VIRTUAL GAS PIPELINE PROJECTS

"Australia’s transition to a new, clean, sustainable and secure energy future, by building the opportunities and infrastructure for future generations"

"The National Need for Change"

INFORMED DECISIONS TODAY FOR A BETTER TOMORROW

MLNG

MAY 2014

23 Brennan Way
Belmont WA 6104
Australia

PH +61 8 6555 7731
FAX +61 8 9477 1833
WEB mobileLNG.net.au

ABN 90 142 886 600
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<th>Abbreviation</th>
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<tr>
<td>ABARE</td>
<td>Australian Bureau of Agricultural and Resource Economics (and Sciences)</td>
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<td>BREE</td>
<td>Bureau of Resources and Energy Economics</td>
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<td>CNG</td>
<td>Compressed Natural Gas</td>
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<td>EDR</td>
<td>Economic Demonstrated Resources</td>
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<td>EIA</td>
<td>Energy Information Administration</td>
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<td>GHG</td>
<td>Green House Gas</td>
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<td>GVR</td>
<td>Gas Vehicles Report</td>
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<td>HDV</td>
<td>Heavy Duty Vehicle</td>
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<td>IEA</td>
<td>International Energy Agency</td>
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<td>IGU</td>
<td>International Gas Union</td>
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<td>LNG</td>
<td>Liquefied Natural Gas</td>
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<td>LPG</td>
<td>Liquefied Petroleum Gas</td>
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<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships</td>
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<td>MHV</td>
<td>Mine Haulage Vehicle</td>
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<td>MLNG</td>
<td>Mobile LNG Pty Ltd</td>
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<tr>
<td>MPF</td>
<td>Major Project Facilitation</td>
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<tr>
<td>Mtpa</td>
<td>Million tonnes per annum</td>
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<td>NGV</td>
<td>Natural gas Vehicle</td>
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<td>NRMA</td>
<td>National Roads and Motorists Association</td>
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<td>NSW</td>
<td>New South Wales</td>
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<tr>
<td>Petajoule</td>
<td>One petajoule equals 1 000 000 000 000 000 joules (10 to the power 15).</td>
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<td>RPG</td>
<td>Remote Power Generation</td>
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<td>SA</td>
<td>South Australia</td>
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<td>Northern Territory</td>
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<td>WA</td>
<td>Western Australia</td>
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MLNG – EXECUTIVE SUMMARY

Australia can no longer afford to continue its reliance upon imported diesel fuels, while other countries are obtaining the economic and environmental benefits of using natural gas and liquefied natural gas (LNG) more widely in their economic development.

The use of LNG as a diesel fuel replacement in other countries has provided fuel cost reductions of between 25 to 50 percent, reductions in Green House Gas emissions of between 20 to 40 percent, fostered the creation of new education and employment opportunities and, above all, provided national fuel security.

Australia has abundant gas reserves and the more efficient use of this natural gas within the domestic economy will provide similar benefits to Australia and maintain Australia’s international competitiveness.

Mobile LNG Pty Ltd (MLNG) is a bespoke shareholder and management team with global experience across the complete LNG supply chain: specialising in the mining, energy and resources industries and with the skills and experience to deliver major projects safely and reliably. For the past three years, MLNG has conducted research into the opportunities for the rapid introduction of LNG based technologies to benefit the Australian economy and devised a production and supply strategy using a Virtual Gas Pipeline delivery system and phased expansion into different sectors of the economy.

The MLNG model places first focus on the electricity generation and transport sector needs of remote regional centres generating Australia’s export wealth and upon the global trend for LNG to replace diesel as the cleanest, cheapest and safest option for fuelling heavy duty road, rail and marine transport.

In April 2014, the Australian Government recognised MLNG’s projects as being of national significance for the contribution they will make to Australia’s competitiveness, productivity and growth. The Deputy Prime Minister and Minister for Infrastructure and Regional Development, granted the projects “Major Project Facilitation (MPF)” status and wrote to all “relevant Commonwealth Ministerial colleagues, the Premiers of South Australia and Western Australia and the Chief Minister of the Northern Territory, informing them of my decision to grant MPF status to your project and seeking their active cooperation and assistance for the project within their respective areas of portfolio responsibilities”.

MLNG will deliver Australia’s first virtual gas energy pipeline via the construction of $1 billion program, building four LNG plants and distribution centres which will produce 1600 tonnes per day of LNG. This will displace approximately 700,000 tonnes of imported diesel per annum for remote power generation for mining and communities and for the transport sector (industry and tourism) with first production within two years.

MLNG’s project will create in Australia 1500 direct jobs during the construction phase and approximately 4000 direct and indirect jobs in ongoing operations.

This new domestic LNG industry will create jobs, save governments money in reduced remote power generating costs, unlock investment, improve Australia’s competitiveness in the mining and tourism sectors, reduce the cost of living in regional and remote parts of Australia, improve Australia’s energy security, improve Australia’s balance of trade and significantly reduce CO2 emissions.

This document “The National Need for Change” provides background and rationale for the development of the virtual gas pipeline system, it defines MLNG’s projects and describes the opportunity this will provide for Australia.

1 As determined by using Guidelines for estimating employment supported by the actions, programs and policies of the NSW Government OFFICE OF FINANCIAL MANAGEMENT Policy & Guidelines Paper November 2009 tpp09-7
THE NEED FOR CHANGE

Australia, positioned for prosperity?

Geologically, Australia is positioned over vast resources of natural gas, estimated in excess of 900,000 petajoules, enough to sustain Australia’s domestic energy consumption and liquefied natural gas (LNG) export programs for many decades to come. With these resources and rapidly increasing annual export programs, Australia is set to become the world’s largest exporter of LNG by 2020. Australia’s abundant natural gas resources place it in an enviable position to maintain long-term, cleaner energy security domestically and internationally.

Geographically and in trading history terms, Australia is positioned close to China and India, the emerging economic engine rooms of future global growth. China and India have already been among the world’s fastest-growing economies for the past two decades, China is already Australia’s largest merchandise trading partner.

But is Australia positioned for prosperity?

Many of the risks to Australia’s economic outlook are external and their cause beyond much control, such as volatility in the world economy and its potential negative impacts on the emerging economies and how this may affect the rate of Australia’s export trade with them. Internally, the risks are within Australia’s control and are perceived by many to have common focus around four interrelated areas; the domestic economy, the environment, infrastructure, and how Australia will address the energy supply needs with its economy.

Oil

The Australian economy, like that of most western cultures, has evolved with a heavy reliance on the use of oil. Typically oil accounts for around 50 per cent of Australia’s total annual energy consumption. However, despite this dependence, Australia’s oil refineries have for some years not been able to produce sufficient quantities of oil to meet the local demands, and the nation has been more and more reliant upon importing oil to meet the shortfall.

Last financial year, Australia was required to import in excess of $40.14 billion worth of oil/petroleum products for its domestic consumption needs. Australia’s need to import fuels makes it subject to the spot prices applying at that time and volatility of the world oil market. Imported fuels have significant price fluctuations, and a ratcheting up of prices adds to production costs and uncertainty in the economy.

The transport sector in particular is susceptible to these price fluctuations and oil supply issues. The transport sector consumes 38 percent of Australia’s annual energy supply and cost implications felt here permeate on throughout the entire economy as cost increments are passed on to the end consumer. This adds costs to all levels of business and has particular ramifications on Australia’s export, mining and manufacturing services and to their international competitiveness.

Australia’s Oil Outlook:

- Australia’s refineries will continue to be unable to produce oil in sufficient quantities to meet domestic needs;
- Increasing levels of oil imports will be required to meet the shortfall;
- World oil prices will add to the increasing cost of the imports required.

Analysts, industry groups, and the media have expressed concerns with Australia’s apparent inability to meet its own energy needs without having to rely on other countries to supply its oil product needs via a massive program of oil imports. They believe this to be affecting both Australia’s economy and its economic security.

Peak motoring agencies such as the NRMA have released analysis and reports under banners such as “Australia’s Liquid Fuel Security”, highlighting that there “are less than three weeks of fuel supply on shore at any one time in the Australian system”…and “that geopolitical, environmental or other unforeseen catastrophes could delay imports and this would bring Australia to a halt”.

Clearly there is an issue here and a need for change. Australia needs to attain fuel security for the confidence of the economy and to enable long-term infrastructure planning.

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3 Geoscience Australia and ABARE, 2010, Australian Energy Resource Assessment
4 BREE 2014 Australian Energy Statistics Update
5 BREE 2014 Total Energy Consumption Table C
6 BREE 2014 Petroleum Imports, Australia Table 48B
7 BREE 2014 Australian energy supply and consumption Table A
Natural Gas

In contrast to oil, Australia has an abundance of natural gas and technology and exploration are still adding to Australia’s recognised gas reserves. Australia is already the world’s third largest exporter of natural gas as liquefied natural gas (LNG).

Australia’s LNG Outlook:

- Australia has an abundance of natural gas reserves and technology and new fields will add to these reserves;
- LNG exports required from Australia will continue to rise as the world moves to a gas economy;
- Shortly, Australia will undertake the largest gas development programs in the world and this is projected to increase the annual exports of LNG to a level making Australia the largest global LNG exporter by 2019-2020.

To insulate themselves against oil price fluctuations, sectors of the mining industry and the manufacturing industry have recognised the economics and environmental advantages of using natural gas instead of diesel oil fuels and where available, connected to pipeline gas supplies to contain their energy costs. Unfortunately, pipeline gas options aren’t available to all sectors of the market, nor in all geographical areas. For example, this opportunity is not available to the transport sector or to the majority of the mining sector, where their activity occurs in remote regions of Australia and where pipeline gas supply is not available, nor is it an economic option to provide a pipeline service to these locations.

Energy supply is of critical importance in Australia’s economy. With the declining capacity of Australia’s own refineries to meet demands, price fluctuations, price rises of oil affecting productivity and the ongoing need for Australia to import huge quantities of fuel, it is a reasonable conclusion by the analysts and commentators that Australia cannot meet its own energy needs without the huge cost to the economy of importing tens of billions of dollars of fuel to meet the shortfall.

Change is needed. Alternative strategies and options need to be examined. Any alternative fuel option considered must have regard for international trends, particularly those where other countries are gaining economic and environmental advantages in competitive market niches for Australia’s exports of goods and services.

The Solution

The case for change has a ready solution. The solution is to better utilise Australia’s own natural gas, specifically through using the attributes of liquefied natural gas (LNG) with its lower costs, lower carbon content and higher efficiency.

The rest of the world is moving ahead with its use of LNG in the sectors of power generation, transportation and mining to reduce costs, increase efficiency and reduce environmental impacts while Australia continues to import expensive diesel fuel and export the benefits of its own LNG off-shore.

In the following sections, issues and opportunities are presented supporting the need and opportunity for Australia to adopt LNG use more widely in its economy, and how this can be achieved, by Mobile LNG Pty Ltd (MLNG) particularly in remote areas of the mining and transport sectors.

MLNG

MLNG is a bespoke shareholder and management team with global experience extending across the complete LNG supply chain; specialising in the mining, energy and resources industries and with the skills and experience to deliver the projects safely and reliably. It is a private Australian owned company dedicated to ensuring that the Australian economy makes better use of its own natural gas resources, through providing LNG as a replacement fuel for imported diesel in the domestic market.

Since 2010 in particular, shareholders and the management team have researched markets, international developments and assembled luminaries of industry to provide a commercially viable alternative and option path for Australia’s fuel supply future, one that makes better use and distribution of LNG as a source fuel.

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10 ibid
**MLNG BOARD MEMBERS**

**Dr Peter Wentworth OBE – Chairman**
Chairman of Mobile LNG Australia, Chairman of Weir Minerals Malaysia and a Senior Partner in CEO Solutions, Chairman of the British Malaysian Chamber of Commerce for 5 years.
Over 35 years with British Petroleum Plc (BP), including 10 years as CEO of BP’s operations in Malaysia, Thailand and Philippines with a track record of success in the oil & gas industry.
Recognised by both the British Government (Order of the British Empire: OBE) and the Malaysian Government (Datuksip).

**Mr Andrew White – Co-Founder and Managing Director**
Over 35 years’ experience in the Heavy Engineering and Construction industry including LNG, Oil and Gas, Petrochemical, Minerals Processing, Materials Handling, Power, Utilities and Infrastructure sectors across five continents.
6 years as Managing Director of Modern Industries Holdings a private mid-tier construction and maintenance group with operations in Australia and SE Asia. The operations were recently sold to a major European organisation.
Co-Founder & Managing Director of Mobile LNG Pty Ltd, established to promote the “Virtual Gas Pipeline”, a supply chain solution enabling the use of LNG for power generation and fuel for mine haul vehicles and road, rail and marine transport generally in remote areas as a clean, safe alternative to diesel.

**Mr Doug Walker – Director of MLNG**
Over 35 years in industries of electrical mechanics and power generation, with the Herald Sun, PNG Electricity utility, ELCOM and CRA.
Responsible for developing over 55 gas and diesel fuelled power stations and related energy infrastructure projects primarily within the Oil & Gas and mining/resources sector throughout Australia, the Asia Pacific rim and in West Africa.
Founder of Statwest power, which he developed and sold to Wesfarmers Energy.
Co-founder, Chairman & Managing Director of Zenith Energy Pty Ltd and Zenith Pacific Pty Ltd.

**Mr Steve Skea – Co-Founder and Director**
Over 40 years’ experience in corporate management and business development focused on the industrial manufacturing, construction and maintenance services in the resources sector.
Responsible for projects in the North Sea, Europe, The Middle East and North Africa and South Africa, where he has been responsible for running workforces in excess of 1,800 people.
International director of RJ Southey for 5 years, a South African owned business he extended to Singapore and Malaysia, servicing the Oil, gas and LNG industry and projects in the region.

**ADVISORS TO THE BOARD**

**Mr Anthony (Tony) T. Considine**
Board Advisor, Strategy
Distinguished global career with BP in leading roles including Executive Vice President for TNK-BP JV based in Moscow (25,000 people, US$5b EBITDA). CEO for North West Infrastructure based in Perth.
Extensive experience in developing third party relationships, negotiation of JV’s, the development and execution of strategy, the delivery of large scale M&A transactions along with the management of reputational issues with external stakeholders and in managing international post-merger integration and leading the implementation of corporate governance frameworks in complex environments.

**Mr Christopher French**
Board Advisor, Technical Operations
Leading gas industry executive with over 35 years’ experience in design and management of process and operations of gas production facilities.
In 1987 he joined Wesfarmers LPG as part of the Project Team responsible for construction and commissioning of the LPG Extraction and Fractionation Plant at Kwinana, designed to process 320 Terajoules per day of natural gas, producing 150,000 tonnes per year of LPG.
Former General Manager of Wesfarmers LPG Pty Ltd responsible for all aspects of operations, maintenance and management of the Kwinana LPG plant.
Served as Director of Wesfarmers LPG Pty Ltd and Wesfarmers Kleenheat Gas

**Mr Stephen Critchison**
Board Advisor, Commercial
An accounting professional with over 20 years’ experience in the downstream domestic gas industry, mainly within the Kleenheat Gas business in the areas of Finance & Administration, Operations & Logistics, Sales, and Business Development.
Formerly the Accounting Manager for the Wesfarmers Energy division, with day to day responsibility for the production of financial and management accounts, tax returns and audits for the various business units within the division.
From 2010 to 2013 Steven worked for Clean Energy Fuels Australia which provides advisory services on LNG, CNG and LPG to mining and industrial companies, gas suppliers and government organisations, as well as operating its own domestic Victorian based LNG distribution business.
The market substitution of LNG for diesel in MLNG’s business model will be made possible by the use of proven leading edge technologies. These technologies will permit Australian companies and industries, particularly those in regional areas, to have access to Australia’s own natural gas as a clean, reliable and economically viable replacement fuel and to avoid further dependence on expensive imported oil products. Diesel fuels have very high costs both financially and to the environment through their greenhouse gas emissions and threats to the water table and soils. LNG is a superior, more affordable and cleaner fuel.

MLNG is planning to build a $1 billion Virtual Gas Pipeline across four LNG hubs in Australia. Each hub will facilitate LNG production, distribution, refuelling and regasification facilities. Each hub will be capable of producing approximately 400 tonnes per day of LNG from pipeline gas. To ensure the widest most flexible and expedient distribution of LNG to the community and industries, MLNG will employ its signature “Virtual Gas Pipeline” approach which features world leading technology and a multi modal distribution system (capable of deliveries via road, rail, or sea). This will ensure the provision of LNG to the widest environs possible and avert the need, time delays and capital costs to construct physical pipeline systems and cause potential disruptions to flora and fauna.

Analysis and projections have shown that by producing LNG in the manner proposed and by supplying LNG in the virtual pipelines model, collectively, these four hubs will achieve the following economic benefits:

- Deliver annual fuel costs savings of $330 million to the community; ¹¹
- Saving the need to import around $636 million per annum of diesel fuel; ¹²
- Increasing Australia’s export potential by reducing production costs;
- Employ approximately 1500 people¹³ in regional areas in the construction phase; and approximately 4000 direct and indirect jobs¹⁴ in ongoing operations
- Eliminate approximately 500,000 tonnes of CO₂ emissions per annum; ¹⁵
- Provide the infrastructure and platform for the Transport Industry [heavy haulage trucks, rail, and marine] and Mining Industry [mine haulage vehicles, remote power generation] to move to the economic and environmental benefits of using Australia’s own fuel.

The MLNG model places first focus on the electricity generation and transport sector needs of remote regional centres generating Australia’s export wealth, and upon the global trend for LNG to replace diesel as the cleanest, cheapest and safest option for fuelling heavy duty road, rail and marine transport.

In April 2014, the Australian Government recognised these MLNG projects as being of national significance for the contribution they will make to Australia’s competitiveness, productivity and growth.

The Deputy Prime Minister and Minister for Infrastructure and Regional Development, granted the projects “Major Project Facilitation (MPF)” status and wrote to all “relevant commonwealth ministerial colleagues, the premiers of South Australia and western Australia and the Chief Minister of the Northern Territory, informing them of my decision to grant MPF status to your project and seeking their active cooperation and assistance for the project within their respective areas of portfolio responsibilities”.

Your decision to participate with MLNG in the delivery of LNG as a replacement to diesel use in the markets identified is also invited, and will be remembered as the day you facilitated…

*Australia’s transition to a new clean sustainable and secure energy future, by building the infrastructure and opportunities today.*

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¹² MLNG modelling Fact Sheet Dec 2013 – replacing 823,500 kl of diesel p.a. and diesel is $0.77 litre
¹³ 1200 during construction (15-20 months), 260 permanent jobs during the operational phase
¹⁴ As determined by using Guidelines for estimating employment supported by the actions, programs and policies of the NSW Government Office Of Financial Management Policy & Guidelines Paper November 2009 tpp09-7
¹⁵ MLNG modelling based on Fact Sheet Dec 2013 LNG CO₂ emissions 27% less than Diesel p.a.
AUSTRALIA’S LNG PRODUCTION

Natural Gas

The emergence of natural gas as the preferred fuel in the Australian economy reflects the confluence of world market demands for cleaner energy, new resource discoveries, large export opportunities, and ongoing natural gas project expansions and, conversely, a less buoyant domestic oil output. The International Energy Agency in the World Energy Outlook to 2035 is referring to the current era for the world as being “the Golden Age of Gas”.16

Natural gas is now universally viewed as an environmentally efficient and preferred energy source with lower greenhouse gas and related emissions than either coal or oil. These attributes provide a considerable advantage in the promotion of Australia’s natural gas use in both the export markets and in the domestic market in the context of a cost effective, reliable, clean energy future and as a catalyst for infrastructure reform. This market opportunity has been created by the widening gap between the global price of diesel/oil fuels and natural gas and by the magnitude of Australia’s own natural gas resources.

Compared to other fuel sources, gas is more abundant, more environmentally friendly, more efficient, more economical, and more affordable.

Australia is fortunate to have abundant resources of natural gas, estimated at over 900,540 petajoules.17 This supply is continually growing as new technology allows companies to produce more from their large reserves.

To put the magnitude of the current resources in perspective:

- 900,540 petajoules of gas is enough to power a city of 1 million people for approximately 16,000 years.18

Australia has more than enough gas reserves to meet both its domestic needs and export market requirements.

The significant role of gas in the Australian economy is not always obvious:

- It is a major source of energy, providing 23 per cent of all final energy consumption in the Australian economy;
- 33 per cent of the gas used in Australia is used for supplying electricity;
- Another sixth of the gas is used in other energy transformations where gas is used to refine other fuels, such as coal or petroleum;
- In the Australian economy, for every gigajoule of gas consumed directly by an end-user, an equivalent amount of gas has been used to help produce some other type of energy for Australia.19

Our vast natural gas resources place Australia in an enviable position to maintain long-term, cleaner energy security domestically and internationally. Natural gas makes it possible for Australia to meet the world’s growing energy needs over the coming decades at the lowest possible cost while domestically enhancing its own economic performance from export revenue and incorporating a strategy to curb emissions and to progress economic development and reforms in regional Australia.

Natural gas is set to increase in importance over the coming decades as it becomes more easily and economically transported. Its abundance and low carbon characteristics make it an increasingly more attractive fuel.

Domestic use

Australia’s gas system has evolved to support the LNG export trade and then through extensive transmission pipelines its domestic market needs, supplying the geographically diverse Eastern, Western and Northern Markets. Through this network natural gas consumption in 2011–12 accounted for around 23 per cent of total primary energy consumption in Australia. The manufacturing sector was Australia’s largest consumer of gas, followed by the electricity generation, mining, residential and commercial sectors. Gas is used widely in the manufacturing sector particularly in the metal product industries (mainly smelting and refining activities) and in the chemical industry (fertilizers and plastics) where it is a major energy source and production input.

16 IEA World Energy Outlook to 2035
17 BREE Gas Market Report 2012
19 Grattan Institute 2013 Getting gas right: Australia’s energy challenge
The gas industry’s economic linkages are broader and deeper than commonly appreciated. Of total industry value added, about $4.3 billion is generated by supplying gas across the economy.20

Resources

Australia’s export gas supply is currently served by offshore gas fields (the Carnarvon basin off WA and the Bonaparte basin off the NT—in the Joint Petroleum Development Area with East Timor). LNG facilities at both of these fields are located onshore and receive gas via pipelines connected to offshore platforms. These pipelines are integrated into the LNG process, so are owned and operated by the companies responsible for both the production and export of gas representing 24.3 million tonnes of LNG export capacity.21

Australia’s economic demonstrated resources (EDR) of gas comprise around 2.92 trillion cubic metres of conventional gas and around 0.93 trillion cubic metres of gas from coal seams. There are also considerable sub-economic, inferred and identified resources of up to 17.9 trillion cubic metres22 spread around Australia. Australia’s gas sector is embarking on a sequence of major new investments — the largest in the history of the industry. Substantial additions to production capacity are set to propel Australia towards becoming the world’s second largest exporter of liquefied natural gas. Of the 14 gas liquefaction plants under construction or firmly committed around the world, eight are in Australia. The projects under construction represent an additional 62 million tonnes of export capacity a year by 2018–19 and are expected to increase exports to 79 million tonnes.23

Export

Australia is currently the third largest LNG exporter in the world, after Qatar and Indonesia. Exports of LNG have increased strongly in recent years—by around eight per cent a year over the past five years as new LNG projects (Darwin and Pluto) have been commissioned in response to growing international demand. In 2012, around 79 per cent of Australia’s LNG exports were sold to Japan and 16 per cent to China.24

With the upcoming completion of LNG projects in WA, Queensland and the Northern Territory, it is estimated that Australia’s total export capacity will grow to 87.2 Mtpa by 2017, making it the largest international LNG exporter and responsible for 23.9 per cent of international LNG export capacity before 2019-20.25 More than half of Australia’s natural gas production is exported in the form of liquefied natural gas (LNG); around 19 million tonnes (worth $13.7 billion) in 2012–13.26 LNG export values are forecast to continue growing in 2013–14 to $16.1 billion, and continuing to increase due to larger volumes, reaching $54 billion (in real terms) in 2018–19.27

Outlook

- The advantages of gas as a fuel, including its relative cost competitiveness, has seen growth in total global gas consumption increase more than four fold over the past 50 years.28
- Abundant gas resources have attracted investment into Australia that has seen Australia develop into a globally significant LNG exporter as well as developing its domestic markets to supply industry and households.
- Globally, there will be a massive increase in demand for energy and the International Energy Agency projects a 50 per cent increase in energy demand by 2030.29 Towards addressing this, currently more than two-thirds of the global investment in LNG liquefaction is occurring in Australia, 30 and Australia is to become the largest exporter of LNG by 2019.
- To make maximum utilisation of its gas resources, Australia must find ways to improve its infrastructure to have LNG more widely available to benefit its domestic market.
- Current limitations on access to gas being defined by the existing pipeline network can readily be overcome if “virtual gas pipeline” techniques are used to avail the gas resource more widely to the benefit of remote power generation and for the transport and mining industries.

20 Deloitte Access Economics Advancing Australia Harnessing our comparative energy advantage June 2012
21 BREE Gas Market Report October 2013
22 BREE and GA Australian Gas Resource Assessment 20122012
23 BREE March 2014 Energy Assessment Quarterly Report
24 BREE Australia’s Gas Market Report October 2013
26 BREE Australia’s Gas Market Report October 2013
27 ibid
28 BREE Gas Market Report October 2013 citing MIT 2011, p. 4
30 ibid
AUSTRALIA’S OIL PRODUCTION

OVERVIEW

The Australian economy, particularly the transport sector, is increasingly dependent on oil imports to fill the rapidly increasing gap between domestic consumption and its own production capabilities. This demand in the Australian economy for fuels and energy will continue to escalate as global growth experiences the emergence of China and India. However, towards addressing fuel supply demand, both Australia’s refining capacity and the level of indigenous oil used in production have been in steady decline since 2000. Less than 60 per cent of oil-petroleum products are now refined in Australia, less than 15 per cent of source fuels are indigenous supply and, to the concerns of some transport bodies, over 90 per cent of domestic transport liquid fuels are sourced from imported oil or refined oil products.\footnote{NRMA Australia’s Liquid Fuel Security Report Part 1: Sept 2013}

From a peak production position in 1999-2000, Australia’s liquid fuel refining capability has been steadily shrinking and unable to keep up with the growing demands, and consequently, the domestic market has been increasingly reliant upon importing fuel from Singapore, Japan, South Korea et al. Comparative to these Asian refineries, Australian refineries are small, old, less sophisticated, have higher production costs\footnote{Report on Australia’s oil refinery industry - House of Representatives Standing Committee on Economics January 2013} and cannot generate the economies of scale necessary in their small mature market.

Conversely, Asian refineries in comparison to those in Australia, are newer, larger, have lower production costs, and have the latest technology and higher production capabilities. With this advantage in the region, they are seizing the opportunities Australia presents by producing volumes suitable for exporting their surplus capacity into the Australian market. The market outlook for Australian refineries is pessimistic and indicates domestic demand will continue to increase beyond the capabilities of the domestic refineries, necessitating an even higher level of fuel imports than in the past, as Australia’s aging refineries close or are unable to keep pace with the escalating demand.

Indicative of this has been the recent closure of refinery capabilities in Clyde and Kurnell, where both facilities were closed as refineries to become importers of overseas product\footnote{www.bp.com/en_au/australia.html}. In recent days BP has announced they will also be closing the Bulwer Island refinery in Queensland in 2015, further diminishing Australia’s refinery capacity.\footnote{ibid}

Coupled with their declining capacity, Australian refineries are experiencing challenges with their aging technical capability. This leaves them unable to respond to the high fuel demand trends for supplying both diesel (sales increasing more than four times over the past six years) as well as high octane gasoline, and having a consequence for use and availability of naphtha and gasoline blending components. Ongoing changes with improved vehicle efficiencies and better fuel consumption are also changing the dynamics of refinery workloads and their future outlook.\footnote{NRMA Australia’s Liquid Fuel Security Report Part 2: Feb 2014}

This will continue to place higher pressure on Australian refineries and force increased imports of premium unleaded petrol (PULP) or high octane components. The level of import of these fuels saw the cost of fuel imports exceed $40.14 billion in the last year.\footnote{BREE 2014 Petroleum Imports, Australia Table 4BB}

Peak transport agencies have expressed concern at the high level of petroleum imports and the relative lack of fuel security Australia holds.\footnote{NRMA Australia’s Liquid Fuel Security Report Part 2: Feb 2014} They are lobbying for a government strategy where Australia:

- holds more reserves of refined products;
- engages in mode shifting, such as transporting freight by rail rather than road;
- supports increased use of public transport;
- supports the improved efficiency of vehicles, including expansion in the number and use of different fuel vehicles;
- gives particular impetus to alternative sources of liquid fuels such as natural gas.

32 Report on Australia’s oil refinery industry - House of Representatives Standing Committee on Economics January 2013  
34 ibid  
36 BREE 2014 Petroleum Imports, Australia Table 4BB  
Australian Government Policy towards intervening in this trend has been clearly stated in both the 2011 National Energy Security Assessment and the 2014 Energy White Paper Issues Paper. Recognising that transport represents about 38 per cent of national energy usage\(^{38}\) and being cognisant of the local fuel refinery trends, the Australian Government Policy was reiterated as being one pursuing change away from this continued reliance, stating “Changes in energy sources offer the potential to increase the productivity of this energy use and reduce reliance on petroleum-based liquid fuels”\(^{39}\), where the Australian Government have made two clear directions:

- It considers policy supporting the domestic refineries would be marginal and at very high cost to the tax payer and fuel consumers;
- Its preferred strategy was to encourage the efficient use of petroleum-based liquid fuels including fuel quality and fuel economy disclosure, and to promote alternate fuels for the transport sector, in particular the use of natural gas, stating, “Both compressed natural gas (CNG) and LNG present options for heavy vehicle use”.\(^{40}\)

39 2014 Energy White Paper Issues Paper
ON-SHORE LNG PROFILE INTERNATIONALLY

“Australia will need to improve its general understanding of the benefits of natural gas and how to better utilise it itself, because natural gas will remain part of the long term energy mix of the world for centuries to come” IGU President, Mr Jerome Ferrier

Contrast

Although Australia holds vast resources of natural gas and is forecast to be the world’s leading exporter of LNG by 2019 - 2020, there are few applications of utilising the attributes of LNG as a diesel fuel replacement in its own domestic economy, beyond simple power station generation and pipeline supplied gas to industry or domestic use.

In other countries, different drivers and sometimes the participation of governments are definitive in their nation’s approach to using LNG to displace diesel use and leverage the benefits into different markets of their economy.

- Europe: the need for a cleaner environment and the role natural gas could play as a transportation fuel to reduce emission levels on land and sea, particularly in high density areas, and areas now required to meet stringent environmental compliances set by Legislative targets and goals.
- North America: initially, fuel security was the driving issue. Reliable supply and stable pricing emerged as important, where increased use of natural gas in the domestic economy reduced the dependence on oil imported from the Middle East. From there it progressed into the transport sector and, in particular heavy vehicle use and the significant savings that could be generated for the entire economy.
- South East Asia, China and India: the need for sustainability and to affordably contain growth costs and emission levels was a prime driver in order to avoid the rapid rise of pollution levels coming from urbanisation, industrialisation and growth.

With the attributes and possibilities natural gas/LNG provides as a source fuel, coupled with the respective needs of different sectors of the global community, several market segments and opportunities have emerged for the further use of natural gas for national benefits. These markets being:

- Electricity generation;
- Transport [Road, rail and sea], and ;
- Infrastructure [micro plants, refuelling stations].

These are market segments Australia should also consider for its wealth and future wellbeing. Examples of the penetration into each market niche follow.

Electricity Generation

The International Energy Agency predicts fuels for power generation will account for 57 per cent of the growth in primary energy consumption from 2012 to 2035 and, with the power sector being the one place where all the fuels compete, for LNG and natural gas to be the dominating fuel source due to their advantages of affordability, ease of distribution, increased efficiency and environmental benefits.42

- Japan: LNG use for electricity generation has been the backbone of Japan’s electricity grid since the incidents at the ill-fated Fukushima Dai-ichi Nuclear Power Station. LNG’s clean efficient production of electricity resolved energy shortfall problems and economically and environmentally replaced long standing power plant infrastructure.
- Norway: Along the coast of Norway there are 30 LNG receiving terminals to accept and process LNG shipped to Norway for their power production needs. With main electricity production centres at Karmoy, Kollsnes and Tanager.43 This expediency assists with the cost effectiveness of supply along a rough and extensive coastline of individual centres. This network demonstrates the elements and flexibility of the LNG system featuring receiving ports, micro LNG plants, and a network of distribution of LNG inland to smaller users via truck, road or ferry, averting the need for physical pipeline structures.

41 Department of Industry Energy White Paper Issues Paper 2014
43 Baltic Ports Organisation Future environmental regulations for shipping in the Baltic Sea area 2011
Central and South America: In many power markets in South America, Central America and the Caribbean region, fuel oil was the primary fuel source for base-load or mid-merit power generation. As fuel prices increased and environmental policies have evolved to promote cleaner power generation alternatives, power stations have sought to use natural gas as an alternative source of fuel. The isolation and economics of the power supply needs of Hawaii for example have been well served by the versatility and clean efficiency of LNG.

Singapore: 80 per cent of electricity generation is now provided by LNG deliveries from imports. This has avoided large scale land based production facilities for diesel storage and processing and met new stringent environmental needs for tighter emissions controls in high density areas.

China and India: LNG is the fuel in demand for energy needs in the emerging economies of China and India where the use of natural gas for their vast energy requirements is the best protection they can have for their air quality, waterways and environment. Here the versatility of the size and capacity of LNG power stations is evident with new stations ranging right down to micro LNG supply plants for individual development projects.

Remote Communities and First Nation residents

In Canada, the ability to transport LNG to remote power station needs is fulfilling the electricity generation requirements of several remote communities and First Nation residents.

Transport

Until 5 years ago, LPG dominated in the sector of gaseous alternatives to diesel and gasoline, and accounted for 60 per cent of the oil fuel alternatives. By the end of 2010, natural gas had emerged as the dominant fuel preference and in the last four years the number of natural gas vehicles (NGVs) has doubled to 17.73 million vehicles worldwide. Just in the last three years, the number of NGVs worldwide grew 21 per cent and the number of NGVs in the world fleet is forecast to reach 60 million by 2020. The top 10 NGV nations hold 75 per cent of the world’s NGV fleet numbers at present. The Department of Energy advises there are 86 different vehicle model types now using natural gas.

- USA: GE industries advise there are more than 250,000 NGVs in the USA with increasing numbers coming on the market in recent years.
- Pakistan: Now leads the world with 2.85 million NGVs and a large governmental program supporting the development in the field.
- China: There are in total 600,000 NGVs and 2,500 natural gas refuelling stations in China. These figures are increasing rapidly each year, encouraged by more than 60 NGV car makers that have developed in China.
- India: The government has made a list of 201 cities where natural gas facilities would be installed in the coming years with growing concerns over air quality from diesel fuel emissions. Due to this support India now takes 5th place in the world with 1.1 million NGVs.
- Europe: EU policy of “The Blue Corridor”, and “Transport 2050” policy require half of the “conventionally fuelled” cars in urban transport to be phased out of cities by 2030 and to achieve essentially CO2-free movement of goods in major urban centres by 2030. This has been a catalyst for growth in LNG powered trucks and NGVs in general.

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44, 50, 51, 52 US Energy Information Administration Profile Analysis 2013
45 ibid
46 ibid
47 ibid
48 FC Business Intelligence LNG for High Horsepower applications in Canada 2014
49 Petroleum Economist, World LPG Association, IGU, GVR, NGVRUS
51 http://www.iangv.org/NGV Global Analysis
52 ibid
53 ibid
54 USA Department of Energy, Alternative Fuels Data Centre
56 ibid.
57 ibid
Heavy duty Vehicles

"Natural gas is revolutionizing the fueling of long-haul trucking and other high-horsepower applications. With massive amounts of domestic reserves, America is facing a generational opportunity to move to a more secure, less expensive and cleaner-burning fuel."  John Shepherd, Managing Director - GE Energy Financial Services

Demand for LNG as a transportation fuel in heavy duty applications is the rapidly growing sector of the market. LNG offers several distinct advantages for transportation, and in particular for high horsepower engine applications. E.g. Increased range, rapid and economic refilling of fuel tanks, new pressurising - combustion technology.

National policies in the US and across Europe are facilitating the rise of LNG powered heavy duty vehicles [HDVs] to seize advantage of the efficiency and price advantage of LNG use as a diesel fuel replacement and the financial and environmental benefits this will deliver. Analysts advise “Nearly 1 million natural gas trucks and buses will be sold worldwide from 2012 to 2019”58 due to environmental policies and technological advances in LNG use for HDV and of course, LNG fuel station infrastructures.

In North America, orders for new heavy duty LNG powered vehicles are currently 106,000 a year and already 127,000 ordered for 201669 due to the attractive operating economics of LNG powered HDV - (up to 50 per cent savings in the U.S.) as an alternative to diesel. Seven different brands are available in the U.S. market. President Obama’s policies to encourage local gas use and HDV conversions by way of new tax incentives are driving the U.S. new truck market into sales records. Currently more than 7,500 industry trucks have switched from diesel to natural gas/ LNG in America.60. Vehicle conversions are a booming market and is accelerating the need for LNG supplies along road routes. Waste Management of North America has 3,000 LNG trucks and has announced plans to convert its remaining 15,000 trucks to LNG in “anticipation of saving about 3.5 million metric tons of carbon dioxide emissions and saving 350 million gallons of fuel by 2020”.61

Manufacturers Caterpillar, Wartsila and Westport are offering high performance heavy duty LNG power drives for earth moving and mining equipment with stated benefit savings of 30 per cent over diesel equivalents.

Westport confirm they will be pursuing opportunities in the mining, rail and marine sectors based upon the new opportunities LNG presents over the existing diesel consumption in those sectors.

An important element in the rapid take-up of the LNG technology in both Europe and the USA has been the parallel development of a refuelling infrastructure specialising in natural gas. The core natural-gas infrastructure in the U.S. consists of a 305,000 mile network strip featuring more than 11,000 delivery points, 5,000 receipt points and 1,400 interconnection points.62

About 30,000 natural-gas fueling stations will be operating worldwide by 2020, highlighting the increasing potential for natural gas as a transportation fuel.63

In Europe, North America, Pakistan and China, another infrastructure market emerging is the establishment of Micro LNG plants along main transport lines. These micro plants produce in the range of 50,000 to 150,000 tonnes per year of LNG in a configuration that uses natural gas extracted from a local pipeline network which is then converted to LNG with specific attention to final end user needs and subsequent technology selection.

Rail

“This could be a transformation event for our railroad and rank right up there with the industry’s historic transition away from steam engines last century.”  Matt Rose CEO BNSF

58 PIKE Research – Navigant research into national economies.
59 Nicholas Sonntag President, Westport Europe and Asia nsonntag@westport.com
60 January 2014 estimates based on data from the industry and the Natural Gas Vehicles for America
61 Based on an average annual reduction of 8,000 gallons of diesel and 22 metric tons of greenhouse gases achieved for each truck converted to date US Department of Energy eere.energy.gov/cleanfuels/waste_management.html
62 Navigant research into national eco policies to encourage local gas use and HGV conversions by way of new tax incentives are driving the US new truck market into sales records. Currently more than 7,500 industry trucks have switched from diesel to natural gas/ LNG in America.
LNG technologies and cost advantages are now penetrating the rail industry which is a large consumer of imported diesel fuels.

USA: 24,000 locomotives consume approximately 4 billion gallons of diesel per year.64 The opportunity for national savings is huge and U.S. and global opportunities are being progressed by Locomotive co-manufactures Caterpillar, Komatsu, Cummins and GE. BNSF Railway Co. plans this year to test using LNG to power its locomotives. This is very significant to the U.S. as BNSF’s diesel fuel consumption is second only to that of the US navy.

Canada: Canadian National Railway is currently testing LNG fuelled locomotives in service in northern Alberta. With fuel costs representing 34 per cent of operating costs, the opportunities LNG provides is accelerating efforts to develop the appropriate technologies for each rail need [passenger, load, shunting].

**Marine**

Approximately 90 per cent of global trade is delivered via shipping and to fuel the global shipping fleet, marine diesel and fuel oil are heavily used, with expenses for fuel purchases of diesel tripling in value between 2001 and 2011.

Aware of these opportunities for LNG use to alleviate costs and environmental concerns in the marine transport sector, rival technologies are being developed by manufactures Wartsila, Rolls-Royce, and MAN.

Momentum to adopting LNG use has also come from the European Commission, citing that diesel fuels won’t be able to meet the new standards; “Sulphur dioxide emissions have to be cut by as much as 90 percent and particle emissions by 80 percent before January 2015.” Even more stringent requirements are now enforced on “sensitive areas” such as the English Channel, the North Sea and the Baltic Sea. This is the new standard under the MARPOL65 legislations.

Setting aside the massive gains through fuel savings, environmentally the 15 biggest ships produce more emissions than 760 million cars, and this has emerged as a key focus.

Wartsila, the world’s biggest engine maker, expects 10 per cent of ships calling on North and Baltic Sea ports to be running on LNG by 2015 - a tenfold increase in vessels currently using the fuel.66 While the marine sector uses only 1/5th the amount of fuel used by heavy duty vehicles, a single cargo ship uses approximately the same amount of energy as 100 long-haul trailer-truck combos.

The greatest adoption of LNG in 2013, both planned and delivered, was in the ferry sector. There will be around 50 LNG fuelled vessels in service by the end of 2015 covering a range of sizes and duties, and, the number will double every two years thereafter for the next ten years.67

In January 2014 announcements were made from U.S. companies confirming orders for 42 new LNG vessels (17 ferries, 2 tankers and bulk carriers, 12 offshore service vessels, 6 container vessels, and 1 articulated tug barge). Additionally, orders have been placed for 12 retrofits to convert existing vessels to LNG use.

In the scope of LNG opportunities, the needs of the marine industry parallels that of the road transport industry in the need for LNG fueling and refuelling infrastructures. The infrastructure for LNG has been ramped up to meet the demand for these ships. 29 countries around the world including Japan, the United States, South Korea, the United Kingdom, and Spain are importing LNG for marine use and distribution. Port authorities in Rotterdam in the Netherlands and Antwerp in Belgium are considering break bulk LNG terminals that could bunker small ships or Rhine barges using supplies from adjacent large import terminals.

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64 2012 Chart Industries Chart LNG - USA
65 (MARPOL-short for "marine pollution")
67 www.dnvgl.com
ADVANTAGES OF REPLACING DIESEL WITH LNG - ECONOMICS

The economics of replacing diesel fuel use with LNG and natural gas in industry, transport and power generation scenarios has been examined in a multitude of reports performed in many countries and in many variable circumstances.

A literature search of studies reveals a common consensus finding of each report concluding that LNG use represents a better financial decision than continuing with diesel fuel. This is particularly more so in the Australian economy where Australia’s own LNG would be used to replace imported diesel fuel providing a double advantage to the economy.

Effectively the financial and operating advantage of using LNG as a source fuel has four waves of financial benefit:

1. It is a cheaper source fuel and variously 25 to 40 per cent cheaper than its diesel equivalent in different studies and scenarios;
2. It is more energy efficient and provides benefits from reduced use of fuel loads to achieve the same work outputs;
3. It is a cleaner, more efficient fuel with 30 per cent less carbon emissions and no particulate emissions providing longer engine life and longer intervals between service needs;
4. It provides a cleaner work environment and this provides commercial OH&S advantages with better air quality, visibility, cleanliness, and noise reduction.

In the following cases, no financial consideration has yet been given to the additional advantages and benefits involved for the environmental, the community and the national economy. In all instances the trials, tests and results conclude that there are sound financial gains to be obtained by converting operations away from diesel use and utilizing the more efficient, cleaner and less costly LNG as a preferred fuel source.

Case Studies

Example 1: Shell Australia’s website, reports for Heavy Duty Vehicles ongoing savings at 22 per cent p.a.
The example of the decision by the government of Weld County, Colorado to convert its fleet of vehicles over to LNG use is cited.

LNG use was realizing a 22 per cent reduction in fuel costs, or $25,000 a year, in fuel savings per truck. [shell.com.au] 68

Example 2: LNG use in Power Stations, ongoing operational savings of 25 to 40 per cent p.a.
There is significant financial advantage in using LNG for power station operations. LNG has a higher fuel efficiency, cleaner performance, and is significantly less expensive as a source fuel.

Six sample reports shown in the table below reveal savings of between 22 to 41 percent.

<table>
<thead>
<tr>
<th>Report Samples:</th>
<th>Reported Savings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas used to replace previous power generation source</td>
<td>Post production costs savings as % of equivalent per changeover cost</td>
</tr>
<tr>
<td>Canada¹</td>
<td>41%</td>
</tr>
<tr>
<td>US Department of Energy, USA²</td>
<td>39%</td>
</tr>
<tr>
<td>Energy Information Agency, USA³</td>
<td>35%</td>
</tr>
<tr>
<td>Indonesia⁴</td>
<td>5%</td>
</tr>
<tr>
<td>South America⁵</td>
<td>33%</td>
</tr>
<tr>
<td>UK⁶</td>
<td>22%</td>
</tr>
</tbody>
</table>

Example 3: Trucks, B Doubles operating in Victoria, as part of the green trucks program, fuel savings of 45 per cent over diesel equivalent.
NSW government testing of B double trucks performing high rotation in line haul operations in regional Victoria, as part of the “Green Trucks” evaluation program. [rms.gov.au]

Example 4: Vehicle trials Bus Line Operators 35 to 45 percent reduction in costs.
NGV America trials and testing of various bus lines operating the US strip.

Significantly the fuel savings of 45 per cent were also accompanied by the same level of reduction in greenhouse gas emissions and a 90 percent reduction in noise levels. [ngvamerica.org]

Example 5: Heavy duty drilling operations, Texas reported savings of 50 percent in fuel and operating costs from LNG use.
Apache drilling evaluated the use of LNG as a replacement fuel to diesel on its drilling rig range from 1,500 to 2,000 horsepower units.

Outcomes were all consistent with high levels of savings and reduced noise on all rigs, savings in fuel of an average of 50 percent [promethienergy.com]

Example 6: Ferry operations Washington achieving 40 per cent reduction in operating costs.
Washington state department of Transport 6 ferry operations converted to LNG use. [leg.wa.gov]

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Example 7: Canadian Heavy Duty Vehicles and Marine use of LNG, ongoing operational savings of 30 to 35 per cent.

This report was conducted for the Department of National Resources of financial benefits that could be derived from the use of LNG in Trucking and Shipping. In this study the modelling and analysis also applies the operational cost savings back to paying off the capital cost purchase of equipment, so as to reinforce the economics of the choice and the relative size of the operating costs derived.69

The Mining Industry

One of the nominated target sectors to benefit from having access to using LNG as a replacement fuel to diesel is the mining sector. To appreciate the magnitude of benefits on offer to them and to the Australian export sector, following is an analysis of a Western Australian iron ore mining operation producing 150 million tons per annum.

Essentially, operational savings of over 30 per cent would be achieved by this mining operation over their current costs incurred through the use of diesel fuel. This can be achieved through applying MLNG’s delivery systems for LNG supply via a LNG production facility “hub”, and distribution through their organizational needs using the flexibility of MLNG’s virtual gas pipeline approach. Power generation for their use, Heavy Duty mobile Plant and Equipment consumption, and Transportation costs have all been considered.

Micro Economic Benefits generated by MLNG Projects

Following is a synopsis of the financial and economic benefits and savings the Mobile LNG Virtual gas pipeline projects and LNG production hubs will deliver to the Australian economy and, more particularly, to the environs of the hubs and the industries they serve.

PROJECT IMPLEMENTATION BENEFITS

1. CONSTRUCTION OF LNG PLANT AND DISTRIBUTION CENTRES:
   • The programmed capital expenditure for each hub is $250 million. The four hubs accordingly will require expenditure of $1 billion with 60 per cent of componentry and technology being sourced locally;
   • The construction program is over 30 months.

2. WAGES AND EMPLOYMENT CREATION:
   • During the construction phase approximately 1200 positions will be directly employed;
   • Post Construction the Administration Teams will total 300 positions;
   • At various stages throughout the project the wages total $90 million p.a. before standardizing around $30 million p.a.;
   • In addition, the scope of the project is projected to generate over 2,000 positions locally in service and support roles.

ONGOING ANNUAL BENEFITS TO THE ECONOMY

3. FUEL COST SAVINGS THROUGH USE OF LNG REPLACING DIESEL:
   • The use of the LNG facilitated through the virtual gas pipeline distribution to consumers will displace approximately 2.2 million litres of diesel fuel daily;
   • The use of LNG will be between 25 to 40 per cent cheaper to the end user [depending on the current fuel subsidy or fuel rebates];
   • An annual fuel saving of approximately $330 million per year is forecast.

4. REDUCED TRANSPORT COSTS WILL BE A RESULT OF THE SIGNIFICANT FUEL SAVINGS:
   • The use of LNG will be between 25 to 40 per cent cheaper than previous use of diesel;
   • With fuel responsible for 40 per cent of trucking costs and an estimated 20 per cent of savings being returned to the consumer via price reductions, an annual saving in transportation costs of $25 million is forecast.

5. REDUCED COST OF IMPORTS DUE TO REDUCTION IN DIESEL CONSUMPTION:
   • 823,500 kilolitres of diesel will be displaced by the use of the LNG produced;
   • An annual reduction in diesel imports of $636 million is forecast.

6. CUMULATIVE BENEFIT
   • The cumulative annual benefits from the Project’s spending and savings over the first six years is predicted to be around $4.5 billion, as indicated in the following summary table and graph;

<table>
<thead>
<tr>
<th>MLNG Hub Forecasts</th>
<th>YEAR1</th>
<th>YEAR2</th>
<th>YEAR3</th>
<th>YEAR4</th>
<th>YEAR5</th>
<th>YEAR6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td>$40,000,000</td>
<td>$80,000,000</td>
<td>$100,000,000</td>
<td>$100,000,000</td>
<td>$60,000,000</td>
<td>$20,000,000</td>
</tr>
<tr>
<td>Construction Expenditure</td>
<td>$60,000,000</td>
<td>$120,000,000</td>
<td>$150,000,000</td>
<td>$150,000,000</td>
<td>$90,000,000</td>
<td>$30,000,000</td>
</tr>
<tr>
<td>Direct Employees</td>
<td>$22,500,000</td>
<td>$45,000,000</td>
<td>$59,250,000</td>
<td>$65,250,000</td>
<td>$48,750,000</td>
<td>$32,250,000</td>
</tr>
<tr>
<td>Community Employment</td>
<td>$13,500,000</td>
<td>$27,000,000</td>
<td>$37,125,000</td>
<td>$40,500,000</td>
<td>$30,000,000</td>
<td>$30,000,000</td>
</tr>
<tr>
<td>Reduced Fuel Costs</td>
<td>$21,250,000</td>
<td>$41,250,000</td>
<td>$123,750,000</td>
<td>$205,250,000</td>
<td>$288,750,000</td>
<td>$288,750,000</td>
</tr>
<tr>
<td>Reduced Transport Cost</td>
<td>$3,300,000</td>
<td>$9,900,000</td>
<td>$16,500,000</td>
<td>$23,100,000</td>
<td>$23,100,000</td>
<td>$23,100,000</td>
</tr>
<tr>
<td>Reduced Import of Diesel</td>
<td>$79,500,000</td>
<td>$238,500,000</td>
<td>$397,500,000</td>
<td>$556,500,000</td>
<td>$556,500,000</td>
<td>$556,500,000</td>
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<tr>
<td><strong>TOTAL ECONOMIC BENEFIT</strong></td>
<td>$122,500,000</td>
<td>$258,500,000</td>
<td>$460,300,000</td>
<td>$724,525,000</td>
<td>$859,500,000</td>
<td>$980,975,000</td>
</tr>
<tr>
<td><strong>CUM. TOTAL</strong></td>
<td>$122,500,000</td>
<td>$381,000,000</td>
<td>$841,300,000</td>
<td>$1,565,825,000</td>
<td>$2,425,325,000</td>
<td>$3,406,300,000</td>
</tr>
</tbody>
</table>

![Annual Economic Benefits Virtual Gas Pipeline Chart](chart.png)
IMPLEMENTING CHANGE FOR THE NATIONAL INTEREST

“One of the biggest factors in bringing more jobs back is our commitment to American energy use. One of the reasons why is natural gas ... it’s the bridge fuel that can power our economy with less of the carbon pollution We are going to build fuel infrastructure and to replace oil with U.S.-produced natural gas in trucks and other transportation, and industry”

Barack Obama

MLNG is also cognizant of the significant role that making better use of natural gas can deliver in transforming the Australian economy.

We continue to conduct analysis and research of world’s best practices and to investigate associated technological advances in the production, supply and distribution of LNG and to develop ways of increasing the availability and applicability of natural gas use in the community and industry as a substitute for imported, expensive diesel fuels.

In pursuit of the optimum use of Australia’s natural gas in its own economy, presentations and extensive consultations have been held with Local, State and Federal Governments. The opportunities, the situation and the role for a whole of government approach have been presented as has the methodology MLNG can employ to facilitate change.

MLNG has put forward its researched and costed solutions model, one which will avail the benefits of LNG cost savings and associated environmental and community benefits to the widest possible spread of industry in the shortest timeline. Prior to examining the elements of the model, it is prudent to re-visit the needs case for change.

Background

Australia’s need to implement change away from its continuing dependency on diesel fuel use has been gaining momentum and has been motivated of late by:

- Australia’s need to be less reliant on imported fuels and energy for economic, trade and security reasons, (oil prices continue to escalate with unrest in the middle East and supply is dictated by countries of the OPEC block);
- The need and demand for low carbon solutions as a means towards attaining significant reductions in greenhouse gas emissions;
- The emergence of Australia’s own natural gas and LNG as the preferred fuels for the future due to significant economic and environmental advantages over the continued use of diesel fuels;
- Australia holding an abundance of natural gas resources and reserves and emerging as one of the largest producers of LNG on the world stage;
- The significant cost cycles and variations in diesel fuel prices and the ripple effects and impacts this causes throughout the economy and businesses;
- The demand by industry for low cost and more efficient alternatives to diesel;
- The continuing drive to improve and reform supply side economics in Australia to benefit both its domestic economy as well as generating new export markets through increased competitiveness;
- The planning and proposed projects in consideration in other countries that could challenge Australia’s future export trade by providing competitors the cost advantage LNG use has to offer;
- The economic, environmental and social benefits that could be delivered to regional Australia particularly to the mining and transport sectors with using natural gas as an alternative fuel;
- Technology and science studies are also revealing the serious health hazards to humans and the environment derived from using other fossil fuel sources;
- Technology increasing the flexibility and suitability of LNG use in a wider range of industries and market niches.

Until recently, one of the limiting factors in Australia was that supplying natural gas to consumers had been restricted to pipeline access routes. Any variation to existing pipeline supply routes required large upfront capital expenditure and long project lead times for pipeline planning and construction of 3 to 5 years minimum. Then, there were the added impediments of land availability and acquisition, and whether the route would endanger culturally or environmentally sensitive areas.

Implementing change without dependence on existing pipelines is now possible through the capability of MLNG’s “Virtual Gas Pipeline” approach. MLNG and its Virtual Gas Pipeline Projects will employ world’s best practice and proven leading edge technology to resolve supply and distribution issues, and to supply natural gas as LNG to remote and regional Australia making LNG more accessible to remote communities and to Australia’s mining and export sectors in these regions.
**The model**

The MLNG concept is to replace the consumption of imported diesel in the Australian economy with the cleaner more efficient and Australian sourced and owned LNG in a manner that will deliver financial, economic and environmental advantages to the regional areas of each project. The core aspects of the model are:

- The construction of LNG production facilities in the four nominated Regions in Australia where no domestic LNG supply is available, and where there will be clear and rapid benefit to industry and the communities;
- The implementation of the Virtual Gas Pipeline model (which involves integrating the production facility) for the effective and efficient distribution of LNG via a multimodal distribution system so as to distribute LNG and the benefits from its use as a fuel to client premises throughout the regions, widely and efficiently, and without the cost, delays and environmental challenges of building physical pipeline supply infrastructure;
- The use of innovation, Australian expertise and advances in technology to permit a range of solutions specifically tailored for each industry and community need in the environs of each of the project areas;

Principal components in each of the four hubs will be as follows:

**Implementation of the Model**

- $1 billion capital expenditure for the construction of four LNG hubs in Australia;
- Each hub will be providing LNG to the market in sufficient quantities daily, to substitute for what was 550,000 litres per day of diesel fuel use.

The hubs will be located in:

- Darwin [NT] - a solution to remote energy needs of Northern Australian communities and mining operations;
- Port Hedland [WA] - required for the needs of the WA mining industry which is centred in the Pilbara and Mid-West and responsible for most of Australia’s export wealth;
- Kalgoorlie [WA] - to assist the WA gold mining, agriculture and regional transport industries in particular and to make economic and supply side reforms and efficiencies to assist in gaining new export markets;
- Adelaide [SA] - required for the needs of the South Australian economy, particularly mining, export, transport and tourism industries as the gateway to export facilities.
Functions of each hub or project:

- To produce LNG at their plant and store the LNG in ISO-containers ready for distribution to customers in the region;
- Indicatively, this will be 400 tonnes of LNG per day per plant;
- The resultant LNG is then transported to the client premises where it can be used as LNG, regasified to natural gas, or converted into electricity in generators;
- The transport network can involve rail, road, or sea deliveries depending on the individual needs of each customer.

These four LNG hubs will collectively:

- Employ 1,200 people during construction (15-20 months);
- Employ 300 permanent jobs during the operational phase;
- Facilitate LNG production, distribution, refuelling and regasification for transportation, mining and power generation;
- Capable of producing approximately 1,600 tonnes per day of LNG from pipeline gas - enough to replace 2.2 million litres of diesel daily.

Savings to environment and fuel costs:

- **FUEL SAVINGS** - deliver fuel savings of between 20 to 40 per cent to the mining and export industries by using LNG to replace diesel, a cost reduction of up to $82 million/year/project in fuel use expenses. All four projects providing collectively an annual savings of $330 million over current cost;
- **ENVIRONMENTAL SAVING**; Eliminate approximately 500,000 tonnes of CO2 emissions from entering the atmosphere annually.

**Target Market Segments**

Staged Progress of delivery of benefits into Different Markets

<table>
<thead>
<tr>
<th>PHASE ONE</th>
<th>PHASE TWO</th>
<th>PHASE THREE</th>
<th>PHASE FOUR</th>
<th>PHASE FIVE</th>
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<tr>
<td>Extensive community consultations to maximize local benefits from the construction stage and in the implementation works and facilitating ongoing local benefits from the ongoing use of LNG in the region.</td>
<td>The initial work for the construction of a local LNG production facility for domestic supply.</td>
<td>Construction of the local LNG production and distribution facilities, and initial supplies to the mining and export industries.</td>
<td>In consultation with machinery manufacturers and industry users.</td>
<td>Development of conversion options for marine and port vessels to enhance the efficiencies and environmental gains achieved ensure outcomes exceed new world standards proposed Port Hedland as the latest port in Australia is the ideal choice for this. Darwin too will benefit from conversions to LNG options. Additional entry requirements. Development of agricultural machinery conversions and options.</td>
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<td>Securing Government and agency support at all levels of Government.</td>
<td>Assessing available natural gas supplies [targeted to produce LNG locally at each market segment].</td>
<td>Refining client delivery needs and capacities.</td>
<td>In consultation with the machinery manufacturers and the Mine users.</td>
<td>In consultation with marine and port vessels.</td>
</tr>
<tr>
<td>Securing State Government contributions and assistance for the community consultation and community education stage.</td>
<td>Final aggregation of market segments.</td>
<td>LNG Trials on various mobile plant and equipment configurations.</td>
<td>Conversion of rail locomotive fleets to LNG use.</td>
<td>Conversion of rail locomotives to LNG use.</td>
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<tr>
<td>Establishing the Australian government, recognition of the concept in the project as one of National Significance, and ensuring that agency support, and Marine Port Projects and Facilities.</td>
<td>Determining the extent of diesel replacement for the Community Power.</td>
<td>Converting existing equipment with Original Equipment Manufacturers (OEMs) and negotiations with LNG engine technology providers.</td>
<td>This will be through a similar incremental development process as was performed for HVO and MBN use in previous phase.</td>
<td>Conversion trials for Heavy Duty Vehicles (HDVs) and Conversions of light vehicles to LNG and LNG use.</td>
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The use of LNG will have initial appeal and largest take-up in the areas of remote power generation, due to ease of application and rapid results for the customers in their fuel cost reduction and environmental gains over diesel use.

The mining sector will be the next area to take up the opportunities, particularly heavy haulage mining equipment, as this assists to further reduce costs and make their products more cost attractive to wider markets.

The Transport sector (road) is envisaged will follow either just after, or in parallel with the mining sector, as heavy haulage equipment seizes on the 25 to 40 per cent savings available in their sector.

The second stage of the transport (rail) will then follow with locomotives converting to LNG fuel use for further advantages to Industry and Mining sectors.

The Transport sector by then should be structured in the marine craft and shipping areas (applicable to the Darwin and Port Hedland projects) to use LNG as their source fuel over diesel use.

Finally, the technological and manufacturing changes achieved with engines and power-drive systems, should then facilitate the agricultural industry also then starting to benefit from LNG use.
Direction

All stages and all phases of the implementation of MLNG’s model through the four hubs will be in accordance with MLNG’s corporate directions as follows:

MLNG’s Vision Statement

- To be the leading supplier of Australian LNG to the mining industry and remote communities in Australia.
- To be recognised as an innovative Australian company promoting Australia and supporting community, indigenous training and development programmes.
- To be supportive of stakeholder concerns for the environment and to demonstrate leadership in managing environmental sustainability initiatives.
- To educate the community of the benefits of using Australian LNG including cost savings, increased efficiency, energy security and reduction in diesel imports.

MLNG’s Corporate Goals

- To assist the mining and export industries to achieve a competitive advantage through the use of a domestic resource that will reduce its production and supply costs.
- To provide the foundation for a long-term safe, clean energy alternative to diesel fuel throughout Australia, particularly in all aspects of the mining and transport industries.
- To implement projects and case studies to demonstrate the benefits of LNG fuel use for wider application throughout Australia, and to encourage its adoption in other Australian regions and in other industries, such as agriculture.
- To assist in improved air quality outcomes from industry through the reduction of pollutants, particularly CO2, from the consumption of fossil fuels.

In the execution of these goals and with mining typically being in remote and regional areas of Australia, MLNG also has additional objectives;

- To undertake each project with the maximum amount of community consultation practicable, to facilitate the optimum flow of benefits, information, support and ownership to the local community.
- To provide new and flow on employment opportunities to the local community and environs of each project, from both the level of expenditure during construction and implementation of projects, and from the economics achieved from the introduction of new technologies and techniques.
THE NATIONAL INTEREST - CHANGING TO LNG

“You don’t want to look back and be on the wrong side of history”
“We can’t have an energy strategy for the last century that traps us in the past. We need an energy strategy for the future …a strategy for the 21st century that develops every source of American-made energy.” Barack Obama

General

Simple economics and environmental demands highlight the need for change and a new way of thinking in energy use and supply in our economy.

To ensure Australian Industries remain cost-effective and competitive with rival industries of other nations competing for manufacturing and export markets, they must follow the world trend and adopt the benefits LNG can offer to reduce their production costs.

USA example

The lead being taken by the Obama administration in the U.S. is a good example of the path to follow. In their public policy, Congress has identified U.S. energy use priorities as to:70

- Become more efficient in its use of energy;
- Reduce dependence on imported liquid fuels from OPEC;
- Focus on the use of indigenous energy in all its available forms, particularly in conjunction with local employment programs;
- Reduce greenhouse gas emissions and other atmospheric pollutants, particularly those generated by Industry and Transport.

Obama personally stated, “We can’t have an energy strategy for the last century that traps us in the past. We need an energy strategy for the future – an all-of-the-above strategy for the 21st century that develops every source of American-made energy.”71

The USA has undertaken massive natural gas development and production programs and is now a net exporter of gas and, within its domestic economy it is examining ways to obtain further benefits and leverage from the use of gas to replace diesel imports in other market segments. The American natural gas producers have embraced the policy and as part of the national gas refuelling highway expansion they are ensuring that natural gas is “to be transported in “virtual pipelines” to remote locations and there decanted for use as fuel for power generation and transport equipment beyond the reach of the pipeline system” to further maximize the displacement of imported diesel in other markets.72

The USA approach is precisely what the MLNG model and proposal sets out to achieve for Australia. Making better use of Australia’s natural gas resources through better use of LNG to replace diesel consumption, to reduce costs and achieve environmental improvements while generating local employment.

The Economics of change

The national interest case for Australia adopting LNG use in the markets previously dominated by the use of imported diesel fuel is compelling. In every head to head comparison, LNG use emerges as superior to diesel fuel in efficiency, emissions control, cost effectiveness, work place safety, and in future proofing Australia’s education and training and employment for the new era.

Further, for Australia and Australian industry not to proceed with changing to the advantages of LNG use, would be allowing other countries to seize productivity advantages and compete for our export markets. Further, the opportunity cost of not proceeding with change is escalating as other countries are making the change over and the longer the delays in facilitating change, the more expensive it will eventually become to catch up on their momentum.

The constraint until now has essentially been the reliability of supply. That natural gas supply has in the past followed pipeline access and the pipeline lead time and expenses have not enabled the economics to stand up for the pipeline capital works program required.

The economics for change and rationale for industry to have access in the targeted regional areas and mining, transport industry sites is now facilitated by the MLNG production and distribution model. The MLNG model for the creation of LNG in production hubs and for the LNG distribution to the widest user area possible by use of the virtual gas pipeline technique, has the over-arching benefits of:

1. Not requiring a physical rigid pipeline delivery system:
   - Does not require capital expenditure levels of a physical pipeline. This was most evident in a cost comparison for LNG supply to Gove NT where the MLNG model was $450 million less expensive to implement;

70 http://www.whitehouse.gov/energy
71 Address to the Nation President Barack Obama, March 15, 2012
• Rapid implementation and distribution of benefits to the target industries and consumers – able to be in place 2 to 3 years ahead of a physical pipeline;
• Savings on capital expenditure and planning impediments – no land acquisition, no disruption to flora and fauna associated with a physical pipeline alternative;
• Wider area of spread of the benefits of LNG use, courtesy of the virtual pipeline multi modal delivery system [LNG can be supplied by road, rail or sea], and is not reliant on assembling critical masses of remote clients and has flexibility in supply levels;
• Flexibility of supply levels and frequencies to best suit client needs and demands.

2. The supply of LNG is in cooperation with existing LNG export investment projects, so will not impede future exploration or investment;

3. The MLNG model is no predicated upon any reservation of resources policy. This again assists in the macro economics of the exploration and production of Australia’s resources;

4. The flexibility of the MLNG model and the multimodal distribution makes it possible to target supply direct to the identified markets in the transport, mining and export sectors.

Essentially the economics of change stems from the reduced cost of fuels, the improved efficiencies, the resultant reduction in production costs, ALL achieved with significant improvements to the environment and to the education and employment opportunities of the regional communities involved.

**MICROECONOMIC LEVEL, BENEFITS OF CHANGE TO LNG USE:**

• **Cheaper source fuel cost to user:**
  25 percent to 40 percent less than diesel equivalent;
  On a per diesel litre equivalent measure, LNG can be supplied in the project areas at 25 to 40 percent less than the comparative diesel price [variance is due to whether diesel fuel tax credits and subsidies are now being received by the individual user].

• **Reduced capital costs**
  Use of LNG prolongs both machinery life and extends the intervals between service needs compared to diesel;

• **Reduced fuel consumption**
  LNG has superior fuel efficiency than diesel, less comparable consumption, providing less expensive operating costs;

• **Improved operations**
  LNG operations are cleaner and quieter than diesel, no soot, no poisonous particulate matter, reduced vibrations - permitting greater range of use areas and reduced OH&S concerns for workplaces and neighbouring communities;

• **Levillised cost savings**
  LNG provides proven advantages in levillised costs analysis compared to diesel.

**MACROECONOMIC LEVEL, BENEFITS OF CHANGE TO LNG USE:**

• Decreases the cost of producing goods for export, improving market opportunities and margins [through lower maintenance costs, lower operating costs, lower fuel costs, increased machinery life];

• Stabilizes fuel input costs and insulates industry from destabilizing effects of price spikes associated with diesel use;

• Improves national fuel security by placing less reliance on imported fuels and improves Australia’s self-supply infrastructure;

• Makes better use of an indigenous Australia owned resource, and developing regional economies, infrastructure and employment opportunities;

• Reduces the need and expense of imports by reducing the levels of diesel fuel required;

• Improves Australia’s balance of payments [increasing exports and export potential through reduced costs, while also reducing the need for imports];

• Environmental savings and associated gains from cleaner technologies and cleaner fuel sources generating fewer emissions.
An essential asset and value to us all is the environment. Although not directly factored into the economic argument, a prime case for warranting LNG use over diesel is the relative cleanliness of LNG’s combustion and reduced emissions. LNG is almost 100 percent pure methane, the closest commercially available fuel to hydrogen and the cleanest form of all fossil fuels.

The replacement of LNG for a continuance on diesel fuel use will:

- **Reduce Carbon (CO2) emissions**
  According to the USA’s Energy Information Administration (EIA), natural gas emits 45 per cent less CO2 than electricity and nearly 30 per cent less CO2 than fuel oil. In fact, the U.S. is now a world leader in carbon reductions, having reduced carbon emissions by 7.7 per cent since 2006, the equivalent of removing 84 million cars from the road. As acknowledged by the Chief Economist for the International Energy Agency, natural gas use was the key factor driving the carbon emission reductions in the U.S.

- **Reduce Sulphur (SOx) emissions**
  LNG typically contains no sulphur, hence it emits no sulphur emissions when combusted. Sulphur emissions (sulphur dioxide) released into the atmosphere reacts with water vapour and sunlight to form sulphuric Acid or Acid Rain.

- **Reduce Nitrogen (NOx) Emissions**
  LNG can reduce engine NOx emissions by up to 80 per cent. NOx emissions (Nitrous Oxides) released into the atmosphere react with water vapour and sunlight to form Nitric Acid or Acid Rain.

- **Lower Particulate Emissions**
  LNG emits almost zero particulates when properly combusted, helping to improve the local air quality when LNG is used in place of traditional fuels. Particulate emissions from traditional fuels such as diesel, wood, coal and fuel oil, have a major impact on Australia’s Air Quality.

- **Collectively Harmful pollution**
  Unlike diesel, natural gas will not create air bound particulates, contaminate the water table or cause soil contamination. The general environmental dangers associated with continued diesel use can be curtailed by increased use of LNG.

Recently the OECD Director produced reports and findings suggesting that the deaths attributable to diesel emissions are over twice that of the number of deaths attributable to traffic accidents, and, “at global, regional and national levels, air pollution from diesel emissions poses a major challenge to public health”. The OECD projects that between now and 2030, the number of people who will die globally from exposure to particulate matter from fuel [diesel] will more than double from 1.5 million to 3.5 million annually.”

- **Reduced Noise**
  LNG engines can achieve a reduction of up to 33 percent in noise levels compared to diesel engines making LNG vehicles particularly attractive for use in residential areas. Even Heavy duty vehicles with LNG powered engines run on average 10 dB quieter than diesel equivalents.
We do some intelligence on what the emerging challenges will be, where the opportunities will be and what changes we need to be making. The future does not arrive unexpected, it unfolds daily and for macro issues such as the environment and the economy there are already some definitive trends and emerging needs.

Countries and economies in pursuit of reduced fuel costs but with higher efficiencies and lower greenhouse emissions are ensuring that natural gas becomes their fuel of choice for the coming decades. They are moving fast with increasing the use of LNG in their sectors of power generation, road, rail and marine transport, and in the industrial and agricultural sectors. In fact, anywhere they can utilise LNG to replace a continued reliance on expensive, imported diesel fuel.

Australia too must adopt the new fuel era, if for no other reason than to avoid being left behind and having our traditional markets challenged by the lower production costs that LNG is now affording to other countries. In a recent survey, 73 per cent of companies reported that their international operations are either as profitable as their Australian operations, or more so. We must embrace the cost savings and associated advantages LNG can provide our domestic and export economies to remain competitive.

In Australia, the wider implementation of LNG supply and use in vital regional economies in Western Australia, Northern and South Australia will be made possible by a $1 billion program to be undertaken by MLNG. MLNG is a bespoke shareholder and management team with global experience extending across the complete LNG supply chain: specialising in the mining, energy and resources industries; and with the skills and experience to deliver the projects safely and reliably.

These facilities will create a whole new industry for Australia and will deliver wide ranging benefits and positive impacts for a prosperous Australia in areas such as;

- **Regional Development**: to unlock investment in our regions, create employment, and reduce the cost of living by 20 to 40 per cent [the price difference of LNG to diesel]
- **Trade**: through supply and fuel cost reductions, Productivity Improvements, to Improve Australia’s export competitiveness
- **Industry**: LNG based economics creates New Industry, New Activity, New Jobs, New Technologies
- **Security**: Energy security through improved energy self-sufficiency both for Australia and for the regions, with local low priced fuel supplies
- **Environment**: Facilitating cleaner, healthier environments, less noise, no soot plumes, less GHG emissions, no water table contamination, no soil contamination

In summary, the wider benefits to be delivered are:

- **To Customer and industry:**
  - Reduced fuel costs by 20 to 40 per cent;
  - Reduced CO2 Emissions by 25 per cent;
  - Reduced SOX, NOX, Noise and Particulates;
  - Increased competitiveness of Exports;
  - Increased operating life of equipment;
  - Reduced maintenance down time and costs;
  - Reduced CapEx on Developments;
  - Increased profits for business;
  - Improved Health and Safety;

- **For Australia:**
  - Reduced Diesel Imports;
  - Improved Australia’s energy security;
  - Increased value of Australian Gas Resources;
  - Increased Australian Employment Opportunities;
  - Increased Indigenous Employment Opportunities;
  - Increased competitiveness of Australian Exports;
  - Reduced CO2 and other harmful emissions.

A decision to participate with MLNG in the delivery of LNG as a replacement to diesel use in the markets identified, will be remembered as the day you facilitated….

- **Australia’s transition to a new clean sustainable and secure energy future, by building the infrastructure and opportunities today.**