



**THE SENATE  
SELECT COMMITTEE ON FUEL AND ENERGY  
INQUIRY INTO FUEL AND ENERGY  
SUBMISSION BY LPG AUSTRALIA**

**OVERVIEW**

This submission is made by LPG Australia on behalf of its members. It aims to provide to the Senate Inquiry LPG's view of the role LPG can play in Australia's energy future.

The Inquiry is concerned with energy security and environmental sustainability.

LPG can contribute positively towards a sustainable, secure energy future for Australia. The principal attributes of LPG, and the LPG Industry, which allow a positive contribution are:

- Australia has, and will continue to have, growing LPG production and a surplus above forecast Australian demand;
- LPG, like natural gas, is a low carbon clean-burning fuel;
- LPG has an established position as both a transport fuel and a stationary energy source in domestic, leisure, commercial and industrial applications;
- There is a well developed infrastructure supplying LPG to both the transport and stationary energy sectors. This allows cost-effective growth in LPG consumption;
- There is a well established Australian industry supporting LPG – transport, equipment, vehicle conversions, service etc;
- LPG is available throughout rural and regional Australia, providing a gaseous energy beyond the economical range of natural gas networks;
- LPG's use as a transport fuel is an established technology, embraced by the Australian vehicle manufacturing industry;
- LPG can be used to convert the existing vehicle fleet from petroleum fuels to a lower carbon fuel;
- LPG can substitute coal-based electricity in many domestic and commercial applications. In particular, LPG and natural gas are the most efficient energy for residential hot water, either as the principal energy source or as a boost for solar hot water.

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For the LPG industry to thrive and contribute to the energy policy objective, continuation of existing policy, policy certainty, and some policy enhancement is required. The principal policy areas which will determine whether the strengths of LPG are realised are:

- For the transport sector, policies which offset the higher capital cost of LPG vehicles are required. Excise policy should assist in maintaining a consumer price advantage for LPG over petrol. LPG Australia has submitted a detailed paper to the Henry Tax Review. It demonstrates that excise policy which maintains price differential between LPG and petrol is essential. The current vehicle grants scheme has succeeded in encouraging the conversion of over 200,000 vehicles, and LPGA has some specific recommendations concerning its future;
- For the stationary energy sector, policies which treat LPG in accordance with its efficiency and low carbon content. In particular, some aspects of renewable energy and household efficiency programmes are leading to use of electricity where LPG or natural gas would provide a better policy outcome. Large rebates for electric heat pump hot water systems are a major concern for the broad gas industry;
- For the overall industry, national consistency in policy and regulation.

While policies impacting the transport and stationary energy LPG sectors are largely separate, LPGA emphasises the economies of scale which arise from the common infrastructure. An unexpected change in policy for the transport sector, such as the imposition of excise, could result in a sharp reduction in its volumes with consequent increase in the costs of LPG for stationary applications.

The rest of this paper summarises various aspects of LPG's role, rather than presenting voluminous information. Supporting data and detail is available from LPGA, and we will be happy to provide all assistance to the Inquiry.



Energy security has been described as “a balance of four factors – adequacy, reliability, affordability and environmental performance”. This submission will demonstrate that LPG can contribute to all four factors in a sustainable fashion.

A successful energy policy will require a diverse range of developments in Australian energy markets. LPG can contribute as a small, but important, part of the long term energy mix.

A handwritten signature in black ink, appearing to read 'J Evans'.

John Evans  
President  
LPG Australia  
July 20, 2009

# INQUIRY INTO FUEL AND ENERGY

## SUBMISSION BY LPG AUSTRALIA

### 1. LPG Supply and Demand, and Security of Supply

In 2008, Australian LPG demand of 95PJ compared to Australian LPG production of 145PJ. The LPG Australia Supply and Demand Study (November 2008) forecast 2018 demand of 117PJ and production of 280PJ.

ABARE's most recent forecast for LPG is as follows:

2014-15 Supply 207PJ, Demand 133PJ

2029-30 Supply 294PJ Demand 183PJ

The 2039-30 demand forecast includes 131PJ for road transport, 10% of then road transport energy demand.

LPG is a globally traded product, and Australia's surplus is exported. The forecast growth in LPG production is driven primarily by forecast increase in natural gas production.

Both the LPGA and ABARE forecasts show that continued growth in LPG demand is possible while maintaining an Australian LPG surplus, thus enhancing energy security.

As well as the level of production, energy security requires the infrastructure for storage and distribution. The LPGA Supply and Demand study lists the major LPG storage infrastructure. In addition, there is oil refinery storage and over 150 regional storage facilities owned by the major LPG distributors.

The LPG industry already has major LPG storage capable of receiving and loading maximum capacity LPG ships in close proximity of all major cities apart from Brisbane. With the planned Icythys gas processing facility in Darwin Harbour, the north of Australia will also have access to abundant LPG production and large capacity storage. Brisbane is within relatively short sailing distance of major storage in Sydney, and that planned for Darwin. This infrastructure can be used to facilitate the movement of LPG from production sources in Western Australia to other markets across Australia as required. Existing capacity is sufficient to allow the Australian LPG market to be supplied with LPG produced within Australia for the outlook period to 2030.

There are established commercial arrangements for the supply of LPG into the local market from all the storages, except the North-West Shelf which are dedicated to export.

Overall, Australia has around 380,000 tonnes (19PJ) of LPG storage, equal to 75 days of current average demand. In addition, and unlike natural gas and electricity, LPG is stored at all customers' premises – typically a month's supply, but often more.

The storage is supported by substantial LPG-dedicated trucking capacity, which provides the ability to address any local supply problems. It is noted that LPG supply to Victoria was maintained during the Longford natural gas shutdown (which also shutdown LPG production), and replaced natural gas in crucial uses such as hospitals. This was accomplished by road haulage of LPG from NSW and SA into Victoria. It showed that the industry has the capacity to manage a major disruption.

Australia's LPG supply is sufficiently adequate, and reliable, to supply a higher share of our energy needs.

## **2. Transport Sector – LPG Demand**

LPG now provides around 6% of Australian on-road transport energy (60PJ in 1,000PJ – ABARE 2006-7).

LPG primarily substitutes for petrol in light private and commercial vehicles. There are now around 650,000 LPG vehicles of the overall 10 million vehicle park. In 2008, 100,000 existing vehicles were converted to LPG, and 20,000 new OEM LPG vehicles sold.

All three Australian vehicle manufacturers are currently investing in LPG technology for their vehicle ranges.

## **3. Stationary Energy**

LPG's use as stationary energy of 35PJ is 25% residential, with the balance commercial and industrial. Geographically, it is used widely in rural areas, but also in city areas where natural gas is not available.

Attributes of LPG which are increasingly important as energy use is reduced through efficiency, are LPG's transportability and the flexibility of its distribution

infrastructure. For example, if natural gas is reticulated and replaces LPG, the LPG vessels are easily relocated to new areas. Its flexibility will become more important as efficiency makes extension of natural gas networks less cost effective. Particularly in the warmer climate growth areas such as Queensland, natural gas reticulation economics have relied on the hot water load. The move to higher efficiency, and solar systems, makes the investment in new reticulation sub-economic – it can be well over \$1,000 per dwelling. LPG can be connected to a dwelling for around \$300 investment, with most of that cost relocatable.

There are 1.1 million residential dwellings using LPG (ABS “Environmental Issues: Energy Use and Conservation”, March 2008. Excludes BBQ use which is widespread). There are 4.3 million dwellings not connected to natural gas. There are 3.8 million dwellings with electric storage hot water systems, 1.9 million of which are outside the capital cities. LPG can be provided to all these dwellings.

Other sectors in which LPG use is important are agricultural processing, water pumping, and as a forklift truck fuel (classified stationary as off-road).

#### **4. LPG – Clean, Low Carbon Fuel**

LPG’s CO<sub>2</sub> emissions in various applications are very similar to those of natural gas.

In stationary energy applications, direct use of LPG in place of coal-fired electricity will reduce greenhouse emissions by 60-75%.

In light vehicles, LPG’s greenhouse emissions are 10-15% below those from petrol, depending on the technology.

LPG’s other emissions – those impacting air quality and health – are discussed in the appended Policy Paper. LPG generally performs better than petrol and diesel in carbon monoxide, hydrocarbon, NO<sub>x</sub>, particulate and air toxic emissions.

#### **5. Policy Issues – LPG as a Transport Fuel**

With appropriate policy settings, LPG use as a transport fuel could grow. Orbital (February 2009) has forecast a path forward for the industry which maintains a conversion rate of the existing vehicles of 100,000 pa, and sees

OEM production increase from 15,000 to 80,000 pa by 2015.

LPG could move from its current 6% share of on-road energy to around 10% by 2015.

The required policy settings have been discussed in detail in LPGA's submission to the Henry Tax Inquiry. The following is the summary of that submission:

*"In addressing specific questions raised in the AFTS's consultation paper and taking into account the main Government policies that impact directly on automotive LPG including fuel excise, interaction of CPRS and the changes to the LPG rebate announced in the 2009 budget, the following measures are seen by the industry as an absolute requirement:*

- ***The price differential between LPG and petrol due to differential excise is the fundamental driver of automotive LPG demand.***

*The previous Government's proposed imposition of an excise on LPG from 2011 should be delayed for a five year period.*

*The following tax measures are seen as highly desirable to support the industry in realising its full potential in terms of contribution to the Australian economy:*

- *Amend the R&D concession to provide more generous treatment for research and development into LPG-related technologies*
- *Allow a specific tax deduction for the non-rebated conversion costs of private motorists*
- *Allow a specific tax break (bonus deduction) for small business for the purchase of new LPG vehicles*

*The following measures in relation to the LPG Grants Scheme are also advocated by the LPG industry:*

- *That the LPG rebate levels confirmed by the Federal Government in November 2008 be restored to \$2,000 for a five year period but subjected to key performance criteria in meeting fuel efficiency and improved emission performance*
- *Removing the restriction on the number of conversion rebates that may be applied for in a three-year period (replacing with one rebate per annum)*

*As part of its policy to ensure the delivery of the full environmental potential of LPG as a transport fuel, the industry advocates the following measures:*

- *Access to the full conversion rebate being based around meeting agreed CO2 reduction targets*

- *Mandatory compliance with Australian Design Rules applying at the time of manufacture for all aftermarket fitments*
- *A national accreditation scheme for aftermarket conversions funded by the industry but endorsed by all appropriate regulatory bodies”*

In addition, fuel specifications and standards for vehicle conversions which deliver the low emission outcomes inherent to LPG’s fuel quality must be maintained.

## **6. IPolicy Issues – LPG as Stationary Energy**

There is a wide range of Federal and State Government policies, current and planned, which aim to increase energy efficiency. Residential dwellings are a prime target, but commercial buildings are also important.

The environmental benefits of the direct use of gas, rather than fossil-fuel based electricity, are well understood. LPGA has often found that policy can neglect the national availability of gas through the established LPG infrastructure, and consequently may exclude or restrict the application of policies to LPG. One reason has been concern that LPG prices are internationally linked, while natural gas and electricity prices have been purely local, and low in global terms. LPGA submits that well within the timeframe which the White Paper is examining, Australian natural gas and electricity prices will reflect broader global energy prices, and LPG prices will be more aligned with them.

A strong policy objective has been the replacement of residential electric storage hot water systems with low emission alternatives. Around 300,000 systems require replacement annually. The best environmental solution - gas boosted solar hot water – is not being achieved. In fact, due to perverse policy, electric heat pump systems, with higher greenhouse emissions than standard gas systems (let alone gas –boosted solar), are increasingly being installed.

The inclusion of solar and heat pump water heaters within the nRET does not increase the deployment of renewable energy in Australia’s electricity supply, and neither does it ensure the equivalent of at least 20 per cent of our electricity supply – or approximately 60,000 GWh – is generated from renewable sources by 2020. It will result in a short fall in the 20% renewable energy target.

If the inclusion of solar hot water (renewables) in nRET is a policy decision to assist the development of the solar industry is maintained, the correct



definitions are required to stop the increasing installation of electric systems funded by rebates intended for solar and renewable energy.

This is especially important in the current move to phase out large electric resistance water heaters in existing and new homes by 2012 with a replacement market of around 3.8 million units. It will be important to ensure consumers are correctly advised on the alternatives of electric boosted solar and heat pump systems on the one hand, and storage and instantaneous gas (both natural gas and LPG) systems, including solar gas boosted, on the other.

Heat pumps are, in fact, a very efficient electric hot water system, using a compressor and heat exchanger rather than resistance heating (but also having resistance heating back-up for cold conditions). They do not have solar panels. The classification of air sourced heat pumps as a renewable system is incorrect and poses a significant distortion in the market place through the combined State and Federal rebates together with RECs.

LPGA urges that policy in this area, particularly but not only the NRET Scheme, be based on proven emission outcomes. LPG's national availability can deliver significant greenhouse savings at low cost.

## **7. Policies, Regulations and National Consistency**

There is little national consistency in many policy areas, and in regulations impacting the LPG industry.

For example, the State energy efficiency schemes all differ in their treatment of LPG (and in broader aspects). There is no consistency in policies which determine energy efficient housing across Australia, or in rebates encouraging domestic energy efficiency.

In technical and safety regulation, each State applies different interpretations, or additional rules, to the agreed national standard (AS/NZS1596) which is designed to ensure a safe industry. Trade licencing, trade inspections and interaction by the authorities arrangements vary widely from State to State. A safety issue of great concern to the industry (a safety relief valve failure issue) graphically illustrates these differences, where a known failed and potentially dangerous automotive LPG component installed across Australia required recall and replacement. Despite strenuous efforts by LPGA, four years after the first failure some State governments have only just addressed the issue, claiming difficulties in defining government department responsibilities.

LPG Australia has been pursuing a national accreditation scheme for autogas vehicle installers (convertors), but with little success to date. Advancing technologies, assisted by a Federal Government rebate scheme to private motorists, have increased industry activity. There are, however, a raft of standards allowing differing interpretations and a maze of State regulations. At present, vehicles retrofitted in one state of Australia do not necessarily comply in another state, for the same conversion on the same vehicle type.

Federally, the interpretation and adoption of international policy on autogas (automotive LPG dispensing) has resulted in costly and inconsistent requirements for hardware installations and subsequent maintenance. Almost unknown in the rest of the world, the use and calibration of “density probes” imposes calibration costs on the industry for certifying indolent technology. Further, the (national) “Uniform Test Procedure” varies widely in interpretation and execution across State borders.

Approvals for new domestic or commercial appliances, or routine modifications or new equipment, require approaches to each State energy authority, with no guarantee of consistent interpretation or approval.

## **8. Conclusion and Recommendations**

This submission has demonstrated that LPG can make an important contribution to a sustainable energy future for Australia.

In particular, it can increase energy security while assisting the transition to a low carbon economy.

Government policy will be the major determinant of the extent to which Australia takes advantage of LPG’s potential, with active Government support essential for LPG in the transport sector. LPGA emphasises the importance of fuel excise policy as the underlying driver of LPG’s share of transport fuel.

For the stationary energy sector, LPGA has pointed out policy inconsistencies in the NRET scheme in relation to hot water. More broadly, we request national consistency in policy and regulation.