June 5, 2009

AFTS Secretariat
The Treasury
Langton Crescent
Parkes ACT 2600

Australia's Future Tax System

This submission is made by LPG Australia on behalf of its members. It aims to provide to the Tax System Review LPGA's view of the fundamental impact of tax on the automotive LPG market.

The tax system, as it impacts energy markets, should be compatible with energy policy. The objective of Australia's Energy White Paper has been stated as "to achieve energy security and economic prosperity in a lower carbon economy". LPG can contribute positively towards this objective, particularly as Australia has, and will continue to have, growing LPG production and a surplus above forecast Australian demand. Further, LPG, like natural gas, is a low carbon clean-burning fuel.

The submission focuses on the critical impact of taxation on the use of LPG as an automotive fuel.

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

The principal recommendation of the submission is:

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

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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

For the LPG industry to thrive and contribute to the energy policy objective, the correct tax policy is essential. LPGA is happy to provide whatever further information will assist the Review, and would welcome the opportunity to meet with you to present our case directly.

Yours sincerely,

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AUSTRALIA'S FUTURE TAX SYSTEM

SUBMISSION BY LPG AUSTRALIA

The Australian Liquefied Petroleum Gas Association Limited (LPG Australia) welcomes the opportunity to contribute to the shaping of Australia's Future Tax System (AFTS).

While this submission specifically focuses on critical tax issues facing the Liquefied Petroleum Gas Industry (LPGI) in Australia, we would also refer you to our previous submission dated 17 October 2008 which addresses more generally the broader issues surrounding the role of LPG in the liquid fuel transport sector and their relevant impact on employment and the economy. The critical tax issues highlighted in this submission address some of the specific questions being raised by the review in its consultative document.

LPG contributes to Australia's energy mix in both stationary and transport sectors. This submission focuses on the transport sector on the assumption that LPG use as a stationary fuel is not specifically impacted by the tax system. We address the stationary sector in our submission to the Energy White Paper.

We do note, however, that the overall industry economics rely on the economy of scale from the integrated supply chain serving both sectors. Any reduction in LPG use as a transport fuel will thus impact the predominantly rural use of LPG as stationary energy.

LPGA commissioned Deloitte to assist in the preparation of this submission. Their activities included: conducting interviews with vehicle manufacturers and a cross section of the LPG supply chain, in addition to the conduct of economic modeling on the potential impact of excise on the demand for autogas vehicles.

Contents

Summary

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

These recommendations would achieve the following objectives:

- To increase energy security by maximising the use of Australia's natural resources
- To support the local vehicle manufacturing sector, encouraging further investment in the development of LPG vehicles
- To position Australia as a potential leader in automotive LPG and secure the local industry as a net exporter of technology and hard parts
- To secure the future of the automotive LPG industry in Australia, particularly the industry's planned investments in technology
- To provide certainty to private and fleet consumers of LPG, and to the industry itself
- To increase the level of competition in the retail fuels markets
- To secure in Australia the technology that can reduce the CO2 emissions of the existing vehicle stock
- To secure better and more immediate environmental outcomes from the Australian road transport sector

This paper outlines the support for these recommendations, including modelling of the impacts of proposed policy changes.

The Importance of Certainty in Policy Settings

The principal drivers of demand for LPG vehicles and conversions are the actual, and perceived future, price differential between LPG and petrol/diesel, and the absolute petrol/diesel prices. As the modelling on the petrol/LPG price scenarios conducted in support of this paper shows, time lags associated with price variables are also significant. In this context where future prices are obviously uncertain, it is critical that there is as much policy certainty as possible.

This is evidenced by the dramatic reduction in LPG conversions experienced between 2001-03, coinciding with the debate regarding the imposition of a fuel excise on LPG. At this time, demand fell by 65-70% against the pre-GST peak. This not only demonstrates how sensitive consumers are to uncertainty, but also the attention that they pay to the policy environment.

As outlined further in this paper, there are a range of emerging influences that will generate substantial uncertainty for the industry in the period leading up to 2013. These include:

- The possibility of imposition of a fuel excise on LPG

- The CPRS, and a lack of clarity on the "fixed" changes to petrol excise that definitely will reduce the price differential between ULP and LPG

- General uncertainty regarding the future path of petrol prices as a consequence of the global economic downturn

- The effect of the recently announced reductions in the rebate

The potential impact of the previous Government's plan to introduce excise on LPG has been modelled – both its stand-alone impact and when combined with the impact of the CPRS on the LPG-petrol price differential.

Once the aggregated impact of excise introductions over a five year period are included, and the lasting impact of the CPRS fuel credit system is included, the following significant reductions in the various LPG markets are predicted:

- 27% reduction in new vehicle fleet sales

- 30% reduction in new vehicle private sales

- The potential elimination of the conversion market.

Any proposed imposition of an excise on LPG will have a direct impact on the demand from fleet customers. From work undertaken to date, it is anticipated that each reduction in the price differential of 2.5cpl between petrol and LPG will reduce conversion demand by 14.4%, and reduce new private sales of LPG vehicles by 9.8%.

In regard to the private market, evidence suggests that the absolute level of the petrol price is a strong driver (assuming the relativities between petrol and LPG prices remain constant). The Australian experience suggests that a petrol price over $1.20 per litre will see the private market for LPG engage, (also based on the rebate structure being in place). In this regard, the following should be noted:

- This trigger price is likely to increase over time as consumer expectations regarding prices change. This reflects the consumer becoming more comfortable with higher petrol prices, but still maintaining a trigger where LPG becomes an attractive option. This results in this trigger price increasing over time.

- Many oil price forecasts for the next 10 years in the wake of the financial crisis are remarkably flat, indicating that the demand jump beyond this trigger price may not come into effect in Australia again for some time.

These factors, overlaid by the current global economic crisis mean that the Australian market for LPG faces an especially perilous time.

In this context, the need for the Federal Government to reinforce its support for the LPG industry through all its policy settings, and to outline these with greater clarity, is of paramount importance.

ALPGA's Response to Specific Questions in the Consultation Paper

Q.11.1 Is it appropriate to use taxes on specific goods or services to influence individual consumption choices, and if so, what principles can be applied in designing the structure and rates of such taxes?

In essence, the answer to this query is yes. While the commentary relating to this consultation question focuses on alcohol consumption, the rationale can be extended easily to LPG use.

The underlying question is whether the tax system should be used to influence consumer preferences. The specific case study analysed in the consultation document highlights the role that taxation can play in covering the costs (including the social costs) associated with a particular activity (consuming alcohol in this case).

The measures considered are imposing additional taxes on the product in question. This would raise the price of the product to reflect the social costs associated with that product.

A similar approach may be adopted with fuel. In this case, the Government's environmental policy of reducing carbon emissions is assisted through taxation that favours LPG (a low carbon fuel) over petrol and diesel (higher carbon fuels). Any measure designed to induce LPG consumption needs to impact upon the costs associated with fuel consumption; either reducing the price of LPG or the cost of complementary products/services or increasing the price of substitutes.

While the obvious measure would be to amend applicable excises, this is difficult in the case of fuels due to the structure of the present system. Excise on petrol is already in excess of 40 cents per litre once GST on the excise component is included, and LPG is not subject to excise (although the previous Government had planned to introduce excise in 2011).

Short of a subsidy for LPG, we believe that a more effective measure would be to allow for a specific deduction for the unrebated cost of a LPG conversion on existing cars. Using the present rebate of $2,000, this measure's operation is illustrated in the following example:

Cost of conversion:	$4,000
Rebate allowed:	2,000
Non-rebatable amount	2,000

The taxpayer in this situation would be allowed a deduction against their assessable income of $2,000.

This deduction could be included in a single provision inserted into Division 25 of the Income Tax Assessment Act 1997. To be effective, it is important that the provision does not require a nexus with assessable income. This is unlikely to add unduly to any complexity in the tax system, thereby meeting the simplicity requirement that the Henry Review has identified as one of the guiding principles for any reforms.

Q. 11.6 Should the tax system have a role in influencing the relative prices of different types of cars, including luxury cars and higher polluting cars, and if so on what basis? What does this mean for taxes on the purchase price of motor vehicles?

The proposal to tax higher polluting cars, as described in the consultation paper, is an extension of environment policy aimed at reducing carbon emissions. This approach, though, is fraught with practical difficulties, such as allowing for the differences in emissions from the use of different fuels in the same vehicle (as noted on page 230 of the consultation paper).

A more effective approach is to focus the tax measure on the source of the emissions: the fuels. This avoids the difficulties associated with taxing vehicles that may emit different amounts of carbon depending on the type of fuel. Taxing the fuel should have an equivalent effect on the demand for high polluting vehicles, since the costs of operation increase in line with increases in fuel taxation.

Q. 12.2 What should be the role, if any, of fuel taxes? What does this mean for how fuels and their uses are taxed, and the rates of tax applied?

While the petrol excise generates a substantial revenue stream for the Federal Government, the ALPGA believes that care must be taken to ensure that its application encourages the use of fuels which are consistent with environmental and broader energy policy objectives.

In this context, with LPG representing only 6% of road transport fuel use, the application of the previous Government's planned excise from 2011, combined with the price sensitivity associated with the fuel means that what appears to be levelling the playing field with petrol is actually likely to be unfairly disadvantaging LPG.

Given the major revenue contribution made by fuel taxes, the ALPGA strongly recommends that the introduction of the excise be postponed for five years, until such time that the fuel represents a more significant proportion of total transport fuel usage and the investment made by the local vehicle manufactures in LPG can be realised. At this time, the uncertainties associated with the short term will be clarified, the technological pipeline realised, and the introduction of an excise on LPG can be evaluated in light of the then energy and environmental policy objectives.

Q. 13.2 Noting that many submissions raise concerns over unintended environmental consequences of taxes and transfers, such as the fringe benefits tax concession for cars, are there features of the tax-transfer system which encourage poor environmental outcomes and how might such outcomes be addressed?

The previous Government's planned introduction of the excise on LPG represents a move that would have negative environmental outcomes.

As outlined earlier in this submission, LPG offers significant environmental advantages over petrol-driven cars. With 9% reductions in CO2 emissions resulting from the utilisation of existing technology, LPG represents the most pragmatic, immediate impact on greenhouse gas emissions from road transport.

This has been reinforced by the plans of local and international car manufacturers in regard to LPG technologies, which will offer even more substantial environmental benefits through light weighting and more efficient engine technologies.

In this context, jeopardising uptake levels and the technology pipeline could have a significant and negative impact on environmental damage associated with road transport.

Q. 13.3 Given the environmental challenges facing Australian society, are there opportunities to shape tax-transfer policies which do not currently affect the environment in ways which could deliver better environmental outcomes?

Provided that LPG-petrol/diesel price differentials are maintained, reducing the switching costs associated with fuel use will encourage more consumers to adopt fuels such as LPG with better environmental outcomes.

The present rebate of $2,000 for converting a petrol or diesel vehicle to LPG or purchasing a new LPG vehicle fitted at the time of manufacture is an example of a current tax transfer measure with environmental benefits.

To this end, we propose that the present $2,000 rebate be maintained for new vehicles before registration or and for existing vehicles which comply with their ADR test requirements.

This period would align with the ADR requirement change regarding all vehicles with a build date after 1 January 2004. This stipulated that all vehicle engine families be subject to a test that specifies the reductions in CO2, CO, NOX and hydrocarbons that would result from an LPG conversion. This would effectively guarantee these reductions for this vehicle group.

As with the specific deduction proposed for the unrebated costs of conversion, this will have a greater impact in encouraging consumers to switch to lower-polluting LPG as opposed to increasing the excise on petrol or diesel.

Other considerations

In addition to the proposals set out above, we also submit the following suggestions designed to encourage conversions to LPG and/or development of LPG technology, leading to the development and extension of potential export markets. All of these measures will have favourable effects on employment in the LPG industry as demand for LPG-related products increases.

- Amendments to the research and development (R&D) concession. We suggest an additional 100% on existing concessions, phasing down to 50% over the next five years. The higher amount is to provide greater assistance right now, when it is needed most, to be reduced when this present economic crisis has, hopefully, passed.

- Removal of the restriction of the rebate from demonstration or second-hand vehicles that were registered to a dealership at the time of the conversion.

- Allowing a rebate for one eligible vehicle per annum per owner, regardless of the number of rebates previously received. Currently, taxpayers may qualify for only one rebate every three years, regardless of the number of vehicles fitted with LPG units and otherwise qualifying for the rebate.

- Increase the incentive to small businesses to purchase new LPG vehicles. (Tax deductions are more appropriate for this segment and could be tied to a carbon reduction performance of the business)

These amendments are designed to reflect a new policy behind maintaining the current rebate (and any extensions that may be adopted). While the initial motivation for introducing the rebate was to assist families struggling with high oil prices, the present economic conditions justify extending the scheme.

As well as boosting employment in the LPG industry, increasing the use of LPG is consistent with the Government's environmental policy objective of reducing carbon emissions. All of these measures (with the exception of the R&D concession extension) are designed to encourage conversions from petrol and diesel-powered vehicles to LPG.

Background to this Paper

The supporting material and evidenced used in this paper has resulted from work conducted by the LPGA, and by Deloitte on the LPGA's behalf.

Sources of information utilised in the preparation of the document included:

- Interviews with vehicle manufacturers regarding their plans around LPG technology
- Interviews with a cross section of the LPG supply chain, from producers through to freight providers, tank and under bonnet gear manufacturers in regard to their technology plans, and the contributions that their businesses make to the Australian economy
- Desk research on domestic and international papers regarding the LPG industry
- The conduct of economic modelling regarding the LPG industry in Australia over the past 15 years.

Economic modelling

The statistical analysis of LPG conversions, LPG fleet sales and LPG private sales was conducted using ordinary least squares regression analysis.

A forward-stepwise procedure, using the p-value from an F-test as the criterion, was used to identify the best selection of independent variables to model private and fleet sales (conversions featured a very small data set, so instead a manually-performed equivalent of this procedure was used). This included the use of time-lagged (1 to 6 months) versions of each of the independent variables to take into account any delayed effects between fuel price changes and conversions/sales.

Correlation analysis was used to pre-filter the list of independent variables due to inherent multicollinearity between LPG, ULP, and the price differential, as well as between the time-lagged versions of these variables. Indicator variables were used to represent and test the effect of the rebate (private sales only) in these regression models (the rebate is not available to fleet sales and the small dataset size for conversions required a manually-performed equivalent to testing a rebate indicator variable).

Measuring and removing the seasonal effect in monthly LPG fleet sales was performed using seasonal decomposition (multiplicative seasonal effect, seasonal lag of 12 with centred moving average).

The statistical package STATISTICA was used for performing regression analysis, seasonal decomposition, graphs and the calculation of other calculations provided.

The LPG Industry's Contribution to the Australian Economy

The LPG industry comprises oil and gas producers, refiners, importers, marketers, distributors and retailers. Over recent years, these organisations have invested around $3 billion into the Australian economy. This has resulted in the industry now contributing around $350 million to economic wealth in Australia annually.

Within the LPG Automotive industry a large number of small to medium size domestic businesses are involved in the manufacture, importation, warehousing, distribution, installation and servicing of LPG equipment and related components for motor vehicles.

The total number of people employed in the automotive related LPG industry in Australia is in excess of 10,000 and includes:

- 2,500 registered installer businesses which employ 7,500 installers
- 15 kit suppliers
- 50 component suppliers and manufacturers
- 50 people engaged in training and certifications
- 3,300 service stations dispensing LPG
- 5 LPG dispensing equipment suppliers
- 1,500 in the Autogas marketing and distribution sector

The key economic and energy policy benefits of LPG as an automotive fuel of are:

- Energy Security - Australia increasingly relies on imports to meet its fuel demand. Presently, imports represent 70% of Australia's crude oil demand and 15% of its refined petrol demand. Importantly, the majority of these imports arrive from Asia where demand is rising, and therefore the prospect is for greater reliance on the Middle East in the future.

  Australia is a net exporter of LPG and currently produces 2.9 million tonnes each year, of which only 1.8 million tonnes is consumed domestically. The Australian Bureau of Agricultural and Resource Economics ("ABARE") has forecast that naturally occurring LPG production will double by 2030. To this end 6% year on year growth in LPG demand up to 2030 would still see local supply exceeding demand.

- LPG is the most portable low GHG fuel available throughout regional Australia and represents an important component of the regional economy. Its economics are based on the combined economy of scale of its use as a transport fuel and as stationary energy

Recent announcements have also seen LPG identified as a key aspect of the local car companies push to become more relevant in regard to the production of greener vehicles. This has been supported by their plans to introduce new technologies to enhance the efficiency and environmental benefits of LPG, which has in turn created a very significant pipeline of investment and R&D activity. This has the potential to establish Australia as a key international centre for the fuel and its related technologies.

LPG and the Australian Vehicle Manufacturing Sector

LPG has the potential to act as a significant enabler for the Australian vehicle manufacturing sector.

Amidst the global turmoil facing the automotive industry more generally, Australian manufacturers face particular problems including:

- How to address consumer sentiment shifting towards smaller, more environmentally friendly vehicles and to vehicles allowing economical commuting due to the lack of transport infrastructure

- Which of a range of greener fuels to adopt in order to improve fleet economy.

LPG offers a significant solution to both issues. Its uptake can offer assistance to the local manufacturers by providing an alternative to traditional petrol driven vehicles, and provide greater choice for the Australian consumer.

It is also a proven technology, supported by the extensive plans of local vehicle manufacturers in regard to innovations including liquid and vapour injection, light weighting of tanks, and the localisation of work around the fuel delivery modules.

In this context, the policy framework supporting LPG, particularly in the form of certainty regarding price differential, is playing a crucial role in assisting Australian vehicle manufacturers.

LPG and the Environment

Introduction

The transport sector is the third largest emitter of greenhouse gases in Australia.

The continued transition from traditional automotive fuels to LPG supports Australia's national environmental objectives. To this end, the Government's ongoing support and investment in LPG as an automotive fuel will continue to minimise the automotive industry's environmental impact.

While various alternative power trains are being researched by vehicle manufacturers globally, LPG still offers the most immediate, accessible and cost-

effective environmental alternative for road transport. Globally, we are also seeing many vehicle manufacturers shelve plans for new environmental programs.

In this context, a positive shift in environmental outcomes for road transport in Australia will be heavily dependent on the right policy framework to support LPG.

For the longer term, LPG vehicle and distribution technology provides a pathway to a broader gaseous fuels market including CNG, LNG and hydrogen.

LPG and Environmental Performance

We note that the key environmental benefits of LPG as an automotive fuel include:

- GHG Emissions Reduction - as an alternative to traditional automotive fuels LPG delivers an immediate reduction in greenhouse gas emissions

- Air Quality Improvement - as an automotive fuel LPG poses lower health risks from particulates and air toxics than petrol and diesel.

Both independently commissioned and ALPGA-sponsored research establishes that LPG use as a road transport is superior to petrol from an environmental perspective. Current technology has LPG with lower "well-to-wheel" CO_2 emissions than diesel (as well as lower emissions of other pollutants, such as nitrous oxides) and lower CO_2 emissions than petrol for an equivalent amount of work.

The following data clearly demonstrates the environmental benefit of an LPG vehicle over a conventional petrol (ULP) vehicle. A typical 6-cylinder petrol vehicle travelling 15,000 km per year, and consuming on average 12 litres/100 km, generates 4.7 tonnes CO2. Comparatively, if this same vehicle is then converted to LPG, it will consume on average 15.6 litres/100 km, and will generate 4.2 tonnes CO_2. Note that new generation LPG technology, now being installed, will increase fuel efficiency and the CO2 savings

Full Fuel Cycle CO_2 Emissions

Transport Fuel	**CO_2 Emissions Kg/GJ**	**LPG Benefit**
LPG	65.5	9%
ULP	72.3	

In 2007, over 100,000 vehicles were converted to LPG. If these vehicles used on average the same amount of fuel as the exiting LPG fleet, these 100,000 conversions have resulted in 80,000 fewer tonnes of CO_2 released into the atmosphere. Importantly, these emission savings occur year on year for the life of the vehicle.

As discussed below, the planned R&D programs that vehicle manufacturers and component companies have in train will drive even greater environmental benefits from LPG through lighter weight, more fuel efficient tanks and delivery systems.

Current estimates suggest that these technologies will see the environmental advantage of LPG over petrol increase to 15% over time.

To this end, we recommend that Australian governments maintain and promote clear long-term policies that encourage the use of LPG as an automotive fuel option. These include the fundamental need for a price differential between LPG and petrol/diesel, and ongoing support of the LPG Vehicle Scheme.

Drivers of demand in the LPG Industry

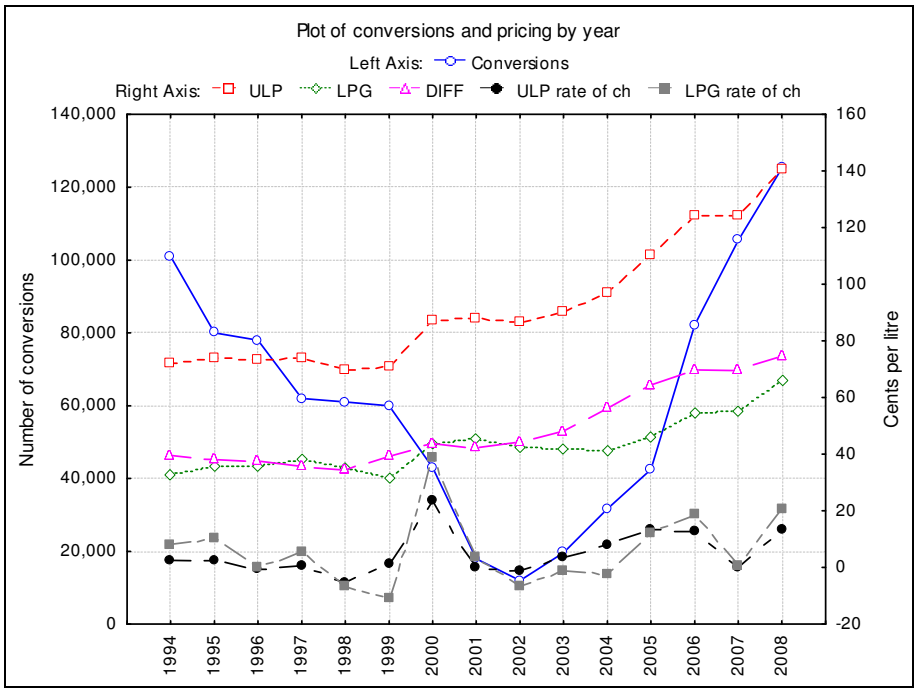
Introduction

There has been substantial work undertaken in determining the drivers of LPG demand in Australia, and the following key items should be noted:

Regarding the conversion market, the following drivers are key:

- The difference in price between ULP and LPG is the best predictor of the number of LPG conversions
- The availability of the rebate results in twice the number of conversions than would normally be expected

Chart 1: LPG Conversions against pricing and rate of change in price, 1994-2008



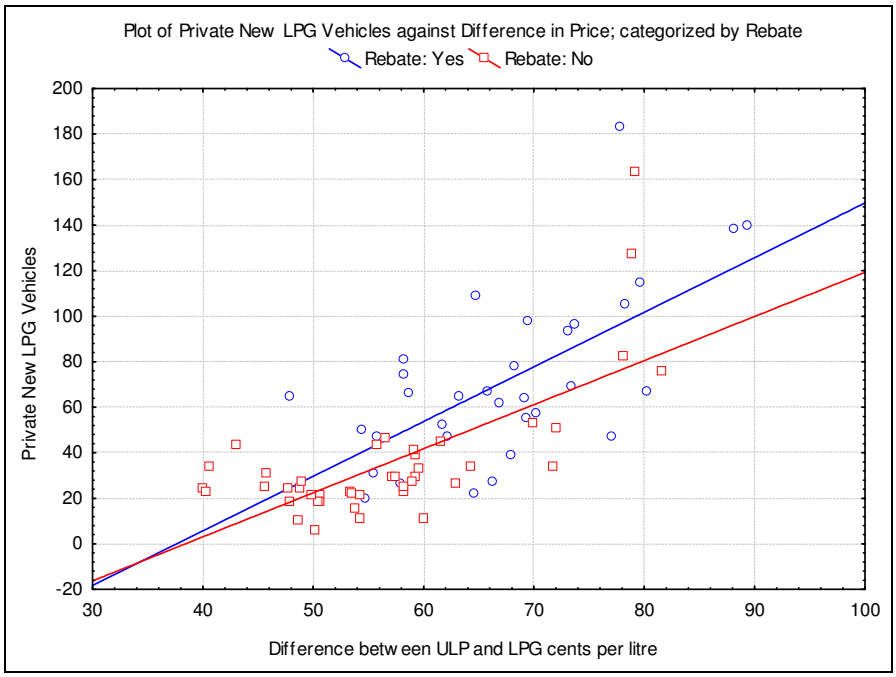
From a new private sales perspective, the following indicators are important:

- The ULP Price with a two month lag
- The differential between the unleaded and LPG price

For the new fleet sales market, the following were found to influence demand:

- The ULP price with a three month lag
- The differential between the unleaded and LPG price with a one month lag.

Chart 2: Private New LPG sales against ULP/LPG price differential – line of best fit



Excise arrangements, the LPG Rebate and Demand

Evidence highlights the important role that the LPG rebate has played in generating activity within the industry.

Since the introduction of the rebate, demand has grown by 52% to 2008 overall with significant demand periods when petrol prices have reached new highs. Price signals have shown to be the major contributor to the take up of the grant. Analysing the recent changes to future rebate levels announced in the 2009 budget, even using a conservative assumption of a linear relationship between the level of the subsidy

and demand, would see significant following downward pressure on conversions into the future.

Modelling regarding the presence of the rebate has highlighted the following:

- The availability of the rebate results in twice the number of conversions than would normally be expected

- Before the availability of a rebate, every 1 cent per litre increase in the difference between ULP and LPG resulted in 1,500 (5%) more conversions

- With availability of a rebate, every 1 cent per litre increase in the difference between ULP and LPG results in 6,000 (6%) more conversions

The 5% and 6% has been calculated as an alternative to the 1,500 and 6,000 difference in conversions that results in a 1 cent change in price differential without and with the rebate, respectively. These absolute numbers would suggest a four-fold increase in the effect on the number of conversions. However, by dividing these absolute numbers by the average number of conversions in the two periods (approx 27,000 and 105,000 respectively), we arrive at the 5% and 6%, which is the true relative performance of the change in price differential.

The actual phenomenon at work on difference between pre-rebate and rebate conversions is the combined effect of the introduction of the rebate and the price differential (which unfortunately cannot be statistically evaluated due to the small data set). Neither of these sets of numbers (the absolute values and their corresponding percentages) should be used to compare conversions with and without the rebate. Instead, by using the 2002-2005 (pre-rebate) model to compute the expected number of conversions during the 2006-2008 (rebate) period given the price differential in that period, the actual number of conversions is, on average, double (2x) the number of expected conversions from the pre-rebate model. This is the true effect of the rebate on the number of conversions.

This modelling highlights the importance of the interaction between any proposed excise arrangements and the rebate. The rebate effectively increases the demand for LPG vehicles fourfold for every cent of increase in price differential.
In light of the recent budget announcements regarding the reductions in the rebate, the introduction of any excise on LPG would significantly worsen the reduction in demand from the lower grant levels.

This analysis does not incorporate the possibilities that demand reductions could be even more significant based on:

- There being a trigger point in the subsidy at which consumers feel all material benefit is lost, and demand for LPG vehicles begins to free-fall

- The lack of certainty regarding the timing of forecast increases in the petrol price following the downward price pressure being generated by the current financial crisis. This creates the spectre of consumers delaying decisions

regarding conversions on the basis of waiting until the path of petrol prices becomes clearer.

CPRS and the LPG industry

The introduction of the Carbon Pollution Reduction Scheme also presents significant uncertainty for the LPG industry, especially in respect of the critical price differential driver.

The government's plans to ensure cent for cent parity between imposts on fuel and associated reductions in fuel excise present significant uncertainties for LPG.

The proposed periodic adjustment mechanism which will be used to reduce fuel taxes will cease after three years, at which time the reductions in petrol and diesel taxes become permanent. There are a range of grey areas with this proposed scheme, all of which have significant impact on the key drivers of LPG demand. These include:

- The effect generated by the fuel tax cuts for petrol becoming permanent after 3 years, with LPG bearing the on-going burden of the CPRS, with the differential permanently reduced

- The way in which the previous Government's suggested introduction of an excise on LPG would interact with this proposed system, and whether the periodic adjustment mechanisms will apply equally to LPG.

The net effect of the CPRS alone could be a price increase of 6.8 cpl on LPG (assuming a carbon price of $40 per tonne, and an emission rate of 1.7 kg CO2 per litre of LPG). The proposed LPG excise was 5 annual increments each of 2.5c/l.

When factored into the modelling, a 27% reduction in fleet sales is predicted, and a 30% reduction in private sales. Highlighting the sensitivity of the conversion market to the differential, the modelling suggests that the introduction of an excise of 12.5 cpl, and a further adjustment of 6.8 cpl from CPRS, may be sufficient to eliminate the conversion market based on historical predictors of demand. The following table highlights the year on year impact:

Year	Differential Reduction (cpl)	Reduction in conversions
2011	2.5	15,133
2012	5.0	30,265
2013	14.3	86,558
2014	16.8	101,690
2015	19.3	116,823

Future oil and petrol prices

As discussed, the absolute petrol price level is a significant driver of private LPG demand.

In this context the future projections regarding the absolute petrol price level are important in determining potential private demand. At this stage, most commentators are predicting modest growth to oil prices in nominal terms, and some reduction in real terms. When considering future petrol prices in Australia, this effect will dampen any significant LPG demand increases.

LPG, Technology and Future Investment

The current period sees the greatest activity levels around planned LPG investment in emerging technologies that Australian industry has seen. These proposed activity levels are based on factors including:

- The global positioning of LPG as a transport fuel of choice to tackle climate change and greenhouse gas emissions in the short to medium term

- The role of supportive government policy settings in the Australian context that has increased demand and acceptance of LPG as a transport fuel of choice. This has acted to generate significant technology investment plans by Australian vehicle manufacturers and the supply chain alike.

Industry estimates suggest somewhere between $70 and $100 million in planned LPG R&D projects between both supply chain representatives and the vehicle manufacturers.

This level of activity is also seeing Australian companies positioning themselves within global supply chains, and engaging with world-leading technology providers.

The amount of technological and R&D activity being undertaken can be viewed from two perspectives:

1. The different physical aspects of LPG systems on vehicles, comprising tanks, fuel delivery modules and under-bonnet gear

2. The activities of Australia's three vehicle manufacturers – Ford, Toyota and Holden.

The equipment perspective:

Companies within the LPG supply chain in Australia are increasing their extensive R&D expenditure around each of the elements of the hardware of the LPG system.

From a tank perspective, extensive work is planned in regard to:

- Reduced weight of tanks through the investigation of alternative materials
- more innovative packaging systems, which will see a minimal amount of space utilised for the positioning of the tank
- Innovative tanks designs that will maximise tank capacity, and consequently distance between refuelling.

Additionally, for the first time in the Australian industry, supply chain companies are investigating the feasibility for the design, development and manufacture of fuel delivery modules.

Under-bonnet systems are also being upgraded, with significant research into liquid injection and sequential vapour systems, for both the original equipment and retrofit markets.

The vehicle manufacturer perspective:

Ford Australia
Ford Australia manufactures the eFalcon, a dedicated LPG vehicle that has its technology fitted within the production process.

Recent announcements have indicated that the next model eFalcon will utilise more advanced technology, further improving fuel economy and GHG emissions. These changes will be sufficient to see the vehicle achieve Euro IV fuel emission requirements.

The next model Falcon is a key example of the achievements being forged in LPG technology, and in the ability of Australian companies to participate in global supply chains around the fuel Australian-based companies including Orbital Corporation and Alternative Fuel Innovations are leading these technology developments.

Holden
Currently, GM Holden has a factory-fitted LPG option on offer to the market in certain vehicle models. The company's Sequential Vapour Gas Injection System generates power and torque levels that are commensurate to the corresponding figures for petrol-driven engines.

Reflecting this commitment, Holden has a number of projects in prospect that will expand the company's ability to sell LPG-powered vehicles into the market.

A mono-fuel LPG system is currently under development, which will reduce CO2 levels further by being LPG-dedicated, and having the vehicle engine optimised for LPG-only use.

Holden has developed a Generation 5LPG system, otherwise known as Sequential Vapour Gas Injection to improve gas performance with a range of high technology solutions. This system is factory-engineered and injects gas directly into the inlet port, replicating the petrol system. The Sequential Vapour Gas Injection has eliminated previous issues relating to performance, reliability and disruption to electronic systems.

Toyota Australia

Toyota Australia is also reported to be considering the role that LPG will play as part of its product portfolio. The Melbourne-based Toyota Technical Centre, one of only five such centres internationally, has been requested to investigate the engineering of LPG liquid injection technologies for the domestic market.

This investigation is reported to include a feasibility on what is required to ready the technology for sale, and what resources will be required to bring it to commercialisation for the Australian market.

The Importance of Supportive and Stable Policy Arrangements

Critically, in the past, uncertainty and ambiguity regarding government policy has disrupted investment in LPG as an automotive fuel. Historical LPG conversion data demonstrates the impact of policy uncertainty between 2001 and 2003.

As a result of the uncertainty regarding the future of LPG between 2001 and 2003, vehicle manufacturers cancelled plans to introduce models offering LPG as an OEM fitment and it negatively affected the perception of LPG as an economic automotive fuel option. This period of uncertainty, characterised by a downturn in LPG conversions, not only effected LPG manufacturers and related service industries, it also had flow on effects felt by educational institutions that trained LPG gas fitters and installers, and entities involved in collaborative innovation and R&D efforts. In the current climate, a significant pipeline of technology-related R&D plans can be jeopardised through this uncertainty.

The Rudd Car Plan

The Federal Government has announced direct assistance for the LPG industry as part of its car industry assistance program (including the Green Car Innovation Fund). This assistance has been to increase the present rebate for petrol/diesel to LPG conversions from $1,000 to $2,000.

This plan, released in November 2008, acknowledges the role and contribution of LPG to the Australian automotive industry, the potential for further investments in LPG technologies, and the important role played by the rebate in realising this activity. The report noted that increasing the rebate on purchases of factory-fitted LPG from $1,000 to $2,000 would "…encourage the early adoption of new technologies, such as more efficient direct-injection LPG technologies".

While such assistance is greatly appreciated and most welcome at this sensitive time, there is significant scope for further government involvement. The Government's own figures indicate that only $10.5 million out of an assistance package worth $6.2 billion is earmarked for this conversion rebate. This represents less than 0.17% of the total assistance being provided for the car industry.

The benefits of having a healthy LPG industry will only be realised if there is sufficient demand for LPG in Australia in the short term. As such, further assistance is required to ensure that the LPG industry's vibrancy continues.

The potential for the Australian LPG industry in the Global Context

Current market circumstances and the planned R&D pipeline present an unprecedented opportunity for the Australian LPG industry to consolidate and grow its position in the international context.

Australia ranks third internationally in regard to per capita LPG consumption for road transport, which has provided a significant foundation for the development of the industry.

The correct policy framework will ensure that Australia capitalises on the opportunities presented by the R&D investment pipeline, growing consumer preference towards greener vehicles, and delays associated with the investigation of alternative environmental power trains in the current climate.

This positioning will be based on the export of both technologies and components.

Conclusions

The next 5 years represents a threshold period for the Australian LPG industry.

The position that LPG has generated in the Australian transport sector, and level of research and development being conducted and planned has been overlaid by the advent of climate change issues. These factors have combined to see a $70-$100M pipeline of technology projects accrue for the Australian sector.

The right policy environment for LPG over that time will see significant growth in the $350M contribution that the industry currently makes to the Australian economy. It will also see world class research and commercialisation being conducted here that will progressively generate significant export income.

This consolidation and growth of the industry will also support the competitiveness of Australia's vehicle manufacturers as they capitalise on the environmental credentials of LPG, thereby making their product offerings more suitable to changing consumer preference.

Realising this potential requires a stable and certain policy framework There are a range of factors that will aggregate in the period to 2013 that create an environment in which both private and fleet customers will see disincentives to invest in LPG.

By extensions, this uncertainty will have significant negative impacts in regard to the R&D and investment pipeline that the Australian market has the opportunity to secure.

Additionally, the impact that the expected reduction in conversions will have on the R&D and investment pipelines will be substantial.

These uncertainties include:

- The extent of the downward impact on demand from the announcements in the 2009 Budget regarding the progressive reduction in the private LPG rebate.

- The advent of the CPRS – The proposed fuel tax cuts to neutralise the impact of the CPRS presents a direct challenge to future LPG-petrol price differentials. This issue is compounded by the fact that the periodic adjustment mechanism will cease in 2013, and the excise reductions identified to that point will remain fixed.

- Uncertainty regarding future petrol prices. As this analysis shows, the petrol price level plays a critical direct role in private conversions and uptake of LPG. Relatively flat projections regarding oil prices over coming years will also generate downward pressure on the rate of private uptake.

- The reduction in the petrol/LPG price differential will also have a significant impact. This differential is being impacted by a pincer movement, with the spectre of the previous Government's planned introduction of the excise increasing the LPG price, and the volatility and lack of certainty regarding petrol price levels meaning the ability of the fleet buyer to accurately forecast the differential (and consequently payback period) being severely eroded.

In this context, the need for certainty regarding, a supportive and transparent policy framework for the LPG industry is of paramount importance.

Securing the industry over the next five years will allow the constituent companies to consolidate and build a sustainable base that has the scale required to become a major international player.