Ruling: Addendum to the NABERSNZ Energy for offices Rules for Thermal Energy Exclusions: Condenser Water Use

Issued: December 2012

Note: This Ruling was first issued by the Office of Environment and Heritage[1], 28th October 2010 and is adapted for use in New Zealand with permission.

Coverage of this ruling

This ruling applies to the document *NABERSNZ Energy and Water for offices - Rules for collecting and using data - version 1 November 2012* (the Rules) and it sets the requirements and methodologies for treating condenser water imports/exports as small end users.

It adds new sections on the treatment of condenser water use to Section 2 'Definition of small end users', and Section 3 'Simplified methodology for small end users'.

The numbering shown in this document follows the numbering of the Ruling for Thermal Energy Exclusions.

A. Definitions:

1.1..1.1 Total Flow in Rated Building	Total condenser water flow inside the building being rated, including condenser water exported from the building for use elsewhere or imported from another building **Exports:** Where condenser water is being exported to another building, the total flow in the rated building is the sum of the internally-used flow and the exported flow. **Imports:** Where condenser water is being imported from another building, the total flow in the rated building is the sum of the internal condenser water production and the imported flow.

B. Ruling:

2. Definition of small end user

2.4 Condenser Water

[1] The Office of Environment and Heritage (OEH), NSW, Australia, has licensed EECA to modify and administer NABERSNZ energy and water for offices in New Zealand.

2.4.1 Whole Building Rating

The import of condenser water to provide one or more services included in the **energy coverage** of the Rating is considered a small end user inclusion, regardless of the amount of water being imported.

The exclusion of condenser water is a small end user only if:

- the building to which it is exported is the same size or smaller and has equivalent use, or
- the exported flow is equal to or less than the flow of tenant condenser water system of the building.

2.4.2 Base Building Rating

The import of condenser water to provide one or more services included in the energy coverage of the Rating is considered a small end user inclusion, where less than the equivalent of 50% of the building's tenant condenser water capacity is imported.

The exclusion of condenser water is a small end user only if:

- the building to which it is exported is less than 50% of the size of the rated building and has equivalent use, or
- the designed flow that is being exported is 50% or less than the maximum tenant condenser water flow, or
- the measured exported flow is 50% or less than the maximum tenant condenser water flow.

2.4.3 Tenancy Rating

The inclusion or exclusion of condenser water is never considered a small end user for a tenancy rating because it is not usually part of a tenancy rating and where it is part of a tenancy rating it is likely to represent a significant portion of the overall rating.

3 Simplified methodology for small end users

3.4 Condenser Water

3.4.1 Whole Building Rating

Addition

For an addition of condenser water imported into the rated space use the following formula:

$$\text{Addition } \% = 5x\left(\frac{\text{Imported flow}}{\text{Total flow in Rated Building}}\right)$$

Use flow meters or design parameters to determine the percentage of condenser water being imported into the space.

Exclusion

For an exclusion of condenser water exported from the rated space based on flows use the following formula:

$$\text{Exclusion } \% = 5x\left(\frac{\text{Exported flow}}{\text{Total flow in Rated Building}}\right)$$

Use flow meters or design parameters to determine the actual exported flow and the total condenser water flow in the Rated Building.

For an exclusion of energy exported from the rated space use the following formula:

$$\text{Exclusion } \% = 5x\left(\frac{\text{Rateable area of other building}}{\text{Rateable area of space}}\right)$$

Note that a maximum of 5% can be included or excluded for a whole building rating. A suitable exclusion/inclusion needs to be applied to one of the energy sources of the rating (for example, an exclusion of electricity or gas), which will change the benchmarking score2 accordingly.

3.4.2 Base Building Rating

Addition

For an addition of condenser water imported into the rated space use the following formula:

$$\text{Addition } \% = 5x\left(\frac{\text{2 x Imported flow}}{\text{Total flow in Rated Building}}\right)$$

Use flow meters or design parameters to determine the percentage of condenser water being imported into the space.

Exclusion

For an exclusion of condenser water exported from the rated space based on flows use the following formula:

$$\text{Exclusion } \% = 5x\left(\frac{2\,x\text{Exported flow}}{\text{Total flow in Rated Building}}\right)$$

Use flow meters or design parameters to determine the actual exported flow and the total condenser water flow in the Rated Building.

[2] The benchmarking score is calculated by the NABERSNZ calculator and is the energy intensity of the rated space that has been corrected for the greenhouse gas emission intensity of the energy, relative to electricity.

For an exclusion of condenser water exported from the rated space use the following formula if only the relative areas are known:

$$\text{Exclusion } \% = 5x\left(\frac{2\,x\text{Rateable area of other building}}{\text{Rateable area of space}}\right)$$

Note that a maximum of 5% can be included or excluded from any rating. A suitable exclusion/inclusion needs to be applied to one of the energy sources of the rating (for example, an exclusion of electricity or gas), which will change the benchmarking score accordingly.

C. Accuracy Requirements:

Note that the simplified methodology for condenser water, as all the other simplified methodologies in the Rules for Thermal Energy Exclusions, is a method for calculating an acceptable estimate of energy consumption. As with all estimates, the entire inclusion or exclusion result must be added to the Potential Error for the rating.

If the combined effect of using one or more methodologies (in addition to any other estimation used in the rating) is larger than 5%, then only sources up to the error limit can be assessed as small end users. In the case of energy exclusions, the remainder cannot be excluded as a small end user and needs to be included in the Rating. For energy inclusions, the standard methodology needs to be used or the rating cannot proceed.

D. Example:

Type of rating: Base Building

Simplified methodology used: Condenser Water

A water loop supplies condenser water for Air Conditioning purposes to several office tenancies in a building and a lower-ground retail store. The energy consumption used for the condenser water being supplied to the retail space can be excluded from the rating, as is does not form part of the **minimum energy coverage** of a Base Building rating.

The assessor has obtained the design documentation with the engineering calculations for the condenser water loop. According to this document, the full-capacity design flow of condenser water in the entire loop is 1 lt/sec, and a 20% of this flow (0.2 lt/sec) is sent to the retail store.

1) **Determine if user qualifies as a small end user:** According to **section 2.4.2**, the exclusion of the condenser water to retail is a small and user, as the exported flow (20%) is lower than 50% of the **total flow in Rated Building**.
2) **Calculate exclusion percentage:** the exclusion percentage is calculated by using the appropriate equation for condenser water in Base Building ratings, in **section 3.4.2**.

$$\text{Exclusion } \% = 5x\left(\frac{2\ x\text{Exported flow}}{\text{Total flow in Rated Building}}\right) = 5x\left(\frac{2\ x0.2\frac{lt}{\text{sec}}}{1\frac{lt}{\text{sec}}}\right) = 2$$

As a result, an exclusion of 2% **over the total emissions** (scope 1, 2 & 3) is to be performed.

3) **Calculate the final emissions:** previous to applying this methodology, the total emissions (scope 1, 2 & 3) for this rating were 1,000,000 $kgCO_2$. As calculated before, a total of 2% of these emissions (20,000 $kgCO_2$) can be excluded from the rating.

   Final total emissions for this rating = 980,000 $kgCO_2$

4) **Calculate estimate:** a suitable energy exclusion must be performed to be able to reduce the emissions from the original total emissions (1,000,000 $kgCO_2$) to the final total emissions for this rating (980,000 $kgCO_2$). As the condenser water energy consumption is supplied from the Base Building electricity account, the exclusion needs to be done to this account.

   Using the online calculator, the assessor has determined that in order for the total emissions to be 980,000 a total exclusion of 14,854 kWh of electricity needs to be applied.

5) **Add to potential error:** after applying the estimated exclusion to the building's electricity account, the entire 14,854 kWh of electricity need to be added to the error calculation.