. This expansion would have increased production to in excess of 400 million litres.
- \$504 million investment in Nowra ethanol plant – making it the 5th largest NSW investment in manufacturing excluding mining.
- The Manildra plant near Orange is in the top 10 flourmills in the world and is state of the art in capital equipment – a situation that is in direct contrast to much of the manufacturing sector in Australia.
- Manildra Group is heavily invested and vertically integrated into sugar and wheat industries. Many of these industries rely on the downstream demand as well as capital investment supplied by Manildra Group.

These types of manufacturing jobs – and investments in plant and equipment – are increasingly important as NSW struggles in the slow lane of Australia's multi-speed economy.

Jobs derived from the fuel manufacturing sector are vital due to the regional economies and communities in which they are located.

Currently, ethanol production is situated near Orange and Nowra. These regional towns have much higher than state average unemployment and thus are more reliant on the continued output and growth of the fuels manufacturing sector. Furthermore as smaller towns, with fewer sources of industry diversification, these areas would feel more acutely the impact of any curtailing of the industry, which could arise from the O'Farrell Government policy reversal. A slow down in the manufacture of fuel would likely have a knock on effect into other upstream and downstream industries.

On a positive note, growth in this industry could have a large tangible economic and employment impact in regional centres.

The fuel manufacturing industry and The Manildra Group through horizontal and vertical integration into agricultural industries also creates indirect employment in research, agriculture and freight.

- There are over 100 contractors servicing the Nowra site.
- Manildra had pioneered a joint venture with NSW Sugar Cooperative in 1989. Since this time 600 sugar cane growers have been supported and 500 employees in the raw sugar and refining plant have been employed.
- Manildra Group has a 50% interest in MSN Milling – providing work to 12,000 canola growers and exporting to 10 countries.
- The Manildra Group transported 2.15 million tonnes of product by rail in 2011.
- 51,400 truck movements were created – the majority of which were in NSW.
- Manildra was the single largest exporter of containers through Port Botany – 2011 totaled over 15,000 containers.

These direct and indirect jobs, investment and economic multipliers are all at risk due to the O'Farrell Government's policy reversal.

It is worth noting that Australian manufacturing workers are highly productive. High levels of labour productivity help to make the domestic fuel manufacturing more competitive than rival producers such as Brazil.

QLD has recently announced council and state approval of a proposed \$425 million sugar ethanol plant in North Queensland. The plant will produce about 335,000 tonnes of sugar a year, generate 80 to 85 megawatts of green power and will create 400 jobs as well as dozens more in cane growing.

QLD is home to two ethanol producers Dalby and CSR who produce roughly 140 million litres annually.

This is an example of other states embracing the opportunity of alternative fuel manufacturing – whereas NSW falls behind in employment, growth and investment.

Global Action on Bio Fuels

Australia is falling behind global investment in the ethanol and biofuels sector.

Of the 34 OECD member nations, only 5 do not have ethanol mandates – Switzerland, Turkey, Israel, Iceland and Australia.

The biofuels industry globally is currently booming with over 50 countries other than Australia currently either actively supporting, encouraging or mandating a shift to renewable biofuels such as ethanol.

Europe	Asia	South America	North America	Africa
Austria	China	Argentina	Canada	Malawi
Belgium	India	Brazil	USA	Nigeria
Cyprus	Indonesia	Chile		
Czech Republic	Japan	Columbia		
Denmark	New Zealand	Costa Rica		
Estonia	Philippines	Jamaica		
Finland	South Korea	Mexico		
France	Taiwan	Paraguay		
Germany	Thailand	Peru		
Hungary				
Italy				
Ireland				
Latvia				
Lithuania				
Luxembourg				
Malta				
Netherlands				
Norway				
Poland				
Portugal				

Romania				
Slovakia				
Slovenia				
Spain				
Sweden				
Turkey				
UK				

Facts about global ethanol consumption and production

- Total consumption of ethanol in 2008 was more than 65,000 million litres (ML) and that figure is growing very quickly.
- In 2008 ethanol made up 2% of all transportation fuel usage globally. This figure has increased to roughly 3% in 2012.
- The International Energy Agency predicts that biofuels have the capacity to displace 5.4% of the world’s gasoline just by 2013.
- Shell – a major oil company – considers that alternative energy for transportation will make up to 30%
- In the major markets of Brazil and the United States where blended ethanol is an important part of the fuel mix, consumption is growing by 10–20% per year.
- The European Union aims to replace 10% of its transport fuels with renewable fuels like ethanol by 2020. Sweden has the stated policy aim of being completely free of fossil fuels by 2020.
- The US has mandated 164 billion litres per year of ethanol in petrol blends by 2022. It is projected to domestically produce 19 billion litres of ethanol in 2012.
- Canada is aiming for 45% of the country’s gasoline consumption to contain 10% ethanol by 2010.
- India has a national biofuels policy of 20% of its fuels by 2017, including mandatory targets of 20%.
- The Philippines have mandated a 10% ethanol mix in gasoline since 2007.

It is clear that the world is moving towards using ethanol as a vital and viable solution to the need for sustainable transportation energy.

The O'Farrell Government's position is contrary to its own prior public statements in favour of the policy and is at odds with international efforts. Furthermore the policy reversal it is out of step with Federal policy that is urging a shift towards the use of renewable and cleaner suppliers of energy.

The ethanol industry is creating manufacturing and agricultural jobs around the world and helping to reduce dependence on fossil fuels – these are jobs and environmental benefits that NSW will forego if it turns it's back on ethanol and fuel manufacturing.

Emissions Reduction and Environmental Impact

- Currently 97-98 per cent of the energy used in the transportation industry is sourced from hydrocarbons found in fossil fuels.
- Transportation is responsible for more than a quarter of the world's greenhouse gas emissions.

Ethanol can be a key player in the reduction of global Green House Emissions (GHG) by reducing the burning and release into the atmosphere of hydrocarbons.

Comparatively to world standards Australia has been slow to act on maintaining standards regarding traffic induced pollution from combustion fuels. This has increased Australia's emissions profile.

Ethanol has the following environmental benefits:

- Ethanol is non-toxic, water soluble and highly biodegradable.
- Ethanol contains 35% oxygen – raising the combustibility of fuel and reducing harmful emissions.
- Ethanol has been shown to reduce exhaust carbon monoxide emissions by as much as 25%.
- Ethanol replaces benzene in fuel – a harmful and toxic chemical that is a carcinogen and has been linked to leukemia.
- The American Lung Association has linked the 25% reduction in Chicago's smog pollution to the introduction of ethanol-blended biofuel.

Health considerations

Urban pollution is highly linked to respiratory illnesses and increased rates of morbidity and mortality.

65% of urban pollution has been shown to be generated by vehicle emissions.

Breathing particle pollution on a daily basis – as urban dwellers do – can be highly detrimental to health. Over exposure to such levels of urban pollution has been linked to the reduction of life expectancy by 1-3 years. Exposure to pollutants from particles has been linked to respiratory disease and disorders, lung disease, cardio-vascular disease and myocardial infarcts, as well as premature births.

A 2003 study has shown that in Sydney twice the number of die from vehicle exhaust as compared to road related accident deaths.

The same study calculated the cost of morbidity and mortality due to particle pollution from vehicles to be \$1.5 billion dollars – It can reasonably be inferred that these costs have climbed as congestion problems have increased along with the fleet of cars in NSW and Sydney.

Ethanol blended fuel – due to its high oxygen levels – burns cleaner than petrol. As a result it releases fewer harmful particles into the air. Ethanol reduces particulate emissions that pose a health threat to children, senior citizens and individuals suffering from respiratory ailments.

The Australian Medical Association has publicly advocated for introduction of an ethanol fuel mandate to reduce the health impacts associated with pollution.

Misinformation on Ethanol

Myth 1: Ethanol is bad for your car

False – Ethanol has a higher combustion rate and burns cleaner than conventional fuels. Ethanol blended fuel in Australia is mandated to have corrosion inhibitors that protect against corrosion in the engine. Ethanol that is sourced from reputable Australian suppliers eradicates the danger of corrosion in the engine.

Myth 2: Ethanol is not a viable fuel solution

False – The world's largest oil and energy conglomerates are investing heavily in biofuels such as ethanol to promote sustainability and carbon reduction. BP recently entered into a US\$680 million acquisition of a Brazilian ethanol producer to compliment its other ethanol asset holdings. Shell has publicly stated that they “see biofuels as the single most important alternative source to hydrocarbons in mobility in the next 20 years”. Shell considers that this market could expand to cover as much as 30% of all transportation energy needs by 2030 and has expanded its asset holdings accordingly.

Myth 3: Australia already does enough to promote renewable energy

Other nations are realising the economic, environmental and health benefits associated with a vibrant fuel manufacturing industry. Australia is currently trailing the efforts of other nations and is falling behind in the race to secure renewable energy supplies, markets and technologies.

Myth 4: 800,000 cars will be affected in NSW

False – Only cars that are made prior to 1986 will be affected by the E-10 policy mandate. **This will affect less than approximately 87 000 passenger cars of the 5.6 million registered vehicles in NSW.** Furthermore it is important to note that for many of the effected vehicles, manufacturers recommend the use of 'premium' fuels as a substitute to old 'super' fuel. Premium fuels do not contain ethanol and will continue to be sold under an ethanol mandate policy.

The role of ethanol and the danger of biofuel imports

Ethanol can play a large role in extending the lifetime of Australia's domestic oil supplies. This is strategically vital if Australia is to reduce, or prevent an increase, in foreign liquid fuel dependency.

Australia has strict standards around the quality of ethanol through the *Fuel Quality Standards Act 2000* – for example corrosion inhibitors are mandatory, and benzene is banned from use.

The Government has announced in the Draft Energy White Paper 2011, that further standards for higher blends of ethanol such as E85 will be developed shortly. These will increase market confidence in the use of ethanol.

Imported biofuels will come from countries that have far less stringent sustainability standards when it comes to fuel quality.

Imported versus locally produced ethanol are therefore not homogenous products, but products with a finite shelf life that are susceptible to evaporation and contamination.

Because quality is checked only at the pump and not at point of entry, it is unclear how imported product will be monitored without adding substantially to administrative costs. This provides a further risk to Australia's energy security. Given the additional compliance costs required to maintain standards, it would be preferable to use trusted NSW based manufacturers that are able to guarantee quality.

Ethanol blend is a readily applicable renewable energy that can supplement existing transport infrastructure and can be used in over 99% of cars and deployed by all bowzers and other refueling systems.

The United States – partly through the introduction of renewable fuels policy – has reduced its oil imports below 50% for the first time since 1989.

Additional Considerations of Ethanol

- **Cost to consumer** – It should be acknowledged that there might be a net increase in cost to the consumer due to slightly higher bowser prices as well as slightly increased fuel consumption in the order of 1-3%. It should be noted however that various other factors such as driving style, car maintenance and adjustments as well as road conditions can affect fuel efficiency equally.
- **Cost to pre 1986 cars** – It should be acknowledged that some cars will be impacted by this policy mandate, however as discussed earlier many of these cars are already likely to be using premium fuel – due to manufacturer suggestion. This effect will reduce over time as natural attrition takes more cars from their era off the road and the car fleet updates naturally.

4. POTENTIAL GOVERNMENT ACTION

It is acknowledged from the outset that the factors affecting fuel manufacturing are complex and not readily solved through simple policy prescriptions.

The issues are similar to those crippling the manufacturing sector generally.

However, it is absolutely vital to Australia's national and economic interests to secure energy independence and to stabilise strategic refining capacity. The current dollar crisis cannot be allowed to create a national energy crisis.

The \$AUD is crippling Australian manufacturing and creating a situation where Australia's energy supply will be dangerously exposed to overseas supply shocks.

If no action is taken, Australia is faced with the prospect of being left with a hollowed out economy that is not only subject to Dutch disease, but is also energy insecure.

Australia is currently experiencing a complex phase where structural issues such as the age of capital stock, the low-medium tech nature of the, lack of infrastructure, lack of investment in skills and education, relative interest rates and relative economic success have all contributed to Australia's new found position as a 'high cost country'.

This is a new structural reality for Australian manufacturing firms. Furthermore this new structural problem is being stressed by the currency competitiveness challenge of a high \$AUD.

It can be assumed that even if the 'stronger for longer' thesis holds true, the \$AUD will not remain at record highs indefinitely.

The interest rate spread in the OECD will tighten at some point as quantitative easing is lessened and nations return to trend growth; and the lag effects of the record level of investment in resources in both Australia and the world will lower commodity prices – both of these factors will take pressure off the \$AUD.

Some analysts have suggested that the new 'natural' home for the \$AUD will be at ~\$0.90, not the ~\$0.75 mark that has been the historic average.

Regardless, Australia firms will be much more able to compete at this new near term currency average – but in order to do so they must survive through this period of acute stress.

Australia – through the appropriate policy settings – has the opportunity to preserve industries that will be needed once the mining boom ends and commodity prices return to

trend. It is important to note that if done correctly with an agenda of productivity and innovation such a policy setting will create highly competitive firms when the \$AUD returns below parity.

Some policy initiatives include but are not limited to:

- **Tripartite agreement** – It is clear that Caltex has made steps to try and improve its operations in order to increase efficiency and decrease costs. In order to solve the complex problems facing the manufacturing sector a tripartite approach is absolutely vital.
- **PM Taskforce** – The PM Taskforce is the focal point of Government efforts to investigate and provide solutions to Australia's manufacturing crisis. The AWU is of the view that energy security implications of Australia's manufacturing crisis should be added to the purview of the taskforce's consideration and reporting. The Taskforce is due to report back by July 2012. The review of Caltex's operations could be folded into the considerations of the PM taskforce.
- **Ethanol mandate** – The O'Farrell Government can reverse its decision to not enforce the 6% ethanol mandate. This will provide certainty to the industry, extend the life of Australia's oil reserves and expand employment and wealth in NSW. This mandate could be extended across Australia for all the reasons that are relevant to NSW.
- **Co-investment strategy** – A co-investment strategy would acknowledge the strategic importance of fuel refining in Australia much like the Federal Government's recent auto-industry package. It is worth noting that Victorian refineries have had significant investment from Shell and Exxon in recent years. Mobil has spent \$250 million since 2008 to upgrade the refinery, including a temporary shutdown last year to carry out long-term maintenance and install new equipment to cut emissions by 21,000 tonnes a year. Based on the above investments there is clearly still a business case for refining in Australia. However it is acknowledged that each refinery will have its own competitiveness story. In respect to the Caltex refineries it is possible that the business case could be bolstered through targeted government action to support capital investment and expansion that boosts overall competitiveness. A co-investment approach would assist the company in justifying capital investment and make judgments on the likelihood of \$AUD strength more justifiable in the short and medium term. It should also be noted that Caltex would be exposing its company to supply chain uncertainty, as its retail arm –which currently supplies 30% of Australia's retail fuel market – would not enjoy the vertical integration of its competitors.
- **Strategic Superannuation Investment** – Australia currently has a large infrastructure deficit in the vicinity of \$700-1000 billion and a manufacturing sector with old capital

stock. Both of these factors represent significant under investment in Australia's supply side capacity and are acting as a drag on productivity. Unlocking the \$1.4 billion in super funds would provide a large boost to Australia's economy. Such a policy would allow Australians to use their savings to invest in social, strategic, or infrastructure bonds and would serve as a way to provide capital in important areas of strategic Australian investment. This policy could be part of the 'My Super' reforms and would be on an opt-in basis. Returns would be at a lower – but more secure – rate and would offer greater certainty and safety than currently being experienced in super funds. Australians would also know that their savings were being used to safeguard national prosperity. This policy would require extensive modeling and investigation, but it is a concept that is worthy of consideration and has had extensive support and commentary in recent years.

- **Accelerated depreciation** – Could be used as an incentive for capital investment and expansion. Firms would be permitted to right down capital investments faster, thereby increasing the return on the investment. Given that a lot of capital is imported – and is currently cheaper due to the strength of the \$AUD – this policy approach could help to achieve a once in a generation boost to the life of Australia's capital stock at a much cheaper rate than would have been historically possible. Accelerated depreciation would provide further justification to the business case for fuel manufacturing. Any accelerated depreciation should also be linked to the use of Australian local content to spread the benefits to other manufacturers who are currently experiencing currency driven, demand side stress.
- **Tax Carry Back** – Allowing firms to 'redraw' on taxes paid in previous years, rather than just carrying forward losses, would help ensure marginal firms remain operational in the near term. This will ensure that firms that are experiencing disruptions in cash flow are not destroyed by the currency competitiveness challenge despite having viable business cases in the medium and long term. This policy would require extensive modeling but could help to bolster the business case for firms currently making judgments on their ongoing viability and assist them to manage the current acute stresses being experienced.
- **Australian Industry Participation Plans (AIPP)** – Australian manufacturers are facing a crisis in demand, much of which is being driven through the competitiveness challenge of a high exchange rate. Having regard to the source of the issue – i.e. resource sector – and the negative policy outcomes of a hollowed out economy that is energy insecure, it would be prudent to try and smooth the demand crisis being faced. AIPP should be linked to innovation plans to ensure that firms understand that such income is not likely to be sustained in the long-run but is being provided to acknowledge the structural competitiveness issues they face. This will ensure that firms

are able to address medium and long-term supply side competitiveness issues, but also survive the demand side crisis in the near term. In regard to fuel manufacturing, a mandate to ensure that Australian refined fuel is used in Australian resource projects would bolster the business case for refining and ensure that issues of global over-capacity are negated while retaining an important Australian strategic capacity.

CONCLUSION

Australia is suffering structural pressures from a persistently high currency that is placing pressure upon other sectors of the economy. As discussed earlier, this is a complex problem that requires significant government attention and resources – never the less it is clear that Australia’s worst manufacturing crisis since the Great Depression has now evolved into a national security and energy crisis.

Australia cannot allow its economy to become hollowed out or energy insecure.

Government inaction or a laissez faire market approach will result in a negative outcome not only for the 1 million Australians who work in manufacturing, but also for all Australians who depend on Australia’s access to liquid fuels.

ⁱ *Draft Energy White Paper 2011: Strengthening the foundations for Australia’s energy future*