



Australian Government

Department of Resources, Energy and Tourism

LIQUEFIED PETROLEUM GAS (LPG) - FREQUENTLY ASKED QUESTIONS

(May 2009 Edition)

What is LPG?

- Liquefied Petroleum Gas (LPG) is the generic name for mixtures of light, gaseous hydrocarbon gas, mainly propane (C_3H_8) and butane (C_4H_{10}).
- LPG is gaseous at normal ambient pressures and temperatures but liquefies readily under moderate pressure or reduced temperature. One litre of pressurised LPG equates to 270 litres of gas.
- LPG is a colourless and odourless gas that is heavier than air. A chemical called ethyl mercaptan is often added to impart a pungent odour to assist with leak detection.
- Automotive LPG can be a mixture of propane and butane, while bottled gas sold in Australia for domestic purposes (such as cooking and heating) is normally solely propane. For safety reasons, automotive LPG mixtures should not be used for domestic purposes.
- LPG burns readily in air and is used as a fuel in a range of applications.
- LPG is a naturally occurring gas and is produced as a byproduct either through the processing of crude oil and natural gas or as a byproduct of petroleum refining.
- LPG can be confused with Liquefied Natural Gas (LNG), however the two products are quite different. LNG is liquefied natural gas (primarily methane CH_4), which has been cooled to approximately -163 degrees Celsius and occupies $1/600^{th}$ of the volume of its gaseous form.

Where is LPG used?

- LPG is used:
 - As a transport fuel
 - As a fuel for industrial equipment such as forklifts
 - In commercial and industrial applications, such as pottery kilns and commercial ovens
 - In residential applications, such as cooking, heating and hot water systems
 - For leisure activities, such as barbecues, camping and patio heaters

How much LPG is produced in Australia? Who is involved?

- During 2007-08, Australia produced a total of 5,386 megalitres (ML) of LPG, of which about 74 per cent or 3,971 ML was associated with crude oil and natural gas production, while about 26 per cent or 1,415 ML was produced in refineries.
 - Major companies involved in producing LPG from Australian oil and gas fields include Esso, BHP Billiton, Wesfarmers, Woodside and Santos. Refining companies producing LPG in Australia include Mobil, Shell, BP and Caltex. Autogas and bottled LPG suppliers include BP Australia; Caltex Australia; Shell Australia; BOC Gases Australia; Kleenheat Gas (Wesfarmers); Elgas Ltd; Gogas Australia (Shell), Vitalgas (Origin and Caltex) and Unigas (a joint venture of Elgas and Kleenheat).
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What is the level of Australian demand for LPG?

- Total Australian sales of LPG during 2007-08 were 4,024ML of which 2,238ML (or 56 per cent) was for automotive use.
- Sales of LPG for residential (8%), leisure (2%), forklift (2%) and commercial and industrial (32%) uses also occurred over this period.
- Australian LPG consumption has increased over the long term, from less than 100ML in 1975 to 4,024ML in 2007-08.

How much LPG does Australia export and import?

- Propane is imported into the eastern states of Australia while Western Australian producers export LPG, mainly to Asian markets.
- In 2007-08, Australia produced 5,486ML (included naturally occurring and refined) of LPG. Of this, 2,589ML was exported (48% of total production) with the largest markets being Japan, China and the Republic of Korea. Australia also imported 965ML in 2007-08.

What international factors determine Australian LPG prices?

- LPG is an internationally traded commodity and prices are determined by the free operation of markets. As Australia must import LPG to meet demand, it must pay the international price for LPG.
- Australian LPG producers have the option of exporting their product or selling it locally at international market prices. If Australian prices do not reflect international prices, investment in the Australian exploration, extraction and refining industries will be discouraged.
- International market prices for LPG in the Asia-Pacific region are generally based on the monthly Saudi Aramco Contract Price (Saudi CP). The monthly contract prices are posted for both propane and butane, and these reflect prevailing spot market sales concluded for the relevant month.
- Australian LPG producers and importers set LPG prices based on the Saudi CP plus an allowance to cover the costs of importing, insurance and loss, storage and handling. The freight, terminalling and other costs, which vary depending on location, can total more than US\$45 per tonne.
- Retail LPG prices reflect the calculated base cost plus GST, as well as marketing, distribution and storage costs within Australia; wholesale and retail margins; franchise fees; bulk breaking costs and other overheads. Retail prices in capital cities can be subject to strong market competition, leading to discount cycles for automotive LPG. As the Saudi CP only varies monthly, weekly LPG price volatility in the Australian market is influenced primarily by strong local competition.
- Changes in the international price for LPG and movements in the Australian/US dollar exchange rate will result in changes in the overall level of domestic LPG prices. The exchange rate of the Australian dollar impacts on the price of LPG because the United States dollar is used for all transactions. LPG prices in Australia tend to be lower when the Australian dollar is valued at a high rate against the American currency. The reverse is true when the exchange rate falls and local LPG prices rise.



- LPG is transported in pressurised vessels, making it substantially more expensive to transport than petrol.
- The average retail price for LPG in Australian metropolitan areas for the week ending 3 May 2009 was 61.0 cents per litre (cpl), a decrease of 2.3 cpl (or 3.7 per cent) below the average for the week ending 5 April 2009 (63.3 cpl). (See Table 1)

Why do automotive LPG prices have a different pattern of volatility compared to other transport fuels?

- International LPG price movements are set monthly, while the Singapore Mogas 95 Unleaded petrol price changes daily. Corrections to the LPG base price, when they occur, therefore can be of a higher magnitude, depending on comparative international price movements.
- Additionally, LPG currently attracts no excise, whereas petrol attracts an excise of 38.143 cents per litre. The excise, levied on each litre of product, tends to buffer sharp movements in petrol prices by reducing the proportional impact of any price movement.

Why do the prices of LPG and petrol move independently of each other?

- While Australian LPG prices are based on the Saudi CP, Australian petrol prices are based upon the Singapore Mogas 95 Unleaded price. Product specific supply and demand factors determine the international market prices for LPG and petrol, leading to differing retail market prices for LPG and petrol.

What has happened to world LPG prices recently?

- In May 2009, the monthly average of butane and propane Saudi CPs sat at US\$390.00 per metric tonne, a decrease of 2.5 per cent from the April price. By comparison, for May 2008, the average monthly Saudi CP was US\$852.50 per metric tonne. (See Table 2)
- International LPG demand has tended to increase to meet northern hemisphere winter heating requirements, with a resultant significant influence on price movements. However, given the current global financial crisis, demand for LPG has dropped significantly.
- Even though international LPG prices are subject to different market forces compared with crude oil and other petroleum products, there is close correlation between the movement in product prices over the long term.

Price Comparisons with other countries

- Most recent figures available from the International Energy Agency show Australian retail LPG prices were the lowest of the developed world. As of the December quarter 2008 Australia's LPG retail price was A\$0.59 per litre. This was well below the developed world's average of \$1.19 per litre and below France (A\$1.47 per litre), Germany (A\$1.27 per litre) and Japan (A\$1.47 per litre).
- The retail automotive LPG price in Australia's state capitals in the week ending 3 May 2009 ranged from around A\$0.48 to \$0.89per litre.



Why doesn't the Australian Government control LPG prices?

- Under the Australian Constitution, the State and Territory governments retain the right to control retail fuel prices. This authority is not vested in the Australian Government.
- As the Australian Competition and Consumer Commission report *Reducing Fuel Price Variability* indicates, competition is delivering lower consumer prices than would be achieved under price regulation.

What is the role of the Australian Competition and Consumer Commission (ACCC) in monitoring LPG prices?

- The ACCC has power under Part IV of the *Trade Practices Act 1974* (TPA) to investigate allegations of price fixing, predatory pricing and other anti-competitive activities in the petroleum industry. Part IV of the TPA does not seek to regulate price levels but instead sets a framework to promote competitive markets. The Australian Government believes that an efficient, competitive market is the most effective means to deliver the lowest prices to consumers.
- Currently, the ACCC monitors petrol, diesel and auto LPG prices in metropolitan areas and about 110 country towns across Australia.
- The ACCC can also conduct additional random monitoring in remote areas and will investigate complaints about price changes. The ACCC may “name and shame” any fuel retailers who fail to bring their price in line with recent movements in the international benchmark price.
- Further information about the ACCC is available at the ACCC website www.accc.gov.au.

Appointment of the Petrol Commissioner

- The Office of the Petrol Commissioner (OPC) has been given full powers, under Part VIIA (Prices Surveillance) of the *Trade Practices Act (1974)*, to monitor and investigate petrol prices formally. The OPC also has responsibility for the informal monitoring of diesel and LPG prices.
- Mr Joe Dimasi was appointed as the Petrol Commissioner.
- The Petrol Commissioner is responsible for overseeing formal price monitoring and investigating petrol prices, including scrutinising documents and other information from participants in the petrol supply chain.



Oilcode Review

- The Oilcode is a mandatory industry code which streamlines the regulatory framework for the retail petroleum industry and removes structural restrictions on competition. The purpose of the Oilcode is to regulate the conduct of suppliers, distributors and retailers in the downstream petroleum retail industry, to remove restrictions on competition, promote industry certainty and cultural change, and improve sustainability. The objective of the Oilcode is to:
 - Establish standard terms and conditions for fuel re-selling agreements for both franchise and commission agency arrangements;
 - Introduce a nationally consistent approach to terminal gate pricing (TGP) arrangements and improved transparency in wholesale pricing and allow access for all customers, including small businesses, to petroleum products at TGP; and
 - Establish an independent, downstream petroleum Dispute Resolution Scheme (DRS) including the appointment of a Dispute Resolution Adviser (DRA) to provide the industry with a cost-effective alternative to taking action in the courts.
- As required under the Oilcode Regulation, the Government undertook a review of the *Trade Practices (Industry Codes – Oilcode) Regulations 2006*. The Review commenced on 1 March 2008, after the Oilcode had been in operation for 12 months. Fourteen submissions to the Oilcode Review were received and the Review is currently being considered by the Government
- The Review was conducted in conjunction with industry, the ACCC, which is responsible for managing compliance with the Oilcode, and the Treasury. The Review examined the appropriateness of wholesale terminal gate pricing (TGP).



Import Terminal Audit

- In light of the increasingly important role that imports will play in meeting Australia's demand for petroleum products, it is important to ensure there are no impediments to the supply of imported crude and product into the Australian market and no barriers to effective competition in the market.
- The Australian Government has agreed that it will complete an audit of terminals suitable for importing refined petrol into Australia, covering terminal capacity, use and leasing and sharing arrangements to identify whether there are any effective barriers to increased competition. This audit will cover importation of crude oil and petroleum products into the Australian market and is not restricted to refined petrol.
- In order to ensure Australia's infrastructure is sufficient to meet our future requirements, the audit will examine current and forecast supply and demand for imported crude oil and petroleum products and the capacity of Australia's existing import infrastructure (including ports, terminals, storage facilities and pipeline and other distribution infrastructure) to meet our expanding petroleum product import requirements as well as identifying any impediments to efficient investment.
- The audit will involve the four Australian oil majors (BP, Caltex, ExxonMobil and Shell), wholesalers and retailers in the petroleum industry, other independent petroleum companies, independent importers, petroleum storage providers, other significant fuel users, and other relevant stakeholders.

What Government measures support LPG use?

- LPG is currently excise free. Based on 2007-08 sales of automotive LPG (of 2238 ML), this policy provides an effective benefit to LPG consumers of around \$560 million in excise revenue foregone (based on the proposed mid energy content excise level of 25 cpl).
- In addition to the current excise exemption, the Government has other programs in place to promote the use of alternative fuels, including:
 - The LPG Vehicle Scheme, designed to encourage the uptake and use of LPG as an alternate fuel in private vehicles via a \$2,000 tax-free grant for LPG conversions, a \$1,000 tax-free grant for the purchase of a new motor vehicle with an LPG unit fitted at the time of manufacture, **for vehicles purchased before 10 November 2008**, and a tax-free grant of \$2,000 for the purchase of a new motor vehicle with an LPG unit fitted at the time of manufacture, **for vehicles purchased on or after 10 November 2008**. As at 30 April 2009, the Government paid a total of 216,191 grants, at a cost of \$430,940,000. For further information on the Scheme, please visit the AusIndustry website www.ausindustry.gov.au or call the AusIndustry Hotline on 13 28 46.
 - Users of gaseous fuels in the on-road heavy vehicle market receive grants under the Energy Grants (Credits) Scheme to encourage use of these fuels on road haulage routes outside metropolitan areas.



When will automotive LPG become excisable and what excise rates will apply?

- Alternative fuels, including LPG, were scheduled to begin incurring fuel tax from 1 July 2011 under a policy announced by the previous government. As indicated in a press release by the Treasurer and Assistant Treasurer on 13 May 2008, the Government has not yet reached a decision on the taxation of alternative fuels beyond 2011.

Would it be cost-effective to convert my car to LPG?

- LPG is significantly less expensive than petrol. The pricing advantage is due partly to the excise applied to unleaded fuel, at 38.143 cents per litre (cpl), which currently is not applied to LPG.
- Average prices for April 2009 (ULP 119.4 cpl, LPG 61.0 cpl) show that LPG maintains a pricing advantage of around 58 cpl. As LPG has a lower energy content rating than petrol, and generally increases fuel consumption by up to 30 percent, motorists will need to fill up more regularly.
- Also, there is the cost of installation and higher servicing requirements to consider. However, the introduction of the Australian Government's LPG Vehicle Scheme, which provides a \$2,000 tax-free grant for LPG conversions and a \$1,000 tax-free grant for new LPG-dedicated or dual-fuel vehicles manufactured before 10 November 2008 and \$2,000 tax-free grant for new LPG-dedicated or dual-fuel vehicles manufactured on or after 10 November 2008, makes the economics more attractive.
- Motorists should determine if their car's usage will make the use of LPG more cost effective. For further information, please contact your motoring organisation.

Where can I observe automotive LPG Australian retail price movements?

- A chart showing recent movements in automotive LPG average monthly prices for the six Australian capital cities is available on the Australian Automobile Association's web site at www.aaa.asn.au (look under 'What are the latest petrol prices').
- Daily information on automotive LPG retail prices at branded retail locations throughout Australia is available from Shell Australia's web site at www.shell.com.au (look under 'Shell for Motorists') and BP Australia's website at www.bp.com.au (look under 'Products and Services'). Daily information on the cheapest automotive LPG prices at numerous locations is available at www.motormouth.com.au.

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Why do automotive LPG retail prices fluctuate?

- In addition to the fluctuations caused by international factors, local retailers set prices according to their commercial assessments of the competition in their areas; marketing, distribution and storage costs within Australia; wholesale and retail margins; franchise fees; bulk breaking costs and other overheads.
- The automotive LPG market is frequently subject to significant discounting cycles due to competitive market pressures, during which selling prices can actually fall below the retailer's cost price. Competitors may respond by similarly reducing their prices. As prices fall, some service station operators might obtain price support from their wholesalers (the distributor or oil company).



- During periods of heavy discounting, service stations and suppliers may end up selling at a loss and eventually the discounting will stop. If supplier price support is withdrawn, service station operators will raise prices, usually returning to earlier levels, and the pricing cycle begins again.

What are the reasons for the city versus country price differential for automotive LPG?

- Price differentials between regions are mainly determined by the volume of fuel that is sold at a retail site and the additional freight cost associated with specific country areas, as well as local competition factors.
- A high volume retail site can spread its fixed costs over those sales, reducing its operating margin on each litre of fuel compared to a retail site with a lower volume of sales. Country service stations typically sell less than half the volume of fuel of a metropolitan service station.
- Lower sales of high profit margin non-fuel items in the country tends to push country prices higher for all types of fuel.
- In city areas, competition for market share is intense, resulting in significant discounting and pricing cycles. Competition in country areas is usually less intense and discounting is less common. Metropolitan consumers have a much larger number of outlets to choose from, and when price discounting commences in one location, it tends to spread throughout the metropolitan area. In many country towns, particularly those with little passing traffic, the potential to increase sales through discounting is limited.

Is there a national fuel quality standard for automotive LPG?

- On 1 March 2004, the national fuel quality standards for LPG autogas were implemented under the *Fuel Quality Standards Act 2000* (the Act).
- The standards are regulated through the *Fuel Standard (Autogas) Determination 2003*.
- The proportion of propane and butane in autogas are controlled through standards set for the Motor Octane Number (MON) of the fuel and volatility control through the standard for vapour pressure.
- The Department of Environment, Water, Heritage and the Arts administers the Act and enforces fuel standards.

What is the price of Australian LPG exports to Japan?

- Australia exports LPG to Japan at commercially negotiated market prices. The freight advantage relating to Australian LPG producers being closer to Japan than Middle East producers potentially provides them with a larger profit margin.
- In 2007-08, Australia exported around 1587 megalitres of LPG to Japan, earning Australia approximately \$725 million. This equates to around 45.7 cents per litre wholesale.
- The average LPG retail price in Japan, which includes a range of other costs in addition to the export price, such as transport, refrigerated storage, overheads, taxes, margins etc, for the December quarter 2008 was around A\$1.47 cents per litre. In comparison, in capital cities across Australia, the average LPG retail price was A\$0.59 cents per litre for the same period.



What determines bottled gas prices?

- Bottled gas used for domestic purposes (cooking and heating) in Australia normally consists solely of propane (automotive LPG is a mixture of propane and butane).
- Propane is regularly imported to meet demand in Australian east coast markets, at prevailing international market prices. These prices impact both the automotive LPG and the bottled gas market.
- The higher cost of bottled gas compared with automotive LPG is related to the high cost of cylinder filling, delivery and storage, administrative costs, billing and customer service and cylinder rental, including statutory maintenance costs.
- Excise is not levied on LPG (propane) used for domestic purposes.
- The goods and services tax applies to domestic LPG sales but this is no different from other domestic energy sales.
- The expansion of regional natural gas pipeline distribution networks should lead to a cost reduction for the domestic bottled gas market.

About the industry

- It has been estimated that more than \$3.2 billion in capital has been invested in LPG infrastructure, fuel production, vehicles and services in Australia, with an estimated 15,000 people being employed in the LPG industry in Australia.
- To ensure the safe use of LPG in Australia, legislation requires that LPG systems (for automotive, commercial or domestic use) are fitted and maintained in accordance with strict Australian Standards and only by suitably qualified personnel.
- The location of automotive LPG outlets and installers can be located on the LPG Australia website at www.lpgaustralia.com.au (look under ‘LPG Finder’).



Table 1: Current Australian LPG price

2008	Average Australian LPG Price (cents per litre)
July	73.29
August	71.68
September	72.16
October	73.11
November	69.89
December	59.19
2009	Average Australian LPG Price (cents per litre)
January	55.10
February	60.99
March	63.25
April	61.55

Table 2: Historical and Current Saudi Aramco Contract Prices*

2007	Price, US\$/metric tonne
January	547.50
February	526.00
March	506.00
April	537.50
May	567.50
June	602.00
July	580.00
August	592.50
September	570.00
October	652.50
November	742.50
December	872.50
2008	Price, US\$/metric tonne
January	872.50
February	802.50
March	822.50
April	810
May	852.5
June	907.50
July	927.50
August	875
September	820
October	800
November	490
December	337.50
2009	Price, US\$/metric tonne
January	380
February	505
March	460



April	400
May	390

* Monthly averages of butane and propane Saudi Aramco Contract Prices

Notes:

- (1) LPG industry production, export and import estimates are based on data collected by the Department of Resources, Energy and Tourism from industry sources.
- (2) The Saudi Aramco Contract Price (Saudi CP) used to calculate the international price and import price of LPG is an average of propane and butane prices.
- (3) In 2004, the Australian Liquefied Petroleum Gas Association (ALPGA) changed its name to LPG Australia, therefore references to both names will be found within this document.