

National Energy Guarantee Draft Detailed Design for Consultation, Commonwealth Elements, June 2018

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INTRODUCTION

Since 1959, the Australian Petroleum Production & Exploration Association (APPEA) has been the peak national body representing the upstream oil and gas exploration and production industry. APPEA has more than 60 member companies that explore for and produce Australia's oil and gas. In addition, APPEA's more than 140 associate member companies provide a wide range of goods and services to the industry. Further information about APPEA can be found on our website, at www.appea.com.au.

APPEA welcomes the opportunity to provide comment on the *National Energy Guarantee Draft Detailed Design for Consultation, Commonwealth Elements, June 2018* (the Draft Consultation Paper), released on 15 June 2018. This submission builds on APPEA's March 2018 submission to the Energy Security Board's *National Energy Guarantee Draft Design Consultation Paper*.

In addition to the APPEA submission, a number of APPEA members have made individual submissions to the Draft Consultation Paper. This response should be read in conjunction with submissions from individual APPEA members.

In the brief period available to respond, APPEA's submission addresses specific aspects of the Draft Consultation Paper, focussing on those areas that are particularly important for the upstream oil and gas industry.

THE AUSTRALIAN UPSTREAM OIL AND GAS INDUSTRY

It is important to place our views on the issues raised by the Commonwealth Government in the Draft Consultation Paper within the context of the state and potential future contribution of the upstream oil and gas industry to the Australian economy and to the welfare of all Australians.

Reliable, secure and competitively priced energy is crucial to our everyday lives in Australia. Within this framework, oil and gas plays a key role in meeting many of our energy needs.

Australia has substantial natural gas resources. Geoscience Australia¹ has estimated that Australia's identified gas resources are around total prospective gas resources are around 257 trillion cubic feet (tcf) or 280,000 petajoules (PJ). By way of comparison, Australia's production of natural gas in 2017 (including exports) was around 3.9 tcf or 4,100PJ², meaning, with favourable policy settings, Australia has more than enough gas to service both domestic (including for gas-fired power generation) and export markets for decades.

Our abundant natural gas resources place Australia in an enviable position to maintain long-term, cleaner energy security domestically and internationally. Natural gas has a key role to play as Australia meets its growing energy needs over the coming decades while reducing emissions and addressing the risks posed by climate change.

This means the design of the National Energy Guarantee (the Guarantee) will be an important determinant of future demand for gas-fired power generation.

Just as importantly, the industry creates significant wealth for the country, including through the employment of many Australians, underpinning the revenue collections of governments and generating valuable export revenue for the Australian economy.

¹ Geoscience Australia (2018), *Australian Energy Resource Assessment* (available at aera.ga.gov.au). This report also estimates Australia's total prospective resources of gas, which includes Australia's enormous shale gas potential, at around 11,300 tcf or 12,500,000PJ.

² EnergyQuest (2018), *EnergyQuarterly June 2018 Report* (available at www.energyquest.com.au/reports.php?id=1).

NATURAL GAS: A LOW-EMISSIONS ENERGY SOURCE INTEGRAL TO A LOW CARBON ELECTRICITY SECTOR

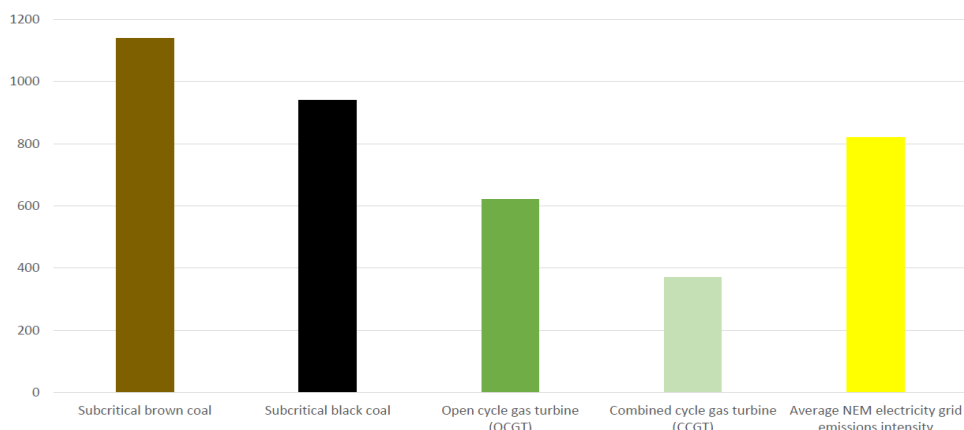
Australia could generate significant additional national economic, environmental and social benefits through greater utilisation of its substantial natural gas resources.

Using more natural gas in Australia's power generation and resource processing would significantly enhance the nation's ability to meet increasing energy needs while at the same time reducing greenhouse gas emissions. As noted, the design of the Guarantee will have a key role to play in securing this positive outcome.

As data in the *Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future* (the Finkel Review Final Report) on page 203 shows, available natural gas power generation technologies can reduce greenhouse gas emissions by 55 per cent compared to the National Electricity Market (NEM) average, and by 68 per cent compared to existing brown coal generation technologies and 61 per cent compared to existing black coal generation technologies.

This is illustrated in Figure 1, which shows, using data from page 203 of the Finkel Review Final Report³, the significantly lower greenhouse gas emissions associated with the use of gas-fired power generation compared to the use of other conventional fuels.

Figure 1. Estimated Operating Emissions for New Power Stations (as generated, kg CO₂-e/MWh)



Source: Data from the *Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future* (2017).

The increased use of natural gas also has several additional environmental benefits, including:

- Reduced emissions of fine particulates.
- Reduced emissions of sulphur dioxide (an important contributor to smog and acid rain) and nitrogen oxides.
- Significantly lower demand for water for power station cooling.

As the Finkel Review Final Report found on page 105:

³ Commonwealth of Australia (2017), *Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future*, June (available at www.energy.gov.au/government-priorities/energy-markets/independent-review-future-security-national-electricity-market).



Access to a reliable and affordable gas supply is in the interest of all Australians for its direct use for heating, as a feedstock chemical for industrial processes and as a fuel for electricity generation. In the NEM, gas-fired generation can provide a reliable, low emissions substitute for ageing coal-fired generation, and can provide essential security services to complement variable renewable electricity (VRE) generation.

In relation to its role on the in reliability and emissions reduction in the NEM – key areas of focus for the Guarantee – the Final Report found on page 107:

Gas contributes to a secure and reliable NEM

Rapid changes in power output from VRE generation need to be balanced with generation technology that has the ability to increase (ramp up) or decrease (ramp down) power output at the same time. Gas-fired generators have the ability to 'fast ramp'. Most of Australia's coal-fired generators do not. In addition, gas-fired generators are synchronous and provide essential security services, including physical inertia to help dampen rapid frequency changes, fault current to help maintain system strength, and the ability to supply or absorb reactive power to help control voltage.

and on page 109:

Gas contributes to emissions reduction

... Australia's coal-fired generation fleet is ageing and is unlikely to be replaced on a like-for-like basis.

The best gas-fired generation is less than half as emissions intensive than even the most efficient coal-fired plant, including ultra-super-critical coal generation, which is referred to as high efficiency, low emissions (HELE) generation. To compete with new gas-fired generation from the emissions point of view, new HELE generation would need to be fitted with carbon capture and storage ...

This means gas has a key role to play in supporting the objectives of the Guarantee outlined on page 4 of the Draft Consultation Paper as:

The Guarantee will provide the policy certainty that industry has said it needs to continue investing in new generation post-2020. This includes investment in the dispatchable capacity needed to maintain the reliability of the system, as well as the low emissions generation needed to reduce emissions in line with Australia's international commitments.

In addition, a 2016 paper⁴ by Syracuse University and the National Bureau of Economic Research, conducted jointly with researchers from the Fondazione Eni Enrico Mattei and Euro Mediterranean Centre on Climate Change in Italy and French Economic Observatory Sciences Po and SKEMA Business School in France, discusses the role of fast-reacting fossil technologies, which includes most gas generation technologies, in supporting renewable energy investments.

It does so by studying the deployment of these two technologies in 26 OECD countries, including Australia, between 1990 and 2013. The paper finds that a 1 per cent increase in the share of

⁴ Verdolini E, Vona, F and Pope, D (2016), *Bridging the gap: do fast reacting fossil technologies facilitate renewable energy diffusion?* (available at www.feem.it/userfiles/attach/20167271022524NDL2016-051.pdf).



technologies such as gas-fired generation capacity is associated with a 0.88 per cent increase in renewables in the long-run.

The paper makes a number of very important conclusions, three of which stand out as directly relevant to the energy debate underway in Australia and issues that are being considered by the Government in considering the Guarantee's detailed design.

Firstly, it shows that countries where gas-fired generation capacity is available are more likely to invest in renewable energy generation, particularly over the longer-term.

Secondly, gas-fired generation, due to its quick ramp-up times and lower capital costs compared to traditional baseload technologies, has enabled renewable investments by providing reliable back-up capacity to support variable renewable supply.

And lastly, renewables and fast-reacting gas-fired power generation technologies appear as highly complementary and should be jointly installed to meet the goals of reduced emissions and stable supply.

This means that as the penetration of renewable energy increases, so will the requirements for increased back-up capacity. Serious stresses will be put on energy systems, such as the NEM, unless the relationship and the complementarity between gas-fired power generation and renewable energy technologies are appropriately acknowledged.

The paper goes on to argue that a debate that sets up renewables and gas as being in opposition misses this important point.

The design of the Guarantee therefore represents an important opportunity to secure the role natural gas can play in the transition to a more reliable and lower emissions electricity sector and, through the consultation process, to recommend to COAG a package of measures that could increase gas supply and allow gas to play the critical role identified by, amongst others, the Finkel Review Final Report.

The potentially growing role of natural gas reflects the role gas could play as a lower-emissions and cost-effective generation technology, both in replacing coal-fired generation and in complementing the growth in renewable technologies.

Intermittent renewable energy requires "on call" electricity generation to manage falls in renewable output or peaks in demand. Gas-fired generation is a dispatchable technology capable of delivering that flexible response. As more renewable energy is integrated into the grid, and as the Draft Consultation Paper recognises, this balancing role becomes more critical.

Experience in the United States demonstrates how quickly emissions from the generation sector can be cut by fuel switching. Data from the US Government Energy Information Administration⁵ shows energy-related emissions in the US in the first six months of 2016 were at their lowest level since 1991, having fallen about 16 per cent from their peak in 2007. Amongst other reasons, this was possible because the US is developing its abundant natural gas resources.

We have a similar opportunity in Australia. If they can be produced, there are sufficient resources to underpin a historic shift to a lower emissions generation sector.

⁵ See www.eia.gov/todayinenergy/detail.php?id=28312 for more information. For more recent data, which shows emissions were lower again in the first six months of 2017, see www.eia.gov/totalenergy/data/monthly (Carbon dioxide emissions from energy consumption: 12.1 By source).



THE BARRIERS TO GAS PLAYING THIS KEY ROLE MUST BE REMOVED

Australia could generate significant additional national economic, environmental and social benefits through greater utilisation of its substantial natural gas resources.

One of the key barriers to gas playing the critical role identified in various reviews, including the Finkel Review Final Report, is the regulatory barriers that are preventing the development of more gas to flow into the domestic market and the entry of more suppliers into that market.

The COAG Energy Council has consistently supported the need to bring more supply and more suppliers into the market but this collective position is not supported by all state governments. The most extreme case is Victoria, which has prohibited all onshore gas activity. Various regulatory barriers have also prevented the industry moving forward in New South Wales.

Until all jurisdictions support a co-operative COAG agenda to remove the regulatory and other barriers to new gas supply, the emissions and reliability objectives of the Guarantee will be compromised.

Such an outcome is also inconsistent with the recommendations of the Australian Competition and Consumer Commission (ACCC)⁶ which has consistently recommended governments adopt:

... regulatory regimes to manage the risks of individual gas supply projects on a case by case basis rather than using blanket moratoria. Governments should take into consideration the significant effects that moratoria and other restrictions on gas development may have on gas users.

In a similar way, the Finkel Review Final Report⁷ found:

... regulatory restrictions not based on evidence have long-term detrimental impacts on gas exploration and development and disrupt the flow of gas.

The interconnected nature of the east coast gas market means decisions made by states in isolation have national consequences and impacts for multiple markets – including the NEM. The consequences of these interventions are now being felt. Any disruptions to the flow of investment will impact the availability of gas for the domestic market, leading to higher prices and consequent risk to the economy and jobs.

The Panel considers that governments should avoid blanket restrictions and bans on gas projects and instead encourage the safe exploration and development of the industry. Evidence based regulatory regimes enable the risks of individual gas projects to be managed on a case-by-case basis.

and went on to recommend:

Recommendation 4.3

Governments should adopt evidence based regulatory regimes to manage the risk of individual gas projects on a case-by-case basis.

⁶ See www.accc.gov.au/regulated-infrastructure/energy/east-coast-gas-inquiry-2015 and www.accc.gov.au/publications/serial-publications/gas-inquiry-2017-2020 for further information.

⁷ Commonwealth of Australia (2017), *Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future*, June (available at www.energy.gov.au/government-priorities/energy-markets/independent-review-future-security-national-electricity-market).



This should include an outline on how governments will adopt means to ensure that landholders receive fair compensation.

In a similar way, the Government should continue to push, in its advice to the COAG Energy Council, the urgent removal of existing bans and moratoriums on natural gas supply on the east coast, with their replacement by a comprehensive and consistent regulatory regime across COAG Energy Council jurisdictions.

This recommendation is vital to ensuring natural gas plays the critical role envisaged for it by the Government and to support the aims for the Guarantee set out in the Draft Consultation Paper.

COMMENTS ON SPECIFIC SECTIONS OF THE DRAFT CONSULTATION PAPER

As outlined above, our abundant 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 while incorporating a strategy to curb emissions and address the risks faced as a result of climate change.

GENERAL COMMENTS

The design elements discussed in Chapters 2-4 of the Draft Consultation Paper are of key interest to the upstream oil and gas industry. However, many of the issues are discussed in these Chapters (as they were in the February 2018 Draft Consultation Paper) in a manner that suggests key decisions have already been taken.

That the positions adopted in the February 2018 Draft Consultation Paper are essentially unchanged is concerning, particularly, as will be considered below, the lack of any recognition of the position facing LNG production as a trade-exposed industry.

APPEA recommends the Government consider very carefully the feedback provided through the consultation process before making final decisions on the design elements considered in the Draft Consultation Paper.

SETTING AND REVIEWING THE ELECTRICITY EMISSIONS TARGET

Setting the electricity emissions target and review process

Setting the sectoral emissions reduction target

The Draft Consultation Paper on page 6 notes “... the Government has previously said that the target for the electricity sector would be a 26 per cent reduction on 2005 levels by 2030”. However, as was the case with the February 2018 Draft Consultation Paper, the Draft Consultation Paper offers little cost-benefit analysis of whether this is the appropriate target for the sector or whether a higher target may be more efficient and, consistent with APPEA's *Climate Change Policy Principles*, lead to lower cost emissions abatement across the entire economy.

APPEA recommends further analysis on the appropriate emissions reduction target for the electricity sector – and whether a higher target should be adopted for the sector – form part of the August 2018 advice to COAG and that further work follow that meeting before a final target is incorporated into Commonwealth legislation.

Form of the emissions reduction target under the Guarantee

Notwithstanding concerns with the level of the target itself, APPEA notes the approach set out on page 6 of the Draft Consultation Paper, that the electricity emissions reduction be expressed as a trajectory of annual average emissions per MWh, appears to remain a reasonable approach. As well as being self-adjusting to the level of demand, while leaving the level of emissions per MWh retailers must achieve unchanged, this approach could accommodate a different emissions reduction target for the sector through adjustments (up or down) to the trajectory.

It is not clear, from the discussion on pages 6-7, whether the Government is contemplating a linear emissions reduction trajectory over the period 2021-2030 or a different trajectory, one that while leaving the total emission budget unchanged, would contemplate smaller reductions in early years before requiring larger reductions in later years. Such an approach could accommodate technological improvements and other cost reductions that may make emissions reductions in later years easier/more cost effective.

Forecast and adjustments to the target

APPEA notes the continued reliance the approach outlined on page 7 places on AEMO's electricity demand forecasts (the reliability requirement, considered in APPEA's submission to the Energy Security Board on their Draft Consultation Paper, also relies on AEMO's forecasting).

AEMO's forecasting performance and history is (at best) mixed. An improved forecasting ability and performance will be required to underpin a number of elements of the Guarantee. This is considered in more detail in APPEA's submission to the Energy Security Board's Draft Consultation Paper.

In the context of forecasts and adjustments to the target, APPEA agrees with the approach set out in the Draft Consultation Paper, that is, that the trajectory of the electricity emissions targets not generally be adjusted to account for variations in electricity demand, but that the decision about how much to adjust for previous variances between forecast and actual demand would be made in the context of setting any future electricity emissions targets (for example, in 2025).

That means APPEA generally supports the option set out on page 7 of the Draft Consultation Paper, that would see the Government "... take account of variations in demand when the next set of electricity emissions targets are set by 2025".

This process would still rely on electricity demand projections and forecasts of demand from trade-exposed businesses that would be taken into account when setting future targets, which means improvements to the reliability of these forecasts remain necessary to underpin this aspect of the Guarantee.

Timing and process for setting the electricity emissions target under the Guarantee

APPEA agrees with the approach set out on page 7 of the Draft Consultation Paper, that is, that the electricity emissions target trajectory be set for ten years, from 2021-2030 and that at least a further five years of targets under the Guarantee be set every five years, in a process aligned with the five-yearly review processes under the Paris Agreement. APPEA also continues to support the proposal to provide five years' notice to any changes to the target trajectory be provided by the Government.

Geographic neutrality

APPEA supports a nationally coordinated and consistent approach to reducing emissions across the Australian economy, including in the electricity sector. Uncoordinated and inconsistent policies across



different jurisdictions, particularly those applying in a way that is not technology neutral, have resulted in inefficient investment decisions, a greater compliance burden for the electricity sector and increased costs to consumers and the broader economy.

It is vital the design Guarantee learn the lessons from these experiences, and apply NEM-wide, allowing any requirement to be met at a NEM-wide level.

As was recommended in APPEA's submission to the February 2018 Draft Consultation Paper, if the COAG Energy Council makes a decision at its August 2018 meeting to proceed with the Guarantee design, then a consultation process should commence to focus on ways to ultimately replace (rather than "accommodate" in the final Guarantee design) the hotch potch of renewable energy targets across NEM jurisdictions with a single mechanism – an efficiently designed, low cost, National Energy Guarantee.

IMPLEMENTING THE EXEMPTION FOR EMISSIONS-INTENSIVE TRADE-EXPOSED ACTIVITIES

The lack of any change to the proposed treatment of LNG production as an EITE activity under the RET, to accommodate the shortcomings identified in APPEA's submission to the February 2018 Draft Consultation Paper, is extremely disappointing.

It remains vital this shortcoming in the RET approach be rectified in the design of this element of the National Energy Guarantee.

Exemptions for EITE activities

APPEA supports the proposal set out on page 9 of the Draft Consultation Paper to recognise the competitiveness of trade-exposed industries by effectively exempting these industries from the emissions requirement.

EITE activities eligible for exemption

However, for the upstream oil and gas industry, specifically LNG exports, the approach under the RET **requires urgent change**. This change, to the LNG activity definition (considered in detail below), was discussed in the context of the RET consultations/negotiations that occurred in 2015, but was left unresolved.

While it has not so far been addressed in either the February or June 2018 Draft Consultation Papers, this consultation process continues to present an opportunity to finally address the shortcomings in the approach facing LNG exports, and ensure that, **like all other relevant trade-exposed activities**, the export of LNG also receives a 100% exemption. This is not the case under the RET approach.

Specifically, APPEA has since December 2012 recommended the inappropriately narrow definition of LNG production included in the *Renewable Energy (Electricity) Regulations 2001* regulations be amended to align with a broader and more appropriate definition that recognises that LNG production includes both an 'upstream LNG facility' (a facility which extracts a gas mixture containing natural gas or a pipeline that supplies the gas mixture containing natural gas as part of an LNG project) and an 'LNG facility' (a facility where some or all natural gas handled or transported by an upstream LNG facility is liquefied). APPEA's recommended approach, while has been under discussion with the Government for some time, uses a definition of LNG production that appropriately encompasses the entire production process rather than the definition of LNG production applying under the RET arrangements that applies narrowly to only the liquefaction process itself.



This definition would appropriately recognise that LNG production is an integrated process that commences with the extraction of natural gas from the relevant reservoir and ends with its loading onto a LNG carrier.

The current RET treatment, with its narrow definition of LNG production, does not provide a 100% exemption and places significant costs on these trade-exposed projects, with the existing arrangements still offering only an exemption to a narrow definition of LNG production (it is still a “partial” exemption, in effect).

This means that, for these projects, the policy aim outlined in the Second Reading Speech introducing the *Renewable Energy (Electricity) Amendment Bill 2015* as being to “... protect jobs in these industries and ensure they remain competitive” and which appears to underpin the objective of the EITE exemption set out on page 9 the Draft Consultation Paper, **is not being met**.

APPEA recommends that the definition of LNG production be amended to more appropriately recognise the production of LNG is an integrated process that commences with the extraction of natural gas from the relevant reservoir and ends with its loading onto an LNG carrier be included in the treatment of trade-exposed industries that form part of the implementation of the Guarantee. It is vital this shortcoming in the RET approach be rectified in the design of this element of the National Energy Guarantee.

To maintain the consistency between the Guarantee and the RET, APPEA recommends the definition of LNG production settled through this consultation process be replicated in the *Renewable Energy (Electricity) Regulations 2001*, replacing the inappropriately narrow definition that is used in those regulations.

Administering the EITE exemption

APPEA supports the approach outlined on page 9 of the Draft Consultation Paper, that is, that the Clean Energy Regulator (CER) administer EITE exemptions under both the Guarantee and the RET.

Method for working out exemption amount

Exemption methodology

Subject to the vital amendments to the treatment of LNG production highlighted above, the approach set out on page 10 of the Draft Consultation Paper, appears reasonable.

Treatment of self-generation

Alongside the provisions considered above for trade-exposed industries, the *Renewable Energy (Electricity) Act 2000* also includes provisions to exempt self-generation from RET obligations⁸.

In addition to recognising the competitive position of projects that self-generate their electricity (such as all of the LNG projects in northern and western Australia), the provisions support self-generation by recognising a substantial proportion of self-generation uses less greenhouse-intensive natural gas or renewables.

⁸ The provisions are contained in subsection 31(2) of the *Renewable Energy (Electricity) Act 2000*.

The provisions also support efficient commercial decision-making, by allowing projects, particularly those operating in rural and remote areas distant from the grid, to access the most cost-effective form of power supply available to them.

The natural gas industry, including the LNG industry, uses natural gas for self-generation purposes (or proposes to) at many facilities around Australia, mostly in northern and western Australia. For example, once all projects under construction are completed, seven of the ten Australian LNG projects will utilise (or may utilise) the self-generation provisions.

While this means for the upstream oil and gas industry, the self-generation provisions are not being utilised in the NEM, future developments may take place in NEM jurisdictions or changes made to NEM or Guarantee coverage.

APPEA notes the only reference to self-generation that appears in the Draft Consultation Paper is on page 12, where the Paper highlights differences in the definitions of electricity covered under the two schemes (the Guarantee the RET).

More detailed consideration is required. To appropriately 'future proof' the Guarantee, APPEA again recommends self-generation provisions be incorporated into the design of the Guarantee.

Audit requirements

APPEA supports the proposal, set out on page 14 of the Draft Consultation Paper, to prescribe that a single audit be carried out and submitted to the CER to meet the requirements of both the Guarantee and the RET.

EXTERNAL OFFSETS

The inclusion of external offsets and A possible approach for the use of offsets

The use of external offsets under the Guarantee was considered in APPEA's submission to the February 2018 Draft Consultation Paper. In summary, APPEA's *Climate Change Policy Principles* support, in the context of a national and broad-based emissions reduction policy, that any policy approach should "... recognise and allow the use of the widest range of credible domestic and international offsets."

Consistent with this position, APPEA continues to recommend the Guarantee's emissions requirement recognise and allow for the use of credible domestic and international offsets and does not place restrictions on the level of offsets that can be used.

Offsets provide an important way to support economically efficient and low cost emissions reduction activities across the Australian economy.

Which offsets could be used under the Guarantee

Domestic offsets

APPEA agrees with the proposal set out on page 16 to allow Australian Carbon Credit Units (ACCUs) for the purposes of complying with the Guarantee.

International units

APPEA also recommends that, if external offsets are to be included the Guarantee, further consultation be held to agree the meaning of 'equivalent standard' to ACCUs and how this



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requirement will be incorporated in the Guarantee's design (and more broadly in Australia's climate change policy approach).



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ATTACHMENT 1



appea

Climate change policy principles



Second edition: December 2015
Australian Petroleum Production & Exploration Association



**APPEA has developed these
climate change policy
principles to assist policymakers
in developing efficient and
effective responses to deal with
climate change.**

APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with an international price on carbon.

Climate policy must be fully integrated and consistent with policies in other areas – including energy, international trade, taxation, economic growth, population, and environmental and social responsibility.

Policy principles

1. International engagement is crucial.

Australia should continue to engage the international community to pursue environmentally effective and economically efficient climate change policies¹.

An international policy framework should:

- Promote international participation.
- Minimise the costs and distribute the international burden equitably.
- Be comprehensive in its coverage.
- Allow for the unrestricted flow of credible emissions units between international jurisdictions.
- Be underpinned by transparent reporting arrangements.

2. Climate change and energy policies must be integrated and harmonised.

Australia's policy response should seek to:

- Deliver lowest cost greenhouse gas emissions abatement through an appropriately designed mechanism that provides an economy-wide transparent price signal to shape business and consumer plans and investments. The mechanism should be efficient, have low compliance costs, and support international trade that recognises different national circumstances.
- Recognise and allow the use of the widest range of credible domestic and international offsets.
- Provide a level playing field for new entrants.
- Avoid penalising early movers who have previously implemented abatement measures.
- Support research into low-emissions technologies, and development and deployment of such technologies.

In the event Australia takes action before comparable action is taken by the nations with which we compete, the Australian policy response should maintain the competitiveness of Australian trade exposed industries, such as LNG, by minimising the costs the industry faces in the absence of a carbon price being imposed on energy sources in customer countries and competitors.

Policies inconsistent with the principles should be phased out and additional measures should only apply to sectors of the economy that are not covered by the price signal on greenhouse gas emissions.

3. Climate change adaptation strategies are necessary.

Australia must:

- Continue to support international and national modelling to provide location-specific climate change forecasts.
- Develop risk-management strategies to reflect likely impacts of climate variability.

4. Climate policy must not compromise national or global economic development or energy security.

Australia's policy response should recognise that:

- Increasing global population and urbanisation generate growing demand for energy.
- Secure energy supply is crucial for a strong modern economy and a healthy, vibrant society.
- Natural gas has a key role to play in the transition to a low-carbon economy – switching to gas could halve the emissions from the Australian electricity sector – and if solar and wind power are to deliver genuine emissions reductions they must have gas-fired back-up.

¹ Australia's contribution to the global climate change effort as set out here reflects the principle in Article 3.1 of the United Nations Framework Convention on Climate Change (UNFCCC) (see unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf). In determining Australia's differentiated responsibilities and capabilities, consideration should be given to matters such as Australia's economic growth and structure, population growth, energy production and energy use.



Australian LNG exports can make an important contribution to reducing global greenhouse emissions intensity.

The global challenge

Throughout the world, policymakers are implementing a variety of regulatory responses to reduce greenhouse gas emissions and mitigate the risks of global climate change.

The Intergovernmental Panel on Climate Change (IPCC) found in its Fifth Assessment Report (AR5) that:

- The human influence on the climate system is clear.
- The more we disrupt our climate, the more we risk severe, pervasive and irreversible impacts.
- Humans can limit climate change and build a more prosperous, sustainable future.²

The multilateral United Nations Framework Convention on Climate Change (UNFCCC) has elicited a global commitment to holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and to pursuing efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels.³

APPEA's stance on climate change

Societies around the world will continue to face two major, interdependent challenges:

- Maintaining and expanding affordable, secure energy supplies to meet growing consumer demand.
- Addressing the social and ecological risks posed by rising greenhouse gas emissions and climate change.

Managing greenhouse gas emissions and meeting growing energy demand requires action by individuals, companies, and governments. Making genuine progress requires an integrated set of solutions. This includes increasing energy efficiency, advancing lower carbon energy technologies, and supporting effective national and international policies.

Reliable and competitively priced energy underpins economic growth and stability, and is crucial to raising living standards in both developing and advanced nations. Therefore, policies aimed at reducing greenhouse gas emissions must do so at the lowest possible cost.

² IPCC (2014), Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland (available at www.ipcc.ch).

³ UNFCCC (2015), Adoption of the Paris Agreement, 12 December (available at unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf).

Natural gas: integral to a low-carbon economy

Natural gas is a lower-carbon form of energy suitable for electricity generation, industry and households.

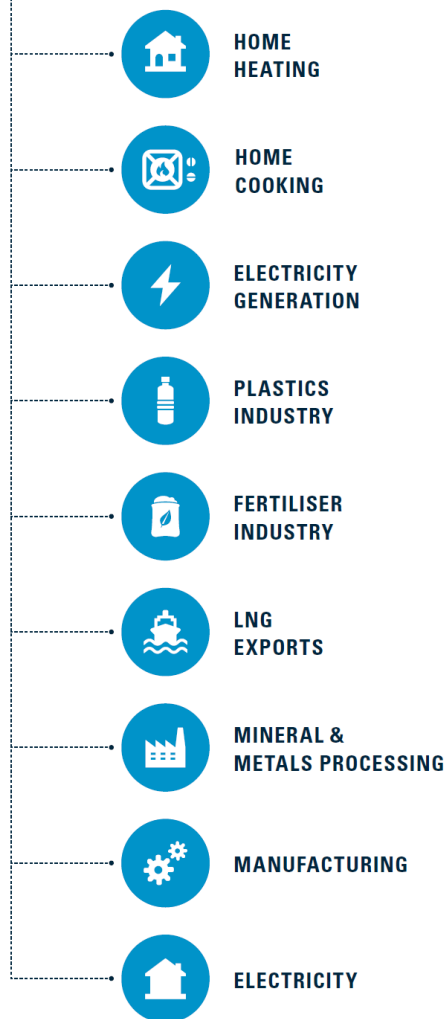
Increasing its use can deliver immediate and substantial carbon savings. Simply switching from coal to natural gas can reduce greenhouse gas emissions by 40-50% and by as much as 75% in some circumstances.⁴

Australia's gas industry, domestically and through our exports of liquefied natural gas (LNG), contributes substantially to the economic development of the nation and reduces global greenhouse gas emissions.

Natural gas is a highly flexible fuel:

- Natural gas is commonly used to generate electricity, heat and steam for industries, including alumina refining, food and beverage manufacturing, and grocery production.
- Natural gas is ideally suited as a complement to renewable electricity generation because gas generation plants can be rapidly turned on and off to respond to changes in intermittent generation from renewable sources.
- Natural gas is the fuel of choice in co-generation and tri-generation. These technologies can provide electricity, heating and cooling at very high thermal efficiencies approaching 80%.⁵
- Compressed natural gas and LNG are used in the transport sector, and this use can be expanded.
- Innovative technologies, such as natural gas fuel cells, have been developed that can provide electricity and heat requirements in applications ranging from a small house to a medium sized office or factory. These technologies can deliver thermal efficiencies as high as 85%.⁶
- Natural gas is also a critical feedstock for industry that often cannot be substituted in producing fertilisers, cleaners, polymers and refrigerants.

NATURAL GAS



⁴ Australian Council of Learned Academies (2013), Engineering Energy: Unconventional Gas Production, June (available at www.acola.org.au/index.php/projects/securing-australia-s-future/project-6). While the emissions benefit is lower when compared to ultra supercritical coal fired power generation, as the Council has noted "gas-fired electricity generation will generally replace existing coal-fired boilers that are less efficient subcritical facilities".

⁵ These technologies are already being deployed in commercial buildings in Australia (see www.urbanenergy.com.au/projects, www.originenergy.com.au/files/Origin_Coca_Cola_place_FactSheet.pdf, www.cityofsydney.nsw.gov.au/vision/towards-2030/sustainability/carbon-reduction/trigeneration and www.qantas.com.au/travel/airlines/electricity/global/en#power for examples).

⁶ Recently there have been significant advances in ceramic fuel cells that run on natural gas, with a range of commercial available products now on the market.

Reducing emissions

The Australian Council of Learned Academies has found using gas to provide more baseload and peak electrical power generation in Australia – in scenarios of higher use of both renewables and gas – would deliver substantial emissions reductions.

This would reduce the Australian electricity generation sector's emissions by between 54 Mtpa-103 Mtpa CO₂-e (million tonnes per annum, carbon dioxide equivalent) by 2030 – a reduction of 27% to 52% from the base case of 197 Mtpa CO₂-e in 2012.

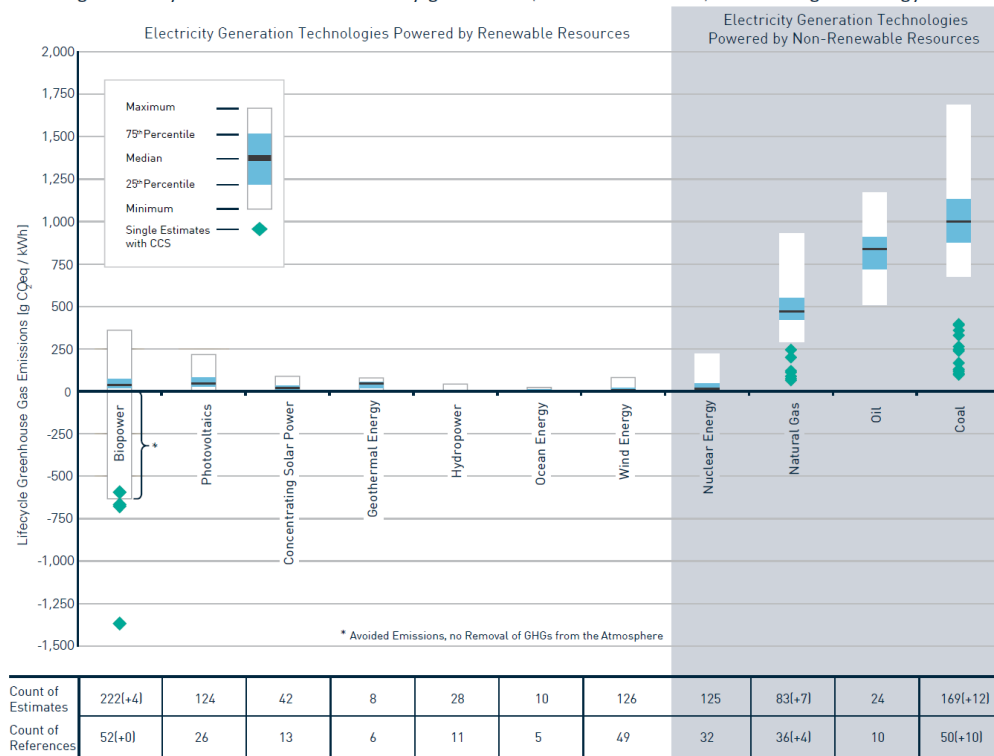
Other environmental benefits

Fuel switching would also have other benefits. Natural gas plants use much less water than coal-fired power and produce much lower levels of noxious substances such as sulphur dioxide, nitrogen oxides and fine particle emissions.

Burning gas instead of coal improves urban air quality. This is particularly important in many Asian countries that are importing Australian LNG or considering imports.

Baseload power is the level of generation needed to meet forecast minimum demands. Baseload power plants must run constantly and at predictable levels. Peaking power is power that can be brought online quickly in periods of peak demand. Intermittent power is any source of energy (such as solar and wind) that is not continuously available.

The range of life cycle emissions for electricity generation (tonne CO₂-e/MWh) from a range of energy sources



Source: IPCC (2011)⁷

7 IPCC (2011), Summary for Policymakers. In: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlomer, C. von Stechow (eds)], Cambridge University Press, Cambridge, UK and New York, NY, USA (available at srren.ipcc-wg3.de/report/IPCC_SRREN_SPM.pdf).

Australia has substantial natural gas resources. Natural gas offers a relatively low-cost emissions abatement opportunity. This means developing these resources can provide significant national environmental, economic and social benefits.



Carbon capture and storage (CCS)

Greenhouse gas storage is seen as one of the pathways to the continued use of fossil fuels in a low-carbon economy.

The global oil and gas industry is leading the world in the practical deployment of this technology. Norway's Statoil has developed large carbon capture and storage (CCS) projects at Sleipner and Snøhvit. In Canada, Shell has developed the Quest CCS project.

In Australia, the oil and gas industry has been at the leading edge of researching and deploying greenhouse gas storage technologies.

The industry instigated significant research efforts into greenhouse gas storage in the late 1990s through the Australian Petroleum Cooperative Research Centre (which has continued through the CO2CRC Limited).

Since that time, several hundred million dollars has been invested in assessing large greenhouse storage projects.

The Gorgon Carbon Dioxide Injection Project⁸ – soon to be commissioned – is the world's largest greenhouse gas mitigation project undertaken by industry.

⁸ See www.chevronaustralia.com/ourbusinesses/gorgon/carbon-dioxide-injection for more information.

APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with there being an international price on carbon.

APPEA climate change policy: key points

1. International engagement is crucial.
2. Climate change and energy policies must be integrated and harmonised.
3. Climate change adaptation strategies are necessary.
4. Climate policy must not compromise national or global economic development or energy security.

APPEA and its members will continue to work with all of Australia's governments to:

- Support a national climate change policy response consistent with the policy principles outlined in this paper.
- Expand the use of natural gas in the domestic economy, with consequent reduction in the emissions intensity of the Australian economy, for example, in electricity generation and resource processing.
- Promote development of lower emissions technologies, such as high-efficiency electricity generation and greenhouse gas storage.
- Make Australia more attractive as an investment destination for LNG projects, so that Australian LNG can help Australia's trading partners reduce their greenhouse gas emissions, thereby contributing to a potential significant reduction in global emissions when compared to the use of higher-emitting fuels.

About APPEA

The Australian Petroleum Production & Exploration Association is the peak national body representing Australia's oil and gas exploration and production industry. APPEA has about 80 full member companies. These are oil and gas explorers and producers active in Australia. APPEA members account for an estimated 98 per cent of the nation's petroleum production. APPEA also represents more than 230 associate member companies that provide a wide range of goods and services to the upstream oil and gas industry.

APPEA works with Australian governments to help promote the development of the nation's oil and gas resources in a manner that maximises the return to the Australian industry and community. APPEA aims to secure regulatory and commercial conditions that enable member companies to operate safely, sustainably, and profitably. The Association also seeks to increase community and government understanding of the upstream petroleum industry by publishing information about the sector's activities and economic importance to the nation.

www.appea.com.au