

**Submission
No 2**

COGENERATION AND TRIGENERATION IN NEW SOUTH WALES

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Gosford City Council

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Dear Sir/Madam

Gosford City Council submission: *Inquiry into cogeneration & trigeneration in NSW*

Gosford City Council supports the use of Cogeneration/Trigeneration (CT) systems where appropriate. CT systems can be more energy efficient than traditional centralised systems by utilising waste heat for heating and cooling purposes. The ideal niche for CT is when simultaneous and balanced electrical and heating/cooling loads coexist in close proximity. In this niche, CT systems are a viable decentralised power system.

Precinct schemes require additional distribution infrastructure, which adds significant capital and operational cost. To justify a precinct scheme, the additional energy efficiency benefits from the distribution scheme should be greater than the life cycle cost of the distribution infrastructure. In other words, the viability of the precinct scheme should be compared to the viability of a series of decentralised CT systems to achieve a similar end result without the distribution system.

Council notes that the local climate is a major factor in driving the demand and timing for heating, cooling and electrical loads. This is particularly important for the viability of precinct schemes designed to distribute hot or cold water. Council notes that all existing examples of district heating schemes are located in cold climates in Europe and North America; very different to the NSW climate. The few examples of district cooling schemes typically rely on low cost renewable energy sources such as cold water from deep water bodies or snow melt.

A distinctive environmental shortfall of CT systems is their reliance on fossil fuels, typically natural gas. It is acknowledged that some decentralised systems run on renewable fuels such as biogas, but these systems are typically located in close proximity to the biofuel source such as a sewerage treatment plant. It is unlikely that a biofuel could be supplied to a precinct scheme without significant additional cost in establishing the biofuel supply infrastructure. In the short term, it is highly unlikely that a precinct CT scheme could be a renewable system. Investment in a precinct scheme would effectively be creating additional demand for fossil fuels.

The inquiry may wish to consider the "crowding out" effect of the precinct distribution infrastructure on the uptake of renewable energy systems. The opportunity cost of the precinct

distribution infrastructure should be considered in light of viable renewable energy systems providing the same energy service. Renewable energy systems using the existing electricity grid can deliver renewable energy to meet the electrical power, heating and cooling demand of the precinct. An alternative to the CT precinct scheme would be to encourage increased fuel switching away from fossil fuels towards renewable electricity such as increased electricity powered space heating and cooling. If a NSW energy system view is taken, space heating and cooling provided by energy efficient heat pump systems (COP>5) may actually be more energy efficient than trigeneration systems using adsorption chillers.

Natural gas prices directly impact the financial viability of CT systems. Uncertainties regarding future gas and electricity prices, supply shortages and choke points in the natural gas distribution system should be considered as they could be significant project risks. Finally, the unintended consequence of increasing demand for natural gas may increase the market for coal seam gas with associated environmental impacts.

If you require any further information regarding this submission, please contact Council's Carbon & Energy Management Officer Mr Dan Waters on [REDACTED].

Yours faithfully

[REDACTED]

Dan Waters
Carbon & Energy Management Officer