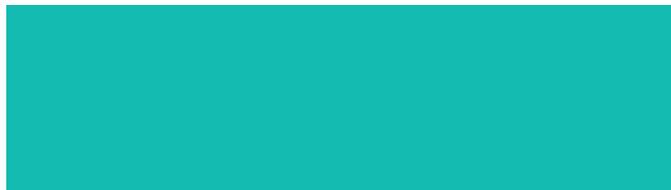


# Submission – Review of the NABERS ruling

*Proportioning of Energy used by Cogeneration or Trigeneration Systems'*

August 2012



  
**Lend Lease**

## Submission – Review of the NABERS ruling ‘Proportioning of Energy used by Cogeneration or Trigeneration Systems’

Lend Lease welcomes the opportunity to provide a submission to the review of the NABERS ruling – Proportioning of Energy used by Cogeneration or Trigeneration Systems. Further, Lend Lease supports the intention to foster an open discussion about NABERS with the NSW Office of Environment and Heritage (OEH), and through provision of relevant and recent industry-user feedback, work proactively with the NSW OEH to further lift the relevance, effectiveness and efficiency of NABERS.

The key issues we would like to raise in this submission pertain to the need to recognise and support developer led masterplanned community co/trigeneration solutions:

- Recognising where precinct scale solutions can create far greater environmental and economic sustainability outcome, than non-optimal building by building systems.
- Recognising that NABERS ratings are important to the ongoing investment in cleaner generation and precinct scale systems.

### The need to support masterplanned community solutions

The primary concern after a review of the Consultation Position Paper relates to how a developer led masterplanned community co/trigeneration solution is dealt with.

A masterplanned community can be defined as a new development which will likely include a number of varying building uses (such as commercial, residential and retail) within a defined land boundary. The masterplanned community may have shared infrastructure within its boundary such as co/trigeneration to enhance its sustainability credentials.

The Consultation Position Paper defines on-site energy generation to occur within the legal boundaries of the building and its grounds. This definition does not account for a centralised co/trigeneration solution within a developer led masterplanned precinct. The current exclusion is expected to significantly affect how individual buildings and tenants will benefit from a community wide co/trigeneration solution.

Centralised systems drive enhanced sustainability outcomes for new developments when compared to building-by-building solutions. In addition to improved environmental and economic sustainability outcomes, centralised systems also ensure:

- higher utilisation of equipment through improved load diversity over the mix of uses (retail, residential, hotel and commercial),
- increased effective generating capacity of the plant,
- improved commercial feasibility for trigeneration.

In-building or a building by building approach to co/trigeneration solutions, whilst appropriate in some instances, in the context of masterplanned community developments or urban regeneration precincts, can result in suboptimal outcomes, both environmentally and economically. Therefore, not supporting developer led masterplanned and precinct scale co/trigeneration solutions, as the current Ruling stipulates, could drive suboptimal and perverse environmental and economic outcomes – discentivising ongoing investment in clean energy solutions.

A case in point is Barangaroo which has a centralised recycle water / sewage plant and central chilled water plant. Providing individual sewage systems in each building is not a practical or smart approach to infrastructure. Likewise, rather than individual buildings having their own chillers and cooling towers, by centralising the chilled water into a central facility and providing recycled water for cooling tower water demand, no potable water is used in cooling towers and it provides a much better economic solution. These central facilities are located in the basement with service provision crossing multiple legal boundaries within the same overall planned development.

Good green building and energy policy drives the right outcomes and does not force poor economic and environmental solutions.

As written the current NABERS Ruling would force Barangaroo to abandon its plans for a central co/trigeneration plant that will provide electricity to the various buildings on site and the chilled water plant while using waste heat for absorption chilling and domestic hot water. This is not a smart outcome. Tenants and building owners want to obtain electricity from lower carbon solutions (particularly on a site like Barangaroo where there is a carbon neutral objective) and it would make no sense nor would it be feasible to have separate co/trigeneration on each of the buildings contained and restricted within their own legal envelopes. Clearly, a NABERS Ruling that would cause Barangaroo to abandon a low carbon co/trigeneration solution is not a good outcome.

Barangaroo is just one such urban regeneration/precinct scale projects that would be impacted in this way, there are numerous other examples. Ensuring the NABERS ruling includes these systems is important to ensuring all buildings and tenants within master planned communities/precincts are appropriately recognised and rewarded for use of low carbon co/trigeneration energy. Therefore, we recommend that the NABERS Ruling be amended to account for a centralised masterplanned community co/trigeneration solution.

The remainder of this submission comments on each of the key issues outlined within the Consultation Position Paper.

## How should on-site energy generation be treated within a NABERS rating?

We strongly recommend that all energy generated from a centralised co/trigeneration plant within a masterplanned community is treated similarly to the current on-site energy generation rules outlined within the Consultation Position Paper. The energy provided by the co/trigeneration plant is proposed to be appropriately metered and sub-metered (at the co/trigeneration plant or the end location), and supply agreements provided to ensure accurate measurements of individual building and tenant energy consumption can be reported.

**Note:** through metering and energy contracts for the supply of co/trigeneration power onsite, the electricity can be attributed to individual buildings from an onsite central co/trigeneration plant with an associated green house gas coefficient. The amount of gas would be attributed based on the co/trigeneration energy used by each onsite building and the associated carbon attributed to it including scope 1, 2 and 3 greenhouse gas emissions.

In terms of co/trigeneration providing electricity to a central cooling plant (i.e. electric chillers), the same methodology will be used and the green house gas coefficient of the cooling provided will be adjusted based on a proportionate amount of co/trigeneration and grid electricity used.

In terms of waste heat used in DHW and absorption cooling from a central plant, this would have no carbon content and onsite buildings would be able to take this into consideration in their NABERS rating.

The centralised co/trigeneration plant will meter all thermal and electrical output for all export and non export end uses. This metering will enable accurate apportioning of energy generation inputs to each of the end users of the co/trigeneration system. All externally supplied energy to the onsite co/trigeneration system is proposed to be apportioned based on the electricity supplied to each of the precinct's buildings and their tenants. Records and metering completed by both the co/trigeneration plant and end users will comply with the current NABERS rules for apportioning of energy.

We recommend that the NABERS position is revised with a definition for energy used within a masterplanned community with a centralised co/trigeneration. A proposed definition is as follows:

Energy generation is considered as being within a Masterplanned community if:

1. All of the process of energy conversion (e.g. solar-electricity, fuel electricity) occurs within the legal boundaries of the masterplanned community and its grounds; and
2. The generated electricity is distributed to buildings and other uses within the masterplanned community boundary

## How should usable energy generated by co/trigeneration systems and exported off-site be treated within a NABERS Energy rating?

The definition of exported energy is recommended to apply only to co/trigenerated energy exported beyond the *boundary* of the master planned community.

The externally supplied energy used by a masterplanned community co/trigeneration system to produce export electricity or export useable thermal energy can be proportionally excluded from a building's (within the master planned community) NABERS Energy Base Building Rating. All additional energy required to reticulate, boost and supply the electrical and thermal energy for the purposes of supplying energy to a third party end user, would be proportionately allocated a generation emissions value, and excluded from the NABERS Energy Base Building Rating.

## How should NABERS communicate the use of low/zero emissions electricity in a rating to assist industry in understanding both the environmental performance and energy efficiency of a building?

Lend Lease agree with the methodology proposed by NABERS on this issue, but propose that Lend Lease will calculate an emissions value for co/trigenerated energy to be used within each of the co/trigeneration export customers NABERS energy ratings.

To determine the emissions value, it is proposed that all co/trigeneration electric and thermal energy supplied for export to customers external to the master planned community will be accurately metered and the relevant supply agreements will provide accurate records of energy consumption.

All externally supplied energy (natural gas) used to generate the thermal energy and electricity within the master planned community co/trigeneration plant will be apportioned to the internal and export streams. Metering will be used to measure the:

- Cogeneration electricity used on-site
- Cogeneration thermal energy used on-site
- Exported electricity
- Exported thermal energy

Once measured, the gas can be apportioned to the relevant energy streams, and the gas used to generate the exported electricity calculated. The associated carbon attributed to the export energy will include scope 1, 2 and 3 greenhouse gas emissions.

Any on-site ancillary energy required to reticulate, boost and supply the electrical and thermal energy to export customers will be metered and included with the proportioned externally supplied energy (natural gas) to determine an accurate emissions value for the export energy.

Based on the gas and ancillary energy data, Lend Lease will determine an appropriate emissions value for the export energy. Access to all measured data required to calculate the emissions value will be provided to ensure the calculations behind the emissions value for the export energy are transparent and verifiable.

### **For Further Information:**

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