DOMGAS ALLIANCE

Senate Select Committee on Climate Policy

Submission by the DomGas Alliance

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Key Points

- Natural gas is the only conventional energy source that can underpin Australia's transition to a low carbon economy during the next 20 years.

- Natural gas produces less than half the greenhouse emissions compared to coal and uses proven, readily available technology.

- Natural gas is also critical to underpin future expansion of renewable energy in Australia. Only natural gas plants can provide the peaking power capacity necessary to support renewable power such as wind and solar, and which makes renewable energy a feasible source of energy for the local market.

- From a global perspective, using natural gas to fuel Australian industry, power generation and households represents the most greenhouse and energy-efficient use of Australia's natural gas resources.

- Australia's current policy framework however discourages domestic gas by compensating coal and mandating renewable energy while ignoring natural gas.

- The CPRS also provides a financial incentive to gas producers – in the form of carbon credits - to export Australia's clean energy reserves as LNG, rather than supply local industry and households.

- This could have serious unintended consequences. It could distort investment, discourage domestic gas supply, increase gas and electricity prices and undermine Australia's energy security.

- It could also lead to higher global greenhouse emissions and shift investment and energy use from gas to coal.

- Escalating gas prices and domestic gas shortages in Western Australia are already undermining Australia's climate change response.

- At current prices in Western Australia, natural gas is no longer competitive with coal for baseload power generation and most resource processing. This is unlikely to change under an emissions trading scheme.

- A number of resource and energy development projects have had to resort to coal-fired energy with long term consequences for Australia's greenhouse footprint.

- Western Australia's experience is being repeated in the Eastern States. The development of LNG projects based on coal seam methane and LNG pricing for domestic gas will lead to dramatic price increases in the Eastern States.

- Given that coal prices traditionally shadow gas prices and the magnitude of the expected increase in domestic gas prices, an emissions trading scheme would have limited effect in reducing Australia's dependence on coal.

- In the absence of policies to promote domestic gas supply, Australia faces a future where coal will be the only viable energy source for the bulk of Australia's needs, with or without an emissions trading scheme.

Recommendations

- Australia's climate policies should provide explicit recognition of domestic gas supply as the most effective and efficient means of reducing Australia's greenhouse emissions.

- Any assistance provided to LNG exports, coal and renewable energy should be on a level-playing-field that does not discourage domestic gas supply.

- The 60% assistance provided under the CPRS to gas producers for emissions produced from LNG production should be extended to domestic gas production.

- Natural gas used as a fuel source should be subject to the same assistance under the CPRS as natural gas used as a feedstock.

- The Government should support initiatives to promote exploration, development and supply of domestic gas, including:

    - strengthening the Retention Lease system to ensure gas fields that can supply the domestic market are developed;

    - ensuring a competitive gas market by removing anti-competitive joint selling arrangements whereby major gas producers sell as a cartel;

    - promoting domestic gas exploration and development through Federal and State tax, royalty and investor incentives;

    - promoting opportunities for third part ownership and multiple use mid-stream gas gathering and processing infrastructure to facilitate domestic gas development;

- promoting the development of new “tight gas” fields that can supply the domestic market; and

- ensuring sufficient reserves of gas are set aside to meet the current and future needs of the community.

INTRODUCTION

The DomGas Alliance represents current and prospective gas users and gas infrastructure investors. The Alliance aims to promote diversity, affordability and security of gas supply for industry and households.

The Alliance was formed in 2006 in response to a serious shortage of gas supply for new developments in WA. Alliance members represent around 80 percent of Western Australia's domestic gas consumption and gas transmission capacity, including smaller industrial and household users of gas. The Alliance also represents a significant proportion of prospective demand for additional gas supplies.

Members include: Alcoa of Australia, Alinta, Burrup Fertilisers, Dampier Bunbury Pipeline, ERM Power / NewGen Power, Fortescue Metals Group, Horizon Power, Newmont Australia, Synergy and Verve Energy.

The Alliance works closely with State and Federal Governments and other industry stakeholders and welcomes the opportunity to make a submission to the Committee's inquiry into climate policy.

CRITICAL ROLE OF DOMESTIC GAS SUPPLY

1. Australia's dependence on natural gas supply

Natural gas underpins Australia's manufacturing, processing and mining industries; supplies households and small businesses; and fuels electricity generation.

Natural gas supplies 19% of Australia's primary energy needs or 1158 petajoules of energy.[1]

In Western Australia, natural gas supplies half of the State's primary energy requirements and fuels 60% of the State's electricity generation. Access to secure and affordable natural gas underpins the State's manufacturing, processing and mining industries, and the significant employment and export benefits they provide.

Australia's demand for gas will continue to grow. A 2008 report by Economics Consulting Services concluded that Western Australia alone will require around 1100 TJ/day of gas by 2014-15 to meet new and replacement demand. This is equivalent to the total size of the existing market for gas and

The expected demand comprises: 274 TJ/day of replacement gas, 68 TJ/day of resource project grid connected electricity and 783 TJ/day of new mineral and petroleum processing projects. While the current global financial crisis may affect the timing of some minerals processing projects requiring gas, potential demand remains significant.

Importantly, around 274 TJ/day of replacement gas will be needed to replace existing gas contracts as they expire. These include large contracts for gas used in electricity generation, industrial processing and manufacturing.

There is no certainty that gas will be available to meet these replacement contracts and that contracts can be automatically rolled-over. Contracts may be tied to fields that are declining and with producers that have no replacement fields in the required timetable. This raises serious issues for Western Australia's electricity, manufacturing and minerals processing sectors.

While domestic demand for gas has expanded, oil and gas producers continue to focus on exports of liquefied natural gas (LNG). Since its inception, North West Shelf Joint Venture has expanded natural gas exports through the construction of five LNG processing trains, with a further sixth train foreshadowed.

[1] ABARE Energy Update 08.

In contrast, supply to the domestic market has increased only marginally. This underlines the need for initiatives to promote domestic gas exploration and development.

2. Australia only has limited reserves of natural gas, yet aspires to be the world's second largest LNG exporter

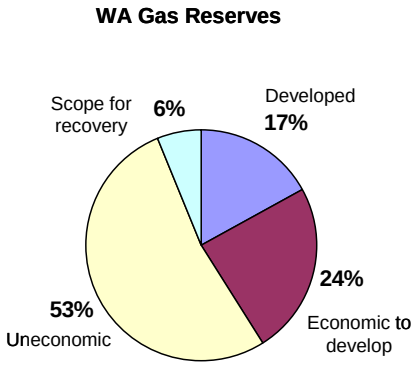
While natural gas has a vital role in meeting Australia's future energy needs and greenhouse challenge, Australia has only limited reserves of natural gas.

Claims by producers that Australia has "vast" or "over a hundred years" of gas are incorrect. Australia holds just over 2% of the world's natural gas resources, which represents little more than one year of world gas consumption. At the same time, Australia is aspiring to be the world's second largest gas exporter.

Approximately 80% of Australia's natural gas resources are located in Western Australia which is estimated to have between 120-140 trillion cubic feet (Tcf) of gas resources. This estimate refers to "P50" resources with only a minimum 50% or higher probability of economic recovery.

Importantly, only 17% of Western Australia's estimated natural gas resources relate to developed fields.

The bulk of resources are located offshore and in deep water; there is no certainty these could commercially be developed. Many of the fields have gas quality issues which impact on development economics and environmental acceptability.

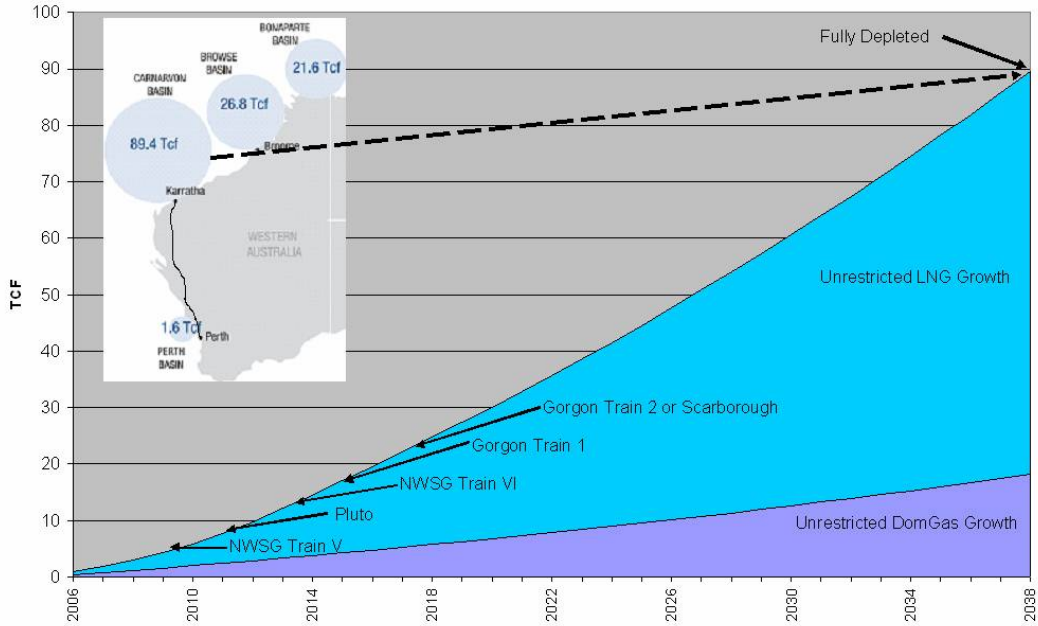


As recognised by the Commonwealth – States Joint Working Group Report on Natural Gas Supply, there are significant barriers to easily accessing and commercialising a significant proportion of Australia's reserves.[2]

The Alliance believes that gas resources in the Carnarvon Basin – which supplies the bulk of Western Australia's gas needs – could be fully depleted within 30 years. In addition, if producer targets for up to 60 million tonnes a year of LNG exports are realized, the bulk of gas will be committed under long term contract between 2015 and 2020. This will put at risk availability of clean energy for Australian industry.

[2] Joint Working Group Report on Natural Gas Supply, p.7.

Depletion of Western Australia's LNG resources



3. Role of natural gas in meeting Australia's greenhouse challenge

Natural gas is the only conventional energy source that can underpin Australia's transition to a low carbon economy during the next 20 years. Natural gas produces less than half the greenhouse emissions compared to coal and uses proven, readily available technology.

Combined cycle gas-fired plants and gas-fired cogeneration plants constitute by far the most greenhouse efficient forms of non-renewable power generation. Over its life, a new 350 megawatt per hour natural gas combined cycle plant will produce 30 million tonnes of carbon dioxide emissions, compared to 70 million tonnes for an equivalent coal power plant.[3] In terms of annual greenhouse gas emissions avoided, the difference is equivalent to removing 325,000 cars off the road.

Natural gas underpins the development of greenhouse-friendly gas fired cogeneration plants. Cogeneration plants at alumina refineries in Western Australia for example generate steam which is used in the alumina refining process, as well as electricity for supply into the grid. Cogeneration plants can achieve at least 75% energy efficiency, compared with 30-50% for comparable coal fired generation.

[3] Simshauser, P. and Wild, P. (2007) 'The WA Power Dilemma', p.23; www.bbpower.com/media/299790/25907%20wa%20energy%20summit.pdf.

Natural gas is also critical to underpin future expansion of renewable energy in Australia. Only natural gas plants can provide the peaking power capacity necessary to support renewable power such as wind and solar, and which makes renewable energy a feasible source of energy for the local market.

The Federal Government's 2007 election policy commits the Government to "support the use of natural gas as a transitional fuel that offers lower emissions in the period before new energy technologies become available". In particular, the policy commits the Government to:

- "Encourage the development of the gas industry to open up additional supply for export and domestic use.

- Support the increased use of gas as a transitional fuel to meet our energy needs as we move to a more carbon constrained economy.

- Promote increased exploration for gas fields through the selective use of flow through share schemes in the gas industry." [4]

4. Domestic gas supply is the most greenhouse- and energy-efficient use of Australia's natural gas reserves

From a global perspective, using natural gas to fuel Australian industry, power generation, small businesses and households is the most greenhouse and energy efficient use of Australia's natural gas resources. Unlike LNG, domestic gas does not need to be liquefied, shipped long distances in tankers and then regasified before it can be used as a fuel – an energy-intensive process.

Domestic gas supply is over 92% energy efficient, with less than 8% of energy lost in the supply chain. Transport through the Dampier to Bunbury Natural Gas Pipeline, the longest gas transmission system in Australia, only uses less than 3% of the energy.[5]

In contrast, LNG is only 74% energy efficient, with 26% of the energy consumed by the LNG supply chain.

In terms of lifecycle emissions, LNG produces 20% more greenhouse emissions on a per gigajoule basis compared to domestic pipeline gas.[6]

The Alliance's analysis is consistent with other international studies. A Carnegie Mellon University study found LNG generated almost 25% more greenhouse emissions over its lifecycle compared to domestic natural gas. The study also

[4] Australian Labor Party, *Securing a sustainable energy supply for Australia's future*, Election 2007.
[5] 2009 DomGas Alliance study. See **Attachment**.
[6] 2009 DomGas Alliance study.

found that the upper band of emissions associated with LNG approached that of coal. [7]

A study by Climate Mitigation Services also found that liquefying and transporting natural gas in LNG tankers accounted for around 21% of the total lifecycle emissions of LNG.[8]

Claims by gas producers that Australia is helping solve the world's greenhouse problems by exporting its clean reserves of natural gas are therefore incorrect. Furthermore, Australian industry and electricity generators are in the main extremely energy efficient compared to their international counterparts. This reinforces the global greenhouse benefits of domestic gas supply.

[7] Jaramillo, Griffin and Matthews, 'Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG and SNG for Electricity Generation', *Environ. Sci. Technol.* 2007, 41, 6290-6296.

[8] Heede, R., 'LNG Supply Chain Greenhouse Gas Emissions for the Cabrillo Deepwater Port: Natural Gas from Australia to California', Climate Mitigation Services Study, May 2006.

THE CURRENT POLICY FRAMEWORK

1. Australia's current policies discourage domestic gas supply

Given the importance of natural gas, it is vital that Australia's greenhouse policies promote supply and use of domestic gas as the most greenhouse and energy-efficient fossil fuel.

The current policy framework however provides compensation to coal-fired energy for carbon costs and supports renewable energy through a Mandatory Renewable Energy Target, while ignoring domestic gas supply.

The CPRS further discourages domestic gas supply by providing a financial incentive – in the form of carbon credits – to gas producers to export Australia's clean energy reserves as LNG, rather than supply local industry and households.

Under the CPRS, the LNG industry is treated as an Emission Intense Trade Exposed (EITE) industry and will qualify for 60% assistance towards any emissions it produces from the production of LNG.

The production of domestic gas on the other hand qualifies for no assistance meaning that the full cost of a carbon tax will be borne by domestic gas, further impacting its price.

To the extent that the gas supplier is not able to pass onto its customers the carbon costs incurred at every step in the gas supply chain, this could distort investment decisions in favour of LNG over domestic gas. Where gas producers are able to pass on carbon costs to the domestic market, this could further increase the cost of natural gas for downstream industry.

2. The CPRS creates additional costs for downstream gas users

The CPRS creates additional costs for downstream gas users where carbon costs can be passed through by gas producers. This will lead to significant costs for downstream industry and erode any assistance that might otherwise be provided under the scheme.

For example, under the CPRS, assistance for the alumina refining industry is based on direct emissions whilst for the aluminium smelting industry the assistance is based on both direct and indirect emissions.

In Western Australia which uses significant amounts of gas for alumina processing, the assistance will only apply to the emissions generated directly from the processing of alumina and not for the carbon costs incurred in the gas supply chain.

Any increased carbon cost of gas processing and gas transmission will therefore directly impact alumina refiners with no mechanism to offset these increased costs. This will increase the cost of natural gas as an energy supply for such operations and erode the protection afforded to the alumina industry.

3. The CPRS must promote investment in domestic gas infrastructure

Given the strategic role of natural gas as a transitional fuel, it is crucial that the CPRS promote, or at the very least not discourage, investment in domestic gas transport and distribution infrastructure.

Natural gas pipelines such as the Dampier to Bunbury Natural Gas Pipeline are significant capital assets, with returns tightly regulated on the basis of a long asset life. They are also significant consumers of natural gas for operating purposes.

A CPRS that reduces domestic gas supply by encouraging LNG exports, or which significantly increases pipeline operating costs, will impact future investment in pipeline capacity.

Ongoing investment in gas transport and distribution infrastructure is also dependent on downstream industries being able to sustain and grow their operations under a CPRS.

4. The current policy framework could have serious unintended consequences

The current greenhouse policy framework could have serious unintended consequences and distort investment, discourage domestic gas supply, increase gas and electricity prices and undermine Australia's energy security.

It could also lead to higher global greenhouse emissions, shift investment and energy use from gas to coal, and undermine the intent of Australia's greenhouse policies.

By increasing the cost of clean energy, rising gas prices undermine industry's ability to meet national greenhouse targets and dramatically increase the cost of any emissions trading scheme.

Removing gas from a competitive fuel mix will also lead to higher overall energy costs as coal prices traditionally shadow gas prices. Rising gas prices will therefore result in higher coal prices - and higher fuel costs for power generation, and electricity costs for industry and households.

From a global greenhouse perspective, it is illogical to discourage the most greenhouse and energy-efficient use of Australia's clean energy reserves by actively incentivising its export as LNG.

5. Rising gas prices are already undermining Australia's greenhouse response

Escalating prices and domestic gas shortages in Western Australia are already undermining Australia's climate change response. Current and prospective gas users have been unable to secure long term gas supplies in substantial quantity. The price of such short term gas that is available has risen dramatically.

According to press reports of recent contracts, WA wholesale gas prices have risen four to five-fold over the past 18-24 months. Prices reported for recent gas sales in WA are now around four to five times Eastern States prices on a delivered basis.

At current prices in Western Australia, gas is no longer competitive with coal for baseload power generation and most resource processing. **This is unlikely to change under an emissions trading scheme.**

As a result of the escalating prices and supply shortages, a number of resource and energy development projects have had to resort to coal-fired energy. For example, the West Australian Government announced that the next base-load power station in the State will be coal-fired as opposed to gas-fired plant.

This has long term consequences for Australia's greenhouse footprint and the domestic gas shortage could be the single greatest factor contributing to emissions growth in Western Australia over the next decade or more.

6. Escalating gas prices will impact the Eastern States

Escalating gas prices reflect a long term strategy of oil and gas producers to increase prices to a notional "international" price based on LNG or international oil prices. This is despite there being no world price for gas with gas prices varying significantly between different countries and regions, and being tightly controlled in many countries, including China.

The development of LNG projects based on coal seam methane and LNG pricing for domestic gas will lead to dramatic price increases for manufacturers and industry in the Eastern States. This was recognised by the Commonwealth – State Joint Working Group on Natural Gas Supply which warned:

> The effects of price competition are already being felt in Western Australia. Gas prices in WA have increased to around double the prices in the Eastern market, where exports of gas are not presently viable.[9]
>
> The announcement of two potential LNG terminals using CSM [coal seam methane] has the potential to impact on both supply and price in the Eastern gas market.[10]

A presentation by Origin Energy considered that access to international LNG markets is likely to result in significant increases in gas prices.[11] The National Generators Forum has also warned that LNG export developments in Gladstone, Queensland, could potentially double the price of gas in the eastern states from the current $3.50 per gigajoule:

> We are worried that prices on the eastern seaboard will mirror the far higher export price, as is the case with domestic gas prices in WA, where an LNG export industry already exists.[12]

The *Sydney Morning Herald* also reported on Queensland Gas' proposed LNG project at Gladstone and that the company appeared to be limiting supply to domestic users to obtain higher LNG prices in the future.[13]

In January 2009, the *Australian Financial Review* reported on a decision by BG to shelve plans to build a 400-600 megawatt gas-fired power plant in the Hunter Valley region to instead export the gas as LNG. The decision was a major setback to New South Wales' efforts to reduce its dependence on coal-fired energy and reduce greenhouse emissions:

> Efforts by NSW to reduce its dependence on coal-fired power generation have suffered another major setback following the decision by British energy giant BG to pull the pin on a $750 million power development in the state.
>
> BG has shelved plans to build a 400-600 megawatt gas-fired power plant in the Hunter Valley region just months after inheriting the project through its $5 billion takeover of Queensland Gas Co.
>
> The plant was expected to generate up to 600 jobs and electricity for between 320,000 and 500,000 hones, with gas for the project to come

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[9] Joint Working Group Report on Natural Gas Supply, p.16.
[10] Joint Working Group Report on Natural Gas Supply, p.9.
[11] Origin Energy, presentation ot Macquarie Conference, May 2008.
[12] 'Gas price under pressure', *The Australian*, 1 July 2008.
[13] 'Queensland Gas looks to high-value LNG', *Sydney Morning Herald*, 6 March 2008, available at: http://business.smh.com.au/queensland-gas-looks-to-highvalue-lng/20080305-1x7t.html?skin=text-only

from a pipeline linking the Hunter Valley with QGC's coal-seam gas fields in Queensland.

At the time plans for the power station were unveiled last May, QGC's then chairman, Bob Bryan, said the plant would operate with half the greenhouse gas emissions of a coal-fired power station and would provide a long-term solution to NSW's electricity needs.[14]

7. Conclusion

The above incidents demonstrate that Western Australia's experience is being repeated in the Eastern States. This will have significant consequences for efforts to reduce dependence on coal or to increase the proportion of gas fired power generation, such as the Queensland Government's 13% gas fired power target.

Given that coal prices traditionally shadow gas prices and the magnitude of the expected increase in domestic gas prices, an emissions trading scheme would have limited effect in reducing Australia's dependence on coal.

In the absence of policies to promote domestic gas supply, Australia faces a future where coal will be the only viable energy source for the bulk of Australia's needs, with or without an emissions trading scheme.

[14] 'BG switches to LNG export plan', *Australian Financial Review*, 16 January 2009.

RECOMMENDATIONS

Given the importance of natural gas, it is vital that Australia's greenhouse policies promote supply and use of domestic gas.

The Alliance recommends:

- Australia's greenhouse policies should provide explicit recognition of the vital role of domestic gas supply;

- Australia's greenhouse policies should ensure a level playing field that does not discriminate against domestic gas supply;

- The Government should support initiatives to promote domestic gas exploration, development and supply.

1. Explicit recognition of the vital role of domestic gas supply

Australia's greenhouse policies should explicitly recognise and promote domestic gas supply as the most effective and efficient means of reducing Australia's greenhouse emissions.

2. Ensure non-discrimination against domestic gas

Any assistance provided to LNG exports, coal and renewable energy should be on a level-playing-field that does not discourage domestic gas supply;

The 60% assistance provided under the CPRS to gas producers for emissions produced from LNG production should be extended to domestic gas production;

Natural gas used as a fuel source should be subject to the same assistance under the CPRS as natural gas used as a feedstock; and

3. Support for initiatives to promote domestic gas exploration, development and supply

The Government should support initiatives to promote exploration, development and supply of domestic gas. These initiatives include:

- strengthening the Retention Lease system to ensure gas fields that can supply the domestic market are developed;

- ensuring a competitive gas market by removing anti-competitive joint selling arrangements whereby major gas producers sell as a cartel;

- promoting domestic gas exploration and development through Federal and State tax, royalty and investor incentives;

- promoting opportunities for third part ownership and multiple use mid-stream gas gathering and processing infrastructure to facilitate domestic gas development;

- promoting the development of new “tight gas” fields that can supply the domestic market; and

- ensuring sufficient reserves of gas are set aside to meet the current and future needs of the community.

3.1 Strengthening the Retention Lease system

Section 38B of the *Petroleum (Submerged Lands) Act 1967 (Cth)* provides for the grant of a Retention Lease over petroleum discoveries. This applies where a petroleum discovery proves to be currently non-commercial but has the potential to become commercial within 15 years.

The initial term of a Retention Lease is five years. This may be renewed provided it still meets the required non-commerciality criteria. A Retention Lease must be converted to a Production Licence when a reserve is commercial. Retention Leases are administered by the Joint Authority comprising both the Commonwealth and the State.

53% of WA’s gas reserves are currently held under Retention Leases on the basis that they are uneconomic to develop. Further reserves are held in Exploration Licences which are close to expiry and are due to be converted to either Production Licences or Retention Leases

The Alliance supports more stringent government assessment of Retention Leases to ensure that they are not used by producers to withhold domestic gas supplies. The Commonwealth – State Joint Working Group on gas supply recommended more stringent assessment, and this has been supported by the Federal Resources and Energy Minister.

A review is also underway on how the policy might be applied in the future, including ways to improve transparency in the Retention Lease process, and to ensure that commerciality tests are stringently applied.

The Alliance believes that in the first instance, reserves held under Retention Leases should be assessed to determine whether they are capable of supplying the domestic market on a commercial basis. The Alliance also supports amendment of the administrative guidelines or legislation to further reinforce this expectation.

The Alliance supports greater transparency and disclosure in the retention lease process. There is currently no gazetting system which would make public the substance of a retention lease application, nor is there a formal procedure for third parties to participate. This provides for an asymmetry of information that exclusively benefits existing lease holders.

Greater transparency and disclosure will improve the underlying basis of decisions, encourage third party participation, subject application claims to greater scrutiny, strengthen the application of the commerciality test and promote opportunity and field development.

There is also a need for the Designated Authority to develop and publish methodology on how it assesses retention leases, and against what metrics. This could include:

- a published methodology that outlines how the Joint Authority assesses different metrics, and how this assessment takes into account other factors; and

- the publication of a quarterly / half-yearly or annual report or assumptions book that outlines these factors and key assumptions, for example labour and raw material costs, local gas demand, rate of return, and expectations on CAPEX and OPEX. This report would provide greater certainty and transparency for the market, and encourage opportunity for potential suppliers.

3.2 Remove anti-competitive joint selling arrangements

The North West Shelf Joint Venture producers – which supply almost 70% of the domestic market - currently sell gas to domestic customers through a joint selling entity North West Shelf Gas.

This arrangement forces gas consumers to deal with a single entity rather than with individual Joint Venturers. This significantly reduces the number of sellers and, as a result, competition in the domestic market. Gas consumers are prevented by the Trade Practices Act from buying jointly.

The impact of joint selling is further exacerbated by the concentration in gas supply. Two operating entities (North West Shelf and Apache) supply close to 100% of the domestic market and control the developed fields that currently service the WA domestic market.

The participants in the North West Shelf Gas Joint Venture hold the vast majority of undeveloped reserves in the Carnarvon Basin. The Synergies Economic

Consulting Report recommended removing the joint selling arrangement to promote competition and supply in the domestic gas market.

The Alliance has written to the ACCC calling for a review of the joint selling arrangement. The matter is currently being investigated by the ACCC's Enforcement Branch.

In the absence of any authorisation, joint selling appears to be in breach of section 45 and 45A of the *Trade Practices Act 1974* which prohibits price fixing and arrangements which substantially lessen competition.

The Alliance is also concerned about joint selling becoming standing practice in other gas developments. Producers should not maintain selling arrangements that would have or be likely to have the effect of substantially lessening competition.

3.3 Promote domestic gas exploration and development through tax, royalty and investor incentives

The Alliance supports Commonwealth and State governments implementing of tax, royalty and other investment initiatives to encourage exploration and development of gas fields for domestic supply.

The Alliance completed a detailed review of tax and royalty arrangements and recommends:

- Commonwealth – State grants to support new domestic gas developments;
- State royalty concessions, such as royalty holidays or reduced royalty rates, for domestic gas developments;
- Increased Federal tax deductibility for pre-wellhead expenses incurred by domestic gas developments; and
- Flow Through Share Scheme for domestic gas exploration and development companies.

Such incentives could promote smaller domestic gas developments, or LNG projects with a domestic gas component. This will help balance the oil and gas industry's current focus on LNG exports, and the incentive under existing tax and royalty arrangements to develop Australia's natural gas resources as large scale LNG projects.

Incentives could also encourage new frontier technical challenges such as onshore "tight gas" fields. Tight gas developments involve additional technology

and significant pre-wellhead expenses compared to conventional fields. Increased deductibility of pre-wellhead expenses could for example promote field development.

Where fiscal incentives enable the development of gas fields, the impact on government budgetary arrangements could be neutral or even positive. This is where incentives deliver tax and royalty streams from gas fields that might otherwise not be developed.

In the current economic downturn, inshore and onshore exploration activities – which are the most likely sources of competitive domestic gas supply - are impacted to a far greater extent than deepwater offshore exploration. This is because the companies involved are reliant on regular injections of risk capital from the local market.

The consequences for future domestic gas supply of inadequate support for domestic exploration are therefore potentially extensive and further underline the need for tax, royalty and investment incentives.

3.4 Promote opportunities for third party ownership and multiple use midstream infrastructure

Third party participation in – and multiple use of - midstream gas supply and processing infrastructure has the potential to facilitate new domestic gas developments by lowering investment barriers and costs.

The Alliance engaged energy consulting firm Wood McKenzie to conduct an analysis of opportunities for common use mid-steam gas gathering and processing facilities.

The report concluded that there were significant benefits including lower barriers to entry, a more economically efficient use of capital leading to lower gas supply chain costs and increased transparency in the costs of supply.

Government can facilitate discussions between relevant stakeholders, and by improving transparency and disclosure in the retention lease system. An effective gas reservation policy would also ensure that any consolidation between domestic gas and LNG projects still delivers domestic gas supply.

3.5 Promote development of onshore tight gas

Western Australia potentially has 9-12 Tcf of ‘tight gas’ resources in the Perth Basin, located close to existing gas pipeline infrastructure. Tight gas currently accounts for around 30% of total gas production in the United States.

The State Government is examining opportunities to facilitate tight gas development, including by meeting current technology barriers. Alcoa and Latent Petroleum have recently partnered to evaluate and develop WA's first tight gas field – the Warro gas field.

The Alliance supports these efforts and the need for the Commonwealth and State to explore financial incentives for tight gas development.

3.5 Ensure the original domestic supply intent of the North West Shelf State Agreement is met with new LNG export contracts and developments

The North West Shelf State Agreement is scheduled in the *North West Shelf Gas Development (Woodside) Act 1977 (WA).* The Agreement was originally due to expire in 2010, but was extended in 1984 to 2025. The gas reservation commitments under the original agreement have been met by the North West Shelf Gas producers.

Since the original arrangements were struck, LNG exports from the North West Shelf Joint Venture have increased by over 150% from the originally envisaged 6.5 million tonnes per annum, with further expansions foreshadowed.

By comparison, supply to the domestic market by the North West Shelf JV has increased only marginally.

Further, the original 20 year LNG export contracts which commenced in 1989 are now approaching their expiry date, with long-term extensions now being negotiated.

It is critical that increased commitment of gas reserves to LNG exports from the North West Shelf JV be matched by additional commitments to the domestic market.

The State Agreement provides a mechanism for Government to do so with respect to: the renewal or rolling-over of existing long term LNG export contracts as they expire; new LNG contracts entered into by the North West Shelf JV; and new LNG developments such as LNG Train 6.

The renewal of production licences, retention leases and permits held by the North West Shelf JV also provides government with a mechanism to ensure additional supply to the domestic market.

3.6 Ensure the local economy's long term needs are met through gas reservation

Claims by producers and government that Australia has abundant reserves of natural gas are incorrect. For an energy intensive economy, Australia holds just

over 2% of the world's natural gas resources, yet aspires to be the world's second largest exporter of LNG.

Current estimates of natural gas reserves considerably overstate availability by failing to take into account: the practical viability of resources, the rapid expansion of LNG export production, or the contracting out of available resources under long term LNG contracts.

Western Australia's 130 Tcf of estimated natural gas resources refers to resources with only a minimum 50% probability of recovery. Only 17% of WA's resources relate to developed fields. The bulk of resources are currently located deep offshore and have gas quality issues. There is no certainty that it would be economic to develop gas from remote reserves for the domestic market.

If government and producer export targets of 50-60 million tonnes per annum of LNG are reached, the total existing resources of the Carnarvon Basin will be fully committed by 2015-2020. Once committed to long term LNG contracts, gas is unavailable to meet current and emerging needs of the local economy.

The Alliance believes that in the face of this, some form of reservations policy is necessary to secure long term domestic gas supply. The Alliance, therefore, supports the efforts of successive WA governments in this regard. The Alliance also supports the development of a unified State/ Commonwealth position on reservations and a national energy security strategy to ensure competitive long term supply.

A report by Curtin University found that governments around the world are acting to ensure long term domestic gas security. Other countries with significant gas reserves are introducing policies to ensure that their domestic requirements are adequately provided for.

The report also found that over 90% of world gas reserves are directly or indirectly controlled by national oil companies. Only 8% of world reserves are subject to full access by international oil companies – Australia represents a quarter of these reserves.

ATTACHMENT: CARBON LIFECYCLE OF LNG AND DOMESTIC GAS SUPPLY

Key Points

- Domestic gas supply represents the most greenhouse and energy-efficient use of Australia's natural gas reserves.
- Domestic gas supply is over 92% energy efficient, with less than 8% of energy lost in the supply chain. This compares to only 74% energy efficiency for LNG.
- On a per gigajoule basis, LNG produces 20% more greenhouse emissions over its lifecycle than domestic pipeline gas.

Background

- Domestic gas supply represents the most greenhouse and energy-efficient use of Australia's natural gas reserves.
- Domestic gas supply is over 92% energy efficient, with less than 8% of energy lost in the supply chain.
- Transport through the Dampier to Bunbury Natural Gas Pipeline, the longest gas transmission system in Australia, consumes less than 3% of the energy.[15]
- LNG is only 74% energy efficient, with 26% of the energy consumed in the LNG supply chain.
- The LNG production chain requires gas to be liquefied, shipped long distances in tankers, and then re-gasified before it can be used as a fuel.
- On a per gigajoule basis, LNG produces 20% more greenhouse emissions over its lifecycle than domestic pipeline gas.
- A 2007 Carnegie Mellon University study found LNG generated almost 25% more greenhouse emissions over its lifecycle compared to domestic natural

[15] 2009 DomGas Alliance study.

gas. The study also found that the upper band of emissions associated with LNG approached that of coal. [16]

- A 2006 Climate Mitigation Services found that liquefaction and transporting of natural gas in LNG tankers accounted for around 21% of the total lifecycle emissions of LNG.[17]

- Given domestic gas is the most greenhouse and energy-efficient fossil fuel, it is vital that Australia's greenhouse policy framework promotes domestic gas supply and use.

- Australian industry and electricity generators are also in the main extremely energy efficient compared to their international counterparts. This reinforces the global greenhouse benefits of domestic gas supply.

- Australia's current greenhouse policies however discourage the supply and use of domestic gas.

- The proposed CPRS recognises that LNG is greenhouse intensive and provides LNG producers with 60% assistance towards emissions generated from the production of LNG for export. Producing domestic gas for use within Australia will, on the other hand, attract the full carbon penalty.

- By providing a financial incentive for producers to export natural gas, the CPRS could distort investment, discourage domestic gas supply and increase gas and electricity prices.

- It could also lead to higher global emissions as Australia's clean energy reserves are exported as greenhouse-intensive LNG, while local industry resorts to coal.

- From a greenhouse policy perspective, it is illogical to compensate coal, mandate renewable energy use and incentivise gas exports, while ignoring domestic gas – the most greenhouse and energy-efficient fossil fuel.

[16] Jaramillo, Griffin and Matthews, 'Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG and SNG for Electricity Generation', *Environ. Sci. Technol.* 2007, 41, 6290-6296.
[17] Heede, R., 'LNG Supply Chain Greenhouse Gas Emissions for the Cabrillo Deepwater Port: Natural Gas from Australia to California', Climate Mitigation Services Study, May 2006.

DomGas Alliance (2009) [18]

For every 100 GJ of energy in the supply chain:

	Energy Delivered	Energy Consumed	Total	Energy efficiency
Dom Gas	92.3 GJ	7.4 GJ	100 GJ	92.3 %
LNG	73.7 GJ	26.3 GJ	100 GJ	73.7 %

Lifecycle greenhouse emissions for:

1 GJ LNG: 67 kg $CO_{2\text{-eq}}$

1 GJ domestic gas: 56 kg $CO_{2\text{-eq}}$

1 GJ of LNG generates almost 20% more greenhouse emissions over its lifecycle than domestic pipeline gas.

Carnegie Mellon Study (2007)

Lifecycle emissions (lb $CO_{2\text{-e}}$ per megawatt hour)

	Dom Gas	LNG	Coal
Midpoint	1250	1600	2100
Upper Band	1600	2400	2550

[18] The 2009 DomGas Alliance analysis drew on a number of data sources including the 2006 Climate Mitigation Services Study. For the purpose of the Alliance's analysis, domestic gas refers to domestic gas supplied through the Dampier Bunbury Natural Gas Pipeline.