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

Dear Sir / Madam

**Inquiry into Australia's future oil supply and alternative transport fuels.**

Herewith a submission on behalf of Advanced Engine Components Limited to the above inquiry.

Yours faithfully

**Antony Middleton**
Managing Director
Advanced Engine Components Limited

Submission to
PARLIAMENT of AUSTRALIA
SENATE

Inquiry into Australia's future oil supply and alternative transport fuels

By

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Inquiry into Australia's future oil supply and alternate transport fuels.

CONTENTS Page

OVERVIEW 3

THE NEED FOR ALTERNATIVE TRANSPORT FUELS 4

AVAILABLE TRANSPORT FUELS 4

THE MOST VIABLE COMMERCIALLY AVAILABLE TRANSPORT FUEL 4

WHAT COULD AUSTRALIA DO? 6

CONCLUSION 7

APPENDIX 8

ADVANCED ENGINE COMPONENTS LTD-
COMPANY PROFILE

Submission to
PARLIAMENT of AUSTRALIA
SENATE.

Inquiry into Australia's future oil supply and alternative transport fuels.

Australia's future oil supply and alternative transport fuels, with particular reference to:

a. Projections of oil production and demand in Australia and globally and the implications for availability and pricing of transport fuels in Australia;
b. Potential of new sources of oil and alternative transport fuels to meet a significant share of Australia's fuel demands, taking into account technological developments and environmental and economic costs;
c. Flow-on economic and social impacts in Australia from continuing rises in the price of transport fuel and potential reductions in oil supply; and
d. Options for reducing Australia's transport fuel demands.

## OVERVIEW

This submission addresses terms of reference (a) and (b) and specifically the advantages of natural gas as an alternative transport fuel in Australia.
In terms of oil production there is agreement that oil being a fossil fuel is a finitive resource. Barry Jones, a former Executive Director of the Australia Petroleum and Exploration Association observed, "All oil fields run out eventually. Predicting how fast and when is not an easy matter."

The Australian transport system is highly dependant on oil and the trend of economic development is an expanded role for transport – more goods are now being transported longer distances. Thus if we accept the premise that oil fields will eventually run out Australia should look to alternative transport fuels to meet a significant share of Australia's fuel demands. This can be done in conjunction with strategies aimed at reducing fuel demands. (Term of reference d)

There are many alternative fuels, which can be used for vehicles. In accessing their suitability the alternative fuel must among other things be technically efficient, widely available and be health and environmentally friendly. Natural gas, because of its ability to meet these requirements is being widely accepted as the most viable commercially available alternative vehicle fuel with targets of up to 20% conventional fuel replacement by 2020 being seen as achievable.

## THE NEED FOR ALTERNATIVE TRANSPORT FUELS

Powerful forces worldwide are currently converging to encourage the search for alternative transport fuels to supplement traditional fuels such as petrol and diesel. These forces include record high oil prices and the realisation that oil production will peak and oil stocks will begin to run out, increased awareness of the national security risk of dependence on oil as an energy source and a heightened awareness of the impact of air pollution on the health and welfare of people particularly those living in large cities.

No one knows when the world's oil production will peak or when oil will run out. Some predictions are that oil production will peak around 2010. Of equal concern to the availability of oil is its price. Oil prices have been at record levels recently and unlike the surprise oil shocks of the seventies and eighties the current issue is very clear and immediate. And while strategies to manage and limit transport fuel use can be implemented there has been in the last few years recognition that alternative fuel sources must also be found.

## AVAILABLE TRANSPORT FUELS

There are many alternative vehicle fuels including Gas-to-liquids (Fischer – Tropsch) Diesel, Biodiesel, Natural Gas either compressed (CNG) or liquefied (LNG) Liquefied Petroleum Gas (LPG), Ethanol, Methanol, Hydrogen, Synthetic oil from oil shale, Tar Sands and Coal.

All these alternative fuels have advantages and disadvantages but can be assessed against the following requirements:

- Be technically developed
- Be cost effective
- Be widely available
- If possible use existing infrastructure, including distribution networks and engines
- Replace imports – contribute to increased local availability and control
- Be environmentally and health friendly

## THE MOST VIABLE COMMERCIALLY AVAILABLE ALTERNATIVE TRANSPORT FUEL

Of the available fuels the gaseous alternatives, CNG, LNG and LPG have a special role to play in Australia because of large resources of gas. Already LPG is well established with distribution, infrastructure and vehicles in place. An estimated 8% of cars, mainly taxis, run on LPG. CNG and LNG are popular

in heavy-duty vehicles with CNG fuelled buses replacing diesel buses in cities and LNG being increasingly utilised for long haul trucks.

Gaseous fuels have also been accepted as better for the environment and for health considerations compared with petrol and diesel. A CSIRO led study in Australia in 2001 concluded that LNG, CNG and LPG were significantly better than low sulphur diesel for greenhouse gases, particulate matter, NOX, and toxics and improved for health considerations.

Hydrogen is looked up as a long-term solution rather than being commercially and technically available now with 3 buses being trialled in Perth.

Of the others they are in varying stages of availability, acceptance and commercial viability.

However rather than this submission purport to be an in depth comparison of the relative value of the alternative fuels against the criteria the approach is to examine recent developments in the alternative fuels area to see what governments, courts and administrators in other parts of the world have determined. These bodies have examined the evidence and applied the results to their circumstances. Rather that re do the investigation the approach is to look at the decision and gauge their applicability to Australia.

Some examples of recent initiatives:

- The European Commission (EC) has proposed strong incentives to encourage the use of cleaner-burning alternative fuels in transportation within its 15 member countries. The target is to achieve a 20% substitution of traditional liquid fuels with alternative fuels by the year 2020. Half of this replacement goal is expected to be met by natural gas.

- The European Natural Gas Vehicle Association (ENGVA) estimates that this policy initiative translates to an estimated 23 million NGVs operating on European roads by 2020. This represents almost a 60-fold increase over the current NGV count in Europe and a potential multi billion-dollar market for alternative fuel technologies.

- Under the U.S. Energy Tax Incentives Act of 2002, tax credits of US$2.2 billion have been tentatively approved to encourage the use of alternative fuels covering vehicles, fuelling infrastructure and fuel sales.

- The High Court of India handed down a decision that required all public transport vehicles in the capital, Delhi, to be CNG powered. This decision will be applied progressively to other Indian cities. The result is over 200 000 natural gas vehicles including 10 000 trucks in India.

- In China there are 85 cities with a population of 132 million with air quality issues. The Chinese government in recognition of pollution, health and national security considerations has identified 17 key regions in which natural Gas will be promoted and encouraged with targets set at 20% replacement with NG fuelled vehicles.

  There is also a concerted effort to pipe gas from the gas fields of the West to the population centres of the East to reduce the dependence on imported oil.

- Natural gas vehicle infrastructure and technology have improved to the extent that there were 4.2 million NG vehicles worldwide in July 2005.

WHAT CAN AUSTRALIA DO?

Australia has many reasons for adopting natural gas as an alternative to petrol and diesel as vehicle fuels. We have vast quantities of gas and a comprehensive distribution network. And although Australian cities are not visibly polluted by Asian standards we are aware that we

are contributing to greenhouse gas emissions and are also aware of the health dangers of diesel particulates. From a national security standpoint also it would be a prudent to reduce our imports of oil.

Australia could consider the following:

- As has been done in other parts of the world set together targets for the substitution of natural gas for conventional liquid transport fuels. A target of 15% of vehicle powered by gaseous fuels by 2020 is achievable. Setting targets and encouraging their achievement is more culturally acceptable in Australia compared with government mandates.

- Support vehicle owners by continuing the Alternative Fuels Conversion Program which has been successful in funding 50% of the differential in cost of diesel and gaseous fuelled vehicles.

- Ensure an attractive differential in price between conventional fuels and gaseous fuels in order to provide a financial incentive. Commercial operators will not use cleaner fuels unless they are also cheaper.

## CONCLUSION

Air emissions from the transportation sector have become one of the most prominent environmental and socio-economic issues around the world.

The alternative fuels industry has moved into the global spotlight primarily due to three global developments:

1. 1. Climate changes are becoming more evident and are increasingly linked to green house gas emissions;

2. 2. Air pollution is growing in major urban centres and is increasingly attributed to health problems and lower quality of life; and

3. 3. Political instability in the Middle East and terrorist actions continue to impact both oil prices and supplies, and are focusing the world on alternative fuels as a way of reducing dependency on imported oil.

Against this backdrop there is a growing belief that natural gas is the most viable commercially alternative fuel for vehicles with a special role to play in Australia.

APPENDIX

# AEC COMPANY PROFILE

Advanced Engine Components Limited (AEC) is a company listed on the Australian Stock Exchange since 2000 (ASX Code: ACE). It has its corporate and research headquarters in Perth, Western Australia and an office and assembly facility in Beijing, China.

AEC was established in 1984 to undertake research, development and commercialisation of electronic fuel injection and engine management technologies designed to increase engine power while meeting – or improving on – international exhaust emission standards.

Over the past 20 years AEC has invested more than AUD27 million in its operations, and has received recognition via a number of prestigious awards, including the Australian Energy Award, Western Australian Energy Efficiency Award and the C Y O'Connor Award for Engineering Excellence.

AEC's flagship product is the patented Natural Gas Vehicle System (NGVS) a multi-point sequential electronic gas injection system, which enables engines to be adapted (on the production line or in retro-fit) to use natural gas.

The system is ideally suited for the city bus and truck fleets, where its low emission levels and operating economies are key benefits. From an environmental viewpoint, engines incorporating NGVS not only conform to the Euro 3 standard currently in use in Australia, but already meet the emission requirements of Euro 4.

The patented AEC technology has an impressive track record. It is in everyday use in nearly 650 buses in Europe and Australia. Collectively, these vehicles have clocked more than 70 million kilometres in commercial service.

AEC is the supplier of natural gas technology and components for Renault engines to the leading French transport vehicle manufacturer Iveco France. The system is also used on engines manufactured by German companies Mercedes-Benz and MAN, and Hungarian company RABA. AEC provides components of Original Equipment Manufacture (OEM) standard and is a Quality Endorsed Company certified to 1S0 9001:2000 and to the International Quality Network Certificate (IQNet)

In order to service the identified demand in the Asia Pacific region for heavy-duty engines running on natural gas (NG), AEC has established strategic partnerships with two major Chinese companies, and has established an office and assembly facility in Beijing.

In conjunction with First Auto Works (FAW), the largest engine and vehicle manufacturer in China, AEC has completed the successful development of heavy-duty NG-powered engines for use in buses and trucks. The engines are currently being field-trialled to achieve final certification for use in China. Following certification, manufacture of the engines will commence for the local and export markets.

AEC has a similar arrangement in place with another major Hong Kong listed Chinese engine manufacturer, Weichai, and development work on two series of Weichai engines is well advanced.

AEC is also working with local companies in Pakistan and India to penetrate their large NG vehicle markets.

AEC continues to be active in Australia and is currently, as part of a consortium, developing natural gas engines for use in trucks.