Submission No 16

COGENERATION AND TRIGENERATION IN NEW SOUTH WALES

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4 September 2013

The Chair
Public Accounts Committee
Parliament House
Macquarie Street
Sydney NSW 2000

Dear Sir/Madam,

Inquiry into cogeneration and tri-generation in New South Wales

APA Group (APA) welcomes the opportunity to lodge the accompanying submission to the Inquiry into cogeneration and tri-generation in New South Wales, initiated by the Public Accounts Committee of the New South Wales Legislative Assembly.

APA is a major ASX-listed gas transportation business with interests in energy infrastructure across Australia, including over 14,000 km of natural gas transmission pipelines, gas storage facilities and a wind farm. APA is Australia's largest transporter of natural gas, delivering about half of Australia's annual gas use through its infrastructure.

APA owns and operates a diverse portfolio of energy infrastructure assets across Australia, with a value of approximately $12 billion. These assets also include direct and indirect investments in NSW. As such, APA is very interested in the outcomes of the review, and looks forward to engaging with the Committee further as the Inquiry progresses.

Please do not hesitate to contact Josh Hankey, Government Policy Manager on [redacted] should you have any questions regarding APA's submission to the Inquiry.

Yours sincerely

[redacted]

John Ferguson
Group Manager, Networks

Inquiry into cogeneration and tri-generation in New South Wales

1. Summary

APA Group (APA) welcomes the opportunity to lodge the following submission to the Inquiry into cogeneration and tri-generation in New South Wales, initiated by the Public Accounts Committee of the New South Wales Legislative Assembly.

A number of issues currently impact the uptake of cogeneration and gas in NSW related to market and policy dynamics. These are outlined in our submission below.

2. Introduction

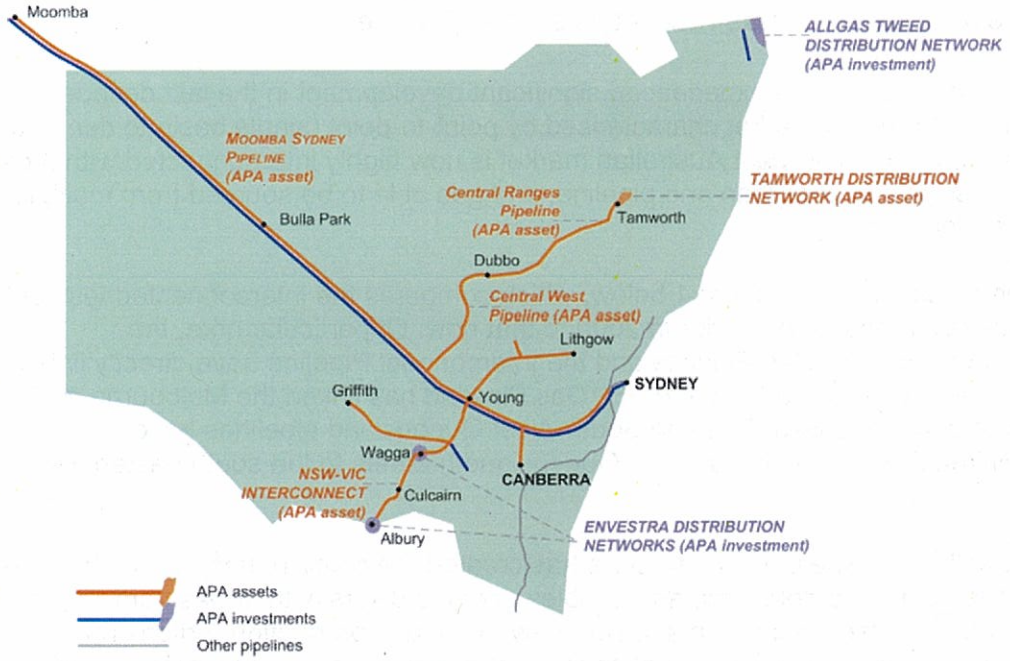
2.1. About APA Group

APA Group (APA) is Australia's largest natural gas infrastructure business, owning and/or operating $12 billion of energy assets. Its gas transmission pipelines span every state and territory in mainland Australia, delivering approximately half of the nation's gas usage. Unique among its peers, APA has direct management and operational control over its assets and investments.

Relevant to NSW, APA owns and operates the Moomba to Sydney Pipeline (MSP), connecting the Sydney market with gas sourced from the Moomba basin and Queensland reserves. In addition, APA owns and operates the Interconnect pipeline, which connects the Victorian transmission system with the MSP, allowing for gas from the Otway and Gippsland Basins to be transported into NSW.

APA also owns and operates distribution assets in NSW, specifically the Tamworth network with approximately 2000 customers. Further, APA operates Envestra's Albury and Country Energy networks and Allgas' Tweed area network. These assets are shown in Figure 1 below.

Figure 1: APA gas investments in New South Wales



2.2. Benefits of Natural Gas

Natural gas is a key fuel for the transition to a low emission economy.

Whilst natural gas is a fossil fuel, it is more greenhouse efficient than coal or oil, with its emissions intensity being half that of black coal and a third that of brown coal. It is the cleanest burning of all fossil fuels. It is colourless, odourless, and non-toxic. Natural gas is currently the cleanest commercial form of reliable and scalable base-load generation. Natural gas provides low emission energy for applications ranging across home appliances, vehicles, commercial buildings, through to large industrial processes.

Natural gas is a suitable fuel for a range of distributed generation technologies including conventional engines, fuels cells, micro-turbines, co-generation and tri-generation.
Gas is often considered to be the transition fuel from fossil to renewable fuels, given that gas is abundant and is also the cleanest of fossil fuels, being considerably cleaner than coal fired electricity. Switching to natural gas typically achieves the lowest unit cost of greenhouse emissions reduction.

The use of natural gas also provides for a potential reduction in electricity network investment (and thus downward pressure on electricity tariffs for consumers), by using gas in greenfield and brownfield developments. This not only includes gas in conventional cooking, heating and hot water applications, but also used for innovative applications such as gas powered co-generation, tri-generation and gas powered air conditioning.

There are many opportunities for natural gas to be used to reduce costs to electricity consumers, whilst at the same time reducing emissions. To achieve this, it is important to understand how gas fits into energy planning and policy development. These aspects are discussed in this submission.

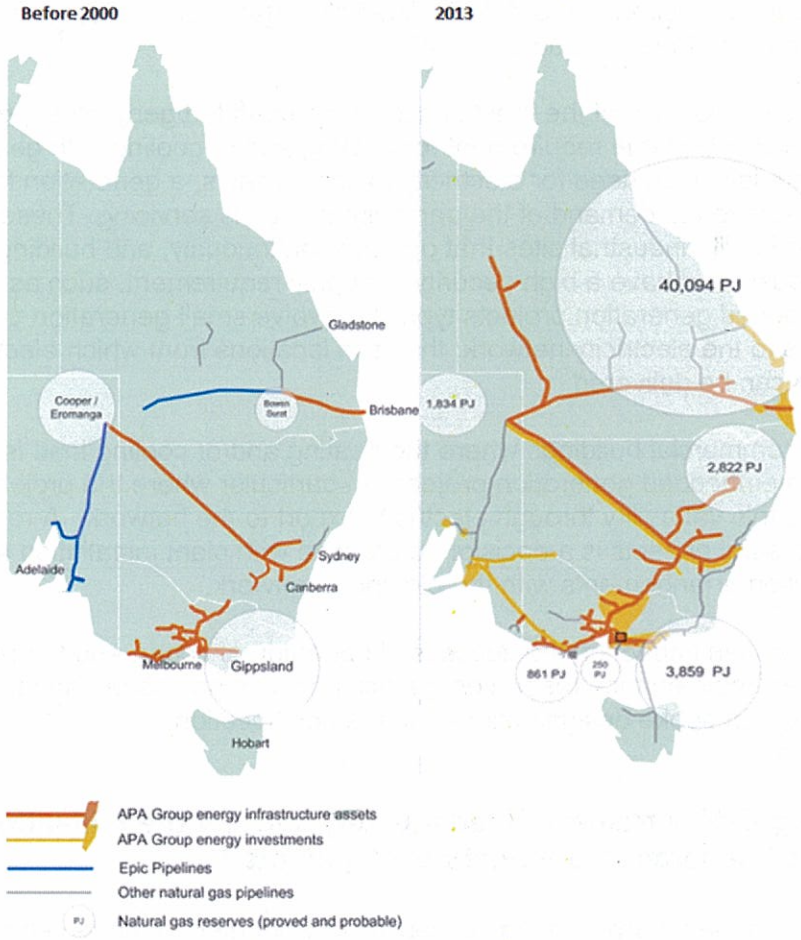
2.3. Development of gas market over last decade

The Australian gas market has experienced significant development in the last decade. Starting from a fragmented market characterised by point-to-point (single basin to demand centre) gas supply, the south east Australian market is now highly interconnected with most major centres served by more than one pipeline, and gas able to be sourced from multiple basins to meet demand.

This development is shown in Figure 1 below, which compares the interconnectedness of the south east Australian gas market prior to 2000 to that now. Of particular note, the construction of the Eastern Gas Pipeline and the Interconnect Pipeline have directly linked the Melbourne and Sydney markets, the SEAGas Pipeline has linked the Melbourne and Adelaide markets, and the BassGas and South West Queensland pipelines have respectively linked the Tasmanian and the Queensland markets to the south eastern gas market.

The interconnectivity of pipeline infrastructure has created the platform upon which basin-on-basin competition could be delivered, and enables users to diversify their gas portfolios as existing long term contracts expire. In addition, new major gas production regions have emerged through the development of coal seam methane reserves in Queensland, and potential for similar development in New South Wales, further enhancing diversity in the south eastern gas grid.

Figure 2 – Gas pipelines and reserves before 2002 compared with 2013



3. Responses to the Inquiry Terms of Reference

3.1. Introduction

APA Group has had considerable experience with the installation of cogeneration, tri-generation (cogen and trigen) and embedded generation facilities across the networks it operates. Given such experience, APA believes it is well positioned to provide input into this Inquiry.

Cogen and trigen facilities offer the following potential benefits:

- Thermal efficiencies of up to 70% relative to 30-40% for conventional fossil fuelled power generation
- Lower energy costs
- Lower emissions (reflected by Green Star Rating NABERS Energy Ratings)
- Greater security of supply
- Demand side response opportunities

- Reduction in electricity transmission and distribution losses; and
- A reduced requirement for future electricity infrastructure investment by electricity network and transmission companies

APA Group's observation is that the most successful embedded generation projects are ones which match a relatively stable requirement for heating and/or cooling with generation plant sized so that there is limited need for electricity export. That is, a generation facility that is well matched in size to the demand of the particular plant it is servicing. These projects are typically associated with industrial sites that operate continuously, and buildings which operate continuously and have a high security of supply requirement, such as hospitals. Successful embedded generation projects typically involve small generation capacities, or locations suitable to the electricity network; that is in locations from which electricity network support services can be delivered.

Residential and commercial buildings where the heating and/or cooling load is highly variable are less suited to embedded generation projects, in particular where the project proponent seeks to manage this variability through electricity export to the network. A recurrent feature of the least successful projects is a decision to proceed with plant installation ahead of securing connection arrangements with the electricity network.

A further issue that can impact on the successful operation of cogen and trigen plant is lack of access to skilled maintenance resources, particularly as many cogen and trigen installations involve bespoke designs tailored to the host location.

3.2. Can the regulatory framework adequately support the utilisation of cogeneration/tri-generation precinct developments?

The single most important barrier to the successful development of cogen and trigen projects is connection to the electricity network, due to:

- Complex connection processes, which vary across states and between distribution networks
- The substantial time and cost required to negotiate a connection; and
- Information asymmetry with limited information available to the project proponent, when much of the required information is available to the electricity network.

Further, some of the potential benefits of cogen and trigen projects such as cost savings associated with delayed electricity distribution and transmission investment, and reductions in electricity network and transmission losses, that is, positive externalities, are not accessible, or captured, by project proponents. The inability of project proponents to capture these benefits reduces the viability of any particular project.

In the specific case of cogen and trigen precinct developments, a further potential barrier is the regulation of the on-sale of electricity, and the regulation of embedded networks. In these instances, the project proponent is confronted by additional regulation that varies considerably from state to state. Further, precinct developments require that downstream consumers source their energy from a single supply (ie the cogen or trigen project). State regulators have been reluctant to deny consumers the benefits of contestable energy supply.

The regulatory regime could be improved through:

- Simplification of electricity network connection process through national standardisation of processes, possibly for different increments of electricity export
- Early advice to the project proponent of those electricity network connection issues (e.g. the possible requirement for network augmentation) which drive the level of analysis required, and the ultimate cost of the connection
- Establishing mechanisms which allow project proponents to access benefits such as avoided electricity network and transmission losses, through for example pre-determined feed-in tariffs.

Standardised national regulation of the on-sale of electricity and of embedded networks would facilitate cogen and trigen precinct development.

Project proponents could possibly facilitate these processes by establishing a suite of standardised designs for smaller cogen and trigen plant.

3.3. The operation of cogeneration and tri-generation in other jurisdictions and its applicability to New South Wales

As mentioned previously APA Group is aware of many instances where cogen and trigen projects have been successfully developed on networks it operates. These include:

- In South Australia
  - Coopers Brewery
  - A number of hospitals operated by SA Health
- In Victoria
  - La Trobe university
  - A number of hospitals operated by the Victorian Department of Health, totalling 36 MW
- In Queensland
  - Castlemaine XXXX
  - 111 Eagle Street

In each instance the proponents have been able to successfully negotiate a range of financial, commercial, engineering and regulatory hurdles.

A further example appears to be the Revitalising Central Dandenong (RCD) Initiative currently under development[1].

The RCD project is a $290m initiative partnership with Places Victoria, the Victorian State Government's Urban Renewal Authority, and Cogent Energy – which is a subsidiary of Origin Energy. The parties have negotiated a Development and Operating Agreement (DOA) to establish Australia's first urban distributed energy precinct using cogeneration technology as a part of the Victorian Governments' Revitalising Central Dandenong (RCD) initiative.

[1] Details provided taken from the Origin Energy website – Dandenong Revitalisation

The distributed energy precinct has been designed so there should be no additional capital or operating cost to building owners or tenants who connect, compared to a business as usual approach.

Features of the RCD are:

- electricity generation by gas fired generators with waste heat used to heat water and provide heating and/or cooling to buildings within the development precinct.
- up to 6MW of gas fired generation capacity together with boilers and heat exchangers
- an underground hot water loop that runs through the entire precinct
- electricity distribution via the grid network to precinct customers
- hot water distribution via a reticulation network to buildings within the precinct

This project appears to represent a possible case study for the NSW government.

3.4. The economic viability of cogeneration and tri-generation in New South Wales including future gas price impacts on running costs

The economic viability of cogen and trigen projects depends upon many factors. Many of these are standard for any sort of engineering project (e.g. construction cost, reliability).

However, there are also factors that are highly specific to cogen and trigen projects. The first of these is the thermal efficiency achieved. This depends upon the suitability of the host site, and is a matter for engineering design. The second is the differential between gas and electricity prices, the so called 'spark spread'.

If electricity prices remain relatively stable, say due to the marginal cost of generation being set by coal-fired plant with a low carbon price, and wholesale gas prices rise, the future viability of cogen and trigen projects is threatened.

Future gas price in NSW is a subject that APA Group recently raised in a submission to The State and Regional Development Committee of the NSW Legislative Assembly, in regard to its inquiry into "Downstream gas supply and availability in NSW". In that report APA Group referred to the current concern within business and industry in NSW, about future gas price increases as a result of potential gas shortages in NSW in coming years.

If these increases do eventuate, APA Group is concerned about their fundamental impact on the economic viability of future cogen and trigen projects in NSW, and their impact on other gas using businesses in the state.

3.5. Financial, public safety and/or other risks regarding cogeneration and trigeneration for customers

APA Group is not aware of any particular or unique public safety risks that are posed to prospective cogen and trigen customers. Otherwise cogen and trigen ventures face the same business risks as other businesses.

3.6. Supply security and reliability issues, especially for residential customers, in regard to cogeneration/ tri-generation systems

By its inherent design, cogen and trigen projects provide a higher level of security of supply to customers than for the same customers on the electricity distribution grid alone. This is simply because the vast majority of precinct cogen and trigen systems are also connected to the electricity network, thus providing energy users on the precinct system with redundant supply.

This redundancy is not usually available to the typical residential customer drawing power from the electricity network. Indeed, even many typical commercial and industrial businesses, which also draw power from the electricity grid, often only have limited supply security options in the case of a power failure e.g. diesel generation that might provide power for limited site operation.

The real issue for prospective cogen and trigen customers is that of cost, as they typically pay for capacity twice, once via the cogen and trigen plant and once for their electricity network connection.

In summary, a properly designed precinct cogen and trigen system, will provide a high level of supply security for customers.

3.7. Ability of existing regulatory arrangements in New South Wales, and National level to address identified issues

APA Group has identified its concerns with existing regulatory arrangements above, in particular in relation to electricity connections.

APA Group considers that if the barriers and issues highlighted are not resolved, then the further development of cogen and trigen projects will not reach their full potential, and associated benefits will not be realised.

3.8. Other relevant matters

As per our comments earlier in the paper, APA Group is concerned about the possibility of rising gas prices over the next few years. APA Group recently raised this as a concern in its response to the The State and Regional Development Committee of the NSW Legislative Assembly, in regard to its inquiry into "Downstream gas supply and availability in NSW".

Since that submission was made, the Australian Pipeline Industry Association (APIA) has released a policy document which makes some specific suggestions about the possibly of a gas price spike in NSW in the next 2-3 years. APIA's document, "Securing Australia's Gas Future – July 2013" recommends that to "address the long-term issues created by the structural changes in Australia's gas markets, APIA recommends the Federal Government should prepare policy to increase the efficiency of gas supply and consider policy that will accelerate the development of Australia's gas reserves".

APIA goes on to say that policy should include:

- A supply-side policy – the Government should establish technology neutral energy investment policy that allows renewables, clean coal, low-emission gas and other clean technologies to compete for funding on the basis of emissions reduction and energy supply.

- A demand-side policy – a technology neutral emissions intensity electricity sector scheme should be established to provide appropriate signals to investors. In the case of gas, it would provide all investors, including explorers, with the signal that low-emission gas technology has an important role to play in the electricity sector.

- Improvements to regulatory and administration regimes - including tenement management, taxation, land access and information.

Although the effect of these suggestions will take time to be realised, they will potentially address over time the anticipated gas shortage issue in NSW, which can only help to support the emergence of cogen and trigen projects, by seeking to address the likely price 'spike' that will be otherwise caused by the shortage.

Closing comments

APA Group thanks the NSW government for an opportunity to submit this paper in response to the Terms of Reference of this Inquiry. APA Group would also be pleased to meet with the committee to discuss further, any matters raised in this paper, should the opportunity arise.