

COGENERATION AND TRIGENERATION IN NEW SOUTH WALES

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

To the Committee Manager,

Re: Clean Energy Council (CEC) Submission | Inquiry into cogeneration and trigeneration in New South Wales

The Clean Energy Council welcomes the opportunity to participate in the consultation process for the Inquiry into cogeneration and trigeneration in New South Wales.

The Clean Energy Council works with more than 600 solar, wind, energy efficiency, energy storage, bioenergy, hydro, cogeneration, geothermal and marine energy businesses to accelerate the transformation of Australia's energy system into one that is smarter, cleaner and more consumer-focused.

The attached submission is our response to the Inquiry's call for submissions.

1. Whether the current regulatory framework can adequately support the utilisation of cogeneration/trigeneration precinct developments

The current regulatory framework consists of several major barriers that impact all forms of distributed generation in New South Wales, and more specifically, would impact the utilisation of co- & trigeneration precinct developments.

The primary barrier is a lacking set of clear standards and regulations in regards to the connection processes for co- & trigeneration. To connect distributed generation equipment to the network, approval must be sought from the relevant DNSP. However, DNSPs have little experience in connecting cogeneration plants and there is no standard connection process. Negotiations and licensing can be difficult and time consuming processes that increase costs. More streamlined connection processes for cogeneration could improve the viability of projects.

Additionally, network planning processes continue to centre on major, centralised power plant investments and new transmission/distribution capacity. Co- & trigeneration is a distributed generation that avoids or defers these investments and as such, is underrepresented in network planning processes. There should be clear and concise guidelines and incentives given to network planners through either legislation, standard or regulatory reform to enable them to prioritise and facilitate more co- & trigeneration systems to be successfully connected into the grid.

Another significant barrier to a co- & trigeneration owner is the difficulties in accessing appropriate Power Purchase Agreements (PPAs). If an owner wants to export electricity to the grid, it will also need to negotiate an energy purchase agreement with the retailer. Again, this is not a standardised process and can prove a timely, difficult and costly process. As is currently available for residential solar PV, standardised contracts for cogeneration should be developed.

The requirement to obtain a retail license for small-scale cogeneration also acts as a barrier to uptake. Because electricity customers are able to choose their own retailer, in commercial and

residential buildings residents or tenants may not want their electricity to be supplied by the cogeneration plant. This can mean that electricity from cogeneration plants will only be used to power common areas such as building lighting, ventilation and lifts, unless the cogeneration facility can deliver electricity at a price that is more attractive than those available through the retail market.

Finally, a lack of price signals to capture benefits from co- & trigeneration that currently accrue to multiple parties is leading to under-investment in the sector. A single co- & trigeneration plant is not limited to fulfilling a single role, or addressing a single application: its benefits to various stakeholders in the sector can be 'stacked' together, which when combined may help justify its cost (such as the benefits of network support for DNSPs, improved productivity and product quality for commercial customers and generation for residential customers).

2. The operation of cogeneration/trigeneration technology in other jurisdictions and the applicability of the technology to New South Wales

Both cogeneration/trigeneration are proven technologies that are building market momentum. Cogeneration/trigeneration offer energy savings ranging between 15 and 40 per cent compared with the supply of electricity and heat from conventional power stations and boilers. It is a technology that can deliver significant emissions reductions, protect consumers from rising energy bills and reduce peak demand.

Cogeneration/trigeneration makes economic sense where there is demand for the heat and electricity. Most cogeneration in New South Wales is in the manufacturing sector, but other common examples include:

- Hospitals and health facilities
- Hotels, cinemas and hospitality venues
- Industrial / manufacturing facilities
- Government offices of local, state and federal agencies
- Multi-dwelling residential
- Educational facilities, universities and TAFE
- Commercial, multi retail and mixed use commercial
- Public utilities such as RailCorp and Sydney Water

Co- & trigeneration offer the potential to reduce peak demand, thereby reducing the need for network augmentation. Analysis indicates that food, education and manufacturing sites offer the highest average peak demand reduction potential *per site* while industrial, health, food and education offer the highest peak demand reduction potential *in total*.

This potential is already being felt in NSW where overall energy demand in NSW has fallen by 9.3 per cent since its peak in 2007-08. Peak demand is also falling, with winter peak demand now 14.6 per cent lower than that in 2008 and summer peak demand 5.8 per cent lower than in 2010-11.ⁱ While the reasons for this are varied, distributed generation such as co- & trigeneration has played a significant role in bringing about fall in demand.

Co- & trigeneration offers NSW consumers an alternative to the business-as-usual approach in continuing to upgrade the network system to manage growing peak demand (at significant cost to consumers). Maximising these opportunities would help ease the upward pressure on the NSW network system and therefore consumer's electricity bills.

3. The economic viability of cogeneration/trigeneration technology in New South Wales including the impact of future gas prices on the running costs of cogeneration/trigeneration systems

The majority of co- & trigeneration facilities in Australia are based on gas turbines or reciprocating engines. This is typically because natural gas is readily available and currently cost-competitive.

The financial feasibility of co- & trigeneration systems is a balance between the value of electricity and thermal output produced, and the capital and fuel costs used to produce them. The moderate price of natural gas and the rising price of electricity have historically supported co- & trigeneration development. However, uncertainty of future gas prices (or a lack of long-term firm pricing options) and expectations of a rising price trend are emerging as major considerations when evaluating the financial feasibility of co- & trigeneration systems.

Another consideration in the economic viability of co- & trigeneration systems is the potential shift to a bias for demand charges rather than energy charges in NSW. This would reduce the financial feasibility of co- & trigeneration systems as such systems generally only reduce the retail and network energy consumption charges and not the network demand charge.

If the system site is on a demand-based network tariff, it is charged a 'capacity' charge based on the previous highest load demand recorded in the month, the past year or the highest demand historically. A single unit co- & trigeneration system usually cannot assume that these can be reduced because, whilst reliability and availability of co- & trigeneration plants is typically high, they do occasionally out and require scheduled maintenance.

A shift to a bias for demand charges would lessen the financial benefits derived from co- & trigeneration in offsetting energy consumption charges that typically account for up to 65% of a total electricity bill. Proponents would continue to be subject to ongoing demand charges that can account for up to 30 per cent of a total electricity bill, thereby lessening the financial feasibility of co- & trigeneration systems.

4. Any financial, public safety and/or other risks to prospective cogeneration/trigeneration customers

Despite co- & trigeneration being a proven technology, developers (including DNSPs) consider the technology a risky venture, typically because:

- The technology remains unfamiliar and can be seen as complex
- Potential investors are generally not already in the business of energy generation and can be daunted by the technical and regulatory requirements
- Objective reliable information about cogeneration can be difficult to obtain and there may be a lack of financing options and skilled labour.

The provision of better information is an important way to reduce this risk. This is an area where the NSW government can play a greater role by correcting a shortage of reliable information on co- & trigeneration systems (in particular on the economic viability of such systems) through the provision of readily available tools and information that assist potential customers to make reliable feasibility assessments.

5. Any supply security and reliability issues associated with cogeneration/trigeneration, including for residential customers of these systems

The wholesale gas market in NSW is very uncertain at present, with the prospect of large exports of liquid natural gas raising questions about future supply. The impacts of this will be felt not only by co- & trigeneration proponents but by NSW consumers more widely.

Deregulation of the NSW gas and electricity markets would help manage this uncertainty by allowing retailers to compete to offer NSW consumers the best possible deal on their gas and electricity bills. This approach has proven effective in Victoria. The Australian Energy Market Commission (AEMC) found earlier this year that a competitive market now exists in NSW sufficient enough for the NSW Government to move to deregulation and deliver real choice for NSW consumers.ⁱⁱ NSW currently has 12 active electricity and five active gas retailers, offering an abundance of different deals. Regulation is no longer needed to protect the best interests of NSW consumers.

6. The ability of existing regulatory arrangements at the New South Wales and national level to address issues which might be identified

The National Electricity Market's (NEM) regulatory arrangements (namely the National Electricity Rules) have recently been, and currently are, the subject of significant reform intended to better enable the integration of low emission electricity generation technologies. Some of these include:

- The introduction of a regulatory investment test for distribution (RiT-D) augmentations valued in excess of \$5 million.
- Proposed reforms of the connection process for embedded generators, including co- and trigeneration systems.
- Consideration of new standards for embedded generators.
- Consideration of the opportunity to enhance information transparency on distribution network demand.
- Detailed reviews by the Productivity Commission, the Market Commission and the Federal Senate into consumer choice, market frameworks and the use of demand management or embedded generation.

However, a significant restriction exists for the current regulatory framework to achieve the intended outcomes of combined cycle generation technologies: currently the NEM's decision making capability is restricted by an objective which makes it incapable of capturing benefits outside of the economic impact on 'consumers' broadly. That is, how electricity bills or the costs to market participants are influenced.

Thus, the currently regulatory frameworks are incapable of addressing issues holistically. This was captured in the recent Federal Senate Inquiry recommendations which analysed the issue in detail. It stated that

"The committee agrees that better alignment between environmental policies, in particular climate change policy, and the NEM to ensure these are not incongruent and working at odds would be beneficial. To this end, the committee recommends that the AEMC consider how the NEO could be amended in a way that would ensure operation and regulation of the electricity market in ways consistent with broader environmental policy objectives"ⁱⁱⁱ.

The NSW government is in a privileged position as the owner of the state's electricity distribution businesses it can influence the priorities of this business to achieve the outcomes

intended by policies which drive emissions reductions, alongside the economic drivers of the business. Serious consideration must be given by the NSW government on the implementation of a scheme which enables the ongoing growth of combined cycle generation technologies, while doing just that.

One of the clear mechanisms within the NEM to do so is the Demand Management and Embedded Generation Connection Incentive Scheme^{iv}. Proper application of the scheme can reallocate costs in network investment now by assisting the introduction of new generation technologies, while recovering this cost from consumers over time through their electricity bills – noting that consumers would be paying for the deferred investment otherwise.

The Scheme can only provide incremental benefit when applied by a distributor. However, in this way the NSW government can utilise Networks NSW to assist in achieving emissions reductions and reducing the long term costs of network investment. In addition it would provide a fixed reference cost which would clearly articulate the value added by co- and trigeneration.

Understanding this cost will encourage the establishment of price signals to capture the multiple benefits from co- & trigeneration that accrue to multiple parties would help strengthen the financial feasibility of such systems. Additional environmental value can be attributed via the continuation of a national carbon price or some equivalent mechanism recognising the GHG emissions savings of co- & trigeneration systems.

As demonstrated by recent continual review the current regulatory arrangements are incapable of delivering the outcomes intended by combined cycle generation technologies. The NSW government should appreciate and support the intent of these technologies by ensuring that the gaps in these arrangements are filled in order to meet the state's objectives, and *consumer-driven* outcomes sought by emissions reduction generation technologies.

7. Any other relevant matters

The CEC and its members would be happy to discuss these issues further with you as your review progresses. If you have any further questions please contact Ange Nichols via telephone on [REDACTED] or by email: [REDACTED]

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ⁱ State of the Energy Market 2012, Australian Energy Regulator (AER), found at www.aer.gov.au

ⁱⁱ Australian Energy Market Commission (AEMC), Review of Competition in the Retail Electricity and Natural Gas Markets in New South Wales, May 2013, found at <http://www.aemc.gov.au/News/Whats-New/draft-report-published-on-review-of-competition-in-the-retail-electricity-and-natural-gas-markets-in-nsw.html>

ⁱⁱⁱ Commonwealth of Australia Senate Committee, Reducing energy bills and improving efficiency, 1 November 2012, http://www.aph.gov.au/parliamentary_business/committees/senate_committees?url=electricityprices_ctte/electricityprices/report/index.htm

^{iv} The CEC notes that this scheme is currently being applied by the QLD government in incentivising significant change to the way in which network investment is occurring within Energex's network.