Submission

No 15

INQUIRY INTO THE ECONOMICS OF ENERGY GENERATION

Organisation: Energy Supply Association of Australia

Name: Ms Kristen Ireland

Date Received: 10/02/2012

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

10 February 2012

The Committee Manager
Public Accounts Committee
Parliament House
Macquarie St
Sydney NSW 2000

Lodged online: www.parliament.nsw.gov.au/publicaccounts

NSW Public Accounts Committee Inquiry into the economics of energy generation

The Energy Supply Association of Australia (esaa) welcomes the opportunity to make a submission to the NSW Public Accounts Committee inquiry into the economics of energy generation.

esaa is the peak industry body for the stationary energy sector in Australia and represents the policy positions of the Chief Executives of 38 electricity and downstream natural gas businesses. These businesses own and operate some $120 billion in assets, employ more than 61,000 people and contribute $19.3 billion directly to the nation's Gross Domestic Product.

esaa understands the importance of safe, secure and reliable supplies of energy. This submission directly answers some of the specific questions asked by the Committee and provides supporting data where available.

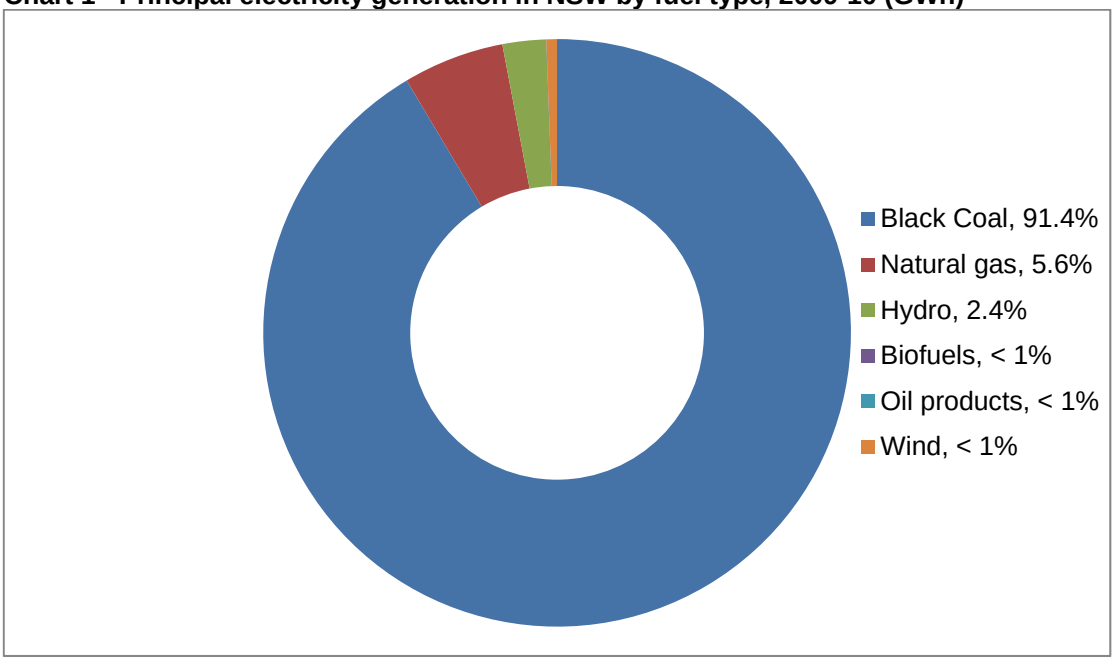
The mix of energy sources used in New South Wales and a comparison with other jurisdictions

Currently, electricity generation in New South Wales is dominated by black coal, with small amounts of hydro-electric and natural gas-fired generation also contributing. The mix of generation sources can be found in Chart 1, which comes from data contained in esaa's 2011 Electricity and Gas Australia publication[1].

Sourcing over 90% of energy from black coal implies a heavy reliance on one type of fuel. However, other states in Australia also tend to have one dominant fuel source which represents the most readily available and lowest cost form of electricity generation. For instance, Victoria relies on brown coal for around 95% of its power generation while in Tasmania more than 80% comes from hydro-electric power.

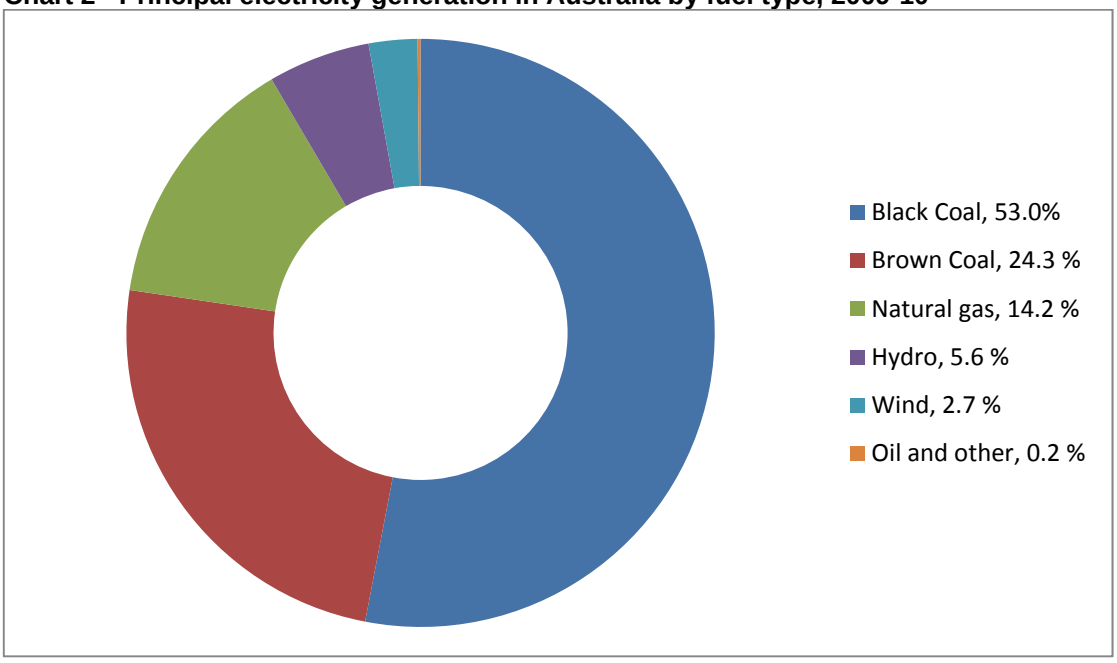
[1] esaa's EGA data for NSW also include the ACT.

Chart 1 - Principal electricity generation in NSW by fuel type, 2009-10 (GWh)[2]



Electricity generation on an Australia wide basis is also dominated by coal – both black and brown – with natural gas also an important source of generation (see Chart 2). The portfolio of generation fuels and technologies is a sign both of Australia's resource strengths and of ongoing market reforms to provide electricity using the lowest cost sources.

Chart 2 - Principal electricity generation in Australia by fuel type, 2009-10[3]



In terms of installed capacity, NSW shows a broader mix with 11,797 MW of installed black coal capacity, with 2,525 MW of hydro and pump storage capacity and almost 2,000 MW of natural gas-fired capacity available.[4]

[2] esaa, 2011, *Electricity and Gas Australia 2011*, p 26.
[3] Ibid

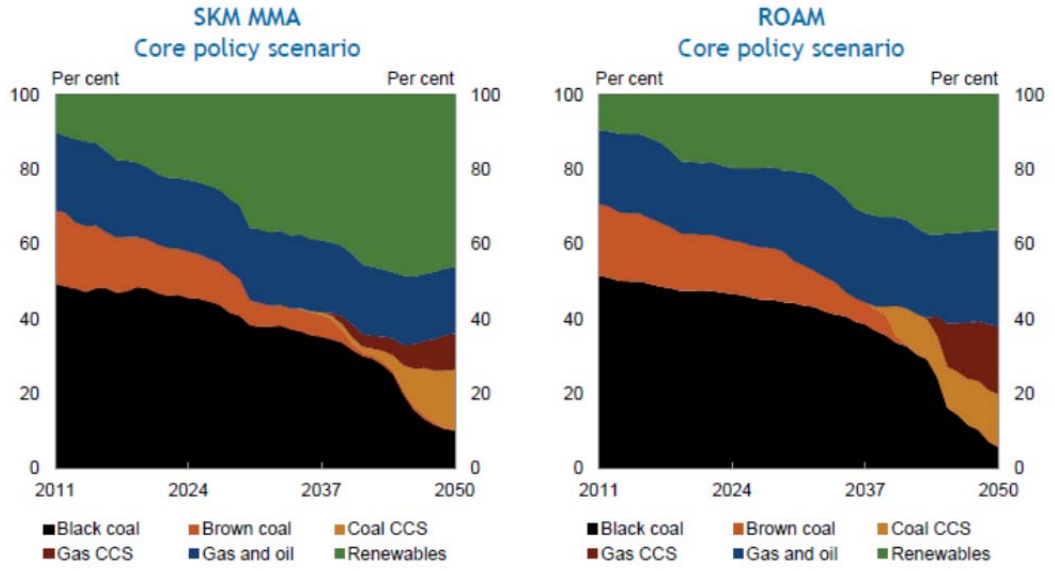
Issues relating to long-term energy security

The Australian Energy Market Operator (AEMO) regularly assesses when each region in the National Electricity Market (NEM) will reach its Low Reserve Condition (LRC). The LRC is an indication that power system adequacy is falling below long-term system reliability standards. In its 2011 Electricity Statement of Opportunities, AEMO found that New South Wales was unlikely to reach LRC until 2018-19. This was the case under their three modelled scenarios of low, medium and high economic growth.

The LRC is based on there being no additional generation capacity built, beyond already committed additions and retirements. It forms a signal to the marketplace as to when new generation may be required in a particular region. The market can be expected to respond to provide new generation before the LRC eventuates. Over the coming years, Australia is likely to see a transformation in the electricity sector with the impact of a price on carbon, higher fuel prices and changing usage patterns. Usage patterns will change through the development of new technologies such as electric vehicles (EVs) and smart meters. In preparing to adapt to these conditions it is important that the NSW Government maintains an open and flexible policy environment. In this way all economically viable fuels and technologies will be able to contribute to the energy mix. Allowing for a portfolio of generation technologies will be essential in order to contribute towards supplying energy generation at the lowest possible cost.

Examples of how the generation mix may change over time can be observed via studies such as SKM-MMA's and ROAM's energy market modelling in the context of carbon pricing for the Australian Government. Importantly, the two modelling houses did not come up with identical results, which illustrates the difficulty of predicting such changes. Both projected that black coal's share of generation is to fall sharply by 2050 under a carbon price scenario (see chart 3 below).

Chart 3 - Source of electricity generation under a carbon price[5]



[4] esaa, *op.cit.*, p18
[5] Australian Government, 2011, *Strong Growth, Low Pollution – Modelling a Carbon Price*, p 104.

Gas and renewable generation are also projected to become significant sources of electricity generation by both modellers. It should be noted that these are national projections and not for NSW specifically. One of the main drivers behind the increasing share of renewable energy generation is the Renewable Energy Target which has a target of 20% renewable energy generation by 2020.

The industry did not have an opportunity to engage in detail with the modellers on their development of these projections. They should be considered as illustrative of how the mix may change rather than definitive. What they do show is that a suite of technologies is likely to be required to fulfil market demand for energy generation.

An alternative appraisal of potential future technologies can be found in a 2010 report by The Australian Academy of Technological Sciences and Engineering (ATSE). This report evaluated new energy technology choices for electricity generation in Australia with a carbon price in place.[6] Based on their underlying assumptions of potential technology costs ATSE found that over the next few decades a variety of fuels and technologies could contribute to energy generation. There is little certainty as to what these fuels and technologies may be. This will depend on a range of issues such as commodity and carbon prices, technological advances and labour market conditions.

esaa considers that governments may enable or hinder the development of new technologies through policies that may preclude a particular technology from entering the market, or subsidise another. What is needed is a flexible approach which allows the market to operate smoothly and invest in new facilities when required without governments mandating a specific approach. In this respect, esaa considers that the NSW Government needs to maintain an enabling policy framework which allows for the market to determine which fuels and technologies are best suited to contribute towards NSW's long term energy security. The Government should also be prepared to accept technology developments such as coal seam and shale gas, wind, geothermal and carbon capture and sequestration (CCS) without resorting to overly restrictive planning regimes.

Additionally, ATSE performed a net present option value analysis which showed that by 2040; virtually all technologies they analysed[7] had some net present option value. On the balance of probability there is value in taking steps (and incurring a cost up to the net present value) to enable commercialisation of each of the options. In this way, there could be a long-term benefit from investing in activities such as research, development and demonstration (RD&D), and infrastructure development for a wide range of new technologies. These activities are often under-provided when left purely to the private sector as the public benefits exceed the private benefits and so there may be a role for government assistance here. esaa has developed a set of principles which describe how the Association considers that RD&D programs should be implemented. The principles can be found at Attachment A.

[6] Australian Academy of Sciences and Technological Sciences and Engineering, 2010, *Low Carbon Energy: Evaluation of New Energy Technology Choices for Electric Power Generation in Australia*, Melbourne

[7] These included including various solar technologies, wind, fossil fuel with and without carbon capture and storage, geothermal and nuclear

The potential for NSW to source energy interstate

In the year ending June 2010, NSW imported 8,863.6 GWh of electricity, with a net import of 7,797 GWh.[8] This is a single year summary and does not mean that NSW will continue to be a net importer of electricity indefinitely. Changes in market conditions could result in NSW exporting electricity into other states. This is how the National Electricity Market (NEM) was designed to operate and is an indicator that it is working effectively.

Currently there are three interconnectors which can import energy into (and export from) NSW. There are two interconnectors between Queensland and NSW – QNI and Terranora – and one connecting NSW with Victoria. These are all regulated interconnectors where the operators receive a fixed annual revenue based on the value of the asset as set by the AER, regardless of actual usage. The revenue is collected as part of the network charges included in the accounts of electricity end-users.

There is an effective regulatory process in place to increase interconnections between states if necessary. In order to build a regulated interconnector, a transmission network service provider (TNSP) must prove that the benefits of a new interconnector outweigh the costs and that there is not another more economically viable option. This is proven through an Australian Energy Regulator (AER) devised regulatory test and the Australian Energy Market commission (AEMC) reviews annually the adequacy of interconnection.

If a company wanted to build an unregulated interconnector, however, it would be free to do so provided it was able to come to an arrangement with network companies on either side of the border to connect to their infrastructure.

In terms of the existing interconnectors, planning is under way to increase the capability of the QNI interconnector by 25 per cent. Formal consultation and evaluation of this option will commence this year according to the interconnector's operators, Powerlink and TransGrid.

Accordingly, importing energy from other states remains a viable option for NSW, with a clear regulatory framework to provide a basis for further interconnection and the additional possibility of unregulated interconnection.

The potential for, and barriers to, development of alternative forms of generation

esaa's members have a fundamental interest in the future development of generation and the Association is supportive of the need for funding of research, development and demonstration projects to help new technologies progress. This will be essential to help develop a portfolio of energy generation options in the future.

It is important that the NSW Government maintains an open and flexible regulatory environment so as not to preclude any new technologies from emerging. This may arise as a result of issues such as restrictive planning arrangements or by RD&D support policies that favour one particular technology.

[8] esaa, *op. cit*., p 22

The development of new technologies that impact the demand side of the electricity system also pose challenges and opportunities for long-term energy security in NSW. Examples of such technologies include advanced metering infrastructure (AMI or "smart" meters), energy efficiency, embedded generation and electric vehicles (EVs).

Demand side responses such as smart meters are a potentially viable alternative to new generation. In conjunction with dynamic pricing plans that provide an incentive to customers to reduce demand at critical times, they can enable greater opportunities for load-shifting and better management of the existing system. This could avoid the need to both upgrade existing network infrastructure and invest in new peaking plants.

The easiest way to allow for the development of pricing structures to enable demand side response is for the NSW Government to follow through with its commitment as part of the Australian Energy Market Agreement to remove retail price regulation. This is a critical change which would allow consumers to better manage their usage. It could also contribute to reducing the need to upgrade networks infrastructure to keep up with increasing demand at peak times. This would help to put downward pressure on prices as coping with peak demand is one of the key drivers of rising prices.

Improved energy efficiency may also help reduce demand and thus the need for new generation. esaa agrees there are market failures and non-price barriers to energy efficiency which could be addressed through targeted measures. However, there is currently such a plethora of schemes at both state and national level that energy efficiency goals are not being achieved at least cost. This was highlighted by the *Strategic review of Australian Government climate change programs*.

In particular, esaa does not consider that white certificate schemes that impose additional costs on all energy consumers, such as NSW's existing Energy Savings Scheme, are the right measures. If such schemes continue they should be harmonised across jurisdictions. In this context we welcome the recent announcement of the NSW Government's intention to work with the Victorian Government to align the two state energy efficiency schemes.

Increasing levels of embedded generation such as residential solar photovoltaics (PV) is a further possibility for reducing demand. Households and businesses wishing to install solar PV units should not be discouraged, although the potential impacts on networks of high levels of penetration should be borne in mind. It is important not to over-incentivise embedded generation through overly generous subsidies, such as premium feed-in tariffs and the Australian Government's Solar Credits Scheme. Accordingly, esaa welcomes the approach taken by IPART in its current *Review of solar feed-in tariffs* to determine a benchmark for a fair and reasonable feed-in tariff.

The greater penetration of EVs could pose a challenge in the need for charging infrastructure and more generation to cope with the increased demand. Certainly this will be the case if people intend to charge their cars at peak times, such as when they get home from work. However, with the right technology and time-of-use pricing arrangements in place, it is possible that EVs could be used to fill in the off-peak 'troughs'. They could even act as a form of storage of electricity, which could then be

exported to the grid. Providing the right price signals to charge EVs overnight when demand is low would allow for improved capital utilisation of the system. This would help moderate electricity prices in the long-term.

Conclusion

Decades of economic and market reform has helped to shape the NEM into a safe, secure and reliable system. It is important that for this to continue the NSW Government maintains an open and flexible approach that allows for all fuels and technologies to compete evenly in the marketplace, and to allow for the continued development of new sources of generation in the future.

Any questions about our submission should be addressed to [redacted]

Yours sincerely

Matthew Warren
Chief Executive Officer

esaa's principles for government research, development and demonstration programs for the energy industry

1) There is an important role for governments to support research, development and demonstration of stationary energy supply technologies to correct identified market failures.

2) Government RD&D support should clearly articulate its objectives and how it links with energy and other policies.

3) Given the inherent challenges and uncertainties of RD&D, government support must provide a long-term commitment (including support for the different stages of technology development), sufficient resources and be appropriately flexible. Ad hoc programs and arbitrary changes are not conducive to achieving RD&D objectives.

4) Overall, governments should avoid trying to 'pick winners' in energy supply technologies. RD&D policy should be guided by the principle of fuel and technology neutrality.

    a. However, individual technologies may necessarily require specific programs which take into account their particular circumstances.

5) RD&D funding programs should not distort existing markets.

6) As Australia is generally a 'technology' taker from the global energy technology market, RD&D programs should focus on:

    a. Areas where Australian-specific conditions are particularly relevant to the technology.

    b. Supporting Australia to be a 'fast follower' of international technology developments.

7) The energy industry has valuable expertise to contribute to achieving Australia's RD&D objectives. RD&D programs should seek to maximise industry participation.

8) RD&D programs involving industry must recognise the commercial realities businesses face and be designed and administered accordingly. In particular, the RD&D support instrument needs to adequately address the risk/reward balance to make projects commercially justifiable for business.

9) Programs should be designed so as to reflect the differing circumstances of individual technologies. This may be done by:

    a. Recognising the specific profile of each technology when designing funding arrangements.

    b. Recognising the timing required for different stages of development, so that projects which are ready can begin quickly, and that those which require more data or need to secure funding arrangements can do so without losing their funding.

c. Providing for ongoing or multi-stage funding.

d. Ensuring that funding is targeted appropriately for the scale of the project.

e. Allowing for all relevant technologies to access funding.

10) RD&D programs should be administered effectively and efficiently.

a. Information about programs should be easily available and transparent.

b. Regulatory and compliance costs should be as low as practical.

c. Governance arrangements should be aligned with commercial practices to minimise business compliance costs.

d. There should be coordination where possible between different RD&D programs and different levels of government.