



# Emissions Trading and the Natural Gas Industry

## APIA Submission to the Garnaut Climate Change Review

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## Introduction

This submission is made on behalf of the Australian transmission pipeline industry in response to an invitation to comment on the Emissions Trading Scheme Discussion Paper (Garnaut Climate Change Review, 2008). The submission addresses issues relevant to the natural gas transmission pipeline sector which may also be relevant to other sectors. The submission also refers to the expected requirement for CO<sub>2</sub> transmission pipelines to assist the process of sequestration of greenhouse gases from stationary energy.

The gas transmission industry is well placed to provide a useful contribution to the discussion about reducing the nation's greenhouse gas emissions.

The Australian Pipeline Industry Association (APIA) is the peak national body representing the interests of Australia's high-pressure transmission pipeline sector. APIA's membership is predominantly involved in the high-pressure transmission of gas, however, the Association membership also includes companies and individuals involved in the transmission via pipelines of other products, including water, slurry and oil. Clearly, this representation is likely to also include transmission of carbon dioxide and other greenhouse gases as part of carbon capture and storage.

Recent figures show there are more than 29,000 kilometres of pipeline in Australia, of which more than 21,000 kilometres are used to transport natural gas. Natural gas transmission pipelines provide the safest, most efficient and most economic means of transporting natural gas.

Natural gas comprises mainly methane (CH<sub>4</sub>) and ethane (C<sub>2</sub>H<sub>6</sub>) and smaller amounts of other gases including carbon dioxide. While there is a minimal amount of controlled venting during the gas transportation process, there is no leakage. To the extent there ever is a leak event, this would be considered an intolerable fault condition that would be remedied immediately.

The development of an effective system to reduce emissions is of key interest to the gas transmission industry, given the ability of natural gas to provide a relatively clean, efficient and water-friendly alternative to coal-fired power generation.

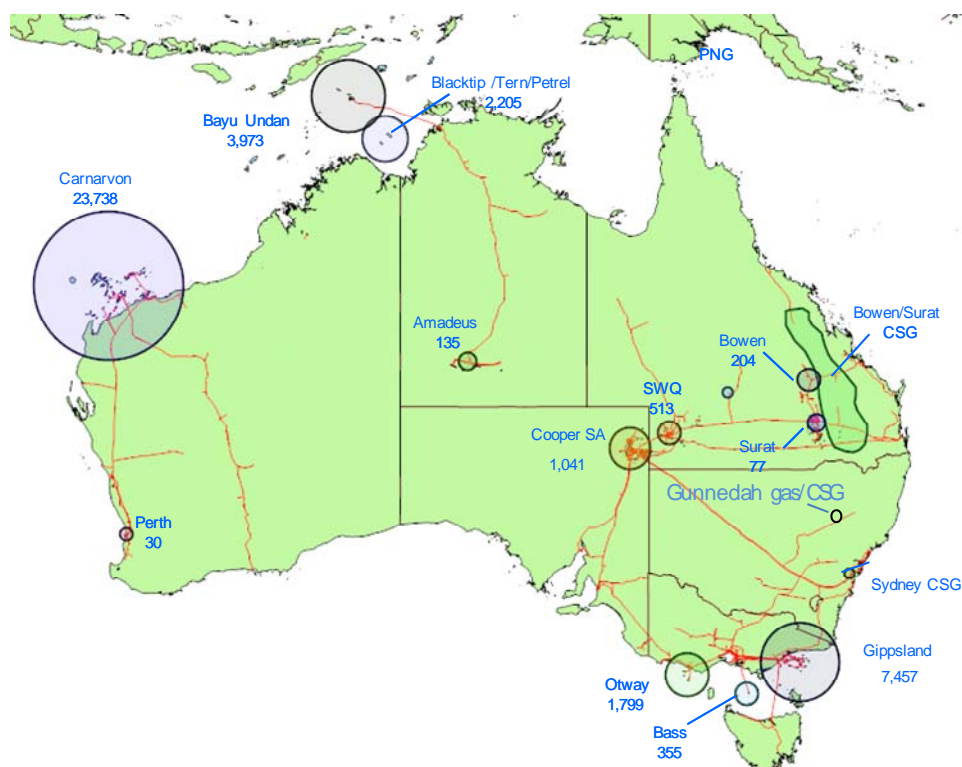
The combustion of natural gas produces a much lower level of greenhouse gas emissions than does the combustion of coal or liquid petroleum fuels. Combined-cycle gas turbines are also more efficient than conventional coal-fired steam turbine power stations, with lower emissions of greenhouse gases per kWh of electricity generated. Clearly, natural gas has an important role to play in reducing greenhouse gas emissions.

## 1. The natural gas sector

Australia has substantial resources of natural gas. According to estimates by Geoscience Australia, proven and probable reserves of natural gas were approximately 35,000PJ as at 1 January 2006. Production was estimated to be around 1,650 PJ. Australia also has significant resources of coal seam gas in Queensland and NSW. Levels of independently certified reserves of coal seam gas continue to grow rapidly. By the end of 2007 estimates of proven and probable reserves of coal seam gas were around 7,200 PJ. Production of coal seam gas had reached 100 PJ per year by this time.

The location of Australia's resources of natural gas is shown in Figure 1

Figure 1 Australia's natural gas resources

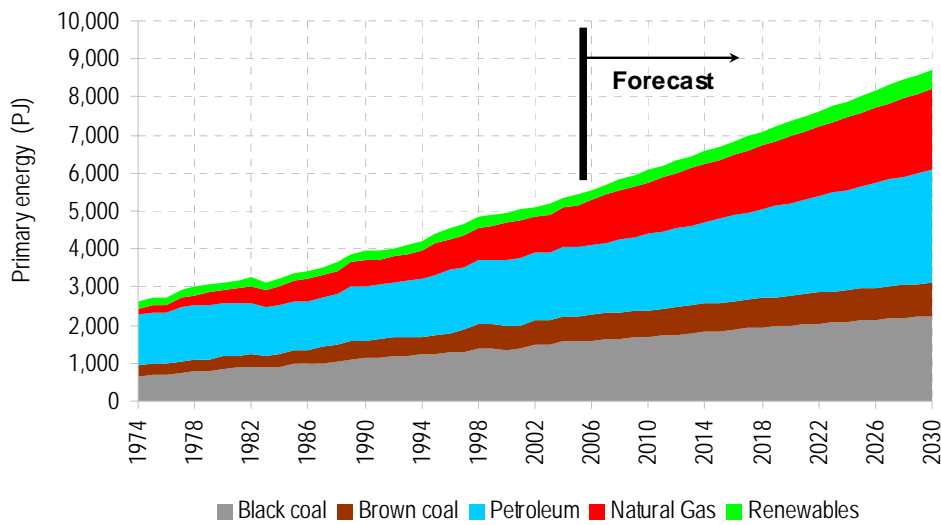


Source: ACIL Tasman and Geoscience Australia

### Natural gas demand

Natural gas consumption in Australia has risen from virtually zero in 1968 to just over 1,100 PJ in 2004–05. Natural gas currently accounts for around 20.5% of Australia's primary energy demand (Figure 2). By 2029–30, ABARE expects this figure to rise to 24.5% of total primary energy demand (2,136 PJ).

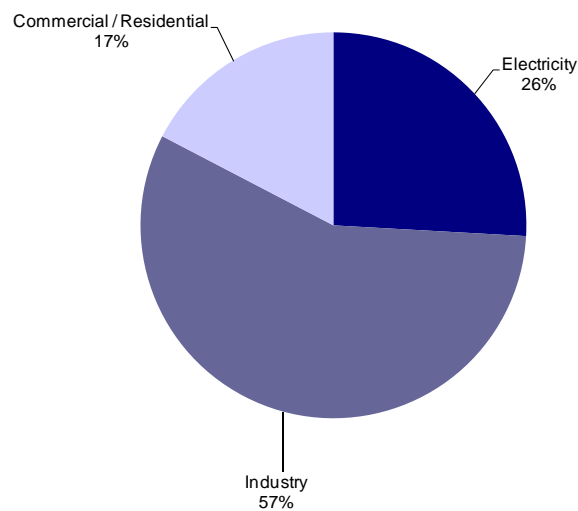
**Figure 2 Australia historical and forecast primary energy demand, by fuel**



Data source: Based on ABARE historical data, ABARE 2005

Most of Australia's natural gas provides energy for major manufacturing and industrial uses, including mining, electricity generation for public use and fertilizer manufacture. Only around 10 to 12 per cent of Australia's natural gas is provided for household use. The use of natural gas by sector in 2005-06 is shown in Figure 3.

**Figure 3 Natural gas demand by end use 2005-06**



Source: ABARE

The use of gas in the power generation sector, particularly for intermediate load combined-cycle gas turbine (CCGT) plant, is a major driver of gas demand growth in Australia.

Natural gas has application in many different types of industrial enterprises, including minerals processing, fertiliser/ammonia and other chemical manufacturing facilities.

Many of these industries face global competition where prices are set in global markets. They are therefore likely to qualify as Trade Exposed Emission Intensive Industries (TEEII) in a future emissions trading scheme.

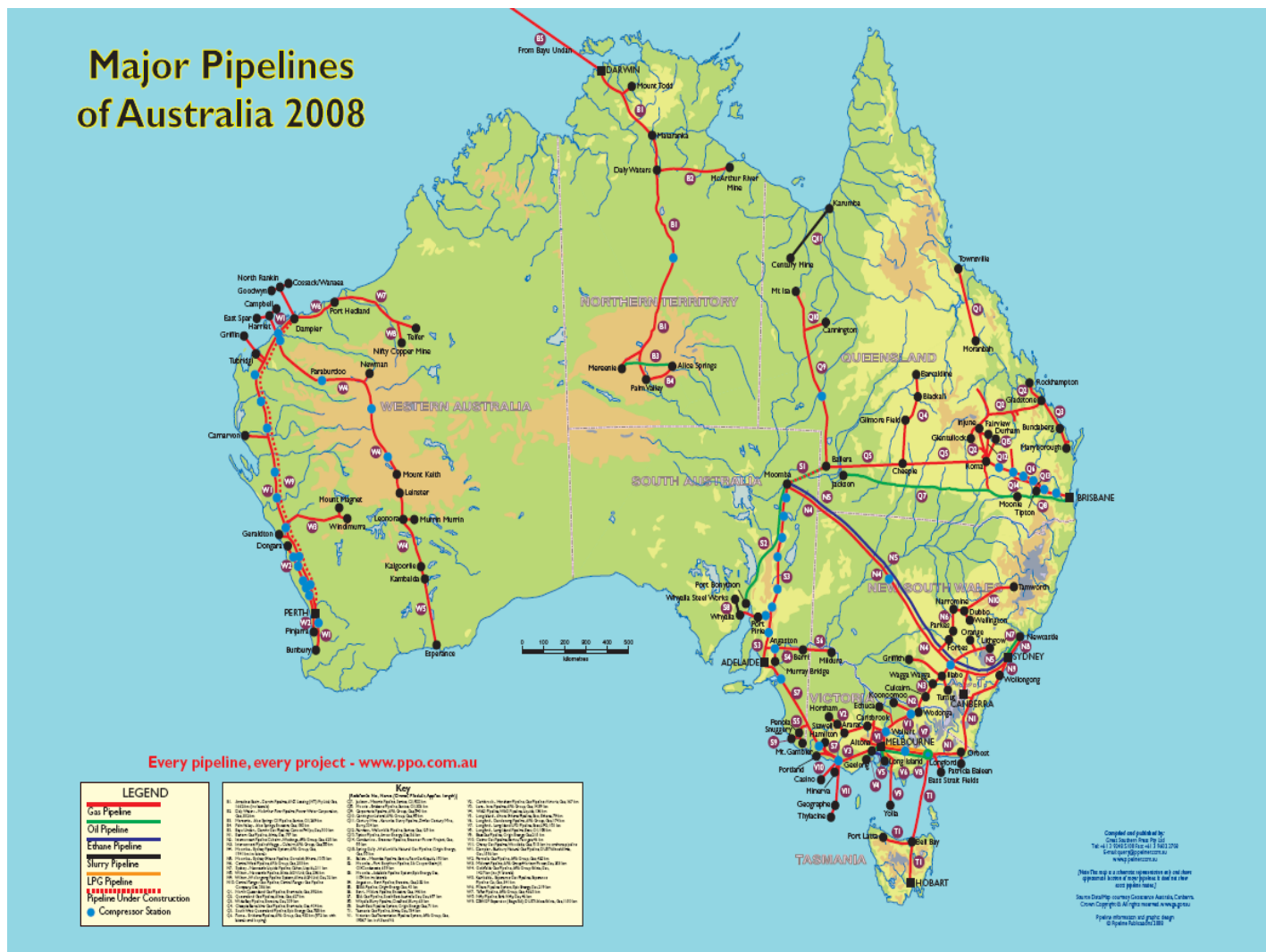
## The Gas Transmission Sector

Australia's natural gas supplies and reserves are linked to major markets by high-pressure transmission pipelines. Generally, natural gas transmission pipelines operate at pressures of above 1050 kPa (although some have lower pressure). Facilities feature larger diameter steel pipelines, compressor stations and remote systems management delivered through supervisory and control systems (SCADA).

There are more than 21,000 kilometres of high-pressure transmission pipelines used in long-distance transportation of natural gas. Australia's major natural gas and liquid fuels pipelines are shown in Figure 4.

Figure 4 **Australia's gas pipelines**

Pipeline Map of Australia, Copyright Pipeline Publications (not to be reproduced without prior permission)



## **Distribution**

The distribution stage of the gas chain involves operating the gas reticulation or network system, to take gas from gate stations to homes, offices and factories. Distribution pipelines operate at medium to low pressures. There is around 75,000 kilometres of low-pressure gas distribution pipelines.

Distribution networks begin at the city gate stations, where natural gas is transferred from the larger, high-pressure, long-distance transmission pipelines.

This submission does not address matters relating to distribution pipelines.

## **2. Proposed Emissions Trading Scheme**

APIA accepts the need to reduce greenhouse gas emissions and therefore the need for a system such as an Emissions Trading Scheme (ETS) as outlined in the discussion paper. The discussion paper notes that modelling of different options is still underway and further analysis will be undertaken of the impacts of the proposed scheme once this is completed. APIA will reserve further comment on the economic impact of the proposed ETS until the results of the modelling are released.

Principally, APIA argues that, in any system, a level playing field should be created for all participants, and this can be broken into the following areas:

- ◆ the point of obligation;
- ◆ the impact on contractual positions arising as a result of the ETS, for example, the impact of contract clauses on the ability for pass through of costs incurred as a result of the ETS;
- ◆ potential liability for venting of off-specification gas;
- ◆ the treatment of trade exposed energy intensive industries (TEEIs);
- ◆ the role of the private sector in investment in natural gas and CO<sub>2</sub> transmission pipelines , and
- ◆ inconsistencies between the ETS and other schemes, such as the MRET scheme.

The natural gas sector is an important supplier of energy to many TEEIs, such as the aluminium and minerals processing industries. The discussion paper outlines proposed

compensation arrangements for these industries. From the gas transmission industry's perspective the classification of TEEIs and the compensation arrangements are critical. The TEEIs are important customers of the gas industry. A loss of this market could significantly impact the development of the natural gas industry in Australia.

It is essential that TEEIs remain competitive with competing industries operating in countries that have not adopted a comparable ETS scheme.

APIA's specific comments on the ETS model follow.

### 3. Point of obligation

The technical guidelines provided by the Department of Climate Change for comment under the National Greenhouse and Energy Reporting System (NGERS) have provided a default emission factor for high-pressure natural gas transmission pipelines of 8.7 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) per kilometre of pipeline (NGERS, 2006).

The guidelines state that emissions from high-pressure transmission pipelines may "occur as a result of compressor blowdowns for maintenance at compressor stations, maintenance on pipelines, leakage and accidents". For clarification, gas transmission pipelines do not leak.

Gas transmission pipelines have the following sources of greenhouse gas emissions:

- Exhaust gases from compressor drivers - gas turbines of gas engines
- Blowdowns from compressors stations
- Off specification gas being control-vented
- Blowdowns of scraper traps - generally during inspections.

These emissions are typically measured and accounted for by pipeline companies as part of their gas accounting for shippers of system use gas and will, for most pipelines, be readily available for the purposes of the NGERS and an ETS.

This system-use gas, or operational emissions for gas pipelines, will vary with pipeline size and throughput, and will depend on compression facilities and their usage.

APIA notes with great concern the comments made in the Emissions Trading Scheme discussion paper that "Fugitive emissions from gas transmission and distribution systems already represent leakage of an economic resource and a possible public safety hazard." (p52). This is not accurate in relation to natural gas transmission pipelines. We have previously stated that there is no leakage in the transportation system (as opposed to the distribution system) but we acknowledge that a minimal amount of gas is control

vented from time to time as part of the transportation process, and is definitely not a public safety hazard.

All venting is undertaken in a safe and controlled manner, in line with Australian Standard 2885 and pipeline companies' Standard Operating Procedures, with absolute regard to any potential public or environmental hazard. Consequently, this industry does not accept that this activity constitutes a public safety hazard and this implication should not stand unchallenged. It must be noted that gas transmission and gas distribution networks have very different operating processes and physical constraints. Transmission pipelines do not leak and have an impressive safety record.

Transmission pipelines have a commercial imperative for the accurate measurement of system use gas and this ensures that there are procedures that promote the efficient use of the gas.

In addition, clarification is required with regard to the comment that "the point of obligation for fugitive emissions from pipeline systems could be placed on pipeline systems as defined by operational control of the physical infrastructure, such as pipes, valves and compressor stations" (p30-31). Again the term "fugitive" infers uncontrolled and unrecognised leakage which does not reflect the reality of transmission pipeline operations. Transmission pipelines do not leak, but operational activity does require the occasional minimal venting of gas. The recognition that all parties in the gas industry need to work towards strategies and processes that minimise carbon emissions is accepted, and is a different argument from one that states there are large amounts of gas escaping to the atmosphere in an uncontrolled manner.

Any point of obligation requirement will necessarily be industry specific and again APIA reinforces the point that natural gas transmission and natural gas distribution are different industries with different operating environments and constraints.

Transmission pipeline companies accept the need for responsibility for emissions that emanate at a facility level for pipeline infrastructure, however further information is required regarding liability for emissions.

It should be recognised that commercial arrangements pre-exist the development of the ETS. As a result, transitional arrangements which recognise the implications of long-term contracts between shippers and transmission businesses may need to be considered. If a company does not have the means to pass on the costs associated with the proposed ETS then financial impacts will be significant.

#### 4. Gas transmission contracts

One practical consideration in implementing a start-up emissions trading scheme will necessarily be the reasonable attributing of associated costs to the appropriate parties.

There are a number of contracts and access arrangements supporting the commercial structure of gas transmission in Australia. These private arrangements and government regulated access arrangements may or may not allow for the pass through of an ETS liability.

APIA considers that compensation should be available to pipeline enterprises where contract conditions prohibit pass through of costs.

APIA is unaware of provisions, in the proposed ETS framework, for cost recovery or pass-on arrangements associated with the proposed emissions trading scheme. The issue of costs associated with an ETS is a significant issue given that the gas transmission industry utilises long-term contracts where pass through of costs associated with an ETS were not foreseen at the time of the contractual agreements, and hence such costs are not covered in current contracts.

It should also be noted that pipeliners are contracted to transport gas and do not determine the use of the product. Therefore, in order to encourage the required behavioural changes in relation to emissions by producers and the wider economy, some form of transitional arrangement will be required to assist in the establishment of the ETS's acceptance phase to ensure emissions costs do not impose a prohibitive and unfair burden on pipeliners.

It is imperative that emissions trading legislation specifically addresses this issue, as was done in respect of the Goods and Services Tax.

##### **Potential liability for venting of off-specification gas**

Off-specification gas is gas that does not meet the conditions set out in "AS 4564 - 2005 - Specification for general purpose natural gas" and in related contractual arrangements between gas shippers and gas transporters. Such contracts refer to AS 4564, but may also have additional specification expectations such as temperature, CO<sub>2</sub> levels and heating value.

There are occasions where a producer may inject off-specification gas into a transmission pipeline. Ordinarily when this occurs, there is no significant detriment as, by the time that gas gets to the point of consumption, it has been co-mingled and therefore is of an acceptable specification. However, on occasions, a significant amount of off-specification gas may be injected into a pipeline that cannot be addressed through

co-mingling. In this case, the off-specification gas received from a shipper is a major concern in pipelines, as transporting the gas may cause problems and damage to the transporter's and shipper's equipment and, down the line, result in a customer receiving gas that does not perform to expectations and requirements, or it could possibly present a safety hazard when used by the customer.

In such a circumstance it is necessary, on safety grounds, to vent that gas from the pipeline.

Under the current drafting of the NGERs legislation, off-specification gas is considered a liability of the operator of the transmission pipeline, as they have operational control of the facility. However, the existence of the off-specification gas is not a fault of the pipeliner, but of the producer. To hold the pipeliner accountable under an ETS, would be inequitable and not provide the required behavioural signals to the producer in order to prevent this from occurring in the first place.

In current contractual arrangements between shippers and gas transmission enterprises, an ETS was not envisioned. Therefore, the contractual arrangements do not cater for such a scenario. Clearly, to hold the pipeliner liable for such a scenario would be inequitable. Transition arrangements will be necessary to avoid the pipeline operator incurring these costs while these older contractual constraints exist.

## **5. Compensation for trade exposed emissions intensive industries (TEEIs)**

While the liquefied natural gas (LNG) industry and many industries that depend on natural gas will be categorised as TEEIs, due to their high dependence on international markets, the natural gas transmission pipeline sector is not, on its own, a TEEI.

APIA emphasises that arrangements for establishing TEEI thresholds and compensation will be critical to Australia's competitiveness and economic growth in the period before the non-participating economies implement comparable emissions reduction policies.

Regulatory and policy failure in this area would result in significant economic and social costs to Australia. The discussion paper notes a number of uncertainties in determining the level of compensation to TEEIs in the transition period pending the adoption of comparable emission trading instruments in other countries. APIA suggests that TEEIs should be compensated for the full impact of additional costs on their international competitiveness until other countries have implemented comparable schemes. It is also suggested that a conservative approach be taken to the classification of thresholds and levels of compensation, recognising that new information will become available over

time to better inform decisions. The cost of premature loss of existing TEEIs, as a result of the introduction of an ETS, is likely to be significant for the economy as a whole as well as for the natural gas transmission industry.

Also, there needs to be an effective consultation and appeal process in the governance arrangements for the proposed Independent Carbon Bank, or equivalent organisation, with respect to benchmarking and compensation decisions, as there will be a high level of uncertainty associated with technical progress in emission reduction technologies, estimates of global competition and future policies of non-participating countries.

## 6. Investment in infrastructure

The role that natural gas is to play in reducing the greenhouse gas emissions of the power generation sector is acknowledged in the discussion paper. The paper also notes the possibility of investing government proceeds of the sale of permits in infrastructure.

Recent growth in the Australian natural gas transmission pipeline sector is predominately through the private sector. Australia's economic efficiency and growth will be best served by continuing private investment in natural gas pipelines. The private sector stands ready to invest in further development of natural gas transmission infrastructure, as well as in CO<sub>2</sub> pipelines for carbon capture and storage.

The most important risk to future investment is inappropriate regulation. It is essential that regulatory arrangements do not discourage efficient investment in the expansion of natural gas transmission pipelines. It is noted, for instance, that regulatory decisions by economic regulators, whereby low rates of return are set, are already beginning to restrict gas infrastructure investment in South Australia and Victoria. Access Arrangement decisions have been inconsistent between jurisdictions and a national approach to dealing with the ETS is needed.

APIA believes that prescriptive regulation will remove the opportunity for flexible alternatives in delivering an efficient and effective ETS. As the ETS develops and matures, development of regulations should focus on outcomes that deliver on the Government's policy whilst supporting the continued sustainability of a proven and engaged industry. Given the international nature of energy businesses, an increasingly prescriptive regime in Australia, will place our national enterprises at a competitive disadvantage.

To this end, APIA considers that the final recommendations on the ETS should include complementary recommendations on inter-jurisdictional consistency in regulation and

the removal of regulatory impediments to further efficient investment in gas transmission infrastructure. This is the subject of separate discussion between the industry and government in the process of energy market reform and APIA can provide further information on this matter should it be required.

Investment by government of the proceeds of sale of permits should be focussed on research and development. The further development of the (private sector) transmission pipeline sector will also be critical to the efficient transportation of CO<sub>2</sub> in the system of carbon capture and storage, as most sources of emissions from stationary energy are not co-located with identified geo-sequestration sites. There are real challenges in the safe and efficient transportation of CO<sub>2</sub> gases and, therefore, government assistance should be considered for research and development of CO<sub>2</sub> pipeline technologies and methodologies.

## 7. Mandatory Renewable Energy Targets

APIA agrees with the assessment of the ETS report on the incompatibility of an ETS and Mandatory Renewable Energy Target (MRET). The two schemes working at the same time would lead to inefficient investment in expensive technologies and increase the cost of achieving the emission reduction targets set by government.

Recent modelling conducted for the Australian Petroleum Production and Exploration Association shows that to reach an emissions abatement target of 67Mt CO<sub>2</sub>-e in 2020, electricity prices would need to rise by 18% under an ETS (CRA International). Under a scenario where an ETS is combined with Mandatory Renewable Energy Target (MRET) of 20%, the modelled domestic electricity price rises by 24%. Later modelling by ACIL Tasman suggests that the increase in electricity prices could perhaps be higher if the Government's 2050 emissions reduction target is to be achieved. The figure would depend upon the features of the ETS scheme eventually introduced.

While an MRET aims to encourage zero-emission power generation technologies, it would create significant distortions in the electricity market because of the intermittent availability of the energy, for example, energy provided by wind power. Zero-emission power generation still requires additional reserve generation to be drawn on at short notice to maintain stability in electricity transmission grids.

In other words, wind power needs a back-up generation source to cover for the unreliability of wind. There are clear indications from policy makers that gas-fired intermittent load plants are expected to provide this back-up in most Australian states.

However, MRET style schemes can be a disincentive to new investment in low-emission gas-fired power generation that can help maintain generation stability.

Such schemes address technologies such as wind and solar power but generally fail to accommodate the cost differential between other sources of electricity. An MRET style scheme may superficially make wind power attractive but does not take account of the unreliability of supply. Thus the expensive investment in wind-generated power could encourage a cheap (per unit) coal fired plant to ensure reliability.

This demonstrates the possibility that current policies could create a price signal that would defer the next investment in gas-fired power generation, which may have a higher unit cost but gives a cleaner output than coal-fired generation. The distortions in the market created by MRET style schemes may well negate the policy objectives behind their introduction.

APIA agrees with the ETS Discussion Paper that the MRET should be phased out once the ETS is established. To provide certainty for business investment such a phase-out would require a clear timetable.

As the Government's public commitment to an MRET means that this scheme will be introduced, APIA encourages an expansion of the MRET definition to include lower emission fuels, so that natural gas can be considered as a fuel source under the scheme, thus helping to ensure there will be appropriate investment in natural gas infrastructure.

Expanding the proposed scheme, to allow movement between natural gas and renewable energy technologies would provide greater flexibility for energy producers while still supporting the development of renewable technology. An expanded definition for the scheme would also ensure smoother electricity prices for consumers given the significantly higher costs of energy from renewable technologies.

## **8. Conclusion and Recommendations**

APIA accepts the general framework of the ETS outlined in the discussion paper, subject to the release of further modelling and detail on the operation of the scheme.

APIA emphasises that emissions from the natural gas transmission sector are limited to system use gas, that is, gas used in the operation of the pipeline facility, not fugitive emissions. Further information on this issue may be found in the APIA submissions to the Department of Climate Change on the NGER (attached).

Key areas of concern to APIA, and recommendations for consideration, are:

- The treatment of contracts where pass through of costs arising from introduction of the emissions trading scheme are not allowed. **APIA recommends that compensation provisions are provided until such time as the contracts are concluded or can be renegotiated and that the ETS legislation specifically allows pass through of the cost of permits**
- The inconsistency between an ETS and renewable energy targets such as the MRET scheme. APIA does not support the introduction of an MRET in the currently proposed form. **APIA recommends that any MRET or similar scheme be phased out with the introduction of an ETS. If the scheme is not phased out APIA recommends that the definition of the scheme be extended to include natural gas.**
- Further investment in gas transmission pipelines and carbon dioxide pipelines will be important to the efficient achievement of the Government's emissions targets. **APIA recommends that:**
  - **Appropriate policies should be in place to encourage private-sector investment in natural gas transmission, including improved regulatory outcomes and reduced regulatory risk to major investments**
  - **Investment in research and development into CO<sub>2</sub> pipelines be considered as a key component of development of carbon capture and storage technologies.**

## References

ABS. (2008). *Australian National Accounts*. Canberra: Australian Bureau of Statistics.

Garnaut Climate Change Review. (2008). *Emissions Trading Scheme Discussion Paper*. Melbourne: Commonwealth of Australia.

## Attachments A and B

APIA submissions to the Department of Climate Change - National Greenhouse and Energy Reporting System.