

ISSUE 1: POTENTIAL DOUBLE COUNTING OF EMISSIONS AND CORRESPONDING DOUBLE BENEFIT UNDER NABERS WHEN THE CO/TRIGENERATED ELECTRICITY IS DELIVERED VIA THE GRID.

NABERS Position:

Currently, no double counting occurs when electricity generated by co/trigeneration systems (low emissions electricity) is delivered to other buildings via the grid.

No change is required to the July Ruling in this regard.

NDY Comment:

If in future the calculation method for the NGA greenhouse gas emission factor for Scope 2 electricity is modified to include emissions from small generating units, then this would become an issue. Though the magnitude of error caused would be small now, with the increasing uptake of district embedded generation envisioned, this will increase. A strategy developed now for dealing with this potential occurrence would help to reassure the industry that sudden changes are unlikely to occur in the future assessment of NABERS ratings.

In the event that an industry/government accreditation standard (as per Issue 4) is developed, then an appropriate demarcation line would appear to exist immediately: embedded generators registered as low-carbon suppliers would be excluded from NGA calculations, while primary generators and unregistered embedded generators would be included in NGA calculations.

ISSUE 2: HOW SHOULD ON-SITE ENERGY GENERATION BE TREATED WITHIN A NABERS RATING?

NABERS Position:

Retain the current July Ruling position that allows for all the energy supplied to an onsite co/trigeneration system to be allocated to the electricity generated for the building/and its tenants (where applicable).

No externally supplied energy is required to be allocated to the internally used thermal energy or the non usable thermal energy.

The on-site generation of electricity and thermal energy for use by the base building is considered to affect both the energy efficiency and environmental performance of the building. Therefore this energy will be included in the NABERS rating disclosed through the Commercial Building Disclosure program (CBD).

The NABERS Tenancy Energy Rating Certificate and accompanying Rating Report will identify the amount of low emissions electricity that has been used by a tenancy.

The July Ruling is to be amended to include a definition of 'on-site' energy generation, as follows:

Definition: Energy generation is considered as being "on-site" if:

1. All of the process of energy conversion (e.g. solar-electricity, fuel-electricity) occurs within the legal boundaries of the building and its grounds; and
2. The generated electricity is connected on the user side of the meter; and
3. No usable energy is exported beyond the building and its grounds (off-site).

More complex situations may arise where electricity or thermal energy is being provided to a non-office use within the building, which can be excluded under the NABERS Rules, if appropriately sub-



metered. Metering and record keeping required for the apportioning of on-site generation are detailed in the July Ruling and are to be retained. In this situation the non-office use will be treated as receiving a proportion of the energy input and this can be excluded from the rating.

NDY Comment:

We are generally in agreement with the proposal for the assessment of buildings with on-site energy generation. However, regarding the allocation of input energy between base building, tenancy and exported output energy, it is intended that this is done on the basis of annual total energy or on the basis of real time apportioning (as for thermal energy exclusions) since the efficiency of the generator will vary according to total load, and output components will not be constant. The former will be easier to implement, but may not be consistent with existing guidance regarding measurement accuracy. We understand that NABERS is considering how best to rationalise the requirements for energy metering in distribution systems, and this will be an important consideration in such embedded systems which may have multiple energy streams to multiple end users in different locations. The extra-over cost of providing metering to satisfy the relevant requirements could be significant if not appropriately considered in the context of such system arrangements.

ISSUE 3: HOW SHOULD USABLE ENERGY GENERATED BY CO/TRIGENERATION SYSTEMS AND EXPORTED OFF-SITE BE TREATED WITHIN A NABERS ENERGY RATING?

NABERS Position:

NABERS is a single building rating tool, to measure the operational performance of existing buildings.

Under NABERS, treatment of exported energy from building co/trigeneration systems, whether this is electricity or thermal energy, is to be accounted for in the NABERS rating, irrespective of whether it is exported via public or private networks. Therefore, all useful energy exported off-site from a building, (including electricity, hot water or chilled water), for the purposes of supplying energy to a third party end user, will be proportionately allocated a generation emissions value.

When a building exports thermal energy off-site, it will need to meter both its exported and internal thermal energy use to enable the accurate apportioning of energy generation inputs.

The externally supplied energy used by on-site co/trigeneration systems to produce export electricity or export useable thermal energy can be excluded from a NABERS Energy Base Building Rating.

It is recommended that the July Ruling be amended to account for the allocation of generation energy inputs to usable thermal energy exported off-site. This will require working with industry and government to determine an appropriate apportioning calculation methodology.

NDY Comment:

In developing the “appropriate apportioning calculation methodology” the primary consideration needs to be the relative emission reduction potential of the output energy. Currently, the benefit of co/trigeneration systems is primarily realised through the use of natural gas as primary fuel, displacing the prevalent use of black or brown coal in the majority of states and territories. The additional benefit accrued from the use of thermal energy (whether for heating or cooling) is minor. The current apportionment of all emissions to the electricity implicitly acknowledges this fact, and it is important that any future methodology retains this balance.

Simple calculation indicates that the emission reduction potential from cogenerated electricity is four times that from cogenerated thermal energy (assuming complete utilisation) for Victoria (less in other states and territories due to the lower greenhouse gas emission factor for electricity), and as such at least 80% of emissions should be allocated to the electricity.



ISSUE 4: HOW SHOULD LOW/ZERO EMISSIONS ENERGY EXTERNALLY SUPPLIED TO A BUILDING BE TREATED IN A NABERS ENERGY RATING?

NABERS Position:

NABERS supports the creation of an industry/government accreditation standard to account for the apportioning of generation and network supply emission values to thermal energy products and electricity. Once third party verifiable invoices/bills are available that clearly show the energy purchased and its emission value, this low emissions externally supplied energy can be included within a NABERS Energy rating. The amount of low emissions electricity will be identified in the NABERS Energy Rating Certificate and accompanying Rating Report (similar to GreenPower).

Until such a standard is developed co/trigeneration electricity supplied via the grid/network will be allocated standard grid emission values. Imported thermal energy will be considered by the NABERS National Administrator on a case-by-case basis.

NDY Comment:

We acknowledge that a third-party accreditation and verification standard is required for the robust and transparent reporting and accounting of energy and greenhouse gas emissions associated with the operation of distributed decentralised energy generation and distribution. We highlight the Combined Heat and Power Quality Assurance programme operated and administered by the UK Department of Energy and Climate Change (<http://chpqa.decc.gov.uk/>) as an example of a public body already providing such a service; under UK regulations a CHP installation must meet a minimum efficiency standard to be eligible for exemption from the Climate Change Levy otherwise payable on fossil fuel energy, and for tax breaks on capital investment in co/trigeneration technology.

In order that investment in energy efficiency and greenhouse gas abatement schemes is not hindered, it is essential that the industry stakeholders move as quickly as possible to establish and implement such a scheme. There is much discussion in the industry regarding the position of large decentralised energy schemes with respect to the impact on NABERS ratings (for example: <http://www.thefifthestate.com.au/archives/37751>), so clear direction and action is required to provide the assurances that the industry is demanding.

As an associated consideration, the scope of any such accreditation scheme should perhaps not be limited to co/trigeneration operators; where operators are seeking to distribute renewable energy generation capacity via the grid, the same principles would apply, such systems should be included in the scheme (or a parallel scheme operated on the same principle). Portfolio property owners and operators could see such an arrangement as being significantly advantageous to their operations and the cost benefit of installation of renewable energy systems. Building-integrated systems are unlikely to be effectively administered via the GreenPower certification scheme, and the envisaged scheme, directed at embedded generation systems, would be to the benefit of these embedded renewable energy generation systems as well.

ISSUE 5: 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?

NABERS Position:

NABERS will continue to communicate both the environmental performance and the energy efficiency of a building through its website, star Rating Certificate and accompanying Rating Report. Once an acceptable audit and verification system is in place to account for low emissions electricity externally supplied, these purchases can be considered in a NABERS Energy rating.



Consistent with the treatment of GreenPower, the percentage of low/zero emissions electricity used by a building will be displayed on the Rating Certificate and Rating Report.

NDY Comment:

We agree with the methodology described for the treatment of low-emission electricity. However, it is not clear what the rationale is for describing in the discussion part of this issue the use of imported cogenerated thermal energy as an energy-efficiency and environmental-performance improvement, but the use of cogenerated electricity as an environmental-performance improvement only. If this is regarded as a utility such as electricity which may be purchased with a varying component of GreenPower, then the choice to purchase the heating water may similarly vary over time unless it can be demonstrated that the building requires this supply to meet design loads. A building with full design capacity in its own boilers or other thermal energy source should not be automatically credited in this way, if the principles are to be consistently applied.