



25 July 2006

The Secretary  
Senate Rural and Regional Affairs & Transport Committee  
Parliament House  
Canberra ACT 2600

Dear Secretary,

Renewable Fuels Australia (RFA) is the peak Australian industry association that represents the current and future commercial producers of renewable transport fuels such as ethanol and biodiesel in Australia, distributors and marketers of ethanol and biodiesel, and providers of services to the industry (e.g. chemical, engineering, financial investment).

Attached is the RFA Submission to the Committee on – **The Inquiry into Australia's future oil supply and alternative transport fuels.**

### *The World & Australian Oil Crisis & Alternatives*

#### **Introduction**

With justification and hubris Australia has laid claim to being a potential global superpower in the form of a supplier of energy such as clean coal, gas, minerals and uranium.

These resources are spread throughout Australia's large landmass and encompassing seas, and their extraction and transport is all dependent on oil or oil-based products.

Oil-based polymers in many forms touch us personally numerous times every day. This ranges from the cars we drive, the houses and offices we live and work in, the bags we carry our groceries in and store our garbage, disposable needles, medical implants, TVs, iPods, computers, to name just a few, that have become essentials to life as we, and our families have come to know it.

The oil we use for transport today, and the oil we will be looking towards for transport in the future is the same oil we need to become a reliable energy superpower, and maintaining those economic and social essentials we cannot imagine not having available at our beck and call.

Globally there is now recognition that as a finite and nonrenewable resource, oil is approaching a point where demand exceeds available supply – now commonly referred to as Peak Oil. Australia passed the point of peak oil in 2001.

Amongst the most difficult decisions politicians and governments will have to make in the future will be that of allocating priorities for the future use of increasingly scarce oil resources, and in protecting those resources.

Unit 9, 10 Kennedy Street, Kingston ACT 2604

PO Box 3753. Manuka ACT 2603

Tel: (02) 6295 2399 Int: (61) 2 6295 2399 Fax: (02) 6295 2986 Email: [ablinks@ozemail.com.au](mailto:ablinks@ozemail.com.au)

This is made even more difficult by the uncertainty associated with accurately calculating the practical lifespan of current oil fields, future oil resources, and the cost of recovering and processing as yet undiscovered oil.

Decline in future transport oil, can be managed with foresight and planning. Options such as alternative fuels exist to assist in the inevitable transition from petrol and diesel fuels as we know them today, to the transport fuel technologies of the future over the next 25 to 30 years.

For this to be successful there must first be recognition that Australia is confronted by a looming liquid transport fuel crisis, and this needs to be acknowledged now if we are to succeed in addressing the risks of future catastrophic global shocks in oil capacity and supply. .

According to the national expert in this field, GeoSciences Australia, such a crisis has already arrived on Australia's doorstep. It is estimated that Australia's domestic oil reserves could reach the point of effective exhaustion within 7 to 8 years.

Evidence of this liquid fuel energy crisis in the Australian transport sector today resides in the form of increasing dependence on imported oil, and record fuel prices.

As stated in an earlier Submission<sup>1</sup> to the Inquiry – “The provision of sustainable, secure, and economically stable transport fuel options in the medium to long-term looms as a vitally important challenge to the nation.”

## **Alternatives and Options**

With the foresight of having looked at future energy security after the oil crisis of the 1970s, Brazil today has attained planned national liquid transport fuel security. This has been achieved by the development and planned integration of both its oil and renewable fuel resources infrastructure, together with advanced and innovative vehicle technology development.

Today, Brazil is a substantial producer of domestic crude oil and gas and, along with the United States is one of the largest producers of biofuels (ethanol and biodiesel) in the world – with both having a current production capacity of between 15 to 16 billion litres of ethanol per year.

In doing so Brazil, and the United States have exploded the myth that the petroleum fuel infrastructure is not compatible with biofuels, and today has developed advanced, but affordable, vehicle technologies in the form of Flex-Fuel Vehicles (FFVs) that offer users the option of petrol, ethanol blend fuel with petrol (up to 26%), ethanol, or LPG as fuel options.

The technologies for biofuels production are proven and thus low risk, and being continually advanced. And next generation technologies that can be co-located in existing production facilities, such as cellulose to ethanol, is expected to be demonstrated on a commercial scale in the United States within 5 years.

Today Brazil and the United States provide a well-developed roadmap for countries with modest or declining oil and gas resources, but with significant and advanced agricultural resources , to follow in preparing for inevitable future oil crises, and in making a successful and non-disruptive transition to petroleum free transport fuels in the future.

---

<sup>1</sup> Transport Fuels in Australia – The Folly of Australia's Increasing Reliance on Imported Crude Oil, Submission by Noel Child, Oliver Clark AM & Simon Humphries, February 2006.

Australia meets these criteria perfectly, but with the added advantage of major gas resources.

If it has the vision, and can release itself from some of the fossil fuel chains that currently restrain government thinking, Australia should be capable of attaining sustainable transport energy security within 20 years. The cost of doing nothing will come in the form of economic, social and political disruption on a national and global scale.

## **Biofuels**

Biofuels such as ethanol and biodiesel are distinguished by the fact that they are renewable transport fuels, and/or fuel additives, that are produced from a wide and diverse range of biomass feedstocks. They contain oxygen, and have recognized sustainable environmental benefits such as reducing greenhouse gas emissions, reducing harmful hydrocarbon vehicle tailpipe emissions, and being rapidly biodegradable.

Because biofuels refineries are located close to their feedstock source, they offer significant economic, jobs and social benefits to regional and rural communities.

**Ethanol** is produced from the fermentation and distillation of sugars and starch extracted from grains (corn, wheat, barley, sorghum, etc) and sugarcane. In the near future ethanol will be produced from sugars extracted from low-cost feedstocks such as crop stubble/straw, bagasse, forest industry wastes, special grasses, and fiber crops.

At low blend levels ethanol (e.g. 10%) no adjustments are required to the existing Australian vehicle fleet. In countries such as Brazil minor adjustments are made to accommodate ethanol blend level between 22 to 26% and above. The cost of adjusting vehicles to E85 (85% ethanol), and full Flex-Fuel vehicles is around \$A200.00.

**Biodiesel** is produced from waste oils, and biomass feedstocks such as oil seed crops (Canola, sunflower, palm oil, etc) and tallow by a process called esterification.

Biodiesel can be blended with petroleum diesel fuel at a range of blend levels such as B5 (5% biodiesel content), B20 (20%), B50, and as a stand alone biodiesel fuel (B100) without or with minor vehicle adjustment.

## **World Trends**

With the advent of current oil crisis in 2003-04, and the inherent uncertainties about the capacity of major oil companies and oil producer countries to meet future crude oil demand, biofuels have witnessed an unprecedented surge in development and investment growth.

- With the exception of Australia, biofuels (ethanol and biodiesel) are the fastest growing liquid transport fuels in the world.
- The drivers for this are the uncertainties of future oil supply, sharp rises in fuel prices, future fuel energy security, the degradation by petroleum fuels to the environment, and associated public health risks, economic & jobs growth in rural communities, and value adding to agricultural products.
- In Australia, lingering fuel market barriers, and policy uncertainty, are driving investment in biofuels offshore.

The countries leading and stimulating this growth include the United States, Brazil, China, India, Japan, the European Community, Thailand, and Canada etc.

With the price of a barrel of crude oil over \$US70, ethanol in Brazil is competitive with oil at \$US28 to \$US30 per barrel of crude oil equivalent, and ethanol produced in the US from corn is competitive at \$US40 to \$US42 per barrel equivalent.

- Today ethanol production in Australia is competitive with petrol, with biodiesel now close to being competitive.
- With the benefit of exemption from fuel excise taxation, ethanol and biodiesel produced in Australia, offer cost savings to consumers at the pump, or in moderating volatile price rises.

While there is worldwide acceptance that there is a global fuel energy crisis, traditional fossil focused government policy agencies in Australia accept that there is a transport fuel price problem, but not a liquid fuel energy crisis. Unlike government policy agencies in the US and other OECD countries, their Australian equivalents argue that these current distortions will be addressed by the discovery of yet unidentified new oil reserves, and the inherent efficiency of the world marketplace.

- In June 2006, 66% of Australia's Balance of Payments deficit was in the form of crude oil imports – and rising.

Bordering on complacency, this ignores that the surging demand for oil from billion plus populated countries such as China and India has significantly eroded the capacity of the world's ageing major oil fields and producer countries to meet future oil demand.

The US reached the point of peak oil (where domestic oil cannot meet domestic demand) over 20 years ago. Australia's domestic oil reserves peaked in 2001, with domestic oil reserves expected to be exhausted in by 2013-15.

Ethanol production (all grades) in 2005 was 46 billion litres, with the United States and Brazil each individually producing between 15 to 16 billion litres per annum.

- The US is set to produce over 30 billion litres (BL) of fuel ethanol by 2012, and Brazil 28 BL by 2012. By 2020 world production could exceed 90 BL per annum.
- Ethanol production has enabled Brazil to attain fuel transport energy security.
- With the advent of cellulose to ethanol technology, US studies suggest that over 50% of American transport fuel use could be in the form of biofuels by 2050.

## **Rural and Farmer Benefits**

Economics dictate that biofuels will traditionally be produced or processed as close as possible to their feedstock source, thus providing unique opportunity and benefits for rural and regional communities.

- In labour intensive Brazil, the ethanol industry alone supports close to 1 million jobs, and in the US close to 200,000 jobs in rural American communities.

Biofuels are also distinguished by the fact that, with the exception of waste oils, they are co-users of biomass, and add value to these feedstocks –especially agricultural crops.

- In addition to ethanol, wheat, sorghum, corn, and sugarcane produce a range of value added products such wet and dried distillers grains (9 million metric tones in the US in 2005), carbon dioxide, a liquid fertilizer, and green electricity for co-generation.
- The processing of biodiesel from oil seed crops produces a substantial percentage of protein for livestock feed, as well as glycerin.

Farmers in the US see ethanol as a means of maximizing their economic returns, and today farmers and agricultural co-operatives in the US own or operate close to 40% of operating ethanol plants in America.

In 2005 the US ethanol industry increased farmers profits by \$US5 billion per year.

### **An Alternative Solution**

Australia, along with the rest of the world, will have to rely on a range of options in making the transition from petrol and diesel, and alternative fuels (LPG, CNG, ethanol, biodiesel) and advanced vehicle technologies will play an important role in this process.

Today, LPG's share of the transport fuel market is in the order of 7%, and biofuels less than 1%. With national policy certainty in support of alternative fuels, LPG alone could increase their market share to 14% by 2010, and biofuels 2% by 2010, 5% by 2015, and 10% by 2020. This would provide a solid foundation for accelerated production expansion should global peak oil arrive earlier than hoped.

The transition will also be assisted by the rapid advances being made by the automotive industry in form of vehicle technologies and fuel efficiency.

Today Hybrid vehicles are entering the vehicle market at a premium price, but this is expected to balance out as market acceptance increases in an arena where high fuel prices are routine.

In a high price petroleum fuel market consumers will inevitably demand more fuel-efficient road transport, and multiple fuel options.

Mixed and matched vehicle technologies are also emerging in the form of Flex-Fuel Vehicles in Brazil, the US and Europe. FFVs in Brazil have the capacity of running on low ethanol blends with petrol (22 to 26%), 100% ethanol, or LPG, and have captured over 70% of vehicles sales in the country. Major US vehicle manufacturers are also increasing production of FFVs capable of using up to an 85% ethanol blend (E85) with petrol, and earlier in 2006 Ford presented a Hybrid car that was also capable of running on ethanol blended fuel.

The cost of providing vehicles with FFV capability is around \$A200 per vehicle, and it is expected this technology will become a common feature for all new vehicles manufactured in the near future.

- The adaptation of FFV technology as a standard feature in future vehicle manufactured or imported into Australia would most likely see this cost per unit fall below \$A200.

- The adaptation of both FFV and LPG technologies in new vehicles in Australia would also see significant cuts in LPG conversion costs.

A legitimate fear of any responsible government is that of a world confronted with severe oil supply shocks with little or limited notice. Oil has a finite future, and poses high cost risks should current estimates of lifespan use prove deficient and unreliable as an increasing number of experts in the field fear it is.

The exhaustion of Australia's domestic oil reserves increases those risks to the nation.

The impacts on national economies, social life, and security in these circumstances would be devastating.

There is no single silver bullet option available to replace oil.

There are proven and low risk alternative fuel paths available to many countries that could be developed relatively quickly, and are adaptable to future technology advances. Australia falls within this category.

- The alternative fuels path also offers significant domestic economic, environmental, and social benefits.

There is wide recognition that development of a future viable and sustainable alternative fuels industry will take time to achieve, and there is every positive reason to move forward now to secure such a goal, rather than waiting until the axe has fallen.

Bob Gordon  
Executive Director