



Cleaner, Cheaper Australian Fuels

2019-20 PRE-BUDGET
SUBMISSION





ABOUT GAS ENERGY AUSTRALIA

Gas Energy Australia (GEA) is the national peak body which represents the bulk of the downstream gaseous fuels industry which covers Liquefied Petroleum Gas (LPG), Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG).

The industry comprises major companies and small to medium businesses in the gaseous fuels supply chain; refiners, fuel marketers, equipment manufacturers, LPG vehicle converters, consultants and other providers of services to the industry.

To find out more, please visit www.cleanercheaperfuels.com.

FOUR BASIC MEASURES TO:



- *help improve energy reliability and security for Australians;*
- *provide greater domestic liquid fuel security;*
- *improve environmental outcomes by reducing emissions;*
- *reduce energy costs for business, community and residential sectors; and*
- *support both direct and indirect jobs in the industry and manufacturing jobs more broadly.*

1

Help improve the reliability of energy supply by:

- *establishing a pilot program in conjunction with the gaseous fuels industry, to convert off-grid communities to reliable, affordable, cleaner fuels, including gas and gas hybrids;*
- *committing to reforming current regulatory barriers to the uptake of distributed energy resources; and*
- *delivering an effective consumer education program about the range of lower emitting fuel energy sources available that can help mitigate against supply disruptions, increase energy security and provide lower business and consumer energy costs.*

2

Increase liquid fuel security by:

- *honouring the Government's commitment that the tax on gaseous transport fuels should be no more than 50% of that on diesel/petrol on an energy equivalent basis;*
- *encouraging substitution of imported diesel with clean domestic gaseous fuels for off-grid power generation; and*
- *removing barriers to greater use of Australian LNG as a marine fuel, including adopting an international standard for LNG marine bunkering with Australian content.*

3

Improve environmental outcomes cost effectively by:

- *adopting a truly technology neutral approach to 'green schemes' and innovation initiatives;*
- *calling on State and Territory Governments to ensure their procurement rules and policies include low emission gaseous fuel options for their fleets and public transport;*
- *maintaining a technology neutral approach to reducing both vehicle CO2 and tailpipe emissions;*
- *including off-road vehicles that are used in mining, agriculture and construction in emission control regulations; and*
- *ensuring that policies and programs to support zero emission fuels include renewable gaseous fuels such as biomethane and biopropane as well as hydrogen.*

4

Increase freight transport productivity by:

- *integrating dangerous goods transport into a national freight and logistics strategy that incorporates the necessary mechanism to protect designated dangerous goods transport corridors from the impact of urban intensification; and*
- *aligning and removing duplication of freight transport regulation across Australia.*

Gaseous fuels address the triple drivers of security, cost and environment and it is therefore critical to take the necessary steps to ensure that these fuels become a bigger part of Australia's energy mix.

With domestic fuel security concerns and rising energy prices, now is an opportune time to act to promote diversification into other low-emitting energy sources with different risk profiles - particularly gaseous fuels.

However, it isn't about choosing between gas or renewables. It is about making sure that the right energy and right technology can co-exist to provide, secure, affordable and low emission energy to all Australians.

FIND OUT MORE AT:

www.cleanercheaperfuels.com

IMPORTANT GASEOUS FUELS FACTS:



There are 400,000 Australians and thousands of businesses in regional Australia that are not on the electricity grid – many of which run on dirtier, more expensive and often subsidised diesel generation.



Half of the gas used in Australia is for mining and manufacturing – contributing \$196 billion to the national economy and employing over 949,000 Australians.



LPG, LNG and CNG fuels can reduce carbon emissions by up to 25% and virtually eliminates particulates along with NOx and SO2.



There are over 380,000 gas vehicles in Australia and around 3,000 dispensers supplying autogas.



The stationary energy LPG sector supports 2500 direct jobs while over 3600 automotive technicians are qualified to work on LPG autogas vehicles.



Australia's gas infrastructure can store the same amount of energy as 6 billion Powerwall batteries.



Every 10% substitution of imported diesel by Australian gaseous fuels would save \$870 million in import costs.



Almost 70% of homes use mains or bottled gas – that's 6.5 million homes and growing.



GEA Members have almost \$4.3 billion invested in LPG facilities, trucks and cylinders.



Electricity emissions are the largest source of emissions in Australia, representing 45% of emissions, making it an important sector for abatement.



Displacing 10% of diesel used on heavy on-road transport could reduce imported diesel by 1,018 million litres per annum - reducing CO2 emissions by up to 597,000 tonnes.



Transport related greenhouse gas emissions are predicted to grow by 37% between 2005 and 2025 – unless we support cleaner fuel options like gas.



Gas currently delivers 44% of Australia's household energy - but only 13% of household greenhouse gas emissions.



LPG already contributes more than \$3.5 billion a year to the national economy and other gaseous fuels add to this contribution.

FIND OUT MORE AT:

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EXECUTIVE SUMMARY

AUSTRALIAN GASEOUS FUELS INCLUDING LIQUEFIED PETROLEUM GAS (LPG), LIQUEFIED NATURAL GAS (LNG) AND COMPRESSED NATURAL GAS (CNG) ARE AUSTRALIA'S NATURAL ADVANTAGE.

These fuels are cleaner, Australian, better for the environment, can provide greater domestic fuel security and offer more control over Australia's economic future. With Australia's abundant supplies of gaseous fuels, it makes no sense for Australia to be fully dependent on imported, dirtier and more expensive oil-based fuels (i.e. petrol and diesel) particularly for transport energy and off-grid power generation. Australian produced fuels create more Australian jobs.

As the national peak body that represents the bulk of the downstream gaseous fuels industry, Gas Energy Australia (GEA) is pleased to submit this Pre-Budget Submission as part of the 2019-20 Federal Budget. It builds on our Visions for natural gas fuels and stationary energy LPG - both of which include 10-point plans for industry, government and the community. While this Submission concentrates on first steps, a consolidated 10-Point Plan is attached at the end for context.

Unfortunately, cleaner, Australian gaseous fuels - with existing technology and abundant natural supplies - are often overlooked or penalised in Australia's policy settings despite being the only feasible alternative to diesel and other sources of energy for heavy transport and off-grid baseload generation.

WHY AUSTRALIA'S GASEOUS FUELS?

While there is a lot of politics around energy policy and the pace of change towards renewables, there is one common element everyone agrees is needed. That our current and future energy sources must also be reliable. Gaseous fuels are Australian, they are cleaner and they are reliable. On current technology gaseous fuels are the most reliable, low-emitting technology available.

Gaseous fuels like LPG, CNG and LNG are Australia's natural advantage and can readily and effectively provide immediate benefits. With significant existing and flexible distribution networks through virtual pipelines that can be very responsive to changing demand without needing expensive new fixed pipelines, gaseous fuels have an important role to play in:

- *helping improve energy reliability and security for Australians;*
- *providing greater domestic liquid fuel security;*
- *improving environmental outcomes by reducing emissions;*
- *reducing energy costs for business, community and residential sectors; and*
- *supporting both direct and indirect jobs in the industry and manufacturing jobs more broadly.*

INCREASING LIQUID FUEL SECURITY

The International Energy Agency (IEA) fuel reserves requirement is a function of 90 days of imported fuel. Therefore, using more Australian fuels would reduce the quantity of the oil stocks we need to hold and the resulting cost - as well as being better for the environment when the fuel used is gas.

The cost of building a stockpile sufficient to meet our IEA requirement is unaffordable – previously estimated by the Commonwealth Government to be \$6.5 billion. In addition, shifting more domestic users from higher polluting, imported oil to cleaner, Australian gaseous fuels means lower carbon emissions and virtually none of the harmful particulate pollutants of oil-based fuels. And being Australian produced and not imported, means more jobs for locals.





IMPROVED ENVIRONMENTAL AND HEALTH OUTCOMES

There are also strong environmental and health benefits to be gained from removing barriers to the use of Australia's cleaner, cheaper and healthier gas - instead of higher emitting, higher polluting imported oil-based fuels such as diesel.

The World Health Organisation has concluded that diesel particulates are cancer causing and that there is no safe level of airborne particulates - which are estimated to be causing up to 3,000 deaths a year in Australia.

Further, not only can LPG, LNG and CNG fuels reduce carbon emissions by up to 25% and virtually eliminate particulates along with NOx and SO2 - they are also Great Barrier Reef friendly as they evaporate off water if they spill rather than sediment and slicking like oil-based fuels.

THE GAS INDUSTRY IS CONSTANTLY DEVELOPING AND DEPLOYING NEW LOW-EMISSION GAS TECHNOLOGIES

The gaseous fuels industry is constantly developing and deploying low-emission gas technologies to deliver cleaner and cheaper products to their customers.

For example:

- an LPG dual fuel heavy truck trial by Unigas, Prins Autogassystemen and CMV Truck & Bus in Victoria;
- Queensland company Intelligas developing technology to retrofit a range of mine vehicles including trucks, dozers and shovels with a 'plug in plug out' tank and High Density Compressed Natural Gas (HDCNG) fuel system;
- the LPG Autogas Centre of Excellence in Melbourne, which has been commissioned to provide 100 LPG hybrid taxis for 13CABS;
- INCAT Group in Tasmania designing the world's first high speed LNG ferry; and
- EVOL LNG successfully conducting the first commercial LNG marine bunkering operation in Australia with truck-to-ship refueling.

Encouraging Australian expertise and the development of gaseous fuels technology also creates and protects Australian based manufacturing jobs and helps keep these niche skills in Australia.



IT'S NOT ABOUT GAS OR RENEWABLES – IT'S ABOUT THE BEST LOW EMITTING FUEL FOR PURPOSE

GEA's 2019-20 Pre-Budget Submission isn't about choosing between gas or renewables – it's about making sure that the right energy source and right technology can work together to provide, secure, affordable and low emission energy to all Australians.

One of the measures for example would support either standalone off-grid gas-fuelled power generation or gas-renewable hybrids instead of higher polluting diesel fuel.

That's good for our domestic liquid fuel security, good for the environment, good for local jobs and skills - and good for Australia's economy.

READ MORE ABOUT OUR 10-POINT ACTION PLAN

While our 2019-20 Pre-Budget Submission concentrates on four key measures, a consolidated 10-Point Action Plan has been included at the back of this Submission to provide further context.

Further information is also available in our vision documents (A 2030 Vision for Natural Gas Fuels – CNG and LNG and Vision for Stationary Energy Liquefied Petroleum Gas (LPG)), which advocate removing barriers to the greater use of cleaner, cheaper Australian fuels.

To find out more, please visit www.cleanercheaperfuels.com.





1. IMPROVE THE RELIABILITY OF ENERGY SUPPLY

Strengthen Australia's energy security with gas sourced distributed energy

Gaseous fuels can strengthen Australia's energy security by providing more low-emission power and more distributed energy, including through renewable energy hybrid options.

A country as large and regionalised as Australia, has a heavy reliance on off-grid generators that service some 400,000 Australians, businesses and industry. However, much of the electricity for these entities comes from generators running on imported dirty diesel and increasingly from often subsidised unreliable renewable sources.

To this end, it is encouraging to see that the Queensland State Government has made a firm commitment to convert some of Queensland's offshore islands – particularly those in the Great Barrier Reef – to cleaner fuels by developing business cases for solar, wind and gas generation on the Great Barrier Reef.

This plan will cut emissions but will only provide secure power if gas is part of the mix – as the power for these islands and remote communities is currently reliant on higher emitting and polluting diesel generators. Few people realise that gaseous fuels are Great Barrier Reef friendly as they evaporate off water if they spill rather than sediment and slicking like oil-based fuels.



This initiative provides a fantastic opportunity for the Federal Government to work with a willing gaseous fuels industry – along with state and territory governments – to deliver an innovative national pilot program to provide energy security for off-grid, remote or small communities. This approach doesn't just offer the prospect of more reliable and cleaner cheaper power for these communities. By taking some load off far flung electricity networks and reducing overall grid costs, it benefits other communities as well. Off-grid distributed energy systems provide a cost effective alternative to often more expensive, yet less reliable, especially in bushfire prone regions, single wire earth return (SWER) options.

Although the Queensland Government commitment is currently limited to funding the business cases for offshore islands near the Great Barrier Reef, other potential locations that the Federal Government could include in a national pilot program would be off-grid, remote or small communities at the fringe of unreliable networks in Queensland, South Australia or Tasmania.



As gaseous fuels are currently transported by tanker to essentially create 'virtual pipelines' of energy without the capital expense of fixed energy infrastructure, this pilot program would be supported by the hundreds of thousands of kilometres of existing 'virtual pipelines' currently providing LPG, CNG and LNG to communities and industries all around Australia.

These 'virtual pipelines' move readily with demand and already create thousands of Australian jobs.

In contrast to centralised electricity generating facilities such as coal and gas fired power stations, hydroelectric dams and large-scale wind farms - all of which typically require electricity to be transmitted over long distances - distributed energy is decentralised, modular and located close to the energy need it meets - increasing energy security. Examples of distributed energy resources include rooftop solar water heaters and photo-voltaic panels, off-grid diesel/gas electricity generators and gas (both natural gas and LPG) used in homes or businesses to heat water, cook or provide warmth.

One such gaseous fuel that currently has the price advantage, availability, portability and proven environmental benefits is LPG. Not only are there LPG suppliers servicing most of Australia's rural and regional communities, but LPG is often the best choice for powering and supporting many of these same communities. LPG is cleaner, affordable, is easily transported with 'virtual pipelines' and is available anytime, anyplace and anywhere. That makes it an ideal fuel option for rural and regional homes, businesses and communities.

LPG's person-to-person distribution system has created a rich distribution network of local and national distributors across Australia. This includes those significant areas beyond the reach of existing reticulated natural gas networks.

Given the recent network disruptions by weather, the concern about over-reliance on renewables and the cost of expensive interconnectors – estimated at up to \$3.5 billion for additional interconnectors to South Australia and Tasmania alone – there is a strong economic and energy security case to explore the value and risk mitigation of greater use of distributed energy options including LPG.



GEA applauds the Federal Government's changes to the regulatory framework governing the stationary energy market, in particular the National Electricity Rules (NERs) governing the National Electricity Market (NEM) to reduce incentives to over-invest in infrastructure.

While these regulatory changes have increased opportunities for non-network providers and distributed energy, the rules and regulations remain very complicated and represent a barrier for potential new suppliers.

As Australia's future energy policy is developed, GEA has concerns that the current regulatory regime represents an obstacle to third parties providing distributed energy solutions to reduce network demand, such as network customers going off-grid. Consequently, GEA would like the Government to remove impediments to our fuels being part of the energy mix offered to consumers by retailers.

To this end, GEA is calling on the Federal Government to:

- ***establish a pilot program in conjunction with the gaseous fuels industry, to convert off-grid communities to reliable, affordable, cleaner fuels, including gas and gas hybrids; and***
- ***commit to reforming the current regulatory barriers that exist to the uptake of distributed energy resources.***

Implement an effective Consumer Education Program

While noting the current political debate around energy policy and the pace of change towards renewables, there is one universal element everyone can agree on. That is the need for reliable and secure energy solutions for consumers moving forward.

However, as the Federal Government continues to develop and execute an effective energy policy, it is critically important to ensure that consumers are reliably informed of all available low emitting energy solutions - so that their choices reflect a factual understanding of the options, not by unreliable commentary and political activism.

Gaseous fuels like LPG, CNG and LNG are Australia's natural advantage and can readily and effectively provide immediate benefits.

With significant existing and flexible distribution networks through virtual pipelines that can be very responsive to changing demand without expensive additional pipelines, gaseous fuels have an important role to play in:

- *helping improve energy reliability and security for Australians;*
- *providing greater domestic liquid fuel security;*
- *improving environmental outcomes by reducing emissions;*
- *reducing energy costs for business, community and residential sectors; and*
- *supporting both direct and indirect jobs in the industry and manufacturing jobs more broadly.*



It is also critically important that energy suppliers and retailers are directly involved with the future development of energy policy. This will ensure that the Government's technology neutral policy will be effectively implemented, potential negative regional impacts of the policy are mitigated and greater competition in the market facilitated.

To this end, GEA is calling on the Federal Government to:

- ***ensure that distributed energy resources providers - including Gas Energy Australia representing gaseous fuels suppliers - are directly involved with the future development of energy policy; and***
- ***deliver an effective consumer education program that helps to educate the community about the range of lower emitting fuel energy sources available to them and how they can help to mitigate against supply disruptions, increase energy security and provide lower business and consumer energy costs.***



2. INCREASE LIQUID FUEL SECURITY

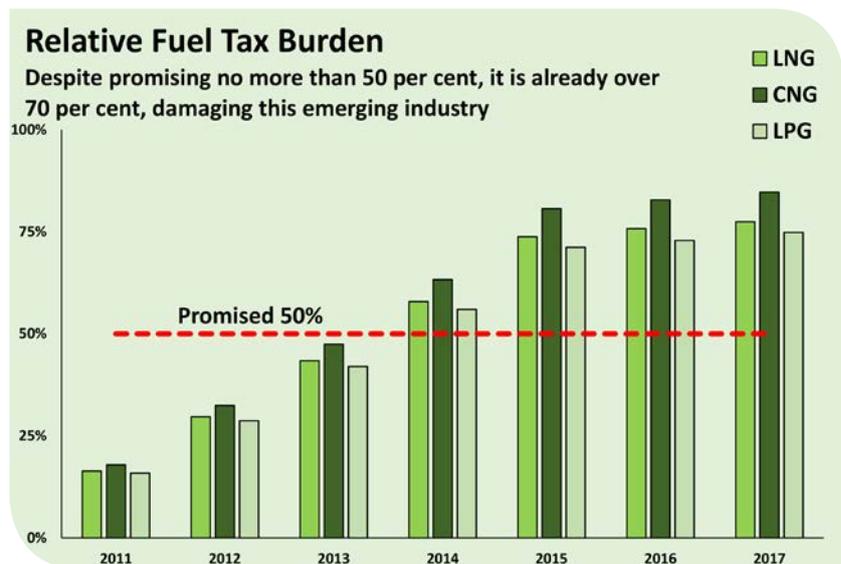
Honouring the Government’s commitment that the tax on gaseous transport fuels should be no more than 50% of that on diesel/petrol on an energy equivalent basis

The significant economic and environmental benefits of gaseous fuels in the transport sector cannot be fully realised without addressing barriers to entry.

The tax on LNG and CNG (and prospectively LPG) used in heavy transport, is still currently well over 70 percent - as shown in the adjacent graph - and must be reduced.

Government inaction on this important issue in recent Budgets has had the unintended consequence of contributing to the decline of natural gas powered heavy transport.

This must be urgently addressed if we are to meet our international environmental obligations, given the large and regionalised nature of Australia - and the need to transport goods and services over long distances.



Despite this, the gaseous fuels industry is confident that it can continue to assist the transport sector to achieve improved emission and environmental outcomes - through the development of new initiatives like the LPG dual fuel heavy truck trial and with the assistance of supportive government policy settings.

Restoring the relative tax burden would fulfil a promise by both sides of Federal Parliament - that the tax on gaseous fuels should not be more than 50 percent of the rate on diesel/petrol on an energy equivalent basis. This would be a demonstration of the importance of promoting innovative clean fuel sources to reduce carbon emissions.

In addition, honouring the 50 percent commitment would increase the take-up of LPG fuelled heavy trucks following the successful trial mentioned above. This would also increase demand for autogas and thereby increase the viability of the autogas distribution network - ensuring autogas users still have access to their low-emission fuel, particularly in outer metropolitan and regional areas.

To this end, GEA is calling on the Federal Government to:

- ***honour its commitment that the tax on gaseous fuels should not be more than 50 percent of the rate on diesel/petrol on an energy equivalent basis - given its environmental, energy security and regional development benefits.***

Encouraging substitution of imported diesel with clean domestic gaseous fuels for off-grid power generation

The International Energy Agency (IEA) fuel reserves requirement is a function of 90 days of imported fuel. Therefore, using more Australian fuels would reduce the quantity of the oil stocks we need to hold and the resulting cost - as well as being better for the environment when the fuel used is gas.

The cost of building a stockpile sufficient to meet our IEA requirement is unaffordable – previously estimated by the Federal Government to be \$6.5 billion. In addition, shifting more domestic users from higher polluting, imported oil to cleaner, Australian gaseous fuels means lower carbon emissions and virtually none of the harmful particulate pollutants of oil-based fuels.

Vehicles, off-grid generators and industrial users can all use LPG and natural gas fuels with current technology. Shifting just a fraction of our imported petrol and diesel use to Australian produced fuels would reduce our international oil reserve requirement,



Regrettably, while Australian fuels are cleaner, abundant and create local jobs through production and niche manufacturing, Australia is becoming increasingly dependent on dirtier, imported fuels from some of the most unstable and dangerous places on earth.

Australia currently has an energy security issue and a fuel security problem. The fixes aren't simple, but a good start would be encouraging more use of locally produced gaseous fuels for things like distributed energy production in remote communities and offshore islands with gas and renewable hybrids providing both secure, cleaner and cheaper generation.

Many of these remote communities are still dependent on imported diesel for power generation or they have unreliable network access when at the same time our oil stocks are inadequate,

LPG and natural gas can do the localised generation job well and over time can also be used to shift a portion of Australia's transport needs - including heavy transport - from diesel to gas using technology that is often Australian developed and well established.

Unfortunately, over the past decade, both Coalition and Labor Governments have increased the costs of gaseous fuels with higher excises and other imposts.

Shifting just 10% of our fuel use to cleaner Australian fuels would cut imports, reduce our fuel reserve requirements, be better for our local environment and create local jobs. And in the case of many remote and rural communities, would provide cleaner, more reliable Australian power options.

And it's not just GEA saying this. The Australian Automobile Association (AAA), the NRMA, Professor Robert Clark AO FAA FRSN from the UNSW and others all point to fuel diversity as part of the solution. But the first step is not just acknowledging we aren't meeting our fuel reserve obligation. It's accepting we have a fuel security problem and acknowledging that there are more ways to improve our domestic fuel security than simply stockpiling more oil.

To this end, GEA is calling on the Federal Government to:

- ***encourage substitution of imported diesel with clean domestic gaseous fuels for off-grid power generation.***

Removing barriers to greater use of Australian LNG as a marine fuel, including adopting an international standard for Australian LNG marine bunkering

The mandate of the International Maritime Organisation (IMO) that all ships and vessels operating anywhere in the world must use low sulphur fuel from 2020 is driving the development of LNG as a marine fuel, especially in Europe, North America and North Asia. The IMO has also adopted a carbon reduction strategy of at least a 50% reduction by 2050 which will further increase demand for clean marine fuels.

Since early 2017, Perth based EVOL LNG has been refuelling Woodside's state of the art LNG powered offshore platform supply vessel, Siem Thiima, in Western Australia.



On the east coast, the new SeaRoad vessel Mersey II, is expected to start using LNG to fuel its operations between Victoria and Tasmania later this year.

Nevertheless, adoption of clean marine fuels in Australia is currently lagging well behind other advanced nations. Most ships and vessels in Australian waters are running on imported diesel and bunker oil which weakens our fuel security as well as pollutes our pristine Australian waters and air.



Australia has more than adequate natural gas reserves, LNG production facilities and industry supply capabilities. However, barriers to greater uptake of LNG as a marine fuel in Australia include high and uncertain domestic natural gas prices, lack of government support, including procurement and uncertain regulations.

GEA is laying the groundwork for the adoption of an international standard for Australian LNG marine bunkering.

But the Federal Government needs to do more to remove these obstacles to the improved fuel security, health, environmental and employment outcomes that would flow from greater use of Australian LNG as a marine fuel.

To this end, GEA is calling on the Federal Government to:

- ***remove barriers to greater use of Australian LNG as a marine fuel, including adopting an international standard for LNG marine bunkering with Australian content.***



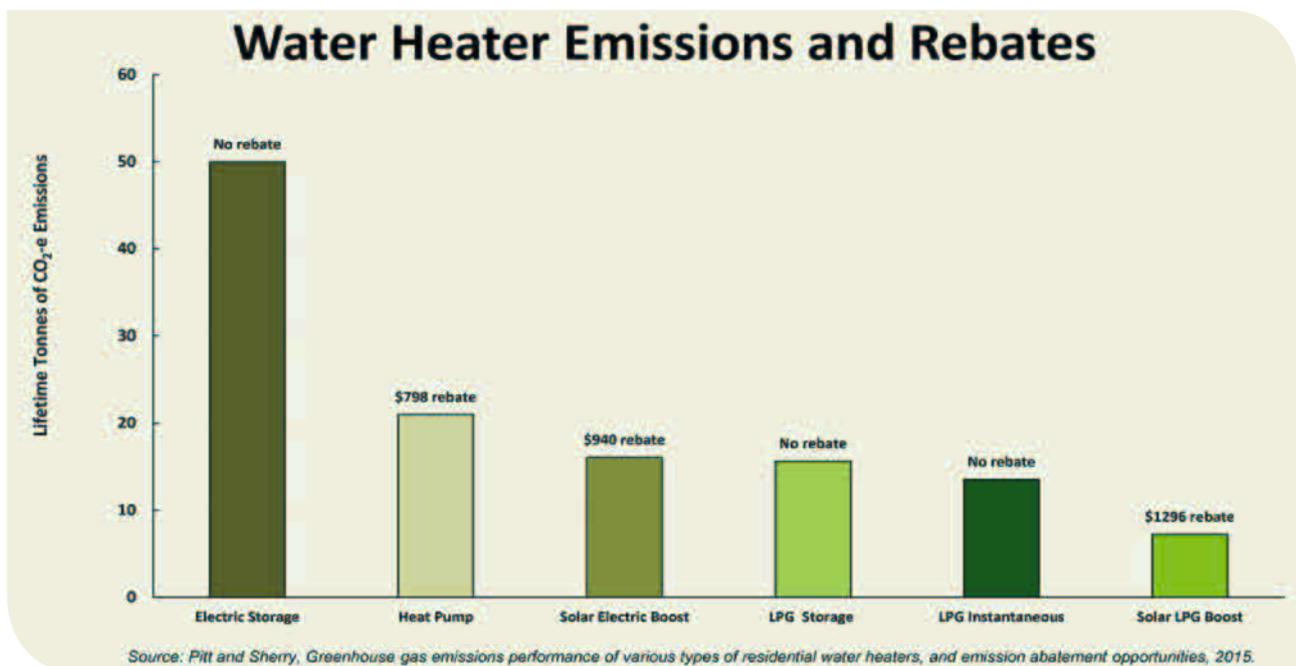
3. IMPROVE ENVIRONMENTAL OUTCOMES COST EFFECTIVELY

Reform government policies and programs to ensure gaseous fuels have the same access to clean energy programs and innovation initiatives as other low emission energy technologies

As part of the 2019-20 Federal Budget, GEA is calling on the Federal Government to fulfil its Energy White Paper commitment to energy technology neutrality, by ensuring its policies do not favour one technology or energy source over another.

Gaseous fuels should be given the same access as renewable energy sources, given their significant environmental benefits and their ability to be easily accessed in rural, regional and remote communities.

This can be done by ensuring that gaseous fuels are not disadvantaged by schemes such as the Renewable Energy Target (RET), including the Small-scale Renewable Energy Scheme (SRES), administered by the Clean Energy Regulator and programs administered by the Australian Renewable Energy Agency (ARENA). The below chart highlights the inconsistent treatment of different types of water heaters under the SRES.



Further, gaseous fuels should also be given the same access to 'green schemes' such as the Clean Energy Finance Corporation, the Emissions Reduction Fund and the Clean Energy Innovation Fund, as renewable energy.

Adopting these simple measures, would not only lower energy costs for government, businesses and every day Australians, but would also reduce carbon emissions.

For example, when used to power household hot water systems, LPG can be much better for the environment than current solar electric hot water systems - producing almost 15 percent or 2.5 tonnes less CO₂ emissions.

But it's not just the environment that can benefit from the use of gaseous fuels – everyday Australians can also dramatically reduce their household energy costs.



CASE STUDY

LIZ HAYWARD, TAMWORTH

After much consideration, Liz replaced her old electric hot water system with an LPG hot water system, because of its efficiency and because it is a better option for the environment.

The installation of an LPG hot water system saw Liz's three-person household electricity bills reduce from an average usage of 1650kWH per quarter at a cost of \$340.00 to 660kWH at a cost of \$190.00 per quarter excluding service charges.

"I love the LPG hot water system and I would recommend it to anyone who was needing to buy a new hot water system to replace an electric one. Not just for the environment but also the amount of money you save and less electricity you use."

Unfortunately, there are currently no Federal Government rebates or energy concessions available for commercial or residential use of gaseous fuels.

As noted in the Independent Review into the Future Security of the NEM, 'gas generators are well-placed to complement variable renewable electricity generators' and as such, should be included in programs and policies that support carbon abatement.

This includes smaller scale, distributed energy generation in remote and offshore communities where bottled and tank LPG, CNG and LNG can provide a competitive, lower emitting, lower polluting and reliable energy source either as stand-alone or as part of a hybrid with renewable intermittent alternatives.

Because budget funded 'green schemes' and initiatives generally have a capped cost associated with them, this is a budget savings measure, as gas is a cheaper form of abatement than most renewable technologies.

GEA also believes that even as governments contemplate fuel efficiency and tighter emissions standards for passenger vehicles, it makes sense that governments themselves can lead the way with their own fleets and public transport options.

To this end, the Federal Government - through COAG and the COAG Energy Council - should call on State and Territory Governments to make a strong commitment to adopt lower emitting gaseous fuel technologies for major bus, ferry and train services.



For example, ferries cruise the harbours, waterways and coastline of many of our States and Territories on dirty imported diesel.

But if they were powered by cleaner, cheaper, safer gaseous fuels, it would further reduce the risk of fuel spills and pollution. That's because gaseous fuels vaporise or dissipate into the air instantaneously and are water friendly fuels.

Australia has played a significant role in contributing to the growth of natural gas ferries when the first natural gas-powered ferry was built by INCAT in Tasmania. However, it was not sold here in Australia but to South America – and now the Argentinians are enjoying the many benefits of an Australian company's technology.



To this end, GEA is calling on the Federal Government to:

- ***adopt a truly technology neutral approach to 'green schemes' and innovation initiatives - and give gaseous fuels the same support as they currently do for other competing low emission technologies; and***
- ***call on State and Territory Governments to ensure that their procurement rules and policies include low emission options, including gaseous fuels for their own fleets and public transport options.***

Vehicle Emission Standards for Cleaner Air

Gaseous fuels are a significant source of energy in Australia, providing not only energy for homes and businesses, but also as a fuel to power vehicles more cost effectively and with reduced vehicle emissions.

The LPG sector alone in 2015, had domestic production totalling over 1.8 million tonnes of product. The Energy in Australia 2014 publication by the Bureau of Resources and Energy Economics (BREE), estimated that 3 percent of energy consumption in the transport sector is autogas (LPG) and that natural gas (LNG and CNG) accounted for approximately 2 percent of transport energy consumption.

The role of gaseous fuels in the Australian transport sector is significant with:

- *around 380,000 LPG powered vehicles;*
- *around 3,000 dispensers supplying autogas to Australians every day;*
- *around 4,000 CNG buses; and*
- *over 3,400 natural gas-powered rigid trucks and non-freight carrying vehicles.*

GEA commends the Federal Government's actions in taking a whole-of-government approach to vehicle emissions. It is through looking at all three aspects of vehicle emissions – CO₂, noxious emissions and fuel quality - that the best outcome will be achieved for both consumers and the environment. Focusing on only one aspect of emissions may change consumer behaviour to such an extent that other undesirable results occur.



For example, if the Federal Government were to examine CO₂ emissions in isolation, it may encourage an uptake in diesel vehicles - which produce less CO₂ but more nitrogen and sulphur (NO_x and SO_x) – which occurred in Europe. Now Europe is grappling with how to reverse the growth in diesel vehicles and improve air quality.

Looking at vehicle emissions in their entirety should ensure that noxious emissions of NO_x and SO_x, particulate matter (PM), hydrocarbons and carbon monoxide (CO) - which are all harmful to humans - are also included in the discussion.

As highlighted in the AMBARC research "Analysis of the Australian 2015 New Light Vehicle Fleet and Review of Technology to Improve Light Vehicle Efficiency" - commissioned by the Department of Infrastructure and Regional Development - an outcome of meeting the Australian Climate Change Authority's Target A in 2025 (105g CO₂/km) might well be a greater number of diesel vehicles, around 57 percent of the fleet. Australia's vehicle fleet is currently dominated by petrol vehicles at nearly 70 percent of the fleet.

GEA is encouraged by the Federal Government's efforts to extensively consult with industry to investigate potential measures to address CO₂ and noxious emissions from vehicles in Australia. With transport accounting for around 17 percent of total emissions in Australia, there is significant scope for this sector to contribute to the Government's environmental objectives.

GEA also notes that gaseous fuels can be used across the range of transport options but has a particular energy and technology advantage over renewable options in public transport, marine, heavy transport (including long haul), mining and rail as well as medium vehicles.

In particular, GEA supports the Federal Government's commitment to maintaining a technology neutral approach to assessing the implementation costs, environmental benefits and other impacts of different policy options - to ensure that the most efficient and cost-effective option is pursued rather than the one that is most popular.

There are currently no emission control regulations in place for off-road vehicles used in mining, agriculture and construction – which predominately run on imported dirty diesel. It is imperative that the Federal Government accelerate emission control regulations to include these off-road applications for the environmental and health benefits that it will bring - in a similar way that the government is looking at on road and sea transport emissions.



The gaseous fuels industry is confident that it can continue to assist the transport sector to achieve improved emission and environmental outcomes with the aid of supportive government policy settings.

For example:

- *autogas emits 22 percent less CO₂ than petrol;*
- *autogas emits 95 percent less NO_x than diesel;*
- *autogas emits 68 percent less NO_x than petrol; and*
- *autogas produces 120 times less small particle emissions than diesel vehicles.*

Natural gas fuels – CNG and LNG – are also cleaner and healthier than diesel, having:

- *30 percent lower CO₂;*
- *75 percent lower NO_x;*
- *90 percent fewer particulate emissions; and*
- *99 percent lower SO_x.*

Therefore, and as per our submission to the Ministerial Forum on Vehicle Emissions Draft Regulation Statement – Vehicle Emissions Standards for Cleaner Air, GEA supports the proposed mandatory standards for light and heavy vehicles. Further, GEA encourages the Government to design its CO₂ target in conjunction with adoption of Euro 6 emission standards.

GEA also recommends that the Federal Government should recognise comparable overseas testing of vehicle standards and require the use of portable emissions measurement systems (PEMS) to get a more realistic measurement of emissions. It is imperative though, that any standard introduced must not result in an increased discrepancy between laboratory testing and real-world fuel efficiency.



In light of the current proliferation of policies and programs to support the growth of hydrogen as a zero-emission fuel, it is important to recognise that there are other zero emission fuels, such as biogas. Biogases are renewable gaseous fuels recovered from renewable sources including wastewater, landfill, agricultural and forestry waste, which means that there are net-zero emissions from its use.

The Gas 2050 Vision released in 2017 demonstrated how biogases, such as biomethane and biopropane, along with hydrogen, have a long-term future in providing Australians with carbon-free energy. At present, biogas represents a cost-effective solution to providing reliable and affordable zero emission power and Australian companies possess the experience and expertise to deliver such solutions. For example, Brisbane based company Intelligas has developed expertise in extracting waste gas from landfills and using it to generate electricity and create high density compressed renewable gas to power refuse trucks.

As gas undergoes its own decarbonisation journey, it can play a key role if Australia's transition to a cleaner energy future is to be affordable and preserve local jobs. Therefore, it is critical that governments ensure that all zero emission fuels are given the same access to clean energy programs and innovation initiatives.

To this end, the GEA calls on the Federal Government to:

- ***maintain a technology neutral approach to reducing both vehicle CO₂ and tailpipe emissions;***
- ***include off-road vehicles that are used in mining, agriculture and construction in emission control regulations; and***
- ***ensure that policies and programs to support zero emission fuels include renewable gaseous fuels such as biomethane and biopropane as well as hydrogen.***



4. INCREASE FREIGHT TRANSPORT PRODUCTIVITY

The importance of effectively moving gaseous fuels around Australia

Gaseous fuels are a significant source of energy in Australia, providing energy for homes and businesses and fuel to power vehicles. This energy transits national freight infrastructure and can do so multiple times - in the case of the LPG sector - before it reaches consumers. It is worth noting the volume and worth of this trade, the extent of the current supply infrastructure and how reliant it is on freight corridors to deliver product to consumers in a timely manner.

There are multiple uses for LPG in Australia, which can be categorised into two key markets – stationary and autogas use. The traditional market for LPG comprises residential (eg, water heating, space heating and cooking), recreational, commercial (eg, forklifts) and industrial uses (eg, steam-raising, kiln firing and food processing). LPG for the traditional market is mainly propane to meet specifications for domestic and industrial heating appliances.

GEA supports the key principle that sound data and information should inform transport planning in Australia and considers planning decisions should take into account the impact on all of the different load types, including gaseous fuels. But transport planning can sometimes deliver unintended consequences that increase costs for industry and produce inferior safety and health outcomes for local communities.

As an example, GEA offers the following Tugun Tunnel case study into the impacts felt by one carrier and a local community, with respect to a tunnel's access restrictions and the resulting dangerous goods alternative route used for the carriage of a class 2 dangerous good.

As outlined in the case study below, it is imperative that jurisdictional lead agencies for vehicle registrations and dangerous goods have open data policies, as these are valuable sources of information on vehicle type, tanker volume and route data, which can better inform transport planning decisions. Further, GEA considers that local government impacts should also be included in future data capture.

TUGUN TUNNEL - QUEENSLAND

CASE STUDY

The Tugun Tunnel in Queensland is a 334m tunnel which forms part of the Tugun Bypass project. The Tugun Bypass takes traffic to the west of the Gold Coast Airport, connecting to Stewart Road interchange at Currumbin and the Tweed Heads Bypass north of Kennedy Drive at Tweed Heads West.

When designed, the Tugun Bypass was expected to take 55% of traffic off the existing Gold Coast Highway by 2017 and reduce the average travel time between Currumbin and Tweed Heads West to 5 minutes. The project opened to traffic on 3 June 2008.

The Tugun Tunnel currently precludes the carriage of:

- *dangerous goods class 1*
- *dangerous goods class 2.1; and*
- *dangerous goods: mixed class.*

This requires tankers transporting Liquefied Petroleum Gas (LPG) to take an alternate route using the Gold Coast Highway.

The alternate route passes through commercial areas, entrances to the John Flynn hospital, Southern Cross University and the Gold Coast Airport. LPG tankers must navigate 5 traffic lights and 5 intersections.

While the alternate route is only 1km longer, the transit time increases to between 15 and 30 minutes depending on the time of day, compared to the transit time on the Tugun Bypass of 5 minutes. The Tugun Tunnel's access restrictions require one carrier's LPG tankers to transit the Gold Coast Highway 14 times per day and more during the winter period. Over 5,000 movements per year could have been avoided by one carrier alone with careful assessment of the public risk and appropriate design of the tunnel infrastructure.





Diagram of Tugun Bypass and dangerous goods alternative route

If there was open and reliable data informing sound planning decisions in the future, restrictions in one area would not create unintended negative impacts, such as what we have highlighted in our case study above – that not utilising 334m of tunnel exposes a community to over 5,000 additional heavy vehicle movements a year.

In conclusion, GEA is seeking priority action for national freight transport planning and regulations to support the safe and efficient movement of dangerous goods freight rather than treat them as a pariah. Currently, people fear and attempt to exclude dangerous goods even though they are a key component in the supply of many consumer goods, be that as an energy source or as an input. Urban growth, port access, regulation and changing technology are all issues which are now impacting the transport of gaseous fuels, increasing cost burdens on consumers and exposing industry and road users to greater risks.

Effective movement of freight is also negatively affected by variations in regulations between Australian states and territories. GEA applauds efforts to nationally harmonise heavy vehicle transport regulations through the recent establishment of the National Heavy Vehicle Regulator (NHVR) which administers one set of laws, the Heavy Vehicle National Law (HVNL), for heavy vehicles over 4.5 tonnes gross vehicle mass. GEA also acknowledges that the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria have all passed a law that either adopts or duplicates the HVNL (with some modifications) as a law of that State or Territory.

That said, the HVNL has not commenced in Western Australia or the Northern Territory. As a result, operators and drivers whose vehicles cross the borders between these jurisdictions and those states or territories where the HVNL applies need to comply with different regulatory requirements in areas such as work diary requirements and access permits. This imposes extra costs on operators and drivers which are ultimately borne by consumers.

To this end, GEA is calling on the Federal Government to:

- ***integrate dangerous goods transport into a national freight and logistics strategy that incorporates the necessary mechanism to protect designated dangerous goods transport corridors from the impact of urban intensification; and***
- ***align and remove duplication of freight transport regulation across Australia.***



1. Support cleaner air and improved health outcomes through greater use of gaseous fuels.
2. Support policies to reduce greenhouse gas emissions given the inherent low carbon content of gaseous fuels.
3. Ensure gaseous fuels have the same access to government policy, procurement and programs as other low emission energy technologies
4. Build awareness of the benefits of cleaner, affordable gaseous fuels to the Australian community.
5. Encourage greater use of gaseous fuels to power regional and remote Australian communities and fuel bus, ferry and train services.
6. Introduce appropriate tax settings to encourage greater use of gaseous fuels for transport, especially heavy vehicles.
7. Reduce regulatory costs and red tape that impose costs on consumers and taxpayers and discourage the use of domestic gaseous fuels.
8. Support training, innovation, R&D and manufacturing of new vehicles, equipment and appliances using Australia's gaseous fuels.
9. Recognise the role of virtual pipelines in providing energy to Australia's dispersed communities and the importance of facilitating refuelling infrastructure.
10. Continue to support the ability of communities to withstand and recover from natural disasters through the flexibility and portability of gaseous fuels.

WHAT OTHERS HAVE SAID ABOUT GASEOUS FUELS...



This is a great opportunity to use our local expertise and natural resources to meet Australia growing vehicle fleet needs.

We know that an over reliance on one fuel source has its limitations so why wouldn't we seek to maximise the use of a fuel that provides great economy for motorists and that also reduces CO2 emissions compared to petrol?

Geoff Gwilym
VACC Executive Director ...commenting on the Victorian Government's support for the LPG Vehicle Demand Study



Australian natural gas is a high quality, environmentally friendly fuel, that is cheaper than distillates and supports Australian jobs.

In Tasmania, we were proud to be a first mover, designing the world's first high speed LNG ferry.

The experience of sourcing and using domestic gas on this world's first vessel, proved to be very satisfactory, as the quality experienced is far greater than is available to our customers in other global markets

Robert Clifford AM
Chairman, Incat Group of Companies



Australia has a natural gas advantage that should translate into a world leading natural gas industry and competitive advantage driving economic growth and local engineering, design and other jobs.

Engineers Australia supports the need for a diverse domestic fuel market in Australia ensuring we are not 100% dependent on foreign fuel imports

Dr Brent Jackson
Engineers Australia



In its 2014 Australian Liquid Fuels Technology Assessment, BRRE found that natural gas fuels offer "the lowest LCOF (levelised cost of fuel) over most of the projection period and they remain cost competitive with the lower cost renewable technologies out to 2050.

Bureau of Resources and Energy Economics (BRRE)



Australia should explore and trial the use of CNG passenger cars and LNG in heavy vehicles to increase our utilisation of domestic energy sources.

Chief Executive
Australian Automobile Association



Australia's fuel self-sufficiency could be increased to 50 to 70% by 2030 through using natural gas as a transport fuel, compared to just 30 to 40% using current fuel sources.

Professor Robert Clark
University of New South Wales



