Submission:

Comparative Economics of Generation Inquiry

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by the

Sustainable Energy Association of Australia

www.seaaus.com.au

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Summary

The Sustainable Energy Association of Australia (SEA) is a business chamber of enterprises supporting the development and adoption of sustainable energy solutions for a carbon constrained future. More detail regarding the SEA and its goals can be found at the end of this document.

The future of NSW energy and in Australia is facing significant challenges, particularly in future energy pricing and what will contribute to these costs. While NSW is a global low cost energy provider, appropriate policy and market mechanisms wills encourage efficient generation and future-proof solution which minimise these impacts.

Current policy settings in NSW are providing opportunities for energy growth, but these policies disadvantage renewable energy generation opportunities while creating advantages for fossil fuel generation. This then prevents the potential benefits of renewable energy, particularly containment of future energy price rises, being realised by NSW, its businesses and its communities.

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Energy generation trends

NSW has a highly developed energy industry and is part of the National Electricity Market (NEM) but the generation is predicated upon substantial generation from black coal deposits mined in the Hunter Valley region and Northern NSW. When compared to other states its stationary energy generation is not reliant on a single generation source but a high reliance on coal delivers a significant per capita emissions profile when compared to some other states such as Tasmania and Western Australia and it is the single largest energy consumer in Australia (Table 1).

Table 1- Energy consumption by state, by fuel, 2008–09[1]

	black coal	brown coal	renewables	petroleum products	natural gas	state share
	PJ	PJ	PJ	PJ	PJ	%
New South Wales	815	0.1	58	541	137	27
Victoria	1	651	42	433	256	24
Queensland	581	0	120	466	149	23
Western Australia	120	0	18	310	498	16
South Australia	72	0	12	119	141	6
Tasmania	15	0	39	40	10	2
Northern Territory	0	0	0	75	43	2
Total	**1603**	**651**	**303**	**1983**	**1233**	**100**

From the period of 2003-04 to 2008-09, NSW showed an overall growth in energy consumption, primarily fuelled by black coal generation increases (Table 2).

Table 2 - NSW energy sources by fuel type, 2003-04 - 2008-09

Year	black coal	brown coal	renewables	petroleum products	natural gas
	PJ	**PJ**	**PJ**	**PJ**	**PJ**
2008-09	815	0.1	58	541	137
2007-08	831	0	48	527	128
2006-07	807	62	46	567	139
2005-06	803	0	47	570	140
2004-05	788	0	42	551	145
2003-04	793	0	43	533	144

Source: BREE – Energy in Australia 2005-2011

[1] Bureau of Energy and Economics (2011) ***Energy in Australia 2011***, Report, Online, Available: http://www.ret.gov.au/energy/Documents/facts-stats-pubs/Energy-in-Australia-2011.pdf

The significant changes to the NSW generation since the completion of the 2008-09 figures includes:

- the rapid growth of domestic solar PV self-generation by an approximate 300 MW;
- the development of significant CSG assets which while many are still under development will increase over the next 10 years significantly;
- while significant commitments have been made to wind farm development in NSW, many of these are now considered to be potentially at risk due to the new and restrictive legislative provisions on the siting of new wind farms.

Australia is a low cost producer of stationary energy due to its abundant sources of fossil fuels, and NSW pricing of electricity is amongst the best in the world with a competitive free market based on production, rather than capacity and production. However, without behaviour changes in consumers and the future pricing of carbon, NSW consumers will face increasing costs for energy from fossil fuel sources.

The current NSW Government appears to be committed to the continuation of significant coal fired generation and the expansion of CSG at the expense of renewable energy, NSW consumers is likely to have significant price increases imposed upon them from reliance on fossil fuels at the expense of renewable energy.

The reason for these increases are:

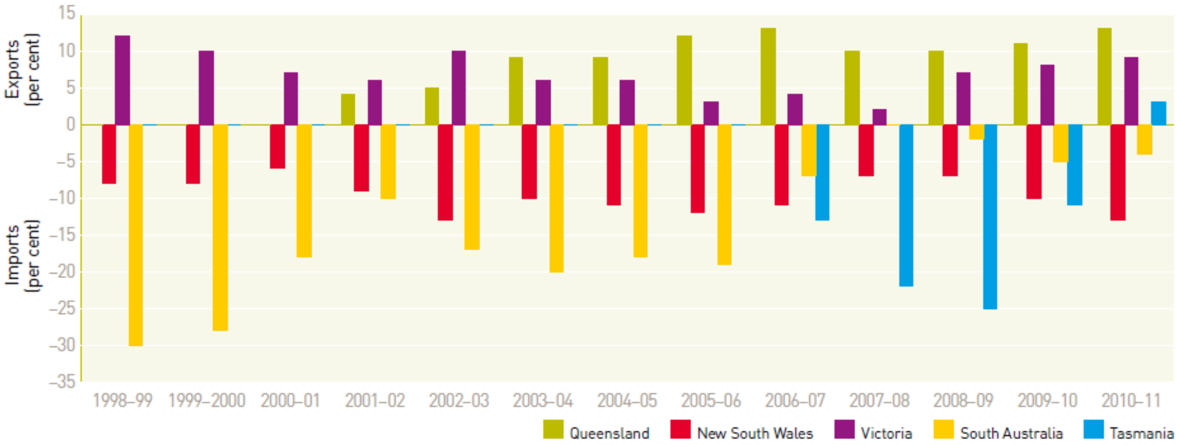
- Gas is a high marginal cost producer of stationary electricity;
- Both coal and gas will produce GHG from emissions and therefore will incur additional costs increases from its use and this will increase the marginal cost of their production, albeit that gas costs will be lower due to lower GHG emissions;
- The potential for low marginal cost of production to be bid into the market by renewable energy such as wind and solar are decreased significantly where restrictive legislation and favoritism prevent renewable energy investment.

These increases are primarily driven from the 'merit order effect' where the lowest marginal cost energy is the first to bid into the market. By increasing the proportion of high marginal cost producers and the impact of intensive GHG emissions, the overall wholesale cost of electricity will increase significantly. While SEA has not modeled this effect, it is a well-known outcome in competitive markets with greater experience of renewable energy such as in Europe.

Interstate sourcing of energy

In terms of stationary energy, NSW has consistently been a net energy importer over the period 2003-2009 from the Snowy scheme as well of from generation in Queensland. NSW importation patterns as a percentage of the total use of energy is currently trending downwards (Figure 1). While it is unsurprising that importation from the Snowy is represented, drought conditions in recent years have reduced the levels of import from the scheme.

Figure 1 - Interregional energy trade as a percent of consumption[2]



Sources: AEMO; AER.

In terms of the future need for additional generation assets in NSW however, according the AEMO 2011 Electricity Statement of Opportunities (ESOO):

> *"New South Wales requires additional generation investment by 2018–19, representing a two-year delay compared with the 2010 ESOO, which is primarily due to a decrease in the maximum demand projections for the region."*[3]

The reason for the fall in demand can be attributed to several possible causes, all of which have had an affect including a slowing in some sectors of the economy as well as the introduction of significant self-generation capacity in the residential sector with the installation of over 300 MW of solar photovoltaic (PV) systems under the now-defunct Solar Bonus Scheme.

Over the 10 year outlook, NSW will need additional capacity to meet the perceived growth in demand and for the reserve capacity mix to ensure network reliability. With this increase, one must factor in that the carbon price will have a longer term impact and that this:

> *"… may result in the retirement of existing coal-fired capacity, and changes to the relative operating costs of existing and new technology, leading to opportunities for replacement generation."*

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[2] Australian Energy Regulator (2011) ***State of the Energy Market*** 2011, Report, Online, Available: http://www.accc.gov.au/content/item.phtml?itemId=1021485&nodeId=dc6e55a316607d9ae4e897e9ce23375f&fn=Chapter%201%20National%20electricity%20market.pdf

[3] Australian Electricity Market Operator (2011) ***Statement of Opportunities***, Report, Online, Available: http://wwww.aemo.com.au/planning/0410-0069.pdf

However, current policy settings are definitely not favourable for this energy generation capacity to include a significant renewable energy component. Rather, the policy settings in NSW are significantly biased towards the development of gas (primarily CSG) as the replacement for in efficient black coal generation.

Energy pricing trends

Energy prices in NSW will continue with a significant increase in costs for end users independent of the source of generation of stationary energy. The driving of these prices is from the increase in network costs which will maintain their preeminent position as the overall cost increase driver. While and additional impost on prices will be seen with the introduction of a price on carbon in 2012, this is primarily due to the high GHG emissions sources of stationary energy generation in NSW. Decarbonisation of the generation mix can act to reduce this cost to consumers.

Key Price drivers

Price drivers within the market for current and future energy prices are essentially determined by the following factors:

- generation costs and market pricing;
- network (transmission and distribution) costs;
- market operational costs (e.g. RET obligations etc.); and
- market transaction costs including retail margin.

Due to the highly regulated nature of the market, the two least controllable factors are generation / market pricing and network costs, which are essentially a function of consumer market behaviours. The two key behaviours that drive this are:

- overall demand; and
- peak demand.

Of these overall demand affects market pricing and peak demand can affect both market prices and network costs. The NEM has seen peak demand increasing significantly while there is a slowing of overall demand. This has caused a depression in the average spot pricing of electricity on the market but has driven significant additional costs for network reinforcement, expansion etc. in a situation that is building for the peak demand which is occurring less frequently.[4]

Examination of the transmission and distribution cost allowance increases over the period 2009- 2015 shows the retail price in NSW has seen double digit growth over the past few years, driven primarily by network costs in building for a fast-growing peak consumption period (Table 3).

Table 3 - Annual increases in network charges in NSW [5]

Type	FY09	FY10	FY11	FY12	FY13	FY14	FY15	Total
NSW TUoS	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	**56.4%**
NSW DUoS	4.1%	18.8%	12.6%	13.2%	14.0%	10.1%	10.1%	**117.7%**

[4] Sandiford, M. (2012) ***A generator's nightmare: low prices, less demand*** Renew Economy, Website, 8 February 2012 http://reneweconomy.com.au/2012/a-generators-nightmare-low-prices-less-demand-88124

[5] AGL Applied Economic & Policy Research (2010) **Working Paper No.17 – Boomerang Paradox**, Report, Online,, Available: http://www.aglblog.com.au/wp-content/uploads/2010/10/No.17-Boomerang-Paradox-Final-Oct-20101.pdf

Influencing future generation costs

The question that must be asked in respect of future cost of energy generation, is the likelihood of the exposure of the NSW fuel supplies (coal and gas) to external market demand drivers, such as the far more attractive pricing that can be obtained from export markets.

As noted previously, carbon intensive generation will increase due to the pricing of emissions and should technologies such as Carbon Capture and Storage (CCS) be shown to be viable, what additional costs might this impose.

Generation cost pricing tools

There are effectively two key mechanisms to determine the cost of energy generation and energy economics: the marginal cost pricing and the levelised cost of energy (LCOE).

The marginal cost pricing is effectively the production cost per unit of energy based solely on the costs experienced by utilities for the last kilowatt-hour (kWh) of electricity produced. A utility's marginal cost can be higher or lower than its average price, depending on the relationships between capacity, generation, transmission, and distribution costs.[6] This method of pricing is different from the cost-of-service regulatory practice, which uses average costs (total costs divided by total sales) as the basis of prices. The application of marginal costs as the basis of prices assumes that no supplier or consumer exercises market power.

The LCOE is the price at which electricity must be generated from a specific source to break even and is an economic assessment of the cost of the energy-generating system including all the costs over its lifetime. It typically includes:

- initial capital investment;
- operations and maintenance;
- cost of fuel; and
- the cost of capital.

The LCOE does not normally include the cost of externalities unless these are specifically included as a financial cost to the generation e.g. carbon costs, pollution health costs etc. In addition LOCE does not include the costs of transmission, distribution, market access etc.

The LCOE is typically used as a comparator of the costs of different energy generation sources over the life of the relevant asset. The problem is that the any LCOE analysis is very sensitive the assumptions, financing terms and technological deployment analyzed and therefore care must be used in these comparisons. For example, renewable energy generation systems with a low operational cost and zero fuel costs are very sensitive to variations in the initial capital cost and costs of financing, while fossil fuel generation is more sensitive to variations in fuel pricing over its life.

Recently other potential comparison mechanisms for energy costs have been developed but due to their recent development they have not yet been adopted by the energy industry and analysts, for example, the Full Fuel Cycle Energy Use method by the Lawrence Berkley Laboratory energy Efficiency Standards Group.

[6] Lawrence Berkley Laboratory (?)Marginal Energy Price Analysis, Website, Available: http://ees.ead.lbl.gov/projects/cross_cutting_analysis/marginal_energy_price_ana

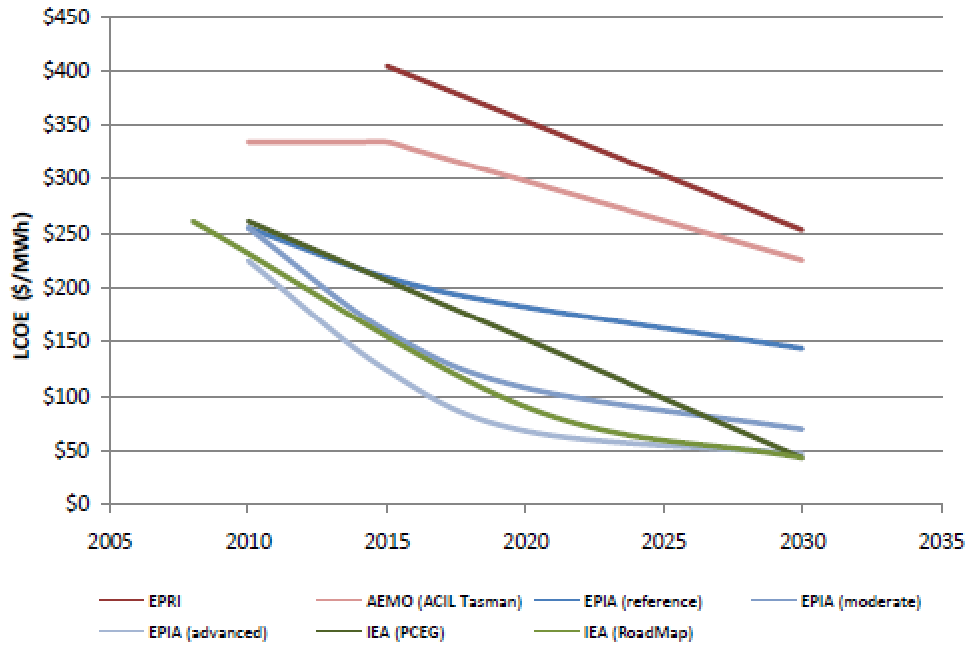
Technology cost comparisons and pricing.

SEA's preference is the use of the concept of the LCOE as we believe that at this time, it is the most representative non-technology specific mechanism to compare pricing. In addition to this, there is a significant utilisation of LCOE by various industry bodies and government reports which use LCOE comparisons regarding the relative energy costs.

SEA has not had the resource to complete any form of LCOE modeling at the time of this submission and is not therefore prepared to forecast future energy pricing for different types of generation. However, we will utilise and comment on pre-existing studies undertaken on generation LCOE.

The most commonly referenced LCOE comparison is that undertaken by the Electric Power Research Institute (EPRI) in the US. A meta-study of LCOE projections undertaken by the Melbourne Energy Institute as a part of the Garnaut Review has demonstrated that this commonly used 'benchmark standard' is inconsistent with other internationally recognised energy modellers.[7]

Figure 2- LCOE of Solar PV: comparison of cost curves

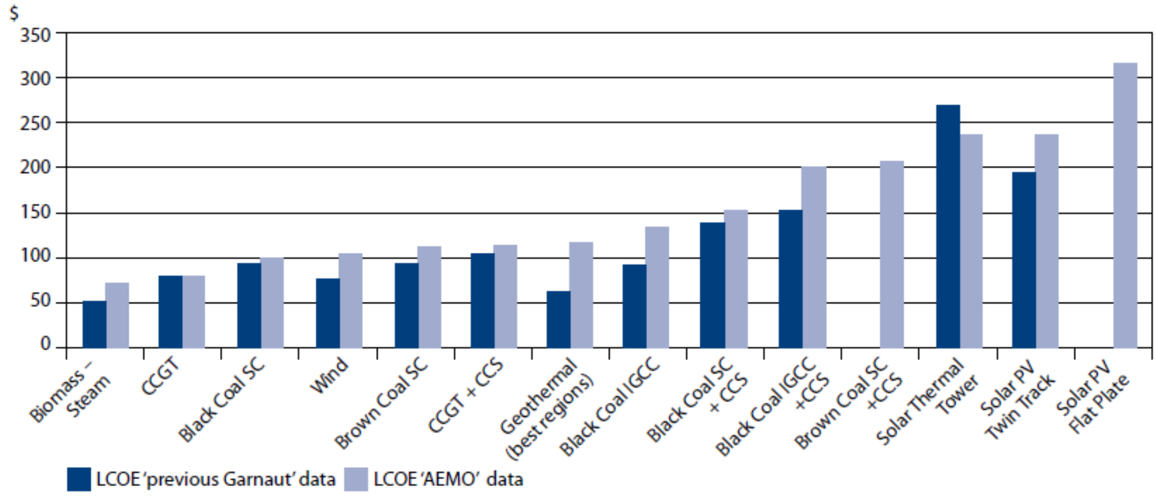


Unfortunately in LCOE projections are made which utilise out of date data about the costs of rapidly developing technologies such as Solar PV, Wind and concentrating solar thermal (CST). In many cases once the report has been published assumptions of costs have already shifted to a point which demonstrates that the overall cost comparison assumptions are invalid. This then leads to decisions being made about policy settings that are the most appropriate to both reduce GHG emissions and to control the costs of future energy for consumers.

[7] Hearps, P McConnell , D (2011) ***Renewable Energy Technology Cost Review***, Melbourne Energy Institute, Online Available: http://www.garnautreview.org.au/update-2011/commissioned-work/renewable-energy-technology-cost-review.pdf

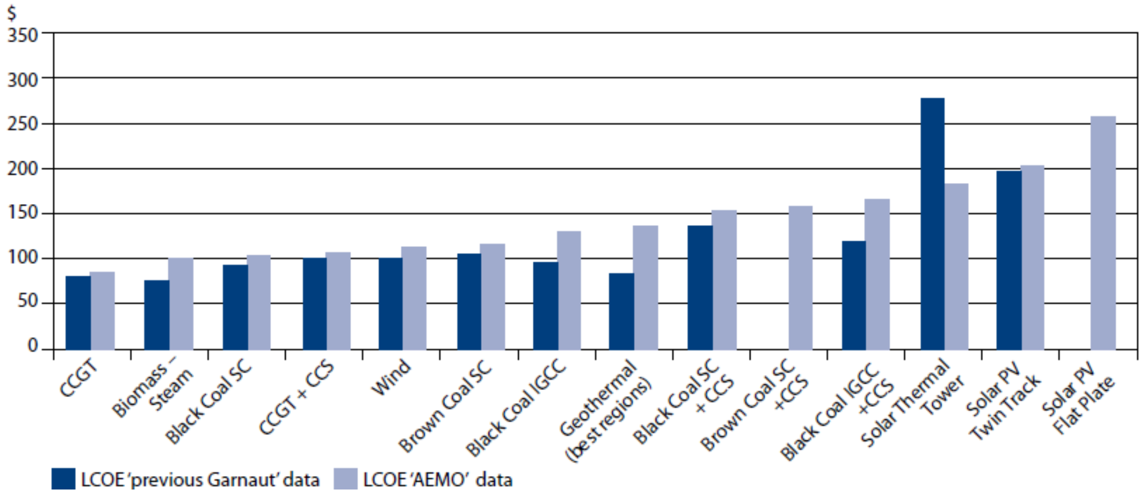
A recent report by the Australian Academy of Technological Sciences and Engineering (ATSE) has updated costs and assumptions of both older Garnaut (2008 treasury estimates) and recent AEMO assumptions and costs. This has shown that wind, gas (using CCGT technologies) and biomass (within the next 10-15 years), then later in addition to these CST technologies and geothermal technologies will have cost advantages over all coal generation except for supercritical black coal.[8] However, because of the rapidly changing solar market, costs of PVs in most analysis remain overstated and so outdated in 2012 market terms.

Figure 3 - LCOE ($/MWh) of energy generation technologies, 2020



Source: ATSE, 2011

Figure 4 - LCOE ($/MWh) of energy generation technologies, 2030



Source: ATSE, 2011

The policy implications of this are quite significant, in that when many older and less efficient generators are no longer able to sustain operations due to plant age, emissions

[8] ATSE (2011) ***New power cost comparisons: Levelised Cost of Electricity for a Range of New Power Generating Technologies***, Report Online, Available: http://www.garnautreview.org.au/update-2011/commissioned-work/new-power-cost-comparisons.pdf

issues etc. the majority of these black coal generators will need to be replaced. Unfortunately, recent policy changes have shifted away from renewable energy to focus on the development of gas generation, primarily from CSG which acts as a discouragement to the planning of future investment in renewable energies that can potentially benefit the energy consumers of NSW.

In particular, the introduction of "the tightest wind farm regulations in the world" along with statements by the government that there is a decided preference against the introduction of wind as a future potential source of energy in NSW, a view personally endorsed by the Premier.[9] In SEA's view this is an extremely regressive step and is a clear case of 'picking winners' in terms of creating additional entry barriers for renewable energy projects in NSW while providing almost unfettered access for the development of CSG projects at the expense of stakeholder rights, in particular those of farmers and other landholders.

[9] ABC (2011) ***NSW unveils tough new wind farm guidelines***, The World today, ABC Radio, Friday, December 23, 2011.

Renewable energy and alternative generation models

To provide the best opportunities to manage both energy costs and security for future energy in NSW, the two issues that need to be considered are:

- How the increase in small scale, decentralized energy development might benefit the networks and energy costs; and
- How renewable energy overall will decouple carbon intensity and the vulnerability of portable energy supplies (coal and gas) from both price shocks as well as supply deficiency from export pricing competition from suppliers.

In both of these cases, the benefits of integrated renewable energy strategies need to be considered along with the potential benefits of a shift away from large centralised thermal generation.

Centralised versus distributed energy policy

The growing popularity of distributed energy generation is analogous to the historical evolution of computer systems. Whereas we once relied solely on mainframe computers with outlying workstations that had no processing power of their own, we now rely primarily on a small number of powerful servers networked with a larger number of desktop personal computers, all of which help to meet the information processing demands of the end users. Just as the smaller size and lower cost of computers has enabled individuals to buy and run their own computing power, so the same trend in generating technologies is enabling individual business and residential consumers to purchase and run their own electrical power systems. [10]

Perhaps incongruously, distributed generation facilities offer potential advantages for improving the transmission of power. Because it produces power locally for users, distributed generation aids the entire grid by reducing demand during peak times and by reducing the potential total demand for power on the network.

The areas of potential benefits to the overall energy market form the use of distributed generation include:

- Increased electric system reliability
- Reduction of peak power requirements
- Provision of ancillary services, including reactive power;
- Improvements in power quality;
- Reductions in land-use effects and rights-of-way acquisition costs
- Reduction in vulnerability to terrorism and improvements in infrastructure resilience.[11]

In addition to this, the UK the Business Taskforce on Sustainable Consumption and Production in 2008 stated that:

> *Covering a wide range of technologies that do not rely directly on the high-voltage electricity transmission network or gas grid, decentralised energy brings a range of business benefits including:*

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[10] National Renewable Energy Laboratory (2009) ***Distributed Energy Basics***, Website, Available: **http://www.nrel.gov/learning/eds_distributed_energy.html**

[11] Department of Energy (2007) ***The potential benefits of distributed generation and rate-related issues that may impede their expansion***, Report Online, Available: http://www.ferc.gov/legal/fed-sta/exp-study.pdf

- *increased conversion efficiency (capture and use of heat generated, reduced transmission losses)*
- *increased use of renewable, carbon-neutral and low-carbon sources of fuel;*
- *more flexibility for generation to match local demand patterns for electricity and heat;*
- *greater energy security for businesses that control their own generation; and*
- *greater awareness of energy issues through community-based energy systems, driving a change in social attitudes and more efficient use of our energy resources* .[12]

One of the significant concerns regarding infrastructure is dealing with the peak load issues faced in summer. However, with more distributed generation available, the issue of infrastructure is less problematic. Combining generation park concepts as part of a distributed energy strategy could provide some of the solution to this problem, along with load shifting through stationary energy storage on-grid and behind the meter, which is further discussed later.

As previously noted, SEA has not had an opportunity to undertake modeling of the potential effects of the potential for increased distributed energy to positively impact the grid in respect of the issues raised above and is therefore unable to quantify the financial benefits arising from distributed generation on the NEM. Methods for such an analysis have been developed and are exemplified by a report for the US Department of Energy in *Quantitative Assessment of Distributed Energy Resource Benefits* by Hadley, Van Dyke, Poore and Stovall.[13] These quantifiable benefits are identified in the table below.

Table 4 - Benefits of generated distribution by stakeholder

Benefit	Owner	Utility	Society
Lower Cost	Savings based on electricity and thermal savings versus cost of DER	Change based on marginal cost reduction versus reduced sales revenue	Savings based on marginal cost reduction and cost of DG
Reliability	Increased reliability through added electricity source, with backup from grid	Multiple small sources lower needed reserve for equivalent reliability	Improved power services, or reduced economic cost of current services
Ancillary services	Selling ancillary services in market adds revenue	DG may be lower cost source of ancillary services	
Emissions reductions	Owner may get credit for net reductions in area emissions	Utility needs fewer emissions permits to meet caps	Lower overall emissions if DER is cleaner than alternative
T&D expansion postponement		Savings based on marginal cost of expansion versus embedded cost	Delays disruptions and cost of added T&D infrastructure

12 Business Taskforce on Sustainable Consumption and Production (2008) ***Decentralised Energy: business opportunity in resource efficiency and carbon management***. Report, Online, Available: http://www.csrinternational.org/reports/

13 Hadley, Van Dyke, Poore and Stovall (2003) ***Quantitative Assessment of Distributed Energy Resource Benefits,*** Oak Ridge National Laboratory, Report, Online Available: http://www.ornl.gov/~webworks/cppr/y2001/rpt/116227.pdf

Energy storage and integration with the grid.

Grid based energy storage as well as utility based storage for load shifting and ameliorating the impact of variable renewable energy generation (wind PV) is seen by many as a necessity prior to the decarbonisation of the electricity supply network. Grid integration of energy storage using large centralised systems as well as the opportunity for localized load shifting and peak energy reduction has been consistently seen as a 'holy grail' for the energy industry, yet it still only has a limited application in the management of energy networks.

One of the current complaints is that energy storage infrastructure costs are too expensive to implement within the grid in Australia and to not provide net benefits in investment. However, there is a dearth of recent studies on the economics of different types of energy storage, their implementation costs and the potential for these systems to deliver financial benefits on the grid. With the current rate of development of new energy storage systems, in particular related to the potential for alternative energy applications for wind, solar thermal and solar PV systems as well as for vehicle electrification, older studies and cost assumptions are arguably no longer applicable. As such conclusions developed based on this older information may no longer be valid and that an independent review of the costs and benefits of energy storage is now warranted to ascertain what these benefits might be.

In addition to this, recent research efforts in the United States have indicated that the best value for energy storage in the pricing arbitrage opportunities which improves the return on investment and economics of grid based energy storage. This is a factor often not highlighted in many previous studies on the economics and efficiency of energy storage.

Comments by utilities on energy storage indicates that they are happy for energy storage to be connected to the grid, however, they are unwilling to pay for the capital costs but utilization of its benefits can provide them benefits. These comments generally relate to the opportunities with electric vehicles and vehicle-to-grid (V2G) technologies. As yet, these utilities have not suggested how benefits might be paid for by them that are derived from grid connected storage opportunities.

Renewable energy advantages and the issue of base load generation

One of the main issues facing the renewable energy uptake is the concept of "baseload" electricity and that most renewable energy sources are intermittent and unable to provide for the baseload. We define baseload as the minimum amount of power that a utility or distribution company must make available to its customers, or the amount of power required to meet minimum demands based on reasonable expectations of customer requirements. However, in many cases the baseload of an electricity network varies significantly across the day and varies from hour to hour. The current market structure provides for base load, mid-merit and peaking energy production with a varied mix of different generation technologies.

Baseload power comes about because there is a minimum level of electricity that can be generated by a coal fired plant (albeit inefficiently) before it has to go into a period to shut down and then restart. These plants run most efficiently at a high consistent output load and are poor at matching variability of demand. However, if we have one problem it is that there is a surplus of baseload production which leads to problematic pricing models (very low off peak use and costs) which can end-up reflecting a negative price for off-peak power. This creates an inefficient supply side paradigm and an unnecessary use of resources to keep coal fired power operating.

The potential to eliminate to concept of excessive baseload through the reduction of reliance on coal fired power, it is possible to eliminate significant high pollution generation without having to rely on the commercially and technically unproven concept of CCS, with its own significant set of disadvantages which are beyond the scope of this submission. Furthermore commentary on the baseload concept has shown that:

> *"If we didn't care about the cost of the gas fossil fuel, we would probably run natural gas combined cycle for both intermediate and baseload sections, because it delivers about half the emissions of coal. If you ran this system with every natural gas combined-cycle plant following the load, there would be no baseload in the system, but it would work perfectly well.*
>
> *"The wind is mostly uncontrolled (the only thing you can do is turn the wind generator on or off) and the concentrating solar thermal plants are equipped with low cost thermal (heat) storage like the plants recently installed in Spain, which can follow the grid load.*
>
> *"The solar output in the figure rises and falls to balance the total output with the grid demand and takes the place of both intermediate peaking and fast peaking. The essential load-matching function is performed by the solar thermal storage."* [14]

In addition to a far less polluting source of energy, it is possible supply side efficiency in energy delivery could be achieved, particularly, it there was an increased level or localized or distributed generation within the network which could also benefit areas which suffer reliability issues due to being at the fringe of the grid.

The Government should develop policies that support a transition from large centralised coal based generation to a cleaner and more robust and flexible system. With the current market trends in the development of new stationary energy supplies, coal's future in Australia should be minimised as one of the least efficient ways to produce energy when considering the future needs of Australia's energy future.

Benefits of increasing renewable energy uptake.

SEA is a strong supporter of improving the uptake of renewable energy in both grid connected and off-grid applications as a mechanism for displacing fossil fuel based energy, which is a limited resource and produces GHG emissions as well as other pollutants which can affect the health and wellbeing of the community and the environment. In addition to this, renewable energy has the opportunity to provide economic as well as environmental benefits for users and the community.

The potential benefits from the displacement of fossil fuel sources by renewable energy include:

- Sustainable energy resources avoid the depletion of natural resources for future generations;
- Avoiding and reducing the emission of pollutants such as nitrogen oxide (NO_x), sulfur oxide (SO_x) and carbon dioxide (CO_2) as well as other greenhouse gases;
- Avoidance of the negative effects of high and fluctuating fossil fuel prices;
- Renewable energy can avoid and reduce water consumption, thermal pollution, waste, noise and adverse land-use impacts;

[14] http://www.climatespectator.com.au/commentary/new-pillars-power

- Driving awareness of energy use and energy efficiency across small scale users;
- Reducing the potential of demand increases and peak loads to drive grid based energy price increases;
- Distributed renewable energy and/or self-generation avoids supply side energy inefficiencies from transmission and distribution losses seen in centralised generation;
- Most conventional emission-abatement measures in all sectors impose costs with no offsetting savings; renewable energy can produce fuel savings over their operating lives that cover some or all of their initial costs;
- Improving air quality and visibility due to the avoided burning of fossil fuels which avoids particulate and other pollution emissions that affect air quality;
- Environmental benefits can reduce the cost of complying with future environmental regulation; and
- Renewable energy provides a new avenue for rural economic development, and the improvement of power quality and reliability in fringe-of-grid and off-grid applications.

Sustainable Energy Association of Australia Inc. (SEA)

The peak body for sustainable energy

SEA promotes the development and adoption of sustainable energy technologies and services that minimise the use of energy through sustainable energy practices and maximise the use of energy from sustainable sources.

SEA 2030 VISION

‘On behalf of the people of Australia, the Association will vigorously promote the development and adoption of sustainable energy so that by the year 2030 more than 30% of Australia’s energy use in and across all states and territories is displaced by sustainable energy practices so that energy demand is more than 30% below that measured in the year 2000, and that more than 30% of energy use is derived from sustainable sources.’

About SEA

SEA is a chamber of businesses variously promoting, developing and/or adopting sustainable energy technologies and services that minimise the use of energy through sustainable energy practices and maximise the use of energy from sustainable sources.

SEA is building relationships with businesses that aspire to be more sustainable in their own energy use, are providing the commercial solution to climate change through their products and services, or indirectly through their actions adopting more sustainable energy practices in their own business. Many businesses are acting to support the development of the best policy outcomes for the industry by becoming SEA members.

The role of governments is to build frameworks of governance that establish clear market signals for change and growth, and allow Australia’s innovative businesses to respond and deliver market-based solutions.

A key role of SEA is to offer policy options to governments building those frameworks.

SEA is the only business peak body actively supporting substantive action on sustainable energy in every region and in all sectors of Australia’s economy.

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