Energy Supply Association of Australia
www.esaa.com.au

ABN 98 052 416 083

Level 2
451 Little Bourke St
Melbourne

GPO Box 1823
Melbourne
Victoria 3001

P +61 3 9670 0188
F +61 3 9670 1069
E info@esaa.com.au

19 September 2011

General Purpose Standing Committee No. 5
Parliament House
Macquarie Street
Sydney NSW 2000

Via email: gpscno5@parliament.nsw.gov.au

Inquiry into Coal Seam Gas

The Energy Supply Association of Australia (esaa) welcomes the opportunity to comment on the NSW Legislative Council's (General Purpose Standing Committee No. 5) Inquiry into Coal Seam Gas.

esaa is the peak industry body for the stationary energy sector in Australia and represents the policy positions of the Chief Executives of over 40 electricity and downstream natural gas businesses. These businesses own and operate more than $120 billion in assets, employ 52,000 people and contribute $16 billion directly to the nation's Gross Domestic Product.

The introduction of a charge on greenhouse gas emissions through the Federal Government's Clean Energy Future Package will have a significant impact on the energy industry, which currently produces over 37 per cent of Australia's greenhouse gas emissions. Transforming the energy sector to lower emissions, while maintaining energy security, will require many fuel and technology solutions.

As a fuel and technology neutral organisation, esaa does not support either picking winners or ruling out particular options. Rather, energy security is best served by ensuring that industry has a wide menu of options from which to find the best solutions to meet the community's needs. As discussed in further detail below, over the medium term it's likely that this will lead to increased domestic demand for natural gas. This demand will be driven primarily by increased gas-fired generation capacity but also by higher demand for reticulated gas to service residential and commercial/industrial needs. Additionally, Australia is seeing the emergence of a large-scale LNG export industry on the east coast. In this context, any consideration of restrictions on access to the significant CSG reserves/resources available needs to take account of the implications on downstream markets, in particular from an energy security and emissions abatement perspective.

The Association represents downstream electricity and natural gas supply businesses. This submission, therefore, only provides comment on factors relating to the downstream supply of energy. Since the eastern states are linked by way of interconnected electricity and gas networks, the Association considers that the discussion of CSG should not be limited to New South Wales only, as the

ramifications of any actions to limit access to New South Wales CSG may be more widespread. Accordingly, for the most part, this submission will discuss CSG with respect to the eastern states in general, rather than exclusively New South Wales. However, energy security for NSW can only be enhanced by the presence of localised gas production. This will also likely entail lower transportation costs than for gas imported from other parts of Australia, which should in turn beneficially impact retail prices.

Nature and extent of CSG demand and supply (Part 3.a.)

East coast gas reserves have grown substantially in recent years, principally due to the emergence of the coal seam gas industry. Estimates as at December 2010 suggest that the east coast has over 100,000 PJ[1] of natural gas reserves and resources, around 83,000 PJ[2] of which is attributable to CSG accumulations in Queensland and New South Wales. Notably, it is believed that there is further resource potential still, with identified east coast CSG resources totalling around 168,600 PJ[3] in addition to significant shale gas resources yet to be fully assessed[4]. Compared with cumulative domestic demand over the next 20 years of around 24,000 PJ[5] it is evident that CSG will play a significant role in meeting Australia's gas requirements in the future.

Projected resources are not always proved up or may be costly to extract and it is therefore important to ensure Australia has access to the widest range of potential sources to ensure access to a least-cost energy supply.

Installed and availability costs of CSG versus other stationary energy sources (Part 3.d.)

Development costs are the major drivers of gas production costs. These include the cost of drilling and completing exploration, appraisal and development wells and building pipelines and gas processing plants.

Gas production costs vary significantly across most fields, largely depending upon whether a project is onshore or offshore and also whether it requires new infrastructure. These costs have gradually increased over time in line with growth in site development costs, with the most notable increases on the east coast observed for offshore Victoria developments. Independent reports indicate production costs of new fields in the Gippsland basin are likely to face increased costs compared to historical levels, with estimates for some fields as high as $7.20/GJ[6] and it is anticipated that development of further contingent resources from these fields will be more expensive still. In contrast, the production cost for major new CSG

[1] EnergyQuest, *Stage 2 report*, http://www.esaa.com.au/content/detail/2011_ReportsandPublications_esaa_domestic_gas_study, March 2011.
[2] *Ibid.*
[3] Geoscience Australia and ABARE, *Australian Energy Resource Assessment*, 2012.
[4] U.S. Energy Information Administration, *World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States*, April 2011.
[5] Australian Energy Market Operator, *Gas Statement of Opportunities 2010*, December 2010.
[6] EnergyQuest, *Stage 2 report,* http://www.esaa.com.au/content/detail/2011_ReportsandPublications_esaa_domestic_gas_study, March 2011.

developments is estimated to be $4.00-5.00/GJ[7], a modest increase above current costs of $3.00-4.00/GJ[8].

The CSG production costs identified are attractive relative to the forecast increase in offshore Victorian production costs, particularly given the significant volume of CSG identified. However, the likelihood of LNG sales into the Asian market means that domestic gas prices on the east coast may rise, potentially to export parity/netback pricing over time.[9] Asian markets for LNG are based primarily on long term contracts and oil linked pricing and may offer a higher rate of return on investment, but also a means of monetising resources with high upfront development costs, which may be required to obtain development finance at a reasonable price. Gas netback prices at oil prices of US$80/bbl are estimated to be around $7.30/GJ[10].

Increasing fuel prices will play a significant role in the level and type of investment in electricity generation infrastructure in the future. Analysis of the long run marginal cost (LRMC) of generation shows that as at 2010, coal-fired generation has the lowest LRMC at approximately $46/MWh[11] (for black coal super critical plant), with the LRMC for combined cycle gas turbine plant (CCGT) sitting slightly higher at around $59/MWh[12]. Despite the potential increase in gas prices on the east coast however, the introduction of a price on carbon is likely to result in CCGT plant becoming a credible and competitively priced base-load alternative ahead of various other technologies, including renewables.

Proportion of NSW energy needs which should be base load or peaking supply (Part 3.e.), and an assessment of the effect on greenhouse gas and other emissions (Part 1.f.)

As previously outlined, esaa is a fuel and technology neutral organisation and does not support either picking winners or ruling out particular options. Accordingly, the Association considers that any recommendations describing the proportion of New South Wales' energy needs that should be serviced through base load or peaking electricity generation plant should be governed by market investors and not prescribed by external parties. In addition, given that New South Wales is part of the National Electricity Market (NEM), any decisions to invest in electricity generation plant within New South Wales will impact outcomes for customers in the NEM more broadly, rather than New South Wales customers exclusively.

Electricity generation within the NEM is largely dominated by the output of coal-fired base-load plant, and this is likely to continue at least over the medium term. However, recent modelling commissioned by the Association into the impacts of the government's Clean Energy Future package suggests that over the period from

---

[7] *Ibid.*
[8] *Ibid.*
[9] It should be noted that the extent of any price rise observed will be subject to a range of domestic and international factors including supply-side response.
[10] EnergyQuest, *Stage 2 report,* http://www.esaa.com.au/content/detail/2011_ReportsandPublications_esaa_domestic_gas_study, March 2011.
[11] ACIL Tasman, *Projected energy prices in selected world regions*, http://www.treasury.gov.au/lowpollutionfuture/consultants_report/downloads/Projected_energy_prices_in_selected_world_regions.pdf, May 2008.
[12] *Ibid.*

30 June 2013 to 30 June 2020, investment in new base load capacity will principally consist of CCGT plant.[13] This anticipated growth in CCGT capacity will be coupled with additional renewable plant capacity driven by the large-scale renewable energy target, as well as investment in open cycle gas turbine (OCGT) plant to provide peaking capacity. As a result, the contribution of gas-fired generation plant to total generation output within the NEM is expected to increase by around 7 per cent[14] over the period to 2020.

The transition to increased gas-fired generation, as previously noted, is driven primarily by the lower emissions intensity of gas-fired generation plant relative to current-day coal-fired plant devoid of carbon capture and storage technology. New entrant supercritical black coal plant (air cooled) is estimated to have an emissions intensity of around 0.84-0.88 tCO_2-e/MWh (sent out)[15]. In comparison, OCGT and CCGT plant are less emissive with emissions intensities of around 0.66-0.81 tCO_2-e/MWh (sent out)[16] and 0.39-0.50 tCO_2-e/MWh (sent out)[17] respectively. The contribution of gas-fired generation to Australia's overall abatement objectives – as prescribed in the Clean Energy Future package – is therefore likely to be significant.

Contribution of CSG to energy security and as a transport fuel (Part 3.f.)

Under Australia's stationary energy supply paradigm, energy security relies on decentralised, commercially-driven decision-making by businesses (both privately and publicly owned) in markets. As such, energy security conditions are critically influenced by governments' provision of a sound, stable and supportive policy and regulatory environment to facilitate these businesses to make these investments.

In recent years however, there have been examples where government (both federal and state/territory) decisions have undermined this environment. These include: the difficult policy development processes of the Renewable Energy Target and a carbon pricing mechanism; the continued regulation of retail prices in most jurisdictions and the proliferation followed by abrupt modification of state and territory technology support policies. A common theme in these examples is that governments' pursuit of broader policy objectives has deleteriously impacted the policy stability of the energy sector.

The investment challenge facing the sector to continue to deliver energy security to the community and transform to a lower emissions footing is massive, estimated at $220 billion to 2030.[18] As previously outlined, the transition to a less carbon intensive energy supply sector in the future is likely to result in increased demand for natural gas as a fuel source, particularly for electricity generation. Accordingly, to the extent that CSG reserves/resources are considered economic to develop and suitable to

[13] Assuming gas prices in the order of $6/GJ.
[14] ACIL Tasman, *National Electricity Market Modelling – Projecting changes to prices with changes to electricity contracting levels*, http://www.esaa.com.au/content/detail/national_electricity_market_modelling_ACILTasman, August 2011.
[15] ACIL Tasman, *Fuel resource, new entry and generation costs in the NEM*, www.aemo.com.au/planning/419-0035.pdf, April 2009.
[16] *Ibid.*
[17] *Ibid.*
[18] See speech by the Minister for Resources, Energy and Tourism, Australia's Energy Future, to the Committee for the Economic Development of Australia on 4 May 2011.

service future market requirements, the contribution of CSG to energy security should not be underestimated or discounted.

Conclusion

Natural gas is poised to play a critical role in the future of Australia's energy supply industry, both from a least-cost emissions abatement perspective and also an energy security perspective. As outlined throughout this submission, significant greenhouse gas abatement will be achieved through the development of additional gas-fired generation capacity developed in response to a price on carbon. Notably however, the ability of the stationary energy sector to deliver this least-cost abatement will be largely contingent upon gas supply. Since CSG reserves represent such a significant proportion of east coast natural gas reserves and resources, the task of meeting Australia's domestic requirements may become increasingly more challenging in the event that access to CSG is materially constrained by additional regulation or legislation.

If you require any further information in regard to this submission please contact Kieran Donoghue, kieran.donoghue@esaa.com.au or 03 9670 0188.

Yours sincerely

Clare Savage
Interim Chief Executive Officer