Mr John Miller
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Re: Additional Questions
Inquiry into cogeneration and trigeneration in New South Wales

Dear Mr Miller

The NSW Public Accounts Committee wrote to the Energy Efficiency Council seeking answers to additional questions.

Question 1: To provide the opportunity to increase the breadth of this inquiry, could you give examples of suitable sites and unsuitable sites [for cogeneration systems] in various locations?

There are a number of factors that will affect the costs and benefits of installing and operating cogeneration and trigeneration systems. These factors vary over both time and space, and vary based on the design and purpose of the cogeneration system. As an example, three key factors include:

- **The heat and electrical load profile of the site.** The benefits of a cogeneration system increase where the system is run regularly and the heat and electrical outputs are used productivity. For example, all other factors being equal, an industrial site that needs a large, consistent amount of both electricity and hot water or steam would benefit from a cogeneration system more than a site that has a small, erratic demand for electricity and/or thermal energy.
- **Fuel access and price.** The price of the fuel that is used in a cogeneration system can vary between locations. If the cogeneration system is located where natural gas is less expensive, this decreases the cost of running a cogeneration system. Similarly, if a cogeneration system is located so that it has access to a low-cost supply of renewable fuel (e.g. bagasse) it will lower the cost of running the system.
- **Local electricity network conditions.** The cost of connecting to the electricity network, or benefits from reducing network charges, vary across NSW. In some locations, it can be very expensive to connect cogeneration systems to the network, which could increase the costs of installing a cogeneration system. Conversely, in other locations installing a cogeneration system could avoid the need for network augmentation, significantly increasing the benefits of the system.

These factors, and a number of other factors, interact and vary over time. Therefore, it is not possible to state definitively that some locations are suitable for cogeneration and other locations are unsuitable. Rather, proposals for cogeneration systems should be developed and assessed by a competent expert on a case-by-case basis. Experts would consider the factors listed above and a range of other issues.

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Question 2: In regard to network augmentation deferral due to the installation of cogeneration or trigeneration systems, can you provide an example or examples where this has occured.

There are a number of examples for the use of distributed generation (not just cogeneration and trigeneration). Recent examples include:

- Nova Power 10MW distributed generation network support project in Traralgon VIC
- Network support projects in Perth and Adelaide (using Diesel and Gas gensets)
- Ergon recently completed a project to reduce peak demand and install solar PV on Magnetic Island in Queensland. As a result of this project Ergon managed to avoid spending $17 million to install an additional cable to Magnetic Island.

Question 3: Please can you provide the Committee with examples where cogeneration was a suitable strategy in this area [getting more value out of each unit of gas] and examples where it was not?

Abattoirs use a large amount of gas for heating. Numerous abattoirs around Australia have recently installed cogeneration systems to reduce their total energy bills.

However, in some circumstances it may be more cost-effective for an energy user to keep a gas-fired boiler or install an electric system, particularly if they do not use a large amount of heat. This will depend on the specific conditions at that site, including the price of electricity, cost of network connection, cost of gas, heat load and so on.

Question 4: With regard to the expenses involved with developing and constructing cogeneration plants, could you provide the Committee with some range of costings and an indicative timeframe that the investment could pay for itself? Particularly with reference to small or mid-range projects, in addition to examples of current or future installations that are found to be feasible.

The costs and benefits of installing a cogeneration system will vary significantly from site to site. If a cogeneration system helps an energy user avoid a large network charge, the payback period can be extremely short. Typical payback periods could vary from 3 years to around 15 years. Retrofits for large commercial buildings (e.g. hospitals) that have proceeded in recent years have had payback periods of around 6-10 years.

However, in some circumstances it may be more cost-effective for an energy user to switch from a gas-fired boiler to keep a gas-fired boiler or install an electric system, particularly if they do not use a large amount of heat. This will depend on the specific conditions at that site, including the price of electricity, cost of network connection, cost of gas, heat load and so on.

The cost of cogeneration projects in NSW have been significantly increased by inappropriately high network connection costs. As a result, many of the recent projects have required grants or additional drivers (e.g. helping buildings achieve high energy efficiency ratings) to be cost-effective.

Many projects have confidential costings. However, the NSW Government would have access to the costings for projects that it has recently been involved with a Charlestown Square shopping centre, Westfield Sydney and Tooheys Brewery.

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Please contact me on 03 8327 8422 should you require further information on any of the issues raised in this submission.

Yours sincerely

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Chief Executive Officer

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