NABERSNZ Rules

Energy and Water for Offices

Version 1.2 – March 2021

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1 Introduction

1.1 Summary

The National Australian Built Environment Rating System (NABERS) is a performance-based rating system for buildings. It has been adapted for use in New Zealand with changes reflecting the energy use and practice norms of the New Zealand office market. This document is intended for use by NABERSNZ **Accredited Assessors** and **Auditors** while conducting and reviewing assessments in New Zealand.

NABERSNZ ratings are expressed as a number of stars, for example:

NABERSNZ rating		Performance comparison
6 stars	★★★★★★	Aspirational performance
5 stars	★★★★★	Market leading performance
4 stars	★★★★	Excellent performance
3 stars	★★★	Good performance

A NABERSNZ rating for a building is based on a methodical assessment of the actual environmental impact of operating it. For a rating to be certified by NABERSNZ, the assessment on which it is based must be performed by a NABERSNZ **Accredited Assessor** and comply with a quality standard that sets out principles and rules for gathering, interpreting and using data. Assessments may be audited for compliance.

The quality standard for an assessment is defined in these **Rules**. The **Rules** are amended as required by additional **rulings**, published on the NABERSNZ website, which apply the principles in the **Rules** to specific issues raised since the document was published.

These **Rules** are for assessing office buildings for certified NABERSNZ Energy and Water for Offices performance ratings. In the context of this document, ‘offices’ are understood as being workplaces primarily used for administrative, clerical and similar information-based activities.

1.2 Interpretation of the Rules

1.2.1 Current version

Assessments for a certified rating must comply with the version of the **Rules** (including **rulings**) current on the day the rating application is submitted to NABERSNZ, unless:

a) The assessment is conducted under the terms of a NABERSNZ Commitment Agreement (when applicable) which specifies an earlier version of the Rules, or

b) The **Administrator** in consultation with the Energy Efficiency and Conservation Authority (EECA) and the Department of Planning, Infrastructure and Environment (DPIE) has specifically approved otherwise.

All **rulings** and new versions of the **Rules** are published on the NABERSNZ website www.nabersnz.govt.nz.

Note: The New South Wales Government of Australia through the Department of Planning, Infrastructure and Environment (DPIE) has licensed EECA to modify and administer NABERSNZ Energy and Water for Offices in New Zealand.

1.2.2 Precedence

A **ruling** takes precedence if there is any conflict with the **Rules**. If there is a conflict between **rulings**, the most recent takes precedence.

1.2.3 Formatting conventions and referencing

Wherever the term 'Rules' is used in this document from Chapter 4 onwards, it refers to this particular document, *NABERSNZ Rules – Energy and Water for Offices*.

Notes and **examples**: Text appearing with a grey tint in the background is explanatory text only. It is not to be read as part of the **Rules** and/or is not essential for the proper use of this document.

Text appearing **dark green and bold** is a defined term (see Chapter 2).

All main references to documentation requirements appear *italicised and in blue font*.

1.3 Situations not covered by the Rules

These **Rules** are intended to cover most office buildings. If an exceptional situation is encountered and the **Rules** are not easily applicable, the **Accredited Assessor** must contact the **Administrator** for assistance.

Where an **Accredited Assessor** is unsure how to apply the **Rules**, the **Administrator** may resolve the issue by making an interpretation of the **Rules** or by advising the use of a specific procedure that aligns with the intention of the **Rules**. Written correspondence from the **Administrator** is required as evidence if this occurs.

Procedures not contained within these **Rules** may only be used for a particular rating with prior written approval from the **Administrator**. Approval to use the same procedure must be sought from the **Administrator** each time it is proposed to be used. Approval is entirely at the discretion of the **Administrator**.

1.4 How to use this document

1.4.1 Overview

This document provides the framework for assessing offices in relation to the following elements:

a) Rated areas (Chapter 4);

b) Rated hours (Chapter 5);

c) Counting computers (Chapter 6);

d) Minimum energy coverage (Chapter 7);

e) Minimum water coverage (Chapter 8);

f) Metering systems (Chapter 9);

g) Consumption data (Chapter 10).

Documentation requirements for certified ratings are given in Chapter 11.

A list of the main changes between this version and the previous version is given in Appendix E.

1.4.2 NABERSNZ Energy for Offices

The more stars in a NABERSNZ Energy rating, the lower the energy use of the **rated premises**.

To determine the star rating, the total energy use of the office, based on 12 months of actual data (indexed by greenhouse gas intensity relative to electricity), is compared to the predicted average energy use for an office with the same attributes, such as **rentable area**, hours of use, climate and equipment density. The star rating is awarded based on how far the office's performance differs from its predicted average performance.

Three types of NABERSNZ Energy for offices ratings are available as shown in **Table 1.1**:

Table 1.1: Types of NABERSNZ Energy for Offices ratings

Type of rating	Scope
Tenancy rating	Assesses energy consumed by the occupant in the **rated premises** during the **rating period**, including: a) Lighting to all areas within the **rentable area**, including lift lobbies and amenities (**service areas**); b) Power to all equipment within the **rentable area**, including computer servers, lift lobbies and amenities (**service areas**); c) Tenant-installed signage within or on the building; d) Tenant-controlled supplementary air conditioning to meet a **special tenant requirement**; e) Generator fuel for tenant usage.

	A Tenancy rating does not cover lighting or power allocated to **service areas** that are allocated on a pro-rata basis to more than one tenant.
Base Building rating	Assesses energy consumed in supplying building central services to office rentable and common spaces during the **rating period**, including: a) Common-area lighting and power (for example foyers, plant rooms and those lift lobbies and amenities (**service areas**) that are assigned as **rentable areas** on a pro-rata basis to more than one tenant); b) Lifts and escalators; c) Air conditioning and ventilation, including: 1) Base Building services to meet normal requirements; 2) Centralised supplementary services provided for tenants – see Section 7.3.2; 3) Supplementary services provided to ensure the premises are **comfortable for office work**, where there is no **special tenant requirement**. d) Exterior lighting; e) Exterior signage provided by the building owner for the benefit of office tenants; f) Generator fuel where it serves central services; g) Car park ventilation and lighting, where internal or external car parks within the legal boundaries of the site are provided for tenant use.
Whole Building rating	Assesses energy used by office tenancies and Base Building services to office rentable (including all **service areas**) and common spaces during the **rating period**. This should include all energy supplied to the building for the operation of the building and the occupants of the office space.

1.4.3 NABERSNZ Water for Offices

The more stars in a NABERSNZ Water rating, the less water used by the rated building.

To determine the star rating, the total water use of the office, based on 12 months of actual data, is compared to the predicted average water use for an office with the same attributes, such as **rentable area**, hours of use, climate, and equipment density. The star rating is awarded based on how far the office's performance differs from its predicted average performance.

A NABERSNZ Water for Offices rating does not count consumption of internally or externally supplied recycled water or water from on-site sources such as rainwater tanks. However, externally supplied recycled water source data is collected by the **Accredited Assessor** because it displaces potable water, and the data allows the building owner to understand the total water consumption of the building.

NABERSNZ Water for Offices ratings are for Whole Buildings only. They can be conducted at the same time as a NABERSNZ Energy for Offices Base Building or Whole Building rating.

1.5 Related documents

The following documents have been referenced in this text:

The Rules – NABERS Energy and Water for Offices (v4.1), 2020

NABERSNZ Energy for Offices – Ruling for Thermal Energy Exclusions, 2008

Property Council of New Zealand Incorporated / Property Institute of New Zealand Incorporated, *Guide for the Measurement of Rentable Areas*, 2013

2 Terms and definitions

This chapter lists the key terms and their definitions that are integral to the proper use of this document.

Term	Definition
acceptable data	Data which meets the applicable accuracy and validity requirements of these **Rules**.
acceptable estimate	The values derived from an estimation method permitted by these **Rules** in place of incomplete or uncertain data. Estimates that do not satisfy the above specifications are deemed unacceptable and cannot be used in the rating.
Accredited Assessor	A person of the NABERSNZ scheme, authorised by the **Administrator** to conduct assessments for certified ratings in accordance with these **Rules** and the NABERSNZ processes and procedures.
Administrator	The body responsible for administering the NABERSNZ scheme, in particular for: a) Establishing and maintaining the standards and procedures to be followed in all aspects of the operation of the scheme, and b) Determining issues that arise during the operation of the scheme and the making of ratings, and c) Accrediting Assessors and awarding certified ratings in accordance with NABERSNZ standards and procedures. The New Zealand Government through the Energy Efficiency and Conservation Authority (EECA) as licensee of NABERSNZ has engaged the New Zealand Green Building Council (NZGBC) to act on their behalf as the Administrator. **Note:** The New South Wales Government through the Department of Planning, Industry and Environment (DPIE) has licensed EECA to modify and administer NABERS Energy and Water for Offices in New Zealand.
Auditor	A person contracted to the **Administrator** to perform audits of NABERSNZ rating applications.

cloud metering system	An electrical **metering system** where voltage, current, and phase data is gathered from an electrical network by sensors. This data is then transmitted via the cloud (this is a type of **RMRS**) to software that calculates energy usage. Cloud meters are considered 'non-cumulative' meters for the purposes of NABERSNZ.
co-assess	An application process that allows office Tenancy, Base Building, and Whole Building ratings to be conducted within the same application. **Note:** A **co-assess** application is typically made up of a Base Building and/or Whole Building rating alongside its associated Tenancy ratings. Other combinations are possible, e.g. multiple Tenancy ratings only.
comfortable for office work	Where the conditions in a space, in terms of temperature and outside air supply, are suitable for reasonable, normal use as an office.
computer server room	A room designed to accommodate computer and associated communications equipment that is separated from adjacent spaces by full-height walls and a door.
data centre	A **computer server room** that comprises: a) At least 5% of the total office **rentable area** of the rated building; or b) At least 25% of the **rentable area** of the floor on which it is located; or c) A room where at least 75% of its capacity is dedicated to **external users**. The combination of multiple **computer server rooms** is not considered a data centre.
direct HVAC energy	All energy associated with the provision of a HVAC service to the **functional space** with the exception of energy use associated with the operation of a tenant condenser water loop providing heat rejection for a **supplementary air conditioning equipment**. **Note:** A 'tenant condenser water loop' is sometimes referred to as a 'supplementary condenser water loop'.
educational office facility	An educational facility which occupies a tenancy within a commercial office building that is **fit for office use** and is serviced by the Base Building's **direct HVAC energy**.
embedded network	An electricity network that is generally used where the building or subdivision owner has an incoming gate meter, and they allow energy retailers to trade over the network which is owned and maintained by a third party, the embedded network owner.

end of trip facility	A designated space containing facilities such as secure bicycle storage, showers, changing facilities, lockers, and drying space for clothes, for use by staff and visitors of the building.
end use	A purpose or activity (or a group of related purposes and activities) that water or energy is used for.
exclusively for the use of office tenants	Where public access is not generally allowed by the office owner or leaseholder, except for receiving visitors to the office.
external user	A user of an IT or communication service provided from a facility sited in the **rated premises**, who is not an occupant of the **rated premises**. **Note:** An occupant who uses the service internally from the premises and who may also access the network or system remotely (such as from home or another work location) is not an external user.
fit for office use	Fit for continuous occupation as an office, with adequate lighting and suitable ventilation (such as air conditioning, natural ventilation or mixed-mode operation) of a similar or higher standard of service to the bulk of the office.
fitout works	A construction activity undertaken to install, remodel, replace or remove an office fitout.
functional space	A space identified by an **Accredited Assessor** as a distinct space in accordance with Section 4.4.
hours of occupancy	The number of hours per week when 20% or more of the usual occupants of a **functional space** are present in the space. **Note:** Where a space is used for two or more shifts, the 20% minimum occupancy is determined based on the shift with the largest number of occupants.
hours of service	The number of hours per week for which a tenant has requested that a **functional space** be **comfortable for office work**. The hours of service are the total of the following: a) Core Hours: hours agreed in writing by the building owner and the tenant during which the space will be **comfortable for office work**, subject to the agreement being reasonable and the hours reasonably reflecting the actual use of the space; and b) After-hours air conditioning (AHAC) hours: hours, in addition to the Core Hours, that the tenant has requested air conditioning to operate to service occupancy.

	Note: Hours of service applies to NABERSNZ Energy for Offices Base Building ratings.
measurement standard for rated area	The standard used for determining the **rentable area** of a **rated premises**, as set out in the Property Council of New Zealand Incorporated/Property Institute of New Zealand Incorporated, *Guide for the Measurement of rentable areas*, 2013.
medical office facility	A doctor's surgery, dentist's surgery or other facility operated by a health professional (e.g. physiotherapist) that occupies a tenancy within a commercial office building that is **fit for office use** and is serviced by the Base Building's **direct HVAC energy**.
meeting room	A room designed to accommodate meetings for short periods of time on a temporary basis, as opposed to a permanent working area. A meeting room is separated from adjacent spaces by full-height walls and a door.
metering system	A system of one or more devices providing an individual energy or water measurement.
non-utility metering system	A **metering system** measuring distribution of energy or water in a building, that is not owned or operated by a **utility** supplier.
occupied	A space within the **rentable area** of a building that: a) For Base Building ratings – is **ready for occupation**, b) For Tenancy ratings – is **ready for occupation** and being actively used as an office, including use as an **office support facility**, c) For Whole Building ratings – is **ready for occupation** and either being actively used as an office (this includes use as an **office support facility** or undergoing **fitout works**).
office	A workplace primarily used for administrative, clerical and similar information-based activities, including the use of **office support facilities**.
	Note: For reasons of readability, this term is not highlighted throughout this document.

office support facility	A facility which: a) Is an adjunct to an office used primarily to provide supporting facilities or services to the office or its occupants, and b) Is **exclusively for the use of office tenants**, and c) Occupies a space which is **fit for office use**. This includes facilities for reception, meetings, training, filing and storage, IT and other office equipment, tenant-installed kitchenettes and staff amenities. It can also include childcare, refreshment, recreation, and exercise facilities, as long as they are only available for use by office tenants in the **rated premises**.
Online Rating Calculator	A web-based software tool which allows the full assessment of a certified rating to be performed, submitted, and audited.
Owner/ Tenant Agreement (OTA)	An OTA refers to a document that: a) Is a mutual agreement between the property owner and a tenant representative with adequate authority; and b) Clearly defines the space and the period for which the agreement is made; and c) Defines hours of use for the space considered (OTA Hours); and d) Is in a format that can be relied upon by the tenant for operational complaints and lease (re)negotiation. The OTA could be the lease agreement or any other written correspondence between the tenant and owner if the conditions above are met.
potential error	The total of all **acceptable estimates** (including assumptions, approximations, and unverified data) for a data type.
public access space	A space that members of the public have access to.
rated area	The area measurement used in calculating a NABERSNZ Energy or Water for Offices rating, derived from the **rentable area** of the **rated premises** by excluding the floor area of spaces not used as offices during the **rating period**.
rated hours	The area-weighted average duration of the hours for all **functional spaces** in the building. **Note:** For NABERSNZ Base Building ratings, these hours are referred to as the **hours of service**. For NABERSNZ Tenancy and Whole Building ratings, these hours are referred to as the **hours of occupancy**. See Sections 5.3 and 5.4 for more information.

rated premises	The tenancy or building to be rated.
rating period	The 12-month base period for the rating, requiring at least 12-months of **acceptable data** upon which the rating is based.
ready for occupation	A space within the **rentable area** of a building when a person or organisation: a) Is entitled to exclusive use of the space (e.g., through ownership or a lease or other agreement), and b) Requires normal Base Building services, such as access, air conditioning, lighting, and power to be provided to the space.
rentable area	The floor area, determined in accordance with the **measurement standard for rated area**, of spaces that can be used as offices within the **rated premises**.
Remote Meter Reading System (RMRS)	System whereby meter readings and other crucial meter data are sent to a data collection system. Such a system provides virtual meter access when physical access is not possible.
Rules	Authoritative document produced by the **Administrator** that specifies what must be covered by an **Accredited Assessor** in order to produce a rating. **Note:** Throughout this text, Rules refers to this document, *NABERSNZ Rules – Energy and Water for Offices*.
service area	**Rentable area** that is outside the areas typically **occupied** by the tenant (i.e. outside the tenancy), including lift lobbies, toilets, kitchens, cleaner's cupboards, and the associated access ways as defined in the **measurement standard for rated area**. **Note:** Service areas can be apportioned to **rentable area** on a pro-rata basis in the instance of multiple tenancies on a single floor sharing services.
special tenant requirement	An unusual usage of office space or **office support facility** (e.g., a 'trading floor' within an office), resulting in an increased consumption of one or more services or a requirement for additional services to achieve comfort conditions.
supplementary air conditioning equipment	Equipment that supplements the typical capacity provided by the Base Building air conditioning system.
Tenant Occupancy Survey (TOS)	A survey of the staff managers or supervisors responsible for the **functional spaces** in the **rated premises**, conducted in accordance with these **Rules**.

utility	A company recognised and regulated under legislation for the supply of energy or water to a building and its occupants.
utility meter	A meter measuring supplies of energy or water to a building, operated by a **utility** as the basis for billing its customer.
utility metering system	A metering system measuring supplies of energy or water to a building, operated by a **utility** as the basis for billing its customer.
validation	The process of checking the configuration of a **metering system** for a NABERSNZ rating, and if necessary, adjusting and re-checking, to ensure the configuration is correct.
validity period	The post-certification period during which the rating is valid for up to 12 months.

3 Key concepts and procedures

3.1 Eligibility criteria

3.1.1 Base Building and Whole Building ratings

A building is considered eligible for a NABERSNZ Base Building or Whole Building rating if all of the eligibility criteria detailed below are met:

a) Building type: during the **rating period**, the building or part of the building was used as an office, or, if unoccupied, capable of being used as an office.

Note: Purpose-built educational buildings (e.g. a school or non-office buildings on university campuses) or medical centre buildings are not considered **educational office facilities** or **medical office facilities** as they are not a Tenancy within an office building. Therefore, they cannot be assessed for a NABERSNZ Energy and Water for Offices rating.

b) Building consumption data: less than 80% of the building's total office **rentable area** has been excluded due to lack of consumption data using the method described in Section 4.5.2.

c) Building energy or water coverage: the minimum energy or water coverage for the rating scope and spaces included is met as described in Chapters 7 and 8.

d) New buildings and major refurbishments: new buildings or buildings subject to major refurbishments are eligible for a NABERSNZ rating as soon as 12 months of a **rating period** can be completed. In these cases, the **rating period** can start as soon as one of the following conditions is met (whichever occurs first):

1) The entire building is fit for occupation and 75% of office **rentable area** is **occupied** by tenants; or

2) It has been two years since the Code Compliance Certificate (or equivalent in the relevant jurisdiction) was issued.

3.1.2 Tenancy ratings

A tenancy is considered to be eligible for a NABERSNZ Tenancy rating if all of the eligibility criteria detailed below are met:

a) Tenancy type: the tenancy is used as, or, if unoccupied, capable of being used as, an office.

b) Tenancy consumption data: less than 80% of the **complete tenancy** office **rentable areas** have been excluded due to lack of consumption data using the method described in Section 4.5.2.

c) Tenancy energy coverage: the minimum energy coverage for the Tenancy rating and spaces included is met as described in Chapter 7.

d) New buildings and major refurbishments: tenancies in new buildings or in buildings subject to major refurbishments are eligible for a NABERSNZ rating as soon as 12 months of a **rating period** can be completed. In these cases, the **rating period** can start as it has been two years since the certificate of occupancy (or equivalent in the relevant jurisdiction) was issued.

3.1.3 Multiple buildings versus single building ratings

NABERSNZ ratings are for single buildings. Where it is unclear whether there is a single or multiple buildings present, the following features of a single building must be consulted and met:

a) A common entry point for occupants;

b) Interconnected access or the potential for interconnected access between areas;

c) Central shared provision of the common services, such as heating and cooling;

d) Capacity to be offered to a tenant as one building;

e) Single owner;

f) Buildings constructed at the same or within a short period of time of each other (within 2 years) and the original design allowed for the additional construction;

g) Single public street address (i.e. the address the building is known publicly by);

h) Single LOT number;

i) A reasonable person would assume it is one building.

If the majority of these features are not met, more than one building may be present. Sufficient metering must be installed on each building for the buildings to be rated separately.

Exceptions may be made by the **Administrator**. Examples of exceptions may include:

1) Where it is not physically possible to install separate metering;

2) For a period of time until adequate metering can be installed;

3) Where there is a very small separate building on a site, that on its own would not warrant a separate rating.

Where the **Accredited Assessor** is unsure if buildings should be separated for rating purposes, they should contact the **Administrator**. The **Administrator** reserves the right to determine what is considered a ‘majority of features’ on a case-by-case basis.

3.2 The rating period

A NABERSNZ rating is based on a 12-month **rating period**. Once certified, the rating is valid for up to 12 months after the **rating period**. This is called the **validity period**.

It takes time for the **Accredited Assessor** to complete a rating. Therefore 4 months are given to have the rating certified after the end of the **rating period**. Ratings certified after the 4 months will have a reduced **validity period** to ensure all ratings are based on current data.

The **Accredited Assessor** must respond to all questions from the **Administrator** within 10 working days to avoid impacting the validity of the rating.

More information on the **rating period**, **validity period** and time limits for submission can be found in Appendix B.

3.3 Standards for acceptable data and acceptable estimates

3.3.1 General

An assessment for an certified NABERSNZ Energy or Water for Offices rating must be based on the **acceptable data** or **acceptable estimates** specified in:

a) The relevant provisions of these **Rules** (including applicable rulings); and

b) The relevant sections of the **Online Rating Calculator**.

The decision process for determining **acceptable data** and **acceptable estimates** in Sections 3.3.2 and 3.3.3 must be followed, except where another process is specifically allowed by a provision of these **Rules**.

Note: Some sections of these **Rules** provide that, if specific procedures are followed for some input data, the requirement for compliance with Sections 3.3.2 and 3.3.3 then deemed to be satisfied.

3.3.2 Acceptable data

If accurate and verifiable **acceptable data** is available, it must be used. Where a section of the **Rules** allows more than one type of data source to be used, and no particular priority is given, the following order of preference applies:

a) Data obtained directly by the **Accredited Assessor**;

b) Data provided by a third party without a significant interest in the operation or performance of the building or its equipment (such as an energy or water **utility**), including:

   1) Documents or other records provided by a third party which can be verified by the source (e.g. utility bills) or by the **Accredited Assessor** (e.g. building plans showing **rentable area**); or

   2) Documents or other records which cannot be independently verified (e.g. plant operation data) but whose authenticity and accuracy is attested to by a credible and responsible person without a conflict of interest; or

   3) Written information provided by a credible and responsible person, which includes their full name, position, and contact details of the person giving the information; or

   4) Verbal information provided by a credible and responsible person, recorded in writing by the **Accredited Assessor** with the full name, position, and contact details of the person giving the information.

c) Data provided by the owner commissioning the rating, or a third party with a significant interest in the operation or performance of the building or its equipment (such as a facility manager, technical contractor, or equipment supplier), including:

1) Documents or other records provided by a party to an agreement or transaction which can be verified by another party to the same agreement or transaction (e.g., contracts or other legal agreements);
2) Documents or other records which cannot be independently verified (e.g., plant operation data) but whose authenticity and accuracy is attested to by a credible and responsible person without a conflict of interest; or
3) Verbal information provided by a credible and responsible person, recorded in writing by the **Accredited Assessor** with the full name, position, and contact details of the person giving the information.

3.3.3 Acceptable estimates

If **acceptable data** is not available, estimates (including assumptions, approximations and un-validated data) can be used if they are deemed to be **acceptable estimates** in accordance with these **Rules**.

Acceptable estimates must total to no more than ± 5% of the overall rating greenhouse gas emissions or water consumption, as calculated when using the **Online Rating Calculator**. Where they are greater than 5%, the building cannot be rated until sufficient **acceptable data** and/or **acceptable estimates** have been obtained.

Refer to Section C.5 for more information.

3.4 Site inspections

Accredited Assessors are required to inspect the **rated premises** during their assessment, in order to:

a) Become familiar with the layout, services, and features of the **rated premises**;
b) Confirm that documentation provided for the assessment is accurate, complete, and up-to-date;
c) Check that all required spaces have been included in the **rentable area**;
d) Confirm energy and/or water sources;
e) Check for inclusions and exclusions from the **rated area** calculation and energy and water coverage (as appropriate);
f) Count computers (for Tenancy and Whole Building ratings);
g) Visit plant rooms to ensure that all relevant equipment is covered under the meters included in the rating; and
h) Resolve any other issues that arise.

The inspection must occur during the **rating period** or during the 4 month period following the end of the **rating period**.

An **Accredited Assessor's** inspection of the premises is expected to include a physical check of all **functional spaces**.

The **Accredited Assessor** must identify and report on the following (as relevant to the rating type):

a) All sources of supplied external energy, including:
   1) Electrical including renewable,
   2) Gas,
   3) Diesel,
   4) Geothermal,
   5) Thermal (chilled, heating or condenser water).

b) All sources of supplied external water, including:
   1) Ground water,
   2) Fire services water,
   3) Bore water,
   4) External surface water, such as untreated dam water, and
   5) Externally supplied recycled water sources – whether potable or not.

c) All sources of energy and/or water to shared facilities used by the occupants, including:
   1) Car parks, and
   2) **End of trip facilities**.

d) Energy or water exported from the premises for other uses.

Notes and photos must be kept as evidence of the inspection. All of the following steps must be taken to ensure that no instances of energy and/or water have been missed:

i) Ask the building managers/facilities managers to identify all the energy and/or water sources and associated accounts for the premises, including batch-delivered supplies.

ii) Review service drawings, where available, to identify all supply points (e.g. single line diagrams, electrical circuit schedules and water reticulation diagrams).

iii) Review the premises (including plant rooms and switchboards) to check all equipment requiring different types of energy and/or water supply is covered by the identified supply points (e.g. electricity, gas, diesel, potable water, recycled water).

iv) Review the premises to check for any unmetered sources of water and/or energy to the premises.

v) Ask building managers/facilities managers to identify all the services on site that may be shared with other premises, and the energy and/or water supplies and associated accounts for those services.

Collect all details of **end uses**, sources and meters relevant to the inspection. However, there may be limited circumstances where access to all or part of the premises is refused on safety or security grounds. In this event the **Accredited Assessor** must explain why they could not access these spaces, and fully document the reasons during the rating application. If there are known impacts on the quality of the information obtained for the assessment (e.g. an **acceptable estimate** must be used in the absence of **acceptable data**) then these must also be fully described.

Only the **Accredited Assessor** can undertake a site inspection for a NABERSNZ rating. If the **Accredited Assessor** cannot conduct the site inspection, they may only delegate this task to another **Accredited Assessor** following approval from the **Administrator.**

If there are significant difficulties visiting the site, the **Administrator** must be notified.

3.5 Documentation and record keeping

3.5.1 Documentation required

An assessment may be based on copies of original documents such as utility bills, signed leases, and other records, as long as the **Accredited Assessor** is satisfied that they are, or can be verified to be, true and complete records of the original documents or files. Access to original documents is highly desirable if they are available. Partial copies of original documents must be sufficient to identify the original document including date, title and file name.

3.5.2 Record keeping for auditing purposes

The **Accredited Assessor** must keep for audit all records on which an assessment is based.

The records kept by **Accredited Assessor** must be to such a standard that it would be possible for another **Accredited Assessor** or an **Auditor** to accurately repeat the rating from only the documents provided. This includes records of assumptions made and all information and calculations used as the basis for **acceptable estimates**. The records kept must be the actual documents used for the assessment, or verifiable copies. Summaries or other derivative documents that quote the original source documents are not acceptable, even if prepared by the **Accredited Assessor** from original documents.

Digital copies of documents are considered acceptable in all cases.

Records must be kept for seven years from the date the rating application was lodged and be made available for audit on request. **Accredited Assessor** remains responsible for ratings they have conducted, even if they move companies.

A list of the usual documentation for a rating is presented in Chapter 11. However, additional documentation may also be required to permit an **Auditor** to accurately repeat the rating using only the documents provided.

4 Rated areas

4.1 Summary

In NABERSNZ Energy and Water for Offices ratings, the size of a tenancy or building is measured through its **rated area**. This figure is used (along with other factors such as **rated hours** and climate) to adjust the figures for energy and water consumption so that a fair comparison can be made between spaces or buildings of different size.

The **rated area** for a Base Building or Whole Building rating is effectively the sum of the **rated area** calculations for all office tenancies in the building.

*For documentation requirements, see Section **Error! Reference source not found.**.*

4.2 Process overview

The process for determining the **rated area** is as per **Table 4.1** and **Figure 4.1** below. Calculations for **rated area** are given in Appendix C (see Section C.1).

For a stand-alone NABERSNZ Water for Offices rating, the area calculation process for a NABERSNZ Energy for Offices Base Building rating must be followed.

Table 4.1: Determining rated area

	Step	Reference
1	Determine the **rentable area**	4.3
2	Divide the **rentable area** into easily workable **functional spaces** with separate spaces, vacancies and hours of operation	4.4
3	For each **functional space**, determine exclusions for areas not used for office activities during the **rating period**	4.5
4	Add up the resulting floor areas following Step 3 to calculate the **rated area**	N/A
5	Cap the inclusion of **public access spaces** to a maximum of 10% of the **rated area**	**Error! Reference s ource not found.**
6	For Base Building ratings only, determine spaces qualifying as **medical office facilites** or **educational office facilities** and cap their inclusion to a maximum of 25% of the **rated area**	4.6.2
7	Adjust for unoccupied spaces	4.7

8	The sum of the resulting occupation-weighted **functional space** floor areas are the **rated area** included in the rating	N/A

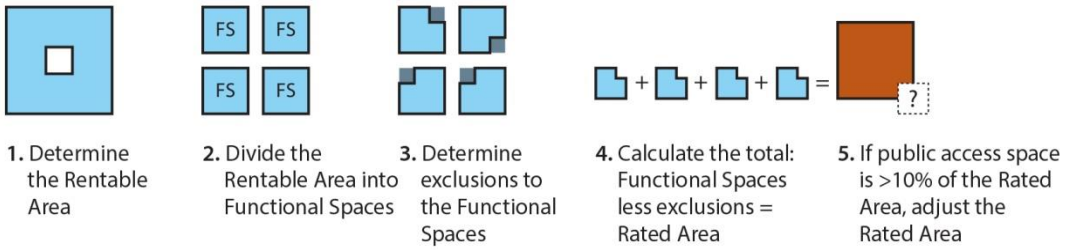


Figure 4.1: Determining rated area

4.3 Determining office rentable area

4.3.1 Calculating the rated area

The method for calculating the **rated area** for different rating types is as follows in **Table 4.2**:

Table 4.2: Calculating rated area

Rating type	Calculation method
NABERSNZ Energy for Offices Tenancy ratings	**Rated area** for the total of all spaces in the tenancy being rated (based on the **measurement standard for rated area**), less the exclusions detailed in Section 4.5.
NABERSNZ Energy for Offices Base Building or Whole Building ratings	**Rated area** for the total of all spaces in the building being rated that are leased or available for lease for office tenancies (based on the **measurement standard for rated area**), less the exclusions detailed in Section 4.5.
NABERSNZ Water for Offices ratings	When assessments for both a NABERSNZ Water for Offices rating and a NABERSNZ Energy for Offices Base Building or Whole Building rating are performed together for the same site and for the same **rating period**, use the **rated area** from the NABERSNZ Energy assessment. For an assessment for a stand-alone NABERSNZ Water for Offices rating, follow the area calculation process for a NABERSNZ Energy for Offices Base Building rating.

4.3.2 Standard for acceptable data

The office **rentable area** of the **rated premises** must be verified by the **Accredited Assessor** to have been measured in compliance with the **measurement standard for rated area**, by one of the following methods (listed in order of preference):

a) Reference to a third-party survey or to lease documentation that is explicitly based on the **measurement standard for rated area**; or, if not available

b) Reference to a third-party survey or to lease documentation that is explicitly based on an earlier version of the **measurement standard for rated area** where, for the purposes of a NABERSNZ rating, it is equivalent to the **measurement standard for rated area**; or, if not available

c) Direct measurement from current plans or scaled prints, measured to the **measurement standard for rated area**; or, if not available

d) Site measurements verified by the **Accredited Assessor** to have been done to the **measurement standard for rated area**

Regardless of the method used to determine the **rentable area**, the **Accredited Assessor** must ensure that the information accurately reflects the configuration of the building and its uses during the **rating period**. Survey information must be checked through a site inspection to ensure the space has not been altered, for example by the introduction of corridors to serve multiple tenancies.

The **Accredited Assessor** must check whether the **rentable area** includes spaces, such as tenant-**occupied** security and reception desks on the ground floor (whether separate spaces or part of the building entrance or lobby), which may not be shown on survey drawings.

An unverified tenancy schedule is not a suitable document on which to base the **rentable area** assessment.

4.3.3 Area measurement estimates

If the area measurement for a space cannot be verified by the **Accredited Assessor** in accordance with Section 4.3.2, then the estimated area of that space must be added to the **potential error** for area.

Note: Subdivision of spaces is not as critical as overall areas. For example, a floor might be verified to the **measurement standard for rated area**, but for convenience of hours calculations might have several **functional spaces** measured from not-to-scale layouts. Since the overall area is verified, there is no need to add the **functional space** floor areas to the **potential error** for area.

4.3.4 Complete tenancy

For Tenancy ratings, the **rentable area** must include all office spaces (including **office support facilities**) in the building that are used together by the tenant as an interrelated group of facilities to accommodate its business, no matter if they are on one or more floors and regardless of whether:

a) The spaces are **occupied** on the basis of one or more leases or other agreements, and

b) Those leases or agreements are nominally held by one or more associated entities on behalf of the tenant.

Facilities are not included in such an interrelated group if they are:

1) Physically distinct, and

2) Managed independently, and

3) Presented or branded distinctly, and

4) Independent of one another for services.

For leases with one or more sub-leases, it is acceptable to either:

i) Consider the entirety of office spaces under the head lease with the main tenant as a complete tenancy; or

ii) For the sub-lease(s), separate and consider the office spaces of the sub lease(s) as individual complete tenancies if sub-metering allows.

4.4 Dividing the rentable area into functional spaces

4.4.1 General

After determining the office **rentable area** of the **rated premises**, the office **rentable area** must be divided into **functional spaces** to calculate the effects of vacancies and differing operational hours across the total office **rentable area**. These spaces should be based on existing functional distinctions such as physical boundaries, leases, or operational divisions.

Most **office support facilities** do not need to be separated into their own **functional spaces** as they will have the same periods of occupation and operating hours as the office space. For Tenancy and Whole Building ratings, **office support facilities** (besides **computer server rooms**) are only required to be separated out into their own **functional space** when there is a significant difference in period of occupation or operating hours.

For documentation requirements, see Section 11.2.2.

4.4.2 Minimum requirement for division of rentable area

For all ratings, a **functional space** must be the smallest of the following:

a) Each individual contiguous floor of the building (i.e., for buildings with multiple units or towers, this refers to each floor of each unit or tower); or

b) Each individual and distinct tenancy, regardless of its size; or

c) Within any tenancy, any section that must be treated as distinct because of a significant difference in period of occupation or operating hours. This must include:

1) Spaces in which significant construction activity has taken place for fit-out works during the **rating period**; and

2) Spaces associated with different AHAC zones or **office support facilities** that have a significant difference in operating hours to the surrounding office space.

d) Any **computer server room** or series of contiguous **computer server room**s that constitute more than 5% of that respective floor plate's **rentable area**; or

e) Any **meeting room** or series of contiguous **meeting rooms** that constitute more than 10% of that respective floor plate's **rentable area** and have supplementary air conditioning or hours of operation that are different to the surrounding offices.

In addition, any space which meets either of the following two conditions must also be separated into its own **functional space** for the purpose of exclusion under Section 4.5.5:

a) **Acceptable data** or **acceptable estimates** of energy and/or water consumption (as relevant, within the coverage of the rating) is not available for reasons beyond the control of the **Accredited Assessor** or customer; or

b) Where it is not possible to include all the energy required to be included under the minimum energy coverage (typically because of supplementary air conditioning that has been allocated to the Base Building under Section 7.3.2.2 but is not on the Base Building meter).

This provision does not apply to any **computer server room** or **meeting room** not required to be separated under provisions (d) and (e) above.

Note 1: The requirements in this section are intended to make it easier for the **Accredited Assessor** to separate independent spaces and record the necessary data, not to fragment the **rentable area** into multiple similar spaces for no real benefit.

Note 2: Small **office support facilities** whose operating hours depend on the spaces nearby should be treated as an integrated component of the surrounding office space. They should not normally be separated out into a different **functional space**. However, if the **Accredited Assessor** judges that the division of office **rated area** into smaller spaces will improve the rating accuracy, such a division can be deemed acceptable.

Example: **Computer server rooms** that make up less than 5% of the **rated area** for Whole Building and Tenancy ratings could be separated into individual **functional spaces** to better reflect the hours for these spaces which are usually serviced by tenant **supplementary air conditioning equipment** 24/7.

For documentation requirements, see Section 11.2.2

4.5 Exclusions from the rated area calculation

4.5.1 General

After dividing the office **rentable area** into **functional spaces**, the **Accredited Assessor** must determine the nature of each of the **functional spaces** and include or exclude them as required.

The following must be excluded from the **rated area** calculation:

a) Spaces within the office **rentable area** that have not been used as offices as per the requirements of Section 4.5.2;

b) **Computer server rooms** or other **office support facilities** as per the requirements of Sections 4.5.4 and 4.5.5;

c) Spaces with no consumption data as per the requirements of Section 4.5.5.

This ensures that ratings are consistently based on office usage of buildings, and provide a fair comparison between different offices.

Note 1: Exclusions are only considered *after* calculating the office **rentable area**. The criteria in this section cannot be applied to areas that are not within the office **rentable area**, as these are never included in the **rated area** calculation.

Note 2: The energy or water consumption associated with an excluded space may still need to be included in the assessment, in accordance with Chapter 7 *Energy coverage* and Chapter 8 *Water coverage*.

Note 3: For consistency and ease of auditing, the area of spaces which have been excluded should be entered into the NABERSNZ **Online Rating Calculator** but their occupancy days should be marked as 0. This area can be approximated by the **Accredited Assessor** as it is not used in the calculation of the NABERSNZ rating.

For a graphical example of these requirements, see **Figure 4.2** and **Figure 4.3**.

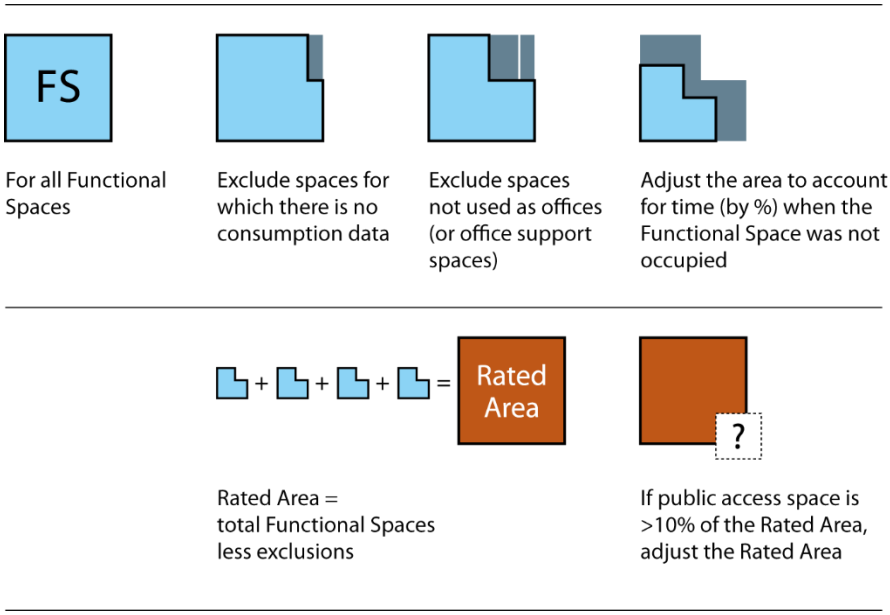


Figure 4.2: Overview – excluding spaces from the rentable area

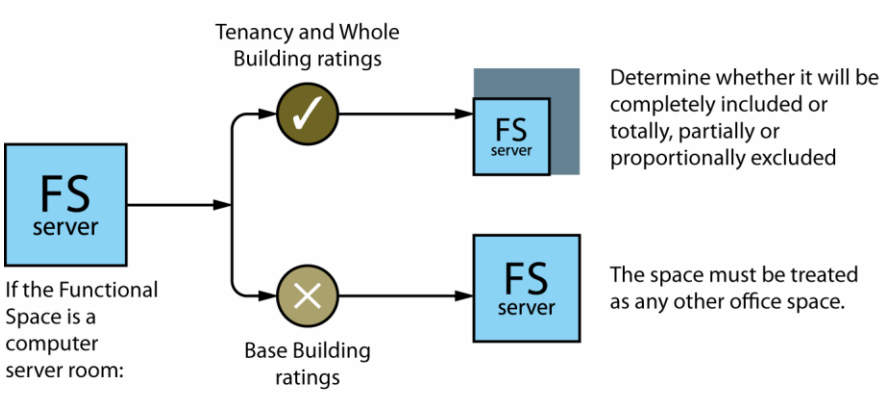


Figure 4.3: Overview – treatment of computer server rooms

4.5.2 Excluding spaces that cannot be considered offices

A **functional space** area must be excluded when:

a) It is not either used for, or available to be used for, accommodating an office or an **office support facility**. This applies whether or not these spaces were primarily intended as office accommodation; or

b) It is not **occupied** for all or part of the **rating period** (as per Section 4.7 for each rating scope); or

c) It is not **fit for office use**.

It is not necessary to exclude a space with a floor area less than 5 m² unless it is a well-defined separate facility (e.g. surrounded by walls). However, where several similar excludable spaces or facilities are located next to each other they must be considered as a single group and not as individual items. See **Table 4.3** and **Figure 4.4** below for examples.

For documentation requirements, see Section 11.2.3.

Table 4.3: Examples of area exclusions

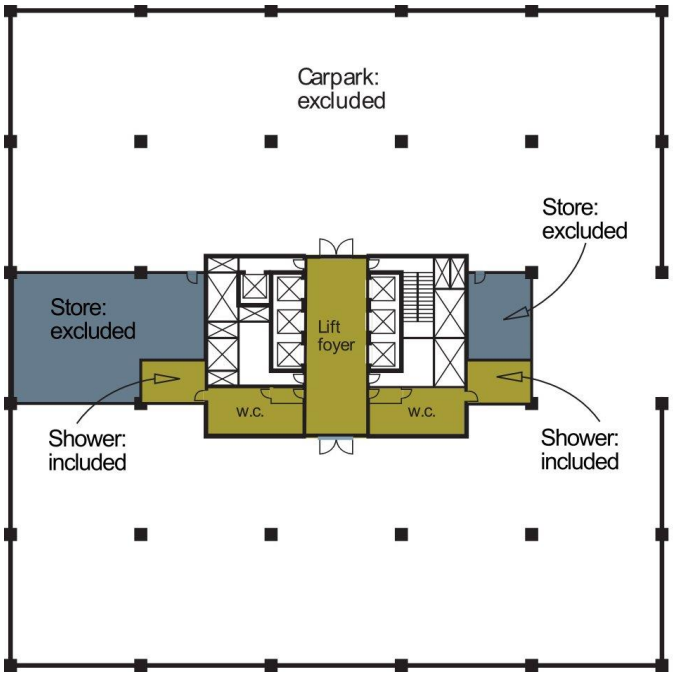
Example	Interpretation
Commercial cafeterias and cafés	
Exclusively for the use of office tenants (and their visitors)	**Included.** They are **office support facilities**.
With public access (but can also be used by tenants)	**Excluded.** They are retail outlets.
Gymnasiums, child minding centres, treatment rooms and similar	
Exclusively for the use of office tenants (and their visitors)	**Included.** They are **office support facilities**.

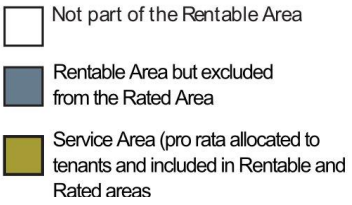
Example	Interpretation
With public access (but can also be used by tenants)	**Excluded.** They are retail outlets.
Call centres and trading rooms	**Included.** They are high-density office spaces.
Breakout spaces, **meeting rooms**, eating areas or tea rooms and kitchenettes built as part of the tenant fit out	**Included.** They are **office support facilities**.
Lifts and lobbies	**Included.** As a **service area**, exclusion of these spaces separately from the associated **functional space** is not permitted.
Toilets, showers, and change rooms	
Tenant fitted toilets, showers and change rooms	**Included.** They are **service areas** and located in spaces **fit for office use**.
Toilets, showers and change rooms in **service areas**	**Included.** No exclusion of **service area** is permitted even though these areas are not **fit for office use**.
End of trip facilities	**Included.** They are **service areas** and included insofar as the associated tenancies are included within the **rated area**.
Storage spaces	
A chain-wire enclosed store in the basement	**Excluded.** This space is not (and cannot become) **fit for office use**.
A similar enclosed space within the fitted-out tenancy floor	**Included.** This is an **office support facility** and is **fit for office use**.
An archival store with lighting, temperature, and humidity settings for preserving paper, not for comfort	**Excluded.** This space is not **fit for office use**.
A compactus file storage facility within the fitted-out tenancy floor with air conditioning and lighting as for the rest of the office	**Included.** This is an **office support facility** and is in a space that is **fit for office use**.

Example	Interpretation
Other spaces	
A space originally designed for office accommodation but not used as an office – such as a suite of training rooms for hire, a commercial art gallery, a showroom, an information centre	**Excluded.** They are not used as offices or **office support facilities**.
Government tenancies where there are spaces open to the public	**Included.** Customer **service areas** requiring appointments or escort can be considered as office spaces.
	Excluded. Waiting areas are still considered as **public access spaces** and must be included in the 10% allowance of **public access spaces**.
A tenancy in a shopping centre used as an accountant's office	**Excluded.** The space is designed for retail accommodation.
A tenancy space with a primary purpose of providing services to walk-in customers, e.g. bank branch open to the public, post office, travel agency, information centre, print shop	**Excluded.** These are retail outlets and the office portion supports the retail space.
A professional library in a lawyer's or consultant's office	**Included.** This is an **office support facility** for professional work.
A public library in an office building	**Excluded.** This is a facility for the general public and is not an office.
A large vault designed as a secure store (such as for paper or gold) and not for continual occupation by people	**Excluded.** Even if empty, this store is not **fit for office use**.
The same vault converted to office space with air conditioning and lighting	**Included.** Although originally a store, the space is now **fit for office use**.
Basement areas	
A basement area not fit for continual occupation by people	**Excluded.** The space is not **fit for office use** but the **service areas** are included.
A basement area part of **rentable area** and converted to office space and **fit for office use**	**Included.** This is an office space and is **fit for office use**.

Example	Interpretation
A basement area that is not part of the **rentable area** but has been converted to office space and is **fit for office use**	**Excluded.** This space is not office **rentable area**.
An enclosed store in the basement part of the **rentable area** that is **fit for office use** and is currently used as a storage space	**Included.** The space is **fit for office use** and is used as an **office support facility**.

The following diagrams in **Figure 4.4** represent an office building over three levels and show how the areas are to be treated:





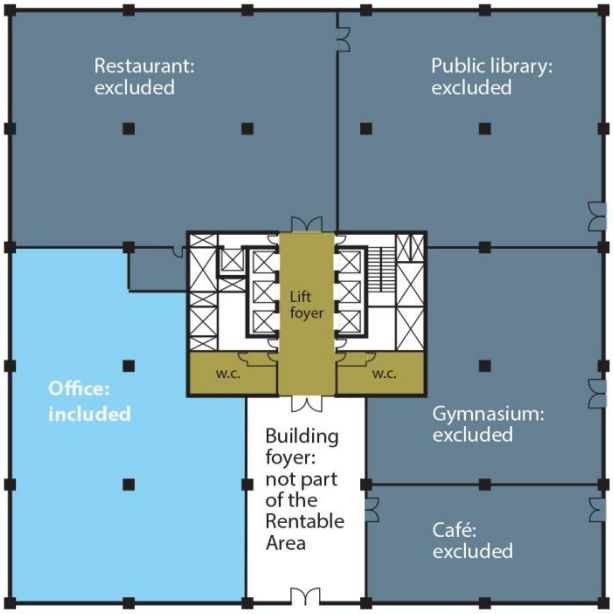
Basement level

The car park is excluded from the rentable area.

The small store is not serviced and cannot become part of the office, so it is excluded from the rated area.

The larger store has lighting and air-conditioning, but it is used as a commercial storage facility and is not associated with an office, so it is excluded from the rated area.

The lift foyer, WCs and showers are rentable area which are allocated pro rata to multiple tenants in the building. As these count as service area, they are included in the rated area as far as the associated tenancies are included within the rated area.



Not part of the Rentable Area

Rentable Area and included in the Rated Area

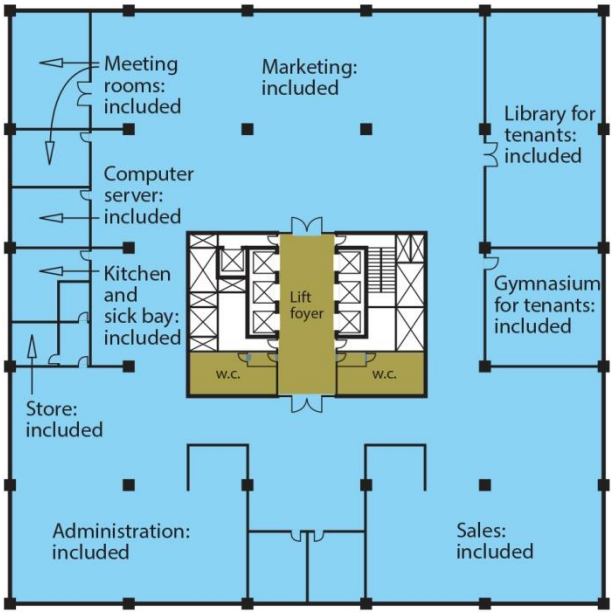
Rentable Area but excluded from the Rated Area

Service Area (Rentable Area pro rata allocated to tenants and included in Rated Areas)

Ground level

The café, library, gymnasium and restaurant on the ground level are not office spaces or office support facilities and not exclusively for use by the tenants, so they are excluded from the Rated Area.

The lift foyer and WCs are Service Areas which are included insofar as they are allocated pro-rata to the office tenancy Rentable Area.



Not part of the Rentable Area

Rentable Area and included in the Rated Area

Service Area (Rentable Area allocated wholly to tenant on this floor)

Level 1

Spaces for public access and use (e.g. lifts, stairs, risers and plant rooms) are not part of the Rentable Area.

The library, gymnasium and sick bay on Level 1 are office support facilities exclusively for use by the tenants, therefore they are included in the Rated Area.

The Lift Foyer and WCs are Service Areas and are thus included in the Rentable Area and the Rated Area.

Figure 4.4: Examples of rentable area, rateable area inclusions and exclusions

Note 1: It can be seen that the two gymnasiums (Level 1 and Ground Level) are treated differently depending on their use. This is because the defining criteria is not so much the actual function of the space but the way it is used by the occupants in the context of a typical office.

Note 2: The toilets and lift lobby on Ground Level and Level 1 are **rentable area**. Although they are not **fit for office use**, they are part of the **service area** and are therefore included. On Ground Level, they are allocated pro-rata to multiple tenants. On Level 1, they are included in their entirety as it is a single tenant floor.

4.5.3 Excluding computer server rooms and data centres

A **computer server room** may not always be separated into its own **functional space,** as described in Section 4.4.2.

This section outlines the conditions where a **computer server room** must be excluded.

Note: The inclusion or exclusion of both the energy consumption and the floor area of **computer server rooms** are determined in the same way; see Section 7.3.1.

For documentation requirements for computer server rooms, see Section 11.2.4.

For documentation requirements for data centres, see Section 11.2.5.

4.5.3.1 Computer server rooms: Base Building ratings

Where a **computer server room** has been separated into its own **functional space** and is not considered a **data centre** (as defined in Section 4.5.3.3), the air conditioning arrangement must be checked by the **Accredited Assessor** and the computer server room excluded from the **rated area** if:

a) No **direct HVAC energy** is provided by the Base Building to that space (i.e. all **direct HVAC energy** is provided by tenant supplementary units only); or,

b) **Direct HVAC energy** is provided by the Base Building but at a lesser standard than that of the surrounding spaces; or,

c) **Direct HVAC energy** is provided by the Base Building and is being adequately sub-metered and excluded from the rating in line with Section 7.3.1.1.

Example: Computer server rooms provided with condenser water only from the Base Building (i.e. air supply is connected to the tenant electrical distribution board) are serviced at a lesser standard than the rest of the office space. Their area therefore is excluded.

Note 1: Only **computer server rooms** that are not considered to be a **data centre** and have **direct HVAC energy** provided centrally by the Base Building to at least the same standard as the surrounding space (with this **direct HVAC energy** being included in the rating) should be included for the **rated area** calculation.

Note 2: The presence of a tenant supplementary unit does not immediately exclude the **computer server room** from the **rated area**. As long as the Base Building provides **direct HVAC energy** to the same or higher standard as the surrounding office space, the **computer server room** is still considered to be centrally serviced.

Where it is determined that a **computer server room** must be excluded, the Base Building rating must exclude the area of the **computer server room**'s **functional space** from the **rated area** calculation.

For documentation requirements for computer server rooms, see Section 11.2.4.

4.5.3.2 Computer server rooms: Whole Building and Tenancy ratings

Where a **computer server room** has been separated into its own **functional space**, the floor area of a **computer server room** must be treated as follows in a Tenancy or Whole Building rating:

a) **Wholly included** in the calculation of the **rated area** if the following conditions are satisfied:

1) The **computer server room** does not qualify as a **data centre** (see Section 4.5.3.3);

2) The **computer server room** is not used as a disaster recovery site for another external **data centre**;

3) The total energy consumption of the server room is not sub-metered;

4) The **computer server room** is used entirely by internal users.

b) **Totally excluded** from the calculation of the **rated area**, if the following conditions are satisfied:

1) The total energy consumption of the server room is sub-metered;

2) The **computer server room** is used entirely for **external users**, or as a disaster recovery site for another external **data centre**;

3) It is too difficult to determine the number of **external users**.

The **Accredited Assessor** must obtain written documentation from the tenant that confirms that the server room is either used entirely for **external users** or as a disaster recovery site for another external **data centre**.

c) **Partially excluded** from the calculation of the **rated area** if the following conditions are satisfied:

1) The **computer server room** is a mixture of internal use and external use, to a maximum of 75% of its capacity dedicated to external use;

2) The externally used IT equipment and/or facility services (including lighting, power, UPS, air conditioning, and dehumidification) are separately sub-metered.

The floor area that may be excluded is determined by measuring the area covered by the externally used IT equipment.

The **Accredited Assessor** must obtain written documentation from the tenant that confirms that the IT equipment in the excluded area is either used entirely for **external users** or as a disaster recovery site for another external **data centre**.

d) **Proportionately excluded** from the calculation of the **rated area**, if the following conditions are satisfied:

1) The **computer server room** is a mixture of internal use and external use**,** to a maximum of 75% of its capacity dedicated to external use;

2) The total energy consumption of the **computer server room** is sub-metered;

3) The externally used IT equipment and/or facility services are not separately sub-metered;

4) It is possible to determine the numbers of internal and **external users** of the IT equipment.

Note: No proportionate exclusions are available for **external users** of public web servers because of the difficulty in accurately counting the number of users.

The floor area of the **computer server room** that may be excluded is determined through the following steps:

Step 1 – Determine the number of internal IT users, based on the computer count.

Step 2 – Determine the number of **external users** of the IT equipment.

Note 1: To determine the number of **external users** of the IT equipment, the **Accredited Assessor** could analyse system usage logs to establish the number of unique users, and then finding the location of each from asset tracking, phone records or similar data.

Note 2: To avoid double counting, occupants of the **rated premises** who access the systems remotely are included in the number of internal users of IT equipment only.

Step 3 – Calculate the area allocated for external use, based on the proportion of **external users** to total users.

Example: If the floor area of a **computer server room** is 50 m^2 and there are 100 internal users and 400 **external users**, the area to be excluded from the **rated area** is calculated as:

$$50 \times \frac{400}{(400 + 100)} = 40$$

The **Accredited Assessor** must obtain credible written documentation from the tenant, completed and signed by an appropriate person, that either:

a) States the number of **external users** of the **computer server room**; or

b) Records which allow the **Accredited Assessor** to accurately calculate (not estimate) the number of **external users**.

When a **computer server room** can be totally excluded from the **rated area** calculation, **service areas** associated with the space can also be excluded. Partial or proportional exclusions are not permitted for **service areas** associated with **computer server rooms**.

For documentation requirements for computer server rooms, see Section 11.2.4.

4.5.3.3 Data centres

Where a **computer server room** qualifies as a **data centre**, then:

a) this space is not considered office space and the area must be excluded from the **rated area** calculation, and

b) the **Assessor** must obtain written documentation confirming that the **computer server room** is a **data centre** as defined in Chapter 2.

The combination of multiple **computer server rooms** is not considered a **data centre**. Each individual **computer server room** must meet the criteria as defined above to be considered as a **data centre**.

For documentation requirements for data centres, see Section 11.2.5.

4.5.4 Excluding other office support facilities

4.5.4.1 General

This section applies to all office support facilities, including meeting rooms.

This section does not apply to computer server rooms, which are covered under Section 4.5.3.

Note: Air from the surrounding **functional space** 'spilling' into the **meeting room** or **office support facility** ('spill air') is not considered **direct HVAC**.

4.5.4.2 Whole Building and Tenancy ratings

The floor area of a **meeting room** or other **office support facility** must be included in a Tenancy or Whole Building rating.

For documentation requirements, see Section 11.2.6.

4.5.5 Functional spaces without consumption data

Where **acceptable data** or **acceptable estimates** of the energy or water consumption for a **functional space** are not available for reasons beyond the control of the **Accredited Assessor** or customer, the **functional space** must be excluded from the calculation of the **rated area**.

Note: This includes scenarios where the use of **acceptable estimates** results in a **potential error** above the 5% threshold.

Examples of **functional space** exclusions include the following:

a) When **utility** bills for energy consumption within the minimum energy coverage cannot be obtained for **functional spaces** within buildings that do not have an **embedded network**. Situations where this may occur include:

   1) When tenants have left the building and cannot be contacted to obtain energy bills; and

   2) When, for Base Building and Whole Building ratings, the tenants refuse to provide required energy bills, and these tenants cannot be obligated to do so.

b) When the **utility** was unable to provide the necessary data to cover the minimum energy and water coverage for the **functional space**;

c) When a **non-utility metering system** was unable to provide the data necessary to cover the minimum energy coverage for the **functional space** and estimates were above the 5% **potential error** allowance;

d) When **functional spaces** are being served by tenant **supplementary air conditioning equipment** meeting standard Base Building air conditioning service requirements and where **acceptable data** or **acceptable estimates** of the

energy/water use of the tenant **supplementary air conditioning equipment** is not available.

Note: **Functional spaces** without hours data cannot be excluded in the same way as spaces without consumption data. These spaces must be included and another method of measuring hours used. (Such a situation can occur, for example, when tenant has moved out and a **TOS** cannot be obtained.)

Service areas associated with the **rentable area** in a **functional space** are subject to the same rules applicable to that **functional space**, unless otherwise noted.

A **service area** can be excluded if it has no consumption data, independently of the treatment of the associated **functional space**. Partial or proportional exclusions are not permitted for **service areas** associated with **computer server rooms**.

For documentation requirements, see Section 11.2.6.

4.6 Medical or educational office facilities and public access spaces

4.6.1 Public access spaces

Offices may have some space for public access, such as inquiry desks, courier counters, and reception areas, included in the **rentable area**. The primary purpose of these spaces is to accommodate arrivals, deliveries, and despatches associated with office activities. These spaces are distinct from non-**rentable area** public spaces in building foyers which are never included in the **rated area** calculation.

In calculating the **rated area** of the **rated premises**, the allowable total floor area of such **public access space** is capped to a maximum of 10% of the total **rated area**.

The 10% ratio applies to the aggregate area of the spaces to be included in the rating. It is not calculated separately for individual **functional spaces**, floors or (for Base Building and Whole Building ratings) individual tenancies.

Example: A tenancy with a total **rentable area** of 600 m² has a large reception space of 72 m².

As the reception space would be more than 10% of the **rated area**, the **Accredited Assessor** must calculate the maximum area that can be included.

The other spaces in the office cover an area calculated as follows:

$$600\ m^2 - 72\ m^2 = 528\ m^2$$

This area must represent at least 90% of the total **rated area**. Therefore, the maximum **public access space** that can be included for this rating is calculated as follows:

$$(528\ m^2 \div 0.9) - 528\ m^2 = 58.6\ m^2$$

The rest of the reception space is calculated as follows:

$$72\ m^2 - 58.6\ m^2 = 13.4\ m^2$$

This must be excluded. The adjusted **rated area** of the tenancy will therefore be:

$$586.6\ m^2 = (600\ m^2 - 13.4\ m^2)\ or\ (528\ m^2 \div 0.9)$$

For documentation requirements, see Section 11.2.8.

4.6.2 Medical or educational office facility spaces

4.6.2.1 Medical office facility spaces

A **medical office facility** is a tenancy that occupied by a health professional (for example, physiotherapist) within a commercial office building that is **fit for office use** and is serviced by the Base Building services**.**

A **medical office facility** may include:

a) Consulting rooms,

b) Patient reception areas,

c) Break-out spaces,

d) **Meeting rooms**,

e) Medical administration areas, and

f) Associated store rooms for medical equipment, supplies, or records.

A space within the facility that is not serviced by the Base Building services does not qualify as a **medical office facility** and must be excluded from the rating.

If a **medical office facility** contains:

1) Hospitals,
2) Operating theatres,
3) Specialist medical imaging practices,
4) Laboratories,
5) Day-stay treatment areas,
6) Wards,
7) Specialist emergency medicine facilities,
8) Pharmacies,

Then the entire facility cannot be considered as a **medical office facility** and must be excluded from the rating. The determining factor here is whether there is significant medical or scientific equipment present, or a requirement to operate continually.

4.6.2.2 Educational office facility spaces

An **educational office facility** is a tenancy within a commercial office building that is **fit for office use** and is serviced by the Base Building services.

An **educational office facility** may include:

a) Classrooms,

b) Seminar rooms,

c) Break-out spaces,

d) **Meeting rooms**,

e) Student computer labs,

f) Administration areas, and

g) Store rooms.

A space within the facility that is not serviced by the Base Building services does not qualify as an **educational office facility**. It must be excluded from the rating, e.g.:

1) Workshops,
2) Laboratories,
3) Art studios,
4) Teaching kitchens,
5) Associated prep areas,
6) Purpose-built educational facilities.

4.6.2.3 Base Building ratings

Although they are not office spaces as such, **medical office facilities** and **educational office facilities** can be included in the calculation of the **rated area** for the purposes of a NABERSNZ Base Building rating. This is acceptable only if **direct HVAC energy** provided by the Base Building to these facilities is not sub-metered, and with the caveat that the inclusion of **medical office facilities** and **educational office facilities** combined is capped to a maximum of 25% of the office **rated area**.

Note: This inclusion is calculated after having adjusted the office **rated area** for the **public access spaces'** 10% cap as per Section 4.6.1.

A rating including **medical office facilities** or **educational office facilities** must include the energy consumption relevant to the Base Building energy coverage for this space in full. No apportionment is allowed.

If **direct HVAC energy** provided by the Base Building to the facilities is adequately sub-metered, these spaces must be excluded as the associated Base Building **direct HVAC energy** is able to be excluded.

Note: Public reception or patient waiting rooms within **medical** or **educational office facilities** should have already been included in the **public access space** requirement.

Example: A building with a total **rentable area** of 2,500 m² has a tenant that is an English college, the area of the tenant space is 1,500 m².

As the **educational office facility** space is more than 25% of the **rated area**, the **Accredited Assessor** must calculate the maximum area that can be included.

The other spaces in the office cover an area calculated as follows:

$$2{,}500\ m^2 - 1{,}500\ m^2 = 1{,}000\ m^2$$

This area must represent at least 75% of the total **rated area**. Therefore, the maximum **educational office facility** space that can be included for this rating is calculated as follows:

$$(1{,}000\ m^2 \div 0.75) - 1{,}000\ m^2 = 333.3\ m^2$$

The rest of the **educational office facility** space is calculated as follows:

$$1{,}500\ m^2 - 333.3\ m^2 = 1{,}166.7\ m^2$$

This must be excluded. The adjusted **rated area** of the tenancy will therefore be:

$$1{,}333.3\ m^2 = (2{,}500\ m^2 - 1166.7\ m^2)\ or\ (1{,}000\ m^2 \div 0.75)$$

4.6.2.4 Whole Building and Tenancy ratings

Medical office facility or **educational office facility** spaces can never be included in the **rated area** for the purpose of Whole Building or Tenancy ratings, with the caveat that a **Tenant Occupancy Survey** is not deemed an acceptable method for determining the hours of occupancy for these spaces.

For documentation requirements, see Section 11.2.9.

4.7 Adjustment for unoccupied spaces

4.7.1 General

After limiting the proportion of **public access spaces**, **medical office facilities** and **educational office facilities**, the **Accredited Assessor** must assess the number of occupation days and the number of **fitout works** days during the **rating period**.

Occupation days and **fitout works** days are used as an adjustment factor to calculate the **rated area** from the office **rentable area**.

4.7.2 Occupation days

For Base Building ratings, the number of occupation days for each **functional space** is the number of days (including weekends and public holidays) the space was **ready for occupation**.

For Tenancy ratings, the number of occupation days for each **functional space** is the number of days (including weekends and public holidays) the space was actively used by the tenants as an office, including used as an **office support facility**.

For Whole Building ratings, the number of occupation days for each **functional space** is the number of days (including weekends and public holidays) the space was **ready for occupation** and actively used by the tenants, including used as an **office support facility**.

If a **functional space** has different occupation days for different areas, the **functional space** must be split so the occupation days can be entered separately.

4.7.3 Fitout works days

The number of **fitout works** days for each **functional space** is the number of days where the space was being refurbished or **fitout works** were being undertaken and Base Building air conditioning services were required for that space. Up to a maximum of 30 days can be entered into the **Online Rating Calculator** for each **functional space**.

It does not include periods of work where the Base Building services were not required for that space. It does not include periods during which the building was under construction or being extensively renovated and was not suitable for normal occupation.

Any period during which it is not possible to clearly distinguish between **fitout works** and other construction activity must not be included. Similarly, if there is no evidence whether normal Base Building services were required by the occupiers during that period, then the **Accredited Assessor** must assume that the services were not required.

For Whole Building ratings, the period for **fitout works** is discounted by 50%. For Tenancy ratings, the period of **fitout works** is discounted by 100% (no fitout days are accounted for). These adjustments are calculated automatically by the NABERSNZ **Online Rating Calculator**, and the **Accredited Assessor** should simply enter the total number of fitout days.

Note: For a Base Building rating:

a) Where a space was not being used as an office while **fitout works** were taking place, the hours of occupation are deemed to be the same as the average hours of occupation for that space for the **rating period**.

b) Where a space was being used as an office during business hours and **fitout works** were taking place outside the normal business hours, then any additional hours (i.e. while the space was provided with Base Building services) should be added to the **rated hours** calculation. If there are different hours for different times of the year, these should be entered into the **Online Rating Calculator** separately. Please contact the **Administrator** for further information.

For documentation requirements, see Section 11.2.10.

5 Rated hours

5.1 Summary

In NABERSNZ Energy and Water for Offices ratings, the hours of occupation of a tenancy or building are measured through the **rated hours**. These hours are used (along with other factors such as **rated area** and climate) to adjust the figures for energy and water consumption so that a fair comparison can be made, even when different spaces or buildings are **occupied** for different amounts of time.

For documentation requirements, see Section 11.3.

5.2 Process overview

5.2.1 General

Table 5.1 outlines the process for calculating **rated hours** for:

a) Base Building energy ratings;

b) Tenancy or Whole Building energy ratings conducted with a Base Building energy rating (i.e. a **co-assess** application including a Base Building rating);

c) Stand-alone water ratings;

d) Water ratings combined with a Base Building energy rating.

5.2.2 Rated hours for Base Building ratings

Table 5.1: Process for calculating rated hours for Base Building energy ratings

	Step	Reference
1	Use the breakdown of **functional spaces** within the **rated premises**	4.4
2	For each type of **functional space**, (except for **computer server rooms** and **office support facilities**), use one of the following methods in priority order below: 1. **OTA** Core Hours and AHAC 2. **Tenancy Occupancy Survey** 3. Average Core Hours 4. Default Core Hours	 5.3.2 and 5.3.3 5.3.4 5.3.5 5.3.6
3	Determine hours for **computer server rooms**	5.3.7
4	Determine hours for other **office support facility** spaces, including **meeting rooms**	5.3.8

	Step	Reference
5	Verify long hours if the **rated hours** for any **functional space** is greater than 60 hours per week	5.4

5.2.3 Rated hours for Tenancy and Whole Building ratings

Table 5.2 below outlines the process and priority for calculating **rated hours** for the following:

a) Tenancy or Whole Building energy ratings conducted without a Base Building energy rating (a stand-alone Tenancy or Whole Building ratings or a **co-assess** application not including a Base Building rating);

b) Water ratings combined with a Whole Building energy rating.

Calculations for **rated hours** for Tenancy and Whole Building ratings are given in Appendix C (see Section C.2).

Table 5.2: Process for calculating rated hours for Tenancy and Whole Building energy ratings

	Step	Reference
1	Use the breakdown of **functional spaces** within the **rated premises**	4.4
2	For each type of **functional space**, (with the exception of **computer server rooms** and **office support facilities**), use one of the following methods in priority order below: 1. **Tenancy Occupancy Survey** 2. **OTA** Core Hours and AHAC 3. Average Core Hours 4. Default Core Hours	 5.3.4 5.3.2 and 5.3.3 5.3.5 5.3.6
3	Determine hours for **computer server rooms**	5.3.7
4	Determine hours for other **office support facility** spaces, including **meeting rooms**	5.3.8
5	Verify long hours if the **rated hours** for any **functional space** is greater than 60 hours per week	5.4

5.3 Determining rated hours

5.3.1 General

There are several methods for determining **rated hours**. The following sections must be used according to the order specified in **Table 5.1** and **Table 5.2** above, depending on the rating type.

5.3.2 Core Hours

5.3.2.1 Owner/Tenant Agreement (OTA) Hours method

An **Accredited Assessor** may use the **OTA** Hours method if a higher priority method for determining **rated hours** as detailed in Section 5.2 cannot be used.

The **OTA** Hours method can only be used if there are hours defined in the **OTA**. When **OTA** Hours are used, Core Hours are based on the hours mutually agreed upon in writing within the **OTA** by the building owner and the tenant for which the space will be **comfortable for office work**. The **OTA** should be able to be applied to the **rating period**.

The **OTA** may refer to another document, which contains information about the Core Hours. Where this document is specifically referred to in the OTA, the information in it can be used by the **Accredited Assessor** to determine the Core Hours. The requirements around language as outlined in the sections below must still be followed.

Hours determined using the steps below are considered **acceptable data**.

Step 1: OTA Hours when they directly refers to 'comfortable conditions'

The key question for an **Accredited Assessor** is whether the tenants have requested that the space be **comfortable for office work** during specific hours. This is not the same as the operating hours of the plant servicing the space as the plant requires start up time to provide comfort conditions to the space.

The **Accredited Assessor** must consider the current lease in relation to building hours as most leases contain specific clauses that describe the lessor's obligations to the tenant. Such clauses are to be used to investigate whether the tenants have requested the space to be **comfortable for office work** or not.

The **Accredited Assessor** must identify and keep record of these specific clauses as evidence of the correct method being used for determining **OTA** Hours.

If it is clear that the hours detailed in the **OTA** are the normal hours for which the space will be **comfortable for office work** then the **OTA** Hours must be used. The wording in the **OTA** must be interpreted carefully to distinguish between plant operation and comfort conditions within the space. Acceptable wording includes, but is not limited to:

a) 'Hours for which the space will be **comfortable for office work**';
b) 'Hours of occupation';
c) 'Hours of comfort conditions'; or
d) Hours for which a temperature range compatible with being **comfortable for office work** must be met.

Wording that is not acceptable evidence on its own to demonstrate 'comfort conditions' includes, but is not limited to:

1) 'Air conditioning hours' – these may be plant operating hours; or
2) 'Hours of access', 'building availability' or 'business hours' – these may be when security doors are open; or
3) 'Hours of restricted access' – these may be when security doors are closed.

The **Accredited Assessor** can seek to obtain a new or updated **OTA** with acceptable wording which accurately captures the hours for which the space is **comfortable for office work**. This may be done if the wording used in the **OTA** is not acceptable, or if the existing **OTA** does not accurately reflect the current situation.

If the wording in the most up-to-date **OTA** remains unacceptable, the **Accredited Assessor** must move on to *Step 2: OTA Hours and BMS data*. If the **OTA** wording clearly states plant running times, and no updated **OTA** is obtained, the **Assessor** must move straight on to *Step 3: OTA Hours minus 2*.

Step 2: OTA Hours and BMS data

Building Management System (BMS) data demonstrating that the plant starts before the stated **OTA** Hours for the **rating period** can be used to clarify ambiguous wording within the **OTA**.

The **OTA** Hours can be used if it is verified that the plant starts up with enough time prior the start of **OTA** Hours to bring the space to comfort conditions. For example, if an **OTA** uses the words ‘air conditioning hours’ but the **Accredited Assessor** has independently verified that the air conditioning starts one to two hours before the **OTA** time every day, this would be sufficient to know that the words ‘air conditioning hours’ have been interpreted to mean ‘hours of comfort’.

Note: Plant operating hours not specifically set out in an agreement between the tenant and building owner (e.g. plant operating hours recorded by a BMS) cannot be used as written evidence as it is not clear whether the tenant has actually requested these hours of service.

The **Accredited Assessor** must obtain additional evidence to allow the **OTA** Hours to be used as ‘hours of comfort’ when:

a) the plant starts with a small start-up time before **OTA** Hours, for example, 30 minutes prior, or

b) an air conditioning plant with an optimised start strategy is present.

Example: The **OTA** refers to air conditioning hours from 8 am to 6pm. It is unclear if this refers to comfort conditions or plant run times. The BMS shows that the plant starts at 7:00 am every week day. As the hour between the plant start time and the **OTA** Hours is considered sufficient to achieve comfort conditions, the **OTA** Hours can be interpreted as hours for which comfort conditions are met.

The additional evidence may include a BMS or mechanical contractor signed statement or temperature data within the space from the BMS, demonstrating that the system is programmed to bring the space to comfort conditions in time for the start of **OTA** Hours.

This Step 2 can only be used where:

1) Wording in the **OTA** is ambiguous, and/or

2) Does not specifically refer to plant running hours, and

3) No new or updated **OTA** with acceptable wording has been obtained.

Where BMS data does not demonstrate the **OTA** intention of comfort conditions, the **Accredited Assessor** must move on to *Step 3: OTA Hours minus two*.

Step 3: OTA Hours minus two

Two (2) hours per day must be subtracted from the **OTA** Hours when:

a) The **OTA** clearly refers to plant run times and no new or updated **OTA** with acceptable wording has been obtained; or

b) Wording in the **OTA** is unclear and there is no BMS data available, or

c) The data within the BMS does not clearly demonstrate the intention of the **OTA** being comfort conditions.

Note: The two (2) hours per day is to account for plant start up time. Where there is evidence showing an optimised start strategy is present for the air-conditioning system, it is acceptable that less hours to be subtracted from the **OTA** Hours.

Step 4: OTA Hours corrections for Whole Building and Tenancy ratings

When Core Hours are determined using Steps 1, 2, or 3 above for Tenancy or Whole Building ratings, five (5) hours per week must be subtracted from the **OTA** Hours. This may be on top of the two (2) hours per day subtracted as per Step 3, *OTA Hours minus two* if this method has been used to determine Core Hours.

Example 1: A lease has been provided for a building which states that the space must be **comfortable for office work** between 8am and 6pm (i.e. 50 hours per week).

For a Base Building rating, Core Hours of 50 hours per week can be used.

For a Whole Building and Tenancy rating, Core Hours of 45 hours must be used (50 hours minus 5 hours).

Example 2: A lease has been provided for a building which states that plant hours are 8am and 6pm (i.e. 50 hours per week).

For a Base Building rating, Core Hours of 40 hours per week can be used:

50 hrs per week minus 2 hours per day x 5 days = 50 – 10 = 40 hours per week (as per *Step 3: OTA Hours minus two*).

For a Whole Building and Tenancy rating, Core Hours of 35 hours must be used:

50 hours per week minus 2 hours per day x 5 days minus 5 hours per week = 50 - 10 - 5 = 35 hours/week (as per *Step 3: OTA minus two* and *Step 4: OTA hours Correction for Tenancy and Whole Building ratings*).

5.3.2.2 Conflicting information on Core Hours

Core Hours are the regular hours for which tenants have mutually agreed with the building owner that a space is **comfortable for office work**. The building owner is obliged to provide services during these hours.

However, if the owner knows that all the tenants have gone home by the end of the agreed hours, they might turn the air conditioning off early. This would present the **Accredited Assessor** with conflicting information on Core Hours, as in practice the air conditioning plant has shut down before the agreed end time stated in the **OTA**.

This is an effective strategy that should be recognised, as it is not efficient if the plant runs longer than required. Therefore, the Core Hours must remain as those stated in the **OTA**.

For documentation requirements, see Section 11.3.1.

5.3.3 AHAC: after-hours air conditioning requests

5.3.3.1 Standard for acceptable data

After-hours air conditioning (AHAC) requests to service spaces outside Core Hours can be included in the calculation of **rated hours** for a **functional space** only if the **OTA** Hours method has been used to determine Core Hours of this space.

Acceptable data for AHAC requests includes:

a) Logs of AHAC requests by tenants, showing the date and time of each request and the **functional space** to which it applied;

b) Evidence of other AHAC requests, such as correspondence between the tenant and the owner or building manager or information written into the **OTA** which has been verified to be correct and up to date. This evidence must include the date, time and space to which AHAC has been agreed to be applied.

Air conditioning operation records that do not show the date, time and source of requests are not acceptable, even if supported by evidence of after-hours occupation of the space. Similarly, records which only show the total ‘hours run’ or ‘after-hours run’ for the air conditioning plant are not acceptable.

The determining factor is the tenant’s request to the building owner for air conditioning services outside Core Hours.

For documentation requirements, see Section 11.3.2.

5.3.3.2 Requests related to Core Hours comfort conditions

The **Accredited Assessor** must verify that AHAC requests do no overlap with the Core Hours. This includes any requests for service that occur in the normal ‘start up’ period for the plant or in the hour before the start of Core Hours.

AHAC requests must be reviewed by the **Accredited Assessor** to ensure that all **AHAC** in the hour before start-up are due to early occupancy rather than to comfort issues. This can be typically demonstrated by providing correspondence with the tenant. If the **Accredited Assessor** cannot accurately assess the duration of the start-up period for the plant to ensure that no AHAC hours have been double-counted during this time, AHAC hours that are included in the entire hour before the start of Core Hours must be disregarded.

5.3.3.3 Maximum duration of individual requests

If a tenant's AHAC request or associated documentation does not include the duration for which a request was made, the maximum duration for each such request must be taken as one (1) hour.

Similarly, if the standard run times per push-button activation is more than one (1) hour and there is no evidence showing that the tenant requested that run time, or agreed to it in an **OTA** with the building owner, the maximum duration for each such request must be taken as one (1) hour.

Note: This is to limit possible overestimation of AHAC hours and to discourage excessive provision of AHAC in response to a single request when it has not been clearly required by the tenant.

5.3.3.4 Spaces that individual requests apply to

An individual AHAC request, applies only to the **functional space** from which the request was made. If a single request results in AHAC being provided to multiple **functional spaces**, and the tenant has not specified which **functional space** they want to be serviced, then the request is taken to apply only to the smallest of the affected **functional space**s. See the list of examples in **Table 5.3** below:

Table 5.3: Examples of spaces that AHAC requests apply to

Example	Interpretation
A written tenant request for AHAC to 20% of the building	The request applies to all the **functional spaces** making up the 20%, as this was specifically requested.
A tenancy that occupies 5% of the building requests AHAC, but 20% of the building is operated to service this request	The request applies to the smaller space (5% of the building in this case).
Push-button request for AHAC from a tenancy that occupies 20% of the building, with more than one **functional space**	The request applies only to the smallest **functional space** serviced by that push-button request.

Note: This rule means that, in a multi-floored or multi-tenanted building, a push-button request cannot apply to more than one **functional space** unless written confirmation from the tenant is available that the request was for a larger number of spaces.

The rule minimises the effect of each AHAC request in the area-weighted calculation of **rated hours**.

5.3.3.5 Requests serving different zones within a single functional space

When different independent requests are serving different smaller zones within a main **functional space**, each of these smaller zones must become their own **functional space.**

If the **Accredited Assessor** cannot obtain detailed areas for the zones served, a simple average calculation (arithmetical mean) must be used. See the examples listed in **Table 5.4** below.

Table 5.4: Example of requests serving different zones

Example	Interpretation
Functional space of 1,000 m^2 comprising three AHAC zones, where the areas of the AHAC zone(s) are unknown. Total AHAC count for push-button 1: 100 hours Total AHAC count for push button 2: 200 hours Total AHAC count for push button 3: 300 hours	The AHAC hours for the **functional space** must be taken as: = (100 + 200 + 300) / 3 = 600 / 3 = 200 hours

5.3.4 Tenant Occupancy Survey

5.3.4.1 General

An **Assessor** may use the **Tenant Occupancy Survey (TOS)** Hours and unusual hours method if a higher priority method for determining **rated hours** as detailed in Section 5.2 cannot be used.

A **Tenancy Occupancy Survey** cannot be used for:

a) **Computer server rooms** not part of a larger **functional space**;

b) **Meeting rooms** not part of a larger **functional space**;

c) Any **office support facility** that is significantly sized and is not usually **occupied**, for example a compactus room that occupies half a floor.

When **Tenancy Occupancy Survey (TOS)** hours are used, hours are confirmed by the manager or the supervisor responsible for the **functional spaces** for which the space is typically at least 20% **occupied**.

For documentation requirements, see Section 11.3.3.

5.3.4.2 Standard for acceptable data

For each **functional space**, a **TOS** must be completed by a manager or supervisor responsible who works in that space and has specific knowledge of the levels of occupancy for the space. The **TOS** template is provided in Appendix A.

Each survey should be completed by a different manager or supervisor as it is not expected that any one individual will know the hours of the **functional spaces** on all floors. A **TOS** across multiple **functional spaces** completed by a single manager or supervisor is only acceptable where it is reasonable that the individual would be aware of the hours in those spaces. Examples of what is considered reasonable are:

a) Multiple small **functional spaces** on a single floor; and

b) One manager or supervisor covering three floors or less of Activity Based Working, where they work across all those floors on a regular basis.

A **TOS** must also be completed for the following:

1) Each shift where more than one shift is worked per **functional space**. For example, a 24-hour call centre is one **functional space** but would require a **TOS** for each shift.

2) Each distinct period where the hours of occupation or the numbers of shifts in a **functional space** changed during the **rating period.**

3) Each distinct period where the manager or supervisor in a **functional space** changed during the **rating period**. For example, where a staff manager or supervisor is only able to provide information about occupation of a **functional space** for part of the **rating period**, a separate survey needs to be completed by the managers or supervisors responsible for the remaining parts of the **rating period**.

A **TOS** is considered unusable if:

i) The **TOS** does not verify that the source of the information is a staff manager or supervisor responsible for the **functional space** over the full course of the **rating period.** This includes **TOS** completed by building or facility managers; or

ii) The **TOS** has missing or ambiguous data. This includes **TOS** that do not have the name, position or contact number of the manager who provided the information, dates of validity of the survey or identification of the **functional space** clearly detailed.

Preference is given to a **TOS** directly completed and signed by the manager or supervisor of the space. However, documentation provided by an **Accredited Assessor** resulting from interaction with the manager/supervisor of the space is also acceptable.

5.3.4.3 Unusual hours

Unusual hours from the **TOS** can only be used if the **TOS** method is used to determine Hours for the **functional space**. If Hours are determined using any other method, no unusual hours can be used.

AHAC Hours cannot be used when using a **TOS**.

5.3.5 Average Core Hours

5.3.5.1 General

An **Accredited Assessor** may estimate the average Core Hours if a higher priority method for determining **rated hours** cannot be used.

Core Hours estimated under this method are **acceptable estimates** and must be added to the **potential error** for hours.

After-hours air conditioning or unusual hours cannot be allocated to a **functional space** that uses the Average Core Hours method.

For documentation requirements, see Section 11.3.4.

5.3.5.2 Standard for acceptable estimates

When average Core Hours are used for a **functional space**, the **Accredited Assessor** can use the following methods to estimate **rated hours** in order of priority:

a) Period-weighted Core Hours of the space where **acceptable data** is only available for some shifts or some periods of operation in the **rating period**; or

b) The average of the Core Hours of nearby **functional spaces** with similar uses and tenants, if **acceptable data** is available for these spaces; or

c) The average of the Core Hours for the remainder of **functional spaces** included in the rating, if **acceptable data** is available for these spaces.

Where a space was not being used as an office while **fitout works** were taking place, the hours of occupation are calculated using Method a) above. Additional evidence is not required for the calculation of these hours; and nor does it add to the **potential error**.

5.3.6 Default Core Hours

Default hours of 45 hours per week may be used for Base Building, Tenancy and Whole Building ratings if a higher priority method for determining **rated hours** as detailed in Section 5.2 cannot be used. Where the **Accredited Assessor** estimates less hours than this as Default Hours, the reasons for doing so must be documented for this estimate to be deemed acceptable.

Except for Tenancy ratings within a **co-assess** application where this is **acceptable data**, Default Core Hours should be added to a rating's **potential error**. AHAC or unusual hours cannot be allocated to a **functional space** that uses default business hours.

For documentation requirements, see Section 11.3.5.

5.3.7 Computer server rooms

5.3.7.1 Base Building ratings

Where a **computer server room** has been separated into its own **functional space**, and **direct HVAC energy** is provided by the Base Building to the space, the **rated hours** are determined using the following methods in order of priority:

a) Hours for which the Base Building provides **direct HVAC energy** to the space as confirmed by the **OTA**, BMS evidence or facility manager's written confirmation. This is **acceptable data**.

b) Section 5.3.5 Average Core Hours. This is added to the **potential error**;

c) Section 5.3.6 Default Core Hours. This is added to the **potential error**.

Where a **computer server room** has been separated into its own **functional space** and no **direct HVAC energy** is provided by the Base Building to the space, the area is excluded from the Base Building rating as per Section 4.5.4.

Where a **computer server room** has not been separated into its own **functional space**, the **rated hours** are the same as the **rated hours** for the adjoining **functional space**.

Note: While the **Accredited Assessor** does not have to identify **computer server rooms** or separate them as **functional spaces** when their total measured area is less than 5% of the floor plate **rentable area**, the option remains to identify the **computer server room** as a separate **functional space** and allocate the hours as per the methods described above.

5.3.7.2 Whole Building and Tenancy ratings

For Whole Building and Tenancy ratings, the hours for a **computer server room** are the hours the ventilation or air conditioning is provided. No distinction is made between the provision of **direct HVAC energy** by either the Base Building or the Tenancy for this purpose.

For documentation requirements, see Section 11.3.6.

5.3.8 Other office support facilities

5.3.8.1 General

This section applies to all **office support facilities,** including **meeting rooms.**

This section does not apply to **computer server rooms** which is covered under Section 5.3.7.

For documentation requirements, see Section 11.3.7.

5.3.8.2 Base Building ratings

Where an **office support facility** including **meeting room** has been separated into its own **functional space** and **direct HVAC energy** is provided by the Base Building to the space (see Section 4.5.5), the **rated hours** are determined using the following methods in order of preference:

a) Section 5.3.2 Core Hours and Section 5.3.3 AHAC: after-hours air conditioning requests. This is **acceptable data**;

b) Section 5.3.5 Average Core Hours. This is **acceptable data**;

c) Section 5.3.6 Default Core Hours. This is added to the **potential error**.

Where an **office support facility** (including a **meeting room**) has not been separated into its own **functional space**, the **rated hours** are the same as the **rated hours** for the **functional space** it is located within.

5.3.8.3 Tenancy and Whole Building ratings

Where an **office support facility** has been separated into its own **functional space**, the **rated hours** are determined using the following methods in order of priority:

a) Hours derived from booking system records, if the **Accredited Assessor** has checked with the manager of the space that the records correspond to the actual occupancy of space. This method particularly applies to **meeting rooms** and is **acceptable data**.

b) The area-weighted average of the Core Hours of all **functional spaces** which contributes to the usage of the office support space. In this case, the hours are not an estimate and should not be added to the **potential error** for hours.

c) Section 5.3.5 Average Core Hours. This is **acceptable data**.

d) Section 5.3.6 Default Core Hours. Except for Tenancy ratings within a **co-assess** application where this is **acceptable data**, Default Core Hours should be added to a rating's **potential error**.

Where an **office support facility** has not been separated into its own **functional space,** the **rated hours** are the same as the **rated hours** for the **functional space** it is located within.

5.4 Verifying long hours

5.4.1 General

Note: The intent of independent **verification** of long hours is to ensure **rated hours** outside of the typical range (beyond 60 hours/week) are expected and reasonable for the space. It is to prevent situations where building services are being operated 'just in case' they are needed, or for a lease that is no longer appropriate for current conditions. For most ratings, **verification** should not be onerous but a matter of simply double-checking the hours determined are relevant for the space.

If the **rated hours** for any **functional space** is equal to or greater than 60 hours per week, then the **Accredited Assessor** must verify these hours using the following procedures (Sections 5.4.2 and 5.4.3).

5.4.2 Procedure for verifying long OTA and AHAC hours

a) The **Accredited Assessor** must first determine whether or not the total hours are obviously as expected and reasonable for the space. If the hours are obviously as expected and reasonable, the hours are considered verified and the **Accredited Assessor** must document the reasons for this decision.

b) If the hours are not obviously as expected and reasonable, the **Accredited Assessor** must obtain evidence from the tenant from the relevant **functional space** that the **rated hours** are as expected and reasonable, and the reasons they are considered to be so. The documentation must be in writing and be signed by the manager or supervisor of the **functional space**.

c) If the tenant does not agree that the hours are as expected and reasonable or cannot provide independent documentation of this, the **Accredited Assessor** must recalculate the **rated hours** using a **TOS**. Where the survey hours are within 10% of the **rated hours** originally calculated, the original **rated hours** are considered verified and must then be used. Where the survey hours are not within 10%, the lower values must be used.

d) If the tenant cannot be contacted to verify the **rated hours**, an alternative method must be used. The **Accredited Assessor** must contact the **Administrator** for approval of an alternative method.

For documentation requirements, see Section 11.3.8.

5.4.3 Procedure for verifying long TOS hours

a) The **Accredited Assessor** must determine if the hours are obviously as expected and reasonable for the space (see Section 5.4.4). If the hours are obviously as expected and reasonable, then the hours are considered verified and the **Accredited Assessor** must document the reasons for this decision.

b) If the hours are not obviously as expected and/or reasonable, the **Accredited Assessor** must confirm the person surveyed has properly interpreted the **TOS** questions. This may be conducted at the time the **TOS** is completed.

c) If the person surveyed does not confirm that all questions have been properly interpreted, a second **TOS** must be completed. This **TOS** may be completed by the same manager/supervisor once the **TOS** has been properly explained.

For documentation requirements, see Section 11.3.9.

5.4.4 Checking expected hours

The **Accredited Assessor** must complete a common-sense check to determine if the hours are 'obviously as expected and reasonable for the space'. For example:

a) 24-hour service for a call centre operating three shifts is reasonable, but not for a call centre operating one or two shifts.

b) 24-hour operation for a **computer server room** is reasonable.

c) Core Hours of 60 hours per week plus an additional 20 AHAC hours requested by the floors as needed (such as by push-button requests) is reasonable and based on demand by the tenants.

d) Core Hours of 60 hours per week plus an additional 20 AHAC hours requested using a long-standing order written at the start of the **OTA** three years ago may not be reasonable if the recent actual occupancy of the space is low outside the Core Hours.

e) Core Hours of 60 hours per week plus an additional 1,000 unusual hours per year based on a **TOS** for standard tenancy might not be reasonable.

For documentation requirements, see Section 11.3.10.

6 Counting computers

6.1 Summary

NABERSNZ Energy for Offices, Tenancy, and Whole Building ratings are affected by the number of computers in regular use.

The number of computers is used, along with other factors such as **rated area** and climate, to normalise the figures for energy consumption. This ensures that fair comparisons can be made between ratings even though the level of computer use may vary between different types of business and tenants.

For documentation requirements, see Section 11.4.

6.2 Process overview

Table 6.1 below outlines the process for conducting a computer count.

Table 6.1: Process overview

	Step	Reference
1	Use the breakdown of the premises being rated into **functional spaces**	4.4
2	Determine which configurations of personal computer systems are present, complete and in regular use	6.3.2
3	Bear in mind acceptable standards for data and Agile and Activity Based Working environments in the space	6.3.3
4	Identify if any computer counts need to be estimated for inaccessible **functional spaces**	6.3.4
5	Decide which **functional spaces** will use a default count, and which will have computers counted	6.3.5
6	If it is not possible to conduct a count in a **functional space** where a count is required, then estimate the count for the space if an estimate is an acceptable value	6.3.4, 6.3.5
7	If there are no more than 10 **functional spaces**, conduct a full count for spaces where the default count is not used	6.3.3, 6.3.5

	Step	Reference
8	If there are more than 10 **functional spaces**, either conduct a full count or a random site survey for spaces where the default count is not used	6.3.6

6.3 Counting computers

6.3.1 Computer count requirements

See **Table 6.2** to determine for which types of office ratings a computer count is required.

Table 6.2: Office ratings requiring computer counts

Rating type	Computer count
NABERSNZ Energy for Offices Tenancy	Count of computers
NABERSNZ Energy for Offices Base Building	Not required
NABERSNZ Energy for Offices Whole Building	Count of computers
NABERSNZ Water for Offices	Not required

6.3.2 Principle and definitions

6.3.2.1 General

A computer is counted if it is a complete ‘personal computer system’ in regular use within a **functional space**.

‘Personal computer systems’ include networked ‘thin client’ systems used to provide access to software and services comparable to personal computers with autonomous processors and system memory.

No count can be made for servers and other equipment mounted in racks other than the number of identifiable personal computer systems in the installation, as identified by monitors in use. Larger stand-alone computer installations with no monitor can be counted as a single computer for each installation.

Only computers in **functional spaces** are counted.

For documentation requirements, see Section 11.4.1.

6.3.2.2 Personal computer system configurations

A ‘personal computer system’ consists of a ‘system unit’ and at least one screen and one keyboard. There are three basic types of ‘personal computer system’ in common use as per **Table 6.3** below.

Table 6.3: Types of personal computer systems

Type of system	Description
Desktop system	A distinct system unit with an external monitor and external keyboard attached
Laptop (or notebook or tablet)	System unit, screen and keyboard in the one unit
All-in-one system	System unit and screen in one unit, but with an external keyboard attached

All of the configurations in **Table 6.3** are equivalent and acceptable.

Adding additional monitors or keyboards to these basic configurations does not change the number of 'personal computer systems' involved. For example, a laptop with a separate monitor attached to it and/or a separate keyboard is still one personal computer system; as is a desktop computer with multiple monitors (see **Figure 6.1**).

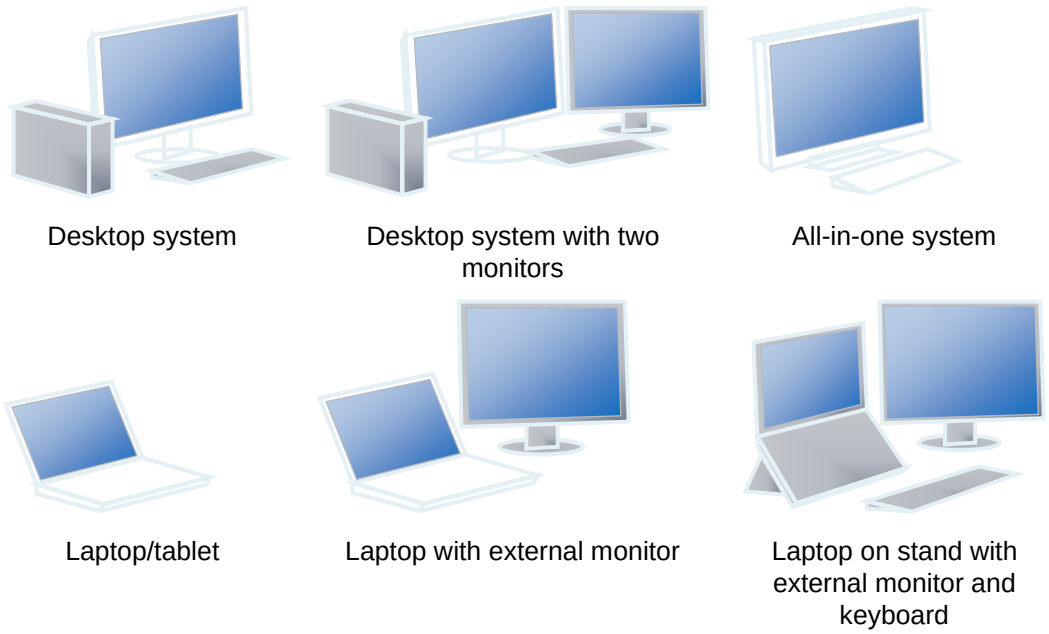


Figure 6.1: Personal computer system configurations

Each of these configurations (**Figure 6.1**) is equivalent to one computer.

If there is any confusion as to how many computers are at a desk then the number of monitors apparently set up for use is the defining factor. Monitors that are obviously not connected to a computer system must be disregarded.

6.3.2.3 Completeness

A personal computer system must not be counted if some components are missing (e.g. a desktop system unit with no monitor, a monitor with no system unit visible and no image on it, or a docking station with no laptop attached). If integral components are not present, it cannot be regarded as a complete system. Such incompleteness indicates a lack of regular use.

Seeing an image on a monitor is evidence that it is attached to a system unit – even if the unit is not visible. It is therefore considered to be complete, as the image is evidence of use.

6.3.2.4 Regular use

To be counted, a personal computer system must be in regular use in the premises being rated. At least one of the following pieces of evidence of regular use must be present:

a) A person using the computer system at the time of the count;

b) Indirect evidence (such as personal effects or files and in-trays on the desk, or the computer system being on) that a person uses the system, even if not there at the time of the count;

c) A report by a manager or other authoritative source that the system is in regular use;

d) For computers in training rooms, etc., booking or attendance records that the **Accredited Assessor** has verified are accurate and which show both the number of computers used and the amount of time for which they were used.

A computer must **not** be counted if there is evidence that it is not in regular use. Such evidence includes situations where the computer:

1) Is not set up for use at a desk (e.g. is in storage or packed up, or with cables not connected),

2) Is obviously inoperable or too obsolete for productive use, or

3) Is located or set up for occasional use only (or approximately less than 50% of the time), such as in a low-use training room for which there are no acceptable booking or attendance records, or a boardroom, **meeting room,** or store.

6.3.2.5 Examples of computer system configurations

Table 6.4 below specifies various computer system configurations and whether these can be counted.

Table 6.4: Examples of computer system configurations

Example	Count	Notes
A desk with one complete desktop computer or a laptop, with a person at the desk	1	One system with evidence of use – the person
A desk with one computer, with no person at the desk but with papers and in-trays as if it is normally **occupied**	1	One system with evidence of use – the papers and in-trays

Example	Count	Notes
A desk with one computer, with no person at the desk and with no papers and no obvious sign that it is being used	0	One system, but no evidence of regular use
The same desk as above, but with a report from the manager that the person is on leave	1	One system with evidence of use (the manager's report)
A desk with a laptop stand or docking station, but no laptop and no evidence of use 	0	No complete system, and no evidence of regular use
A desk in use with a laptop and a stand or docking station, with a separate monitor and keyboard attached	1	One system with evidence of use
A desk with evidence of use, with a laptop stand with external monitor and keyboard attached, but no laptop	0	No complete system (the laptop may be counted elsewhere)
The same desk as above, but with a report from the manager saying the person is out of the office with the laptop	1	One system with evidence of use (the manager's report means the laptop will not be counted separately)
A desk in use with both a laptop and a desktop computer with monitor and keyboard	2	Two systems with evidence of use
A desk in use with one computer (or laptop), and two monitors used	1	One system with evidence of use
A desk with no computer visible, with two monitors being used 	2	Two systems (two monitors, no other data) with evidence of use
Eight desks in a training room used no more than two days a week, each with one computer	0	These systems are used less than 50% of the time and are therefore not in regular use

6.3.3 Conducting a count

6.3.3.1 Standard for acceptable data

The number of computers must be based on an actual site count of computers in each **functional space**. Asset inventory information is not acceptable because it does not differentiate low-use machines and may include old machines no longer in use or on site. Local server counts of computers online at any point in time are not acceptable.

Where **acceptable data** or **acceptable estimates** of the energy consumption for that **functional space** is not available for reasons beyond the control of the **Accredited Assessor** or customer, then computers in the **functional space** must not be counted.

For documentation requirements, see Section 11.4.2.

6.3.3.2 Agile and Activity Based Working

Agile and Activity Based Working (ABW) are spaces which typically include a variety of office environments to support different activities in the workplace. ABW spaces typically do not have set desks for workers.

Conducting computer counts in a **functional space** using ABW should be carried out following the same principles outlined above (see Section 6.3.2).

When counting in **functional spaces** which are operating using agile and ABW principles, NABERSNZ recommends conducting computer counts between 09:30 and 12:00, or between 14:00 and 16:30 to ensure an appropriate representation of the number of computers used on-site is obtained.

Computer counts taken at the very start or end of the day, or during lunch hours, may give a lower result than during the premises' typical occupancy, which could impact the rating's result.

In addition, work points outside of the traditional **rated area** – such as in a café or foyer – may be included in the computer count so long as the computers are still on the premises.

Due to the nature of ABW spaces, it is likely to be more difficult to identify regular use of a computer system (e.g. the absence of personal affects or files at a desk might not equate to non-use). The emphasis around portability in ABW adds to this difficulty. It is important therefore that **Accredited Assessors** use their discretion in determining the occupancy of those **functional spaces** through additional means such as asking the tenant about typical occupancy rates on a standard workday and reviewing work points which are highly frequented.

6.3.4 Estimating numbers of computers

If an **Accredited Assessor** cannot access a space to physically count all the computers in a **functional space**, then the **Accredited Assessor** may discount or estimate the number of computers for that **functional space** as follows:

a) For small spaces within the **functional space** with a combined area of less than 1% of the total **rated area**, assume that there were zero computers in each space.

b) For other spaces, it is acceptable to ask staff familiar with the space, or to estimate the number of computers based on average computer densities for nearby similar spaces.

This section does not apply to unoccupied spaces. If a **functional space** is unoccupied at the time of the count and there is no acceptable evidence of number, completeness or regular use of computers, then the computer count must be zero.

For small spaces as determined above, the estimate of zero is deemed to satisfy the accuracy requirements of these **Rules**.

Otherwise, the **Accredited Assessor** must add the estimate to the **potential error** for computers.

For documentation requirements, see Section 11.4.3.

6.3.5 Default computer count

An **Accredited Assessor** may use a default computer count of one computer per 20m^2 of **rated area**. This does not add to the **potential error** of the rating.

The default count can be used in place of an actual count, including when access to a **functional space** is limited, or for spaces that were **occupied** during the **rating period** but unoccupied during the computer count.

Note 1: For **co-assess** applications, if the **functional space** with the default computer count is applicable to both the Whole Building rating and a Tenancy rating, the Tenancy **rated area** will be used to estimate the number of computers. If no Tenancy rating is associated with the **functional space**, the Whole Building **rated area** will be used.

Note 2: The value of default computer count (20m^2) is based on the analysis of the NABERSNZ certification database.

For documentation requirements, see Section 11.4.4.

6.3.6 Conducting a survey

6.3.6.1 General

For buildings with 10 or more **functional spaces**, a permitted alternative method is to conduct a random site survey in accordance with this section. This alternative method can only be applied to **functional spaces** that are expected to have a 'normal' density of computers (i.e. typical of an office floor).

For documentation requirements, see Section 11.4.5.

6.3.6.2 Process for conducting a survey

a) Identify any **functional spaces** likely to have either a significantly higher density of computers (such as call centres) or lower density of computers (such as computer rooms, meeting or conference rooms) than average. Count the number of computers in regular use in these spaces. The spaces will not be included in the sampling.

b) If the remaining number of **functional spaces** at the premises is still 10 or more, it is permitted to continue with the random site survey method. If the remaining number of **functional spaces** is less than 10, a full computer count must be conducted as per Section 6.3.3.

c) List the remaining **functional spaces** in random order.

Note: A good random sampling method is to draw numbers from a hat, or to ask people on site to provide random numbers between 1 and the number of stories in the building (without providing an explanation for how these numbers will be used). Some scientific calculators have a random number generator. For buildings with 26 or fewer storeys, taking a name and identifying the position of each letter in the alphabet also provides sufficiently random numbers.

d) Take the first five **functional spaces** from the random list as the sample, and count the number of computers in regular use in each of these spaces.

e) Enter the computer count data for the sampled **functional spaces** into the **Online Rating Calculator**.

f) If the message 'Not enough samples, please enter more' appears at the bottom of the page, then the sampling uncertainty for the **functional spaces** is above 10% and the sample is too small. Take the next **functional space** from the random list, count the number of computers in regular use in that space, and add this data to the data already collected.

g) Keep adding data for additional spaces until the page is saved without a warning message at the bottom. The statistical uncertainty is now less than 10%, and the 'calculated number of computers' figure can be used. However, if more data has been collected than is essential, it is better to use the extra data to improve the reliability of the estimate.

h) Add the 'calculated number of computers' figure to the separately counted number of computers from the first step, to give the total number of computers to be used in the rating.

6.3.6.3 Standard for acceptable data

The statistical uncertainty for the figure resulting from the survey, as calculated above, must be less than 10%. This is indicated by the lack of a warning message at the bottom of the Occupancy (Computers) page of the **Online Rating Calculator**.

If for any reason it is not possible to physically count all the computers in a **functional space** to be sampled, then:

a) For small spaces within the **functional space** with a combined area of less than 1% of the total **rated area**, the **Accredited Assessor** may assume that there were zero computers in each space; or

b) For other cases where the **functional space** cannot be included in the sample, it is *not* acceptable to use an estimate of the number of computers in the random survey as these two methods are mutually exclusive. Instead, the **Accredited Assessor** may remove the **functional space** from the sample and replace it with the next **functional space** from the random list – but only if no more than 10% of the sample in total is replaced in this way.

If it is not possible to count the computers in enough of the **functional spaces** on the random list to achieve a statistical uncertainty under 10%, then the premises cannot be rated using this method and a full count must be conducted instead.

7 Minimum energy coverage

7.1 Summary

Correctly interpreting the scope of energy supply and consumption data is essential to the accuracy of a NABERSNZ Energy for Offices rating. The key principles are as follows:

a) An assessment for a certified rating must include all sources of external energy supplied to the **rated premises**, and must cover all of the energy **end uses** specified for the rating type in Section 7.2.

b) **Utility** and **non-utility metering systems** that meet the requirements of Chapter 9 may be used in any combination to achieve the required coverage, subject to the accuracy requirements of Section 3.3.

This section also covers some special conditions governing exclusions and inclusions of small, unmetered **end uses**.

For documentation requirements, see Section 11.5.

7.2 Required minimum energy coverage

7.2.1 General

The **Accredited Assessor** must ensure that all the required energy **end uses** as listed in this chapter are covered by the sources and supply points identified. A thorough site inspection must be conducted. If an **end use** is required to be included in the rating but is not covered by one of the supply points identified, then the **Accredited Assessor** must use one of the alternative allowable methods to ensure the minimum energy coverage requirements can be met.

Note: The scope of energy coverage is not necessarily restricted to spaces included in the **rated area** calculation.

For documentation requirements, see Section 11.5.1.

7.2.2 Tenancy ratings

The required minimum energy coverage for Tenancy ratings is energy consumed in the **rated premises** by the occupant during the **rating period**. This energy coverage includes:

a) Lighting to all areas within the **rentable area**, including **service areas** within the **rentable area** that are wholly allocated to the tenant;

b) Power to all equipment within the **rentable area**, including computer servers, and **service areas** within the **rentable area**;

c) Tenant-installed signage within or on the building that is for a tenant and that is not provided by the building owner as a condition of lease;

d) Tenant-controlled supplementary air conditioning to meet a **special tenant requirement**;

e) Generator fuel for tenant usage.

A tenancy rating does not cover lighting or power allocated to **service areas** that are allocated on a pro-rata basis to more than one tenant. The lighting and power for these spaces is allocated to the Base Building.

7.2.3 Base Building ratings

The required minimum energy coverage for Base Building ratings is energy consumed in supplying building central services to office rentable and common spaces during the **rating period**. This energy coverage includes:

a) Common-area lighting and power (e.g. foyers, plant rooms and **service areas** that are assigned as **rentable areas** on a pro-rata basis to more than one tenant);

b) Lifts and escalators;

c) Air conditioning and ventilation, including:

1) Base Building services to meet normal requirements;

2) Centralised supplementary services provided for tenants (such as supplementary tenant condenser water loops), see Section 7.3.2.1;

3) Supplementary services provided to ensure the premises are **comfortable for office work**, where there is no **special tenant requirement**;

d) Exterior lighting;

e) Exterior signage that:

1) Is primarily used for identifying or advertising the building owners, or

2) Displays the building name, even if unrelated to the tenant or building owner, or

3) Is provided to a tenant by the building owner as a condition of lease;

f) Generator fuel where it serves central services;

g) Car park ventilation and lighting, where internal or external car parks within the legal boundaries of the site are provided for tenant use.

7.2.4 Whole Building ratings

The required minimum energy coverage for Whole Building ratings is all the energy used by office tenancies and by Base Building services to office rentable (including all **service areas**) and common spaces during the **rating period**.

7.2.5 Unoccupied spaces

The energy use (within the scope of the required minimum energy coverage of the rating) of unoccupied office spaces must always be included, even though the space may have been excluded from or discounted in the **rated area** calculation.

7.2.6 Exclusions

7.2.6.1 General

Energy use may only be excluded from a rating if:

a) The energy is not part of the minimum energy coverage of the rating; and

b) There is a methodology within the **Rules** that permits the exclusion; and

c) The coverage, accuracy, and **validation** requirements for the metering of the exclusion are met.

The metering for any exclusion must not include any **end uses** that are required under the minimum energy coverage.

7.2.6.2 Electric vehicle charging points

The energy associated with electric vehicle charge points does not form part of the minimum energy coverage and is not required to be included. Emissions associated with moving vehicles are not included in the scope of ratings.

7.2.6.3 Transmission towers

The energy used by antennas/transmission towers that provide service to the locality/suburb are not part of the energy coverage. Typically, this would be where a building leases roof space to a telecommunications company to operate their telecommunications equipment for servicing of the locale.

7.2.6.4 Computer server rooms and data centres

Refer to Section 4.5.4 for more information on how to exclude the energy for these spaces.

7.3 Energy end uses requiring additional consideration

7.3.1 Computer server room energy coverage

7.3.1.1 Base Building ratings

Where the area of a **computer server room** has been excluded in line with Section 4.5.4, the energy associated with providing central services to this area must also be excluded from the rating if adequately sub-metered or thermally metered.

For situations where HVAC services are provided centrally, thermal metering may be required to determine the proportion of energy use. In these situations, the standard methodology given in *Ruling for Thermal Energy Exclusions* must be used.

7.3.1.2 Tenancy and Whole Building ratings

The energy consumption of a **computer server room** may be partially or wholly excluded from Tenancy and Whole Building ratings on the grounds of external usage of the equipment. However, the same methods and criteria as those used to exclude the floor area of the same **computer server room** from the **rated area** calculation under Section 4.5.4 must be used. Specifically, the following rules apply:

a) If the floor area of the **computer server room** has been **completely included** in the calculation of the **rated area**, then the energy consumption must be completely **included** in the assessment.

b) If the floor area of the **computer server room** has been **completely excluded** from the calculation of the **rated area**, then the energy consumption must be **completely excluded** from the assessment.

c) If the floor area of the **computer server room** has been **partially excluded** from the calculation of the **rated area**, where the externally used IT equipment and/or facility services are separately sub-metered, then the energy consumption of the externally used IT equipment and/or facility services must be **excluded** from the assessment.

Note: Facility services include lighting, power, UPS, air conditioning and dehumidification.

d) If the floor area of the **computer server room** has been **proportionately excluded** from the calculation of the **rated area**, where:

1) The externally used IT equipment and/or facility services are **not** separately sub-metered but

2) It is possible to determine the number of **external users** of the IT equipment,

Then the energy consumption of the IT equipment and/or facility services must be **excluded** from the assessment in the same proportion as the floor area exclusion.

Example: If the energy consumption over 12 months of a **computer server room** is 25 megawatt hours (MWh) and there are 100 internal users and 400 **external users**, the energy consumption for the **external users** is calculated as:

$$25 \text{ x } \frac{400}{(400 + 100)} = 20 \text{ MWh}$$

The documentation required for energy consumption exclusions for **computer server room**s is the same as the documentation required for exclusions from the **rated area** calculation under Section 4.5.3.

For documentation requirements, see Section 11.5.2.

7.3.2 Energy use allocations for services

7.3.2.1 General

Energy used to provide services to office tenants, other than tenant lighting and power, must be allocated according to the requirements of this section.

For documentation requirements, see Section 11.5.3.

7.3.2.2 Supplementary air conditioning in open plan and cell office spaces

Energy used for supplementary air conditioning services to open plan or cell office spaces in office tenancies (including any space with one or more desk/workstation for normal use, or associated circulation spaces) is allocated to the Base Building. If a **special tenant requirement** exists however, it is allocated to the tenant.

Example: If the landlord only provided ventilation to the open plan or cell office spaces and tenants installed their own air-conditioning or other heating and/or cooling systems for normal use, the energy should be allocated to the Base Building.

To determine whether or not a **special tenant requirement** exists, the **Accredited Assessor** must conduct site inspections or obtain documentary evidence to establish that an unusual usage of the space has resulted in an increased intensity of the service required.

The following procedure in **Table 7.1** may be used to determine the allocation of supplementary air conditioning in open plan and cell office spaces:

Table 7.1: Procedure for allocating supplementary air conditioning

	Step	Notes
1	Check whether the **supplementary air conditioning equipment** is operated intermittently in response to a tenant-specific requirement, rather than continuously while the space is **occupied**. If it is operated intermittently in response to a tenant-specific requirement, the energy used for the equipment is allocated to the tenant. If not, go to Step 2.	A **special tenant requirement** may result from overloading due to unusually dense occupation or intense energy use in the space.
2	Check whether the need for **supplementary air conditioning equipment** is localised to the tenancy. If **supplementary air conditioning equipment** is common in spaces elsewhere in the building without a **special tenant requirement**, the energy used for the equipment in question is allocated to the Base Building. If there are other spaces in the building with similar usage but which do not have **supplementary air conditioning equipment**, or if a comparison is inconclusive or not possible, go to Step 3.	A **special tenant requirement** will be limited to spaces where the tenant's unusual usage has resulted in an increased intensity of service required.

	Step	Notes
3	Check the current tenant load conditions in the space against documented specifications for the Base Building system to determine whether the tenant's unusual usage of the space is outside the system's intended conditions and performance. If the conditions in the space are clearly based on an unusual usage of the space that is outside that intended, the equipment's energy use is allocated to the tenant. If not, or if there is no documented specification, go to Step 4.	A check against specifications may show that the tenant's unusual usage of the space has resulted in an increased intensity of service that is higher than the Base Building system was intended to accommodate.
4	The energy used by the **supplementary air conditioning equipment** must be allocated to the Base Building. Where it is not possible to include all the energy used by the **supplementary air conditioning equipment** in a Base Building rating, because it is not connected to a Base Building board or separately metered, then the space serviced by this equipment must be excluded from the **rated area** calculation.	The energy used for Base Building services (such as central chilled water) to spaces serviced by **supplementary air conditioning equipment** must always be included in the Base Building energy coverage, whether or not the floor area is included in the **rated area** calculation.

7.3.2.3 Energy use allocations for other services

Energy used to provide services to office tenants, other than tenant lighting, power and supplementary air conditioning in open plan and cell office spaces, must be allocated according to the following requirements in **Table 7.2** and **Table 7.3**. The rules apply in the order listed. Examples of energy use allocations are given in **Table 7.4**.

Table 7.2: Requirements for tenant allocations

Requirement	Tenant allocations Energy used for the following is always allocated to tenants and must be excluded from an assessment for a Base Building rating.
T1	**Supplementary air conditioning equipment** installed to meet a **special tenant requirement** in **office support facilities**. Examples might include packaged air conditioners (water or air cooled) in **meeting rooms**, tea rooms, **computer server rooms** or tenant-only cafés.
T2	Tenant cooling tower(s) and associated pumps that do not service the Base Building and are separately metered.
T3	Stand-alone domestic hot water units in tenant-only kitchens, tea rooms or toilets with a **special tenant requirement**, unless accessible from a common space or car park without passing through **rentable area**.

Requirement	Tenant allocations Energy used for the following is always allocated to tenants and must be excluded from an assessment for a Base Building rating.
T4	Light and power to **service areas** that are wholly allocated to a single tenant.
T5	Any other system which serves the premises being rated and is not specifically allocated to the Base Building through the rules listed under *Base Building allocations* in **Table 7.3** below.

Table 7.3: Requirements for Base Building allocations

Requirement	Base Building allocations Energy used for the following, when associated with offices rather than other uses, is always allocated to the Base Building and must be excluded from an assessment for a Tenancy rating.
B1	Components added or changed to reconfigure the Base Building air conditioning system for office fitout requirements (e.g. reheats and other additional terminal components).
B2	Centrally provided services that are: a) Sized and located to provide a generic service for occupant **end uses** in different parts of the building, rather than a custom service for a designated set of applications, and b) Available (whether they are used) to at least 30% of the office tenants in the building or 30% of the office **rentable area**.
	Example: a) Supplementary tenant condenser water, and chilled and heating water; b) Supplementary outdoor air, tempered or otherwise; c) Domestic hot water units.
B3	Services whose main characteristics (e.g. temperature, speed or flow volume) are managed by a Base Building control system (other than a master switch for enabling or disabling the service overall).
B4	Services to: a) Non-**rentable area** spaces such as the ground floor foyer; and b) Any amenities space (e.g. a shower or toilet) that is accessible from a common space or car park without passing through **rentable area**, whether the amenities space is being used by a single tenant or otherwise; and c) **Service areas** for which the **rentable area** has been allocated on a pro-rata basis to more than one tenant.

Table 7.4: Examples of energy use allocations

Example	Allocation	Reasons
Supplementary chilled water loop with blanked or in-use connection on each floor (i.e. more than 30% of the floor area) serving a range of fan coils throughout the building	Base Building	Requirement B2
Supplementary condenser or chilled water application designed to service a **computer server room** for a single tenant, not generally available to other tenancies	Tenant	Requirements T1 & B2
Supplementary chiller and associated equipment (e.g. pumps and cooling towers) sized to serve a set of fan coils and computer cooling room units affecting less than 30% of the tenants or total office **rentable area**, without blanked connections available to other applications	Tenant	Requirements T1 & B2
Packaged air conditioners under Base Building control	Base Building unless Requirement T1 applies	Requirements T1 & B3
Air conditioning services to **meeting rooms**, operating from the primary Base Building system	Base Building	Requirement B1
Separate supplementary air conditioning for a leased cafe that is **exclusively for the use of office tenants**	Tenant	Requirement T1
A lift that connects areas leased by a tenant, installed in addition to existing Base Building lifts, and serving less than 30% of the total office **rentable area**	Tenant	Requirements T5 & B2
Domestic hot water units serving common areas and some tenant-specific applications that cover at least 30% of the office **rentable area**	Base Building	Requirement B2
Hot water for a shower block wholly within a single tenant's leased space, with no access from common areas, and under tenant control	Tenant	Requirements T3 & B1
Light and power to **service areas** on a multi-tenant floor	Base Building	Requirement B4
Light and power to **service areas** on a single tenant floor	Tenant	Requirement T2
General HVAC to **service areas**	Base Building	Requirement B2

7.3.3 Energy consumption in excluded spaces

7.3.3.1 Spaces for the exclusive use of tenants

Any space that is for the **exclusive use of office tenants** is considered part of the office **rated premises**. The energy used in these spaces must be included if it is in the rating scope (e.g. a Tenancy or Whole Building rating). This is the case regardless of whether that space is included or excluded from the **rated area** calculation.

7.3.3.2 Other spaces

Energy use associated with spaces that are:

a) *Not* for the exclusive use of office tenants, and

b) *Not* included in the **rated area** calculation

May be excluded from energy coverage under all of the following conditions:

1) The energy consumption is not included in the minimum energy coverage for this type of rating; and

2) The energy consumption is properly metered, and the metering meets the requirements of Chapter 9; and

3) The exclusions meet the requirements of Chapter 10, or, for thermal exclusions only, the NABERSNZ publication *Ruling for Thermal Energy Exclusions*.

This does not apply to **medical office facilities** or **educational office facilities**.

For documentation requirements, see Section 11.5.4.

7.3.4 Exterior signage

Energy use for exterior signage must be included in Base Building and Whole Building ratings if it is:

a) Primarily used for identifying or advertising the building owners,

b) Displaying the building name, even if unrelated to a tenant or building owner, or

c) Provided to a tenant by the building owner as a condition of lease.

Note: This requirement covers the *provision* of signage rather than permission to erect signage.

Energy use for exterior signage is excluded from the rating if the signage does not advertise the building itself or the owners or tenants of the building.

Energy use for exterior signage for a tenant that is not provided by the building owner as a condition of lease is excluded from a Base Building assessment, but must be included in Tenancy and Whole Building ratings.

7.3.5 Car parks

7.3.5.1 General

The energy consumption of car parks is only considered for Base Building and Whole Building ratings, not for Tenancy ratings.

For Base Building and Whole Building ratings, the energy use of lighting and ventilation in car parks in the **rated premises** must be included in the rating to the extent that parking is provided to office tenants as a benefit of their tenancy (e.g. as part of an agreement associated with a lease). This applies whether the energy use is separately metered or not.

It is not uncommon for car park metering to also include other basement services such as hydraulic pumping. In such cases, proportioning of consumption data, as outlined in this section, is not permitted.

Note: Where parking is provided to a tenant as a result of a separate agreement (e.g. a standard contract with a public car park operator that is independent of building ownership and management) then it is not a benefit of the tenancy and is not included.

For documentation requirements, see Section 11.5.5.

7.3.5.2 Complete exclusion

The energy use of lighting and ventilation in car parks provided for office use may be **completely excluded** from the rating where:

a) The car park is not located on the site of the **rated premises**, or

b) Both:

1) The ownership and management of the car park are independent of the ownership and management of the **rated premises**; and

2) There is a separate meter (or group of meters) that covers the entire energy use associated with the car park but does not cover any other aspect of the building's central services energy use that must be included in the assessment.

Note: No complete exclusion applies based solely on the grounds that the car park is leased to, or otherwise operated by, a manager separate from the building owner and building facilities manager. The car park can, however, be excluded if tenants do not have access to the car park, in accordance with the following Section 7.3.5.3.

7.3.5.3 Proportional exclusion of energy use

Where building office tenants have use of part but not all of the building's car park, then a proportion of the energy use associated with these car parks may be excluded from the rating in accordance with the following rules:

a) Proportional exclusion of car park energy use is only permitted where there is a separate meter (or group of meters) that covers the entire energy use associated with the car park, but does not cover any other aspect of the building's central services energy use that must be included in the assessment.

b) Where lease documents assign a proportion of the measured car park energy use, then the share(s) specified in the documentation must be used in the assessment.

c) If no specific allocation of the energy use is given to office tenant(s) in lease documentation, the relevant proportion is calculated by dividing the number of parking spaces allocated to office tenants by the total number of parking spaces.

Where pass cards or keys have been issued to tenants, the number of parking spaces allocated to office tenants is the greater of:

1) The number of physically dedicated parking spaces, and
2) The number of pass cards or keys issued (to a limit of the total number of parking spaces).

Dedicated parking space, pass or key allocation data must be sourced from the lease documentation.

d) If there is no lease documentation available, then it is acceptable to determine the proportions by obtaining documentation signed by tenants that identifies the proportion of allocation.

e) If there is no documentation and tenants are unable to identify proportions, then all of the energy use associated with the car park must be included in the assessment.

f) Regardless of the method used to proportion the energy use, the maximum that can be excluded is 100% of the measured car park energy usage.

The **Accredited Assessor** must fully document both the method and all data used to proportion car park energy usage.

Note: Where no spaces are provided to office tenants as a benefit of their tenancy and there is no car park energy use assigned to the Base Building in lease documentation then the proportion that can be excluded is 100%.

7.3.5.4 Standard for acceptable data

Compliance with this section on car parks is deemed to satisfy the accuracy requirements of Section 3.3.

7.4 On-site generation

7.4.1 Cogeneration and trigeneration systems

Please refer to the separate *NABERSNZ Ruling – Thermal Energy Exclusions* which is available on the NABERSNZ website: www.nabernz.govt.nz or contact the **Administrator** for further information.

7.4.2 Other on-site generation systems

Where energy is generated for use in the **rated premises** and is either:

a) Connected on the user side of the consumption meter which records the relevant external energy supply to the premises, or

b) Used on site independently of utility-supplied systems,

it will reduce the amount of utility-supplied energy required. As such, on-site energy generation must not be included in the external sources as defined in the *NABERSNZ Rules – Energy and Water for Offices*. This will most likely result in an improved rating when low-emission or renewable energy technologies are used. No adjustment is required, which means that energy utility billing data must be used without modification.

Electricity generated on-site but exported to an **external user** (such as a nearby building or the electricity grid) does not improve the energy performance of the **rated premises**. The exported energy must not be subtracted from the utility-supplied consumption as it has no impact on the energy consumption of the premises being rated.

On-site energy generation can only be used where it is directly connected to the premises being rated. This means that the **Accredited Assessor** cannot apportion on-site energy generation among the various electricity accounts, meters, or users.

Externally supplied energy sources (such as gas, fuel oil, or electricity used by heat pumps) used to generate on-site energy must be included within the energy assessment. If on-site energy generation is for off-site use, the externally supplied energy sources can be excluded.

8 Minimum water coverage

8.1 Summary

Correctly interpreting the scope of water supply and consumption data is essential to the accuracy of a NABERSNZ Water for Offices rating. The key principles are as follows:

a) An assessment for an certified rating must include all sources of external water supplied to the **rated premises**, and must cover all of the water **end uses** specified in Section 8.2. This includes externally supplied recycled water sources, whether potable or not.

b) Externally supplied recycled water sources are excluded from the calculation of the NABERSNZ Water for Offices rating, as they would bias the assessment towards a more favourable result. However, they are included in the site's reported total consumption data to aid understanding of the site's **end use** efficiency (as opposed to its source efficiency).

c) **Utility** and **non-utility metering systems** that meet the requirements of Chapter 9 may be used in any combination to achieve the required coverage, subject to the accuracy requirements of Section 3.3.

For documentation requirements, see Section 11.6.

8.2 Minimum water coverage

8.2.1 General

The **Accredited Assessor** must ensure that all the required energy **end uses** as listed in this chapter are covered by the sources and supply points identified. A thorough site inspection must be conducted.

If an **end use** is required to be included in the rating but is not covered by one of the supply points identified, then the **Accredited Assessor** must use one of the alternative allowable methods to ensure the minimum energy coverage requirements can be met (see Chapter 10).

The required minimum water coverage is all the water uses within the building used to support the office during the **rating period**. This includes water use in:

a) Taps and sinks,

b) Air conditioning and other Base Building services (e.g. general cleaning, façade cleaning, etc),

c) All services supplied exclusively to office occupants, such as showers, swimming pools, etc,

d) Fire services in accordance with Section 8.2.4,

e) Water features and irrigation associated with the office building (including areas outside the building not considered **rentable area**, but within site boundaries), unless primarily associated with non-office facilities such as retail spaces, and

f) Toilets and washing facilities servicing office areas.

For documentation requirements, see Section 11.6.1.

8.2.2 Unmetered sources

Premises with consumption of water from un-metered sources (e.g. river, bore or well water) for **end uses** other than fire systems cannot be rated until metering compliant with the **Rules** has been installed and 12 months of **acceptable data** has been obtained.

For documentation requirements, see Section 11.6.2.

8.2.3 Water consumption in excluded spaces

8.2.3.1 General

Any exclusion must only cover the specific item being excluded. This means that every item to be excluded must be assessed separately, and the justification for its exclusion included in the documentation.

8.2.3.2 Spaces for the exclusive use of tenants

Any space for the exclusive use of office tenants is considered part of office **rated premises**, and the water used in any such spaces must be included in the rating. This rule applies regardless of whether that space is included in or excluded from the **rated area** calculation.

8.2.3.3 Other spaces

Water use associated with spaces that are:

a) *Not* for the exclusive use of office tenants, and

b) *Not* included in the **rated area** calculation,

May be excluded from the water coverage if the exclusions meet the requirements of Chapter 9 as appropriate.

8.2.3.4 Unoccupied spaces

The water use (within the scope of the required minimum water coverage of the rating) of unoccupied office spaces must always be included, even though the space may have been excluded from or discounted in the **rated area** calculation.

8.2.4 Fire system water consumption

Water consumption from the operation of a building's fire system, whether consumed in an emergency or during testing, is considered a cost of operating a building and must be included in the calculation of water consumption if it is metered. If it is not metered, fire system consumption need not be included.

Note: Metered fire system consumption that is re-used within the building will tend to improve the rating.

8.2.5 Exclusions

Water use may only be excluded from a rating if:

a) The water is not part of the minimum required water coverage of the rating, and

b) There is a methodology within the **Rules** that permits the exclusion, and

c) The coverage, accuracy and **validation** requirements for the metering of the exclusion are met.

The metering for any exclusion must not include any **end uses** that are required under the minimum water coverage.

8.3 On-site capture and recycling

Where water is collected or recycled at the **rated premises** (e.g. by rainwater harvesting or treatment of on-site waste water), it can be considered a water efficiency measure.

When such capturing/recycling is either:

a) Connected on the user side of the meter which records the relevant external water supply to the premises, or

b) Used on site independently of utility-supplied systems,

A better rating can be expected. No modification of external water source data is required in this situation.

Water exported from the premises cannot be discounted against water used within the premises under any circumstances.

For documentation requirements, see Section 11.6.3.

9 Metering systems

9.1 Summary

This chapter focuses on the accuracy and correctness of **metering systems** which provide data to be used in rating assessments.

For documentation requirements, see Section 11.7.

9.2 High-voltage electrical metering

NABERSNZ Energy for Offices ratings are based on low-voltage (LV) metering.

If a building's main electricity **utility meters** are situated on the high voltage (HV) side of the transformers for the site, it is acceptable to use **non-utility meters** on the low voltage (LV) side as the basis for the energy use measurements, if:

a) Those meters satisfy the requirements of Section 10.2 and Section 10.6, and the accuracy and **validation** requirements of Section 9.4 and Section 10.6, and

b) There are no connections to energy uses within or outside the premises that bypass the LV meters. The LV meters must cover 100% of the electricity **end uses**.

The **Accredited Assessor** must reconcile the LV meters against the HV meters to ensure that no meters are missing or reading incorrectly. Virtual meters (Section 9.3.2.5) cannot be used in this reconciliation.

As a guideline, transformer losses are expected to be less than 10%. Losses above this figure must be re-investigated to find the source of the discrepancy and to ensure the losses are not caused by unaccounted power used by the premises.

The **Accredited Assessor** may use values above 10% losses if they have obtained evidence that the losses are not from electricity used by the premises. The HV metering is to be used in absence of this evidence.

The high-voltage **utility metering system** must be used in the absence of non-utility low-voltage meters which comply with these rules. No allowance is made for losses in this situation.

For documentation requirements, see Section 11.7.1.

9.3 Confirmation of metering systems

9.3.1 General

Data from **utility metering systems** is to be used in preference to data from **non-utility metering systems**.

Utility metering systems do not need to be validated for a NABERSNZ rating. Data from **utility metering systems** can be used for inclusions or exclusions, regardless of whether they are non-cumulative or cumulative.

For documentation requirements, see Section 11.7.2.

9.3.2 Types of non-utility meters

9.3.2.1 General

The following sections outline the different types of non-utility meters and how data from these meters can be treated for the purpose of a NABERSNZ rating.

9.3.2.2 Cumulative meters

Cumulative **metering systems**, for the purposes of NABERSNZ, have a permanent counting mechanism which accumulates consumption data.

Data from these meters, when used as non-utility meters, can be used for allowable inclusions or exclusions in a NABERSNZ rating.

Non-utility metering systems relying solely on records created from pulse readings are considered cumulative if the pulse meter has a counting mechanism to permanently store accumulated consumption data (otherwise known as an absolute count rather than a pulse to an external device).

9.3.2.3 Non-cumulative meters

Non-cumulative non-utility meters are meters which do not meet the definition of cumulative meters.

Data from non-cumulative meters must not be adjusted to fill in missing data.

When using data from these meters for an inclusion, the following rules apply:

a) The data must be reconciled against an energy or water balance from a parent **utility metering system**; and

b) Virtual meters must not be used in this reconciliation.

If the data from these meters cannot be confirmed to be 100% complete using the above rules (e.g. full interval data is available), then the data must only be used for exclusions.

9.3.2.4 ‘Soft’ meters or equipment sensors

‘Soft’ meters or equipment sensors include sensors, fan speeds and data output from variable speed drives. Readings from these meters must convert detected current, phase, and voltage into an energy reading (measured in kWh). This data is only considered **acceptable data** for exclusions in a NABERSNZ rating.

Readings calculated from current and voltage only (apparent power) or sensor data such as fan speeds are unacceptable. Energy readings that are based on intermittent instantaneous power measurements rather than integrated power are also unacceptable.

9.3.2.5 Virtual meters

Virtual meters are effectively not physical meters. Virtual meters refer to calculating consumption data, typically by subtracting the data of one meter from another to obtain the difference. They may also include a sum of smaller meters downstream to create a virtual meter.

Virtual meters cannot be used where an energy and/or water balance against a parent **utility metering system** is required. This includes:

a) Non-cumulative **non-utility metering systems**, where the data is used for inclusions;

b) High-voltage meters.

All **non-utility metering systems** used for virtual meter calculations must be validated in accordance with these rules.

Note: For premises with a very large number of virtual meters, there are certain situations where entry of individual virtual meters into the NABERSNZ **Online Rating Calculator** form may not necessary. Advice should be sought from the **Administrator** to confirm if these situations apply to your premises.

9.4 Non-utility metering system validation

9.4.1 Summary

This section deals with **non-utility metering systems** that have been used to calculate consumption and provides guidance on validating these systems.

Note: **Validation** is required for **non-utility metering systems** due to the potential for issues with software and/or hardware configuration that can directly influence the measurement of energy consumption. Common problems include incorrect wiring of the meter and incorrect meter multipliers (CT ratios). **Remote Meter Reading Systems (RMRS)**, such as a Building Management System (BMS), can vary significantly in how they interpret the measured consumption of a **non-utility metering system**.

The **Accredited Assessor** must comply with the following process to validate **non-utility metering systems** for the rating as defined in **Table 9.1**.

Table 9.1: Process to calculate validation in non-utility metering systems

Sub-Step		Reference
1	If data from **non-utility metering systems** is included in a NABERSNZ rating, then the **Accredited Assessor** must check if these meters need to be validated.	Section 9.4
2	If the meters need to be validated, then the **Accredited Assessor** must ensure that all **metering systems** are properly recorded and validated according to these rules.	Section 9.5
3	If adjustment is required for **non-utility metering systems** as a result of **validation** checks, the **Accredited Assessor** must investigate whether the correct values can be calculated (not estimated).	Section 9.6

9.4.2 Metering systems requiring validation

9.4.2.1 General

The **Accredited Assessor** must check that all necessary **validation** (and correction of data where required) is complete.

All **non-utility metering systems** require **validation** if they include:

a) A meter with a current transformer (CT) (even where the CT ratios are applied internally to the meter face readings); or

b) A gas meter; or

c) A **Remote Meter Reading System (RMRS)** (including an interface to a Building Management System (BMS) used to transmit meter data).

Note: Whilst not required for a rating, NABERSNZ recommends **validation** of:

a) Direct connect meters with no **RMRS**, and

b) Pulse meters with no **RMRS**.

Water meters do not have to be validated unless they are connected to an **RMRS**. In this case, only the **RMRS** needs to be validated. For requirements for **RMRS**s, see Section 9.5.4.

It cannot be assumed that newly installed **non-utility metering systems** have been validated. Evidence of **validation** must be obtained by the **Accredited Assessor**.

9.4.2.2 Non-utility metering systems with CTs

All **non-utility metering systems** (inclusions or exclusions) with CTs require **validation** (and adjustment, if necessary) by a licensed electrician or electrical engineer. This is to ensure that the CT ratio (meter multiplication factor) and wiring are correctly configured and, where applicable, programmed into the meter.

For **validation** requirements relating to **non-utility metering systems** with CTs, see Section 9.5.2.

9.4.2.3 Meters in embedded networks

An owner of a premises may install, own, and manage the meters in an **embedded network**. Where the owner of the premises is able to provide evidence that they are licensed as an electricity retailer, they are deemed to be a **utility** for NABERSNZ purposes. In such cases, meter **validation** is not required.

Where the owner does not hold a license or exemption, the owner is not considered a **utility** and NABERSNZ requires the **Accredited Assessor** to check these meters against the NABERSNZ meter **validation** requirements.

The **Administrator** must be contacted if other arrangements are encountered or there is any uncertainty regarding assessment.

For documentation requirements see Section 11.7.3.

9.4.3 Validation frequency for all metering

If **validation** of **non-utility metering systems** is required, the **Accredited Assessor** must randomly select at least 10% of the following types to be validated each year:

a) Meters with a Current Transformer (CT);

b) Gas meters; and

c) Meters connected to a **Remote Meter Reading System (RMRS).**

The **Accredited Assessor** must not select a non-utility meter that has previously been validated within the last 10 years if:

a) The **Accredited Assessor** has conducted a rating on the premises previously, or

b) Information on previous meter **validation** is available.

Where a **non-utility metering system** requires adjustment, see Section 9.6.

For **co-assess** rating applications, the requirements apply across the whole application, and not to each individual rating.

For documentation requirements, see Section 11.7.4.

9.4.4 Standard for acceptable evidence

The **Accredited Assessor** may only accept evidence of **validation** of a **non-utility metering system** in the form of a certificate of currency or other written evidence that:

a) Confirms that a **metering system** requiring **validation** has been checked in accordance with this Chapter, and found to be correctly recording consumption; and

b) Confirms that the check took place within the last 10 years; and

c) Applies to the present condition and configuration of the **metering system** without any alteration; and

d) Provides details of the **validation** performed.

Note: Examples of acceptable validation records are included in Appendix D.

9.5 Validation requirements of metering systems

9.5.1 General

All **metering systems** requiring **validation** must be checked, and if necessary adjusted and then checked again, as specified in this section and in Appendix D.

If a **metering system** requires adjustment then this must be done by appropriately qualified and licensed persons according to the applicable standards and procedures for the equipment.

For documentation requirements, see Section 11.7.4.

9.5.2 Non-utility metering systems – Electricity

9.5.2.1 General

For electrical **metering systems**, the **Accredited Assessor** must determine if the meters used in the assessment are 'whole current' (direct connect) where all the electricity flows through the meter, or current transformer (CT) meters where the transformer reduces the current flow through the meter by a defined ratio.

Note: CT ratios are expressed as a ratio of the primary current to the secondary current. For example, a ratio of 300:5 means that when 300 amps flows through the CT then 5 amps flows through the meter. If the meter does not have the ability to program this ratio through some configuration, then the meter reading would need to be multiplied by this ratio to arrive at the actual consumption recorded by the meter.

This ratio is also known as the meter multiplier, meter factor or K factor. In the case of a CT ratio of 300:5, the multiplier or K factor would be 60. As a note all CTs have a ratio of the 'value':5 with the 'value' generally indicating the maximum current for the circuit that is metered.

9.5.2.2 Manually read whole current meters

Validation of manually read whole current (direct connect) meters without CTs is not required for NABERSNZ.

9.5.2.3 Checking the Current Transformer (CT) ratio and meter wiring

For CT meters, the **Accredited Assessor** must record the CT ratio and verify that the meter and the CTs for the following issues.

A qualified and licenced electrician must be engaged to cross check the wiring of the meter and the CTs for the following issues:

a) CTs not connected;

b) Reverse CT connection errors, which will significantly reduce the recorded consumption;

c) Cross phase CT connection errors, where CTs are not matched to the same phase voltage;

d) Phase sequence connection errors;

e) Faulty or missing potential fuses, which can significantly reduce the recorded consumption and may cause failure of the meter.

Where the CT ratio is not programmed into the meter, it must be verified that the CT ratio has been correctly applied to the meter readings to arrive at the actual consumption.

Where the CT ratio is programmed into the meter and an additional multiplier does not need to be applied to output of the meter, the meter programming must be reviewed, and the internal ratio recorded. Any discrepancy between the internally programmed ratio and the physical CT ratio must be treated as an installation error. Where a multiplier used within the meter can be reviewed, the figure should be photographed on the meter face and attached to the meter **validation** form for evidence (see Appendix D).

Where the meter's internal ratio is not able to be reviewed, a licensed electrician should verify the meter programming indirectly. This can be done via measurement with a handheld power meter or equivalent.

When undertaking this check, the electrician should record the load current on each phase and the corresponding meter current on each phase. Discrepancies between the readings on respective phases indicate that the internal ratio has not been programmed correctly and thus must be treated as an installation error.

Where the reading from the meter face does need to be multiplied by the CT ratio to calculate the true consumption, the CT ratio or multiplier that is required to convert the meter reading to kWh should be recorded.

Where it is not possible to identify the CT ratio, a qualified electrician can use a power meter to confirm the required multiplier by measuring the actual current flow through the circuit being metered and the corresponding phase to the meter. The following calculation can then be used to determine the CT ratio and the multiplier to be applied to the meter face reading:

$$\text{The CT ratio ('value':5)} = \frac{\text{measured circuit amps (e.g. 120 amps)}}{\text{measured meter amps (e.g. 2 amps)}} \times 5\text{:}5$$

$$= 300\text{:}5$$

$$\Rightarrow \text{A meter multiplier of 60 is required to convert the meter face reading to actual kWh consumption}$$

9.5.2.4 Validating cloud metering

If the **metering system** does not have self-identifying CTs then the CT ratio and wiring need to be confirmed as per a normal CT meter (see Section 9.5.2.3).

If the system has self-identifying CTs (i.e. where the CTs have high level communications with the **cloud metering system** rather than a wire) then CT ratio **validation** is not required, and the **Accredited Assessor** should enter this into the NABERSNZ **Online Rating Calculator** as having no CT ratio.

For wireless CTs, a check must be performed to confirm that the CTs:

a) have been correctly identified with the **end use**, and

b) the voltage and current measurement correspond to the **end use**.

It must be confirmed that the system has both voltage and current measurement within the same distribution board as the CTs, separately for each phase.

9.5.2.5 Checking meters in place to avoid shutdown

Where electrical wiring and CTs cannot be accessed without a partial or complete shutdown of the electrical network, a qualified and licenced electrician must be engaged to perform the **validation** as per Section 9.5.2.3.

The engaged electrician must verify that each **non-utility metering system** has been properly installed, is functioning correctly and is being interpreted correctly. They must also fill out the NABERSNZ **validation** record for electrical **non-utility metering systems** (see Appendix D).

Acceptable methods for verification can include (but are not limited to):

a) Use of a portable power meter to record consumption of the metered circuit over a period of time; and,

b) Use of a clamp-on ammeter or similar device to identify the average current in the circuit being metered.

The CT ratio and meter multiplier programmed in the **non-utility metering system** must also be recorded in the NABERSNZ **validation** record.

Note: If a qualified and licenced electrician is unable to undertake this check, guidance should be sought from the **Administrator.**

9.5.3 Non-utility metering systems – Gas

All non-utility gas meters require **validation** (and adjustment if necessary), by a competent person with an understanding of gas meters. This ensures that the pressure correction factor corrects the measured volume of the **non-utility metering system** to the same pressure conditions used by the **utility metering system**.

Where the pressure factor cannot be physically tested or there is no data available for the meter pressure and the correction factor cannot be determined, the following values can be used:

a) Inclusion meters: **utility metering system** pressure correction factor;

b) Exclusion meters: 1.

Record the meter pressure and the correction factor required to adjust the reading to m^3 under standard pressure. This data can be collected from the **non-utility metering system** and compared with the **utility metering system** or obtained from the gas supplier.

Note: **Validation** of the gas meter includes measuring the gas pressure at the meter to calculate the pressure correction factor. The pressure correction factor is used to adjust the volume of gas by the amount it has been compressed to accurately calculate the energy content.

$$\text{Pressure Correction Factor} = \frac{\text{Measured pressure (absolute)}}{\text{Atmospheric pressure}}$$

The meter pressure and pressure correction factor must be recorded for non-utility gas meter inclusions.

All readings and any adjustments must be documented using the meter **validation** template in Appendix D.

9.5.4 Remote Meter Reading Systems

Note: **Remote Meter Reading Systems (RMRS)** are used to read the meters from a remote location. They are used to simplify the reading process or because of accessibility issues with manually reading a meter. **RMRS** are common for electricity, gas and water metering.

The **RMRS** can record the consumption of the meter through a pulse output or through a protocol that directly reads the meter register. The connection to the meter can be through a hard-wired, wireless or radio frequency connection.

Most remote gas and water reading systems use pulse output type meters, either hard-wired or via radio frequency transmitters. Electricity meters use a combination of pulse output and direct reading of the meter consumption.

The **RMRS** can be part of an existing Building Management System (BMS) or a dedicated system.

All **Remote Meter Reading Systems (RMRS)** connected to **non-utility metering systems** require **validation** to ensure the final consumption amount is correct. This must be conducted by a competent person with an understanding of the meters and the **RMRS** to ensure the meter data is correctly interpreted. At minimum, the person must:

a) Confirm that a unit of consumption on the **RMRS** corresponds to a unit of meter readings as measured at the meter; and

b) Take a minimum of two readings at different time periods and document the results. For each time period, a reading from both the **non-utility metering system** and the corresponding **RMRS** is to be taken simultaneously.

c) For **RMRS** used for counting pulses from a meter:

   1) If an on-board counting device is present, the **RMRS** and the on-board counting device must be read during the site inspection. The consumption on the meter face must be shown to correlate to the accumulated pulse counting on the **RMRS** over the same period.

   2) If an on-board counting device is not present, the **RMRS** and the **metering system** must be read during the site inspection. Interval data taken from the **metering system** must be shown to correlate to the pulse counting on the **RMRS**.

Note: For **RMRS** used for counting pulses from a meter without an onboard counting mechanism, it is considered good practice to undertake a **validation** check multiple times over the course of a **rating period** to ensure the system is operating correctly.

All readings and any adjustments must be documented using the meter **validation** templates in Appendix D.

If there is little or no consumption during the testing period, the time for taking the second reading should be extended until reasonable consumption is recorded.

Where the results identify a discrepancy between the **non-utility metering system** and the **RMRS**, the **RMRS** must be adjusted and at least two more readings taken to confirm the consumption measurement is the same.

Note: It is considered good practice to validate a **metering system** at the start of a **rating period** to ensure the data generated in the rating period is valid.

9.6 Adjustments resulting from validation checks

9.6.1 General

Where a **non-utility metering system** has been found to require adjustment as a result of **validation** checks, the **Accredited Assessor** must investigate the type of fault found and the consumption data available. The investigation will determine whether it is possible to accurately calculate (not estimate) the correct values for the consumption data from the **non-utility metering system**.

9.6.2 Assessments where adjustment is needed

If adjustment is found to be needed, the following requirements apply:

a) All **metering systems** that have never been validated, or have no proof of being validated, must be validated so as to ensure that correct data is collected in the 12-month period before the next NABERSNZ Energy or Water rating. In this case, the **Accredited Assessor** cannot follow the schedule in Section 9.4.3.

b) The **Accredited Assessor** must determine any correction to be applied to the data collected from the **metering systems** which are found to be incorrect; otherwise the data from the meter cannot be used and the rating cannot proceed.

All adjustments to **metering systems** must be done by appropriately qualified and licensed persons according to the applicable standards and procedures that apply within that jurisdiction for the equipment.

The rating can proceed where the **Accredited Assessor** can calculate the correct values for the consumption data. The rating application must include full documentation of the error found, the incorrect records from the **metering system**, and the calculations used to correct the data for audit.

In the absence of any other evidence, a correction must be based on the assumption that the error in the **metering system** is applied to all data collected for the current rating assessment.

Example: If the CT ratio for an electricity meter was out by a factor of +20%, the overall electricity consumption data for that meter must be corrected by -20%. Similarly, if the CT wiring of an electricity meter was incorrect but the consumption for each phase was recorded by the meter, this can be used to reconstruct the actual consumption and the reconstructed data can be used as **acceptable data**.

However, consumption data cannot be reconstructed if the CT wiring of an electricity meter was incorrect and the meter also did not record the energy consumption for each phase.

9.6.3 Assessments where corrections cannot be made

Where it is not possible to calculate the correct values from incorrect **metering system** data, then the following rules apply:

a) If the consumption measured by the incorrect **metering system** was to be excluded from the assessment, the rating can proceed but the consumption must be included in the rating (to ensure a conservative result).

b) If the consumption measured by the incorrect **metering system** was to be included in the assessment, then the procedure in Section 10.3.4 may be used to estimate the worst-case consumption for the **end uses** covered by the incorrect **metering system**. However, if the estimate does not comply with the requirements of Section 3.3, the rating cannot proceed, and the premises cannot be rated until 12 months of accurate data has been obtained.

For documentation requirements, see Section 11.7.5.

10 Consumption data

10.1 Summary

This chapter deals with the measurement, processing and use of data on energy and water consumption. It includes provisions to allow **acceptable estimates** to be made and used in limited circumstances when actual measurements are not available.

For documentation requirements, see Section 11.8.

10.2 Measuring consumption

10.2.1 Process overview

When determining energy and water consumption, the **Accredited Assessor** must comply with the following processes in **Table 10.1** and **Table 10.2** respectively:

Table 10.1: Process for NABERSNZ Energy for Offices ratings

	Step	Reference
1	Confirm all energy sources entering the site	Section 10.2.2
2	Assess the accuracy of the assumptions for each source	Section 10.2.3
3	Determine energy consumption	Section 10.2.4

Table 10.2: Process for NABERSNZ Water for Offices ratings

	Step	Reference
1	Confirm all water sources entering the site	Section 10.2.2
2	Assess the accuracy of the assumptions for each source	Section 10.2.3
3	Determine water consumption	Section 10.2.5
4	Determine the characteristics of externally supplied recycled sources	Section 10.2.6

10.2.2 Confirm all sources

10.2.2.1 General

The **Accredited Assessor** must identify all energy and/or water sources and supply points to the premises. A thorough site inspection must be conducted in order to ensure that all instances of energy and/or water have been considered in the **Accredited Assessor's** analysis for the rating.

Notes and photos must be kept as evidence of the inspection. All of the following steps must be taken to ensure that no instances of energy and/or water have been missed:

a) Ask the building manager/facilities manager to identify all the energy and/or water sources and associated accounts for the premises, including batch-delivered supplies and recycled water.

b) Review service drawings, where available, to identify all supply points (e.g. single line diagrams, electrical circuit schedules and water reticulation diagrams).

c) Review the premises (including plant rooms and switchboards) to check all equipment requiring different types of energy and/or water supply is covered by the identified supply points (e.g. electricity, gas, diesel, potable water, recycled water).

d) Review the premises to check for any unmetered sources of water and/or energy to the premises.

e) Ask building managers/facilities managers to identify all the services on site that may be shared with other premises, and the energy and/or water supplies and associated accounts for those services.

f) Collect all details of **end uses**, sources and meters relevant to the inspection.

The **Accredited Assessor** must also undertake the following checks (Sections 10.2.2.2 and 10.2.2.3), where relevant, of all sources and supply points.

For documentation requirements, see Section 11.8.1.

10.2.2.2 Checks of sources and supply points – Base Building ratings

All tenant meters must initially be considered as sources to the Base Building. They must only be excluded in accordance with these rules. Tenant distribution boards must be reviewed to ensure that none of the Base Building **end uses** have been connected. Instances of connected Base Building power and lighting might include cleaner's power points, lifts or lobby lighting on whole floor tenancies.

The **Accredited Assessor** must check all **end uses** to be included for the rating. This includes **end uses** that are located in spaces not included in the **rated area** calculation.

10.2.2.3 Checks of sources and supply points – Tenancy ratings

Base Building distribution boards must be identified and reviewed to ensure none of the Tenancy **end uses** have been connected.

The **Accredited Assessor** must check if a Tenancy has been supplied with any energy from the following:

a) Tenant meters on other floors;

b) Meters in the main switch room;

c) Uninterruptable Power Supply (UPS) or essential power systems on other floors;

d) Renewable power from an on-site renewable energy system.

If there is any energy from sources listed in a) to e) above, then this energy must be included in the rating.

The **Accredited Assessor** must check all **end uses** to be included for the rating. This includes **end uses** that are located in spaces not included in the **rated area** calculation.

10.2.3 Assess the accuracy of the assumptions for each source

a) Check if any of the bills for that source were estimated.

The total of all estimated bills used in NABERSNZ Energy for Offices ratings must be added to the **potential error** for energy. Estimated bills may not be used for NABERSNZ Water for Offices ratings.

b) Check whether the source includes any non-utility meters for inclusion or exclusion of energy or water.

If non-utility meters are used in the assessment, the **Accredited Assessor** must check that all necessary **validation** (and correction of data, if applicable) has been carried out as specified in Section 9.4, Section 9.5 and Section 9.6.

Note: If a non-utility meter has been found to require adjustment and acceptable corrected data or estimates cannot be obtained for the relevant consumption over the entire **rating period**, then the rating cannot proceed.

c) Check if any other assumptions were made about consumption.

If they were, the **Accredited Assessor** must calculate the total amount of consumption affected by each assumption, and add it to the relevant **potential error**.

d) For the rating to be permitted, the total **potential error** must not exceed the limits given in Section 3.3.

10.2.4 Determine energy consumption (NABERSNZ Energy ratings)

a) Check the data format and units for each energy source, and if necessary convert to units compatible with NABERSNZ Energy for Offices input formats as specified in Sections 10.5.2 and 10.5.3.

b) Check whether any fuel was batch-delivered.

Where fuel was batch-delivered, calculate the energy consumption using the method specified in Section 10.4.

c) For each source, ensure that acceptable energy use data is available to cover the 12 months of the **rating period**.

d) If necessary, adjust for missing data and the first bills to match the **rating period** as specified in Section 10.7.1 and Section 10.8. If **acceptable data** is not available to cover the **rating period**, the premises cannot be rated.

10.2.5 Determine water consumption (NABERSNZ Water ratings)

a) Confirm the data format and units for each water source, and if necessary convert to units compatible with NABERSNZ Water input formats.

b) Check that the data is from meter readings or capacity measurements for batch deliveries, and does not rely on estimates by the supplier.

   If the bill is not based on actual measurements, actual measurements must be sought. Estimated consumption figures are unacceptable.

c) For each source, ensure that acceptable water use data is available to cover the 12 months of the **rating period**.

   1) If necessary, allow for missing data.

   2) If **acceptable data** is not available to cover the **rating period**, the premises cannot be rated.

10.2.6 Determine recycled water characteristics (NABERSNZ Water ratings)

a) Check whether the source contains any non-recycled components.

b) If it does not, the entire source can be counted as recycled.

   1) If there is a known non-recycled component, only the remainder may be treated as being recycled.

   2) If there is an unknown non-recycled component, the entire source must be treated as non-recycled.

10.3 Including or excluding consumption

10.3.1 General

The energy or water consumption measured for an assessment must include the relevant minimum **end uses** identified in Section 7.2 and Section 8.2.

In achieving this, only the following methods of measurement for inclusion and exclusion are permitted:

a) Use of a **utility meter**;

b) Use of a non-utility meter meeting the requirements of Section 9.4;

c) Batch delivery supply bills in which the supplier states the quantity supplied;

d) Any combination of inclusion or exclusion of the above three items;

e) Exclusions as described in Section 10.3.2;

f) Energy exclusions as described in Section 10.3.3 (not permitted for NABERSNZ Water for Offices ratings);

g) Data and estimates as described in Section 10.3.4;

h) Data and estimates as described in Section 10.3.5;

i) Data and estimates as described in Section 10.4.

10.3.2 Exclusions based on financially reconciled utility costs

10.3.2.1 General

The **Accredited Assessor** may estimate the consumption for the **end uses** outside the coverage by applying the fixed proportion to the metered consumption if the following applies:

a) A **utility meter** measures the aggregate consumption for a variety of water or energy **end uses**, some inside the coverage of a rating but others outside it; and

b) **Non-utility metering systems** which only measure those **end uses** inside or those outside the scope of coverage are not present; and

c) The **utility** costs associated with the meter are allocated to the various **end uses** according to a fixed proportion of the meter readings, as specified in Section 10.3.2.2 below.

The estimated consumption may be excluded from the assessment if it is added to the relevant **potential error**. The estimated consumption may be *reduced* to meet the **potential error** requirements; however, an estimate must not be increased under any circumstances.

10.3.2.2 Determining the fixed proportion

If **Owner/Tenant Agreement (OTA)** documentation allocates a proportion of the relevant energy and/or water use, then this proportion must be used in calculating the exclusion. Otherwise, it is acceptable to determine the proportion from documentation, signed by the parties affected by the **end uses** in question. Such documentation must identify:

a) The **end use**,

b) The meter to which it applies, and

c) The proportion of allocation.

If the fixed proportion cannot be determined from acceptable documentation, then no exclusion is allowed and the entire consumption measured by the meter(s) covering the **end uses** in question must be included in the assessment.

10.3.3 Energy exclusions based on area weighting

The following requirements can only be used for office energy ratings. It cannot be used for office water ratings.

If an energy **end use** within a space could be excluded but is not adequately sub-metered, the **Accredited Assessor** may estimate the consumption within that space by undertaking the following:

a) Taking the ratio of the floor area of the excludable space to the total floor area served by the relevant meter (ignoring all spaces not included in office **rentable area**); and

b) Applying the ratio to the total consumption measured by the meter(s).

Note: In the total floor area calculation, the **Accredited Assessor** can choose to ignore spaces not included in office **rentable area**. This is to prevent unnecessary measurement for an estimate which must already fit within the **potential error**.

The **Accredited Assessor** may then exclude the estimated consumption, provided that:

a) The **Accredited Assessor** clearly explains the calculation method used and assumptions made in the submitted documentation, and

b) The **Accredited Assessor** adds the estimated consumption to the relevant **potential error**.

If these requirements are not met then the energy **end use** within the space cannot be excluded.

This method can be used for small retail spaces on the ground floor and for small educational or medical spaces.

10.3.4 Including small un-metered electricity uses

A small amount of un-metered electricity from equipment can be included in the **acceptable estimates,** and therefore can be added to the **potential error**. This may be necessary where an un-metered item is required for inclusion under the energy coverage requirements.

This method applies to inclusions only. It must not be used for exclusions or where acceptable metered data is available for the equipment.

Large equipment or a high number of small pieces of equipment may not fit within the **potential error**. If this occurs, the rating cannot proceed until appropriate metering is installed and acceptable energy use data is available to cover the **rating period**.

Electricity use is estimated using the following procedure:

a) Identify all un-metered equipment or plant to be estimated.

b) Determine the power consumption in kW at maximum capacity from nameplate data or equipment specifications.

c) Calculate the annual hours – typically 24 hours a day. Some equipment may modify the annual hours as they are either on timers or demand-based equipment. The **Accredited Assessor** must provide full justification for any reduction in hours.

d) Determine an appropriate duty cycle based on the annual hours as determined in c) for the equipment suitable specifications or records.

e) Estimate the annual energy use as:

Energy use (kWh) = nameplate power (kW) x Duty cycle (%) x annual hours (h)

10.3.5 Thermal energy measurements

Some buildings export or import energy by means such as thermal-energy-in-water systems. An example is chilled water being pumped from one building to another.

These systems are complex, and it is difficult to:

a) Measure the thermal energy in the water,

b) Relate that back to energy input to the thermal plant, and then

c) Calculate the benchmarking score.

Note: The benchmarking score is calculated by the NABERSNZ **Online Rating 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.

Due to this complexity and because such systems are uncommon, they are treated in a separate document to these **Rules** entitled *NABERSNZ Energy for Offices – Ruling for Thermal Energy Exclusions*.

For documentation requirements, see Section 11.8.2.

10.4 Batch-delivered supplies

10.4.1 Real consumption measurement

Energy or water supplies delivered in batches, such as diesel fuel, bottled gas, coal, or tank-delivered water, must be included within an assessment if they are within the scope defined for the rating.

Quantity data for batch deliveries must be taken from supplier invoices or similar documentation, or from measurement systems (such as meters, scales or unit counting) at the point of delivery.

To ensure that all applicable deliveries during the **rating period** are included in the assessment for a rating, the **Accredited Assessor** must identify the supervisors or managers responsible for each batch-delivered source and obtain the following:

a) A written statement of what deliveries were received during the **rating period**, or, if applicable, a statement that there were no deliveries; and

b) Copies of the bill(s) from suppliers, showing the details of the deliveries; and

c) Descriptions of the measurement and/or methods used.

If all the bills are available, then the total consumption from the bills can be used in the rating.

Note: A single bill is adequate to establish the energy or water supplied by batch to a premises.

For documentation requirements, see Section 11.8.3.

10.4.2 Calculating an alternative measurement

Where real consumption measurements cannot be determined as per Section 10.4.1, an alternative estimate must be calculated for the quantity of a batch-delivered supply from capacity measurements of storage.

Alternative estimates can be determined through the use of a dip-stick, sight gauges or other methods.

The **Accredited Assessor** must ensure that all commissioned tanks servicing the **rated premises** are included in the following measurements, including reserve tanks.

For the purposes of a rating, the order of preference is:

a) One reading taken at the beginning of the billing period and one reading taken at the end of the billing period, covering a continuous 365-day period, and displaced by no more than two months from the **rating period**, and calculating the difference between the two readings in order to determine the alternative estimate.

b) One reading may be taken at the end of the **rating period** and calculating the difference between the total tank capacity and the reading to determine the alternative estimate.

c) The total capacity of the tanks.

10.4.3 Batch-delivered recycled water (NABERSNZ Water ratings only)

Where recycled water is delivered to storage tanks, the quantity of water must be measured at the delivery to the tank.

Note: Water measured from the discharge will potentially misallocate top-up water as recycled instead of potable.

10.4.4 Batch-delivered water for direct uses (NABERSNZ Water ratings only)

No estimates are allowed where batch-delivered water is used without being stored in a storage tank (e.g. applied directly to landscaping or used for testing or direct filling of sprinkler systems, cooling systems etc).

10.5 Consumption data from utility meters

10.5.1 General

The **Accredited Assessor** must check the data units and formats for each **utility metering system** and convert them where necessary.

Billed quantities may be provided by utilities as either hard copy utility bills or an electronic consumption record. The **Accredited Assessor** should refer to Section 10.5.2 for specific requirements on acceptable billing formats.

Some utilities provide a ‘headline’ consumption figure separately from the billed quantities. In the event of conflicting information, the billed quantities always take precedence.

For documentation requirements, see Section 11.8.4.

10.5.2 Utility units

The units of consumption that the **Accredited Assessor** should seek on utility bills are outlined in **Table 10.3**:

Table 10.3: Units of consumption for utility bills

Utility	Units
NABERSNZ Energy for Offices ratings:	
Electricity	kWh (kilowatt hours) or MWh (megawatt hours); GJ (Gigajoules)
Coal	t (tonnes)
Wood	t (tonnes)
Natural Gas	m^3 (cubic metres) at standard temperature and pressure; MJ (Megajoules) or GJ (Gigajoules)
LPG	kg (kilograms)
Fuel oil (diesel, heating oil, etc.)	L (litres)
NABERSNZ Water for Offices ratings:	
Water, all sources	kL (kilolitres) (=m^3)

Some natural gas bills do not have units listed on them. The **Accredited Assessor** must check with the **utility** what the units are and the conversion factors used.

10.5.3 Energy bill formats

Some electrical energy bills are presented in the following format:

$$\text{Total Energy} = \text{Energy (kWh)} + \text{Losses (\%)}$$

For a NABERSNZ Energy rating, the metered energy without inclusion of network losses is used.

10.5.4 Minimum frequency of bills

The frequency of meter readings should be both:

a) At least as frequent as the **utility meter's** billing frequency, and

b) At least quarterly (i.e. four readings spaced evenly throughout the year).

10.5.5 Standard for acceptable data

10.5.5.1 Stand-alone NABERSNZ Energy or Water for Offices ratings

Where it is not possible to gather data for exactly the same period for different **utility** supplies, the following provisions apply:

a) The utility bills that account for at least 80% of the rating result (in kg/m^2 or kL/m^2) must be adjusted to exactly match the **rating period**;

b) The utility bills that account for the balance of a NABERSNZ Energy rating must together cover one continuous 12-month period that is displaced from the **rating period** by no more than two months;

c) The utility bills that account for the balance of a NABERSNZ Water for Offices rating must, for each source of supply, cover a continuous 12-month period that is displaced from the **rating period** by no more than:

1) Two months for water supplies that are billed monthly or quarterly (three monthly); and

2) Four months for water supplies that are billed biannually (six monthly);

d) The last date of the most recent bill for each water source must be no more than four months before the date the application for a NABERSNZ rating is submitted. This is to avoid apportioning of the consumption data at the beginning and end of the **rating period**.

10.5.5.2 Combined NABERSNZ Energy and Water for Offices ratings

When an assessment is being undertaken for both NABERSNZ Energy and Water for Offices ratings, the same **rating period** must apply to both ratings. If it is not possible to gather utility data for exactly the same period for both ratings, the **rating period** should be the data-gathering period for the NABERSNZ Energy rating. The following provisions apply:

a) The energy utility data must meet the same criteria as given above for a stand-alone NABERSNZ Energy rating;

b) The utility data for each water source must cover a continuous 12-month period that is displaced from the **rating period** by no more than:

1) Two months for water supplies that are billed monthly or quarterly (three monthly); and

2) Four months for water supplies that are billed biannually (six monthly);

c) The last date of the most recent bill for each water source must be no more than four months before the date the application for a NABERSNZ rating is submitted.

10.5.5.3 NABERSNZ Energy co-assess ratings

When a **co-assess** rating is being undertaken, the same **rating period** must apply to all ratings. Where:

a) A Base Building rating is conducted, the Base Building **rating period** is used for all ratings.

b) No Base Building rating is conducted, the Whole Building **rating period** is used for all ratings.

c) Only Tenancy ratings are conducted, the **rating period** for the largest tenancy is used.

If it is not possible to gather data for exactly the same period for all ratings, the consumption data for each source in each rating must cover a continuous 12-month period that is displaced from the **rating period** by no more than two months.

10.5.6 Adjusting consumption data to match the rating period

Where utility bills or meter recording periods for an energy or water source do not precisely match the start and end of the **rating period**, the **Accredited Assessor** must use the following procedure to adjust the consumption data:

a) Gather all the meter records from the source needed to cover the entire **rating period**. For **utility meters**, these records will be the utility bills.

b) Order the meter records chronologically and number them from 1 to N, discarding any records that fall completely outside the **rating period**.

c) In the relevant section of the **Online Rating Calculator**, select the meter record for the source and enter the identifying data. The **Online Rating Calculator** will automatically only account the usage during the **rating period**.

d) Refer to Appendix C for details of the calculations performed.

For documentation requirements, see Section 11.8.4.

10.6 Consumption data from non-utility metering systems

10.6.1 General

Consumption data from each **non-utility metering system** must be reviewed by the **Accredited Assessor**. The **Accredited Assessor** must ensure that **acceptable data** covers one complete and continuous year, allowing for estimated and missing data as specified in Section 10.8 below.

For documentation requirements, see Section 11.8.5.

10.6.2 Check if any of the data has been estimated

Consumption from estimated **non-utility metering system** data is not considered **acceptable data** and may not be used for NABERSNZ ratings.

10.6.3 Check the data for anomalies

The **Accredited Assessor** must review the monthly or periodic data from each **non-utility metering system** over the **rating period** and scan the data for anomalies such as:

a) Meter rollovers – where the readings return to 0;

b) Meter changes;

c) Meter faults;

d) **Remote Meter Reading System (RMRS)** faults;

e) Irregular readings; or

f) Disproportionate consumption values.

In some cases, consumption may not be an estimate but may still be inaccurate. The **Accredited Assessor** must use their experience and judgement to identify any anomalies in the data (accounting for seasonal variation) and investigate any significant anomaly. Any investigation must be documented for audit.

The **Accredited Assessor** must contact the **Administrator** before proceeding if the anomaly cannot be explained as the rating may not be able to proceed.

For requirements on correcting missing data, refer to Section 10.8.

10.6.4 Minimum frequency of readings

All non-utility meters used to provide data for energy or water consumption inclusions or exclusions must have a record of readings that is:

a) At least as frequent as the **utility meter** under which the non-utility meter lies, and

b) At least quarterly (i.e. four readings with an average gap between readings of at least 10 weeks).

The **Accredited Assessor** must retain this record of readings for audit.

10.6.5 Data unit and format checks

The **Accredited Assessor** must check the data units and formats for each **non-utility metering system** and convert them where necessary.

If data from **non-utility metering systems** is included in a NABERSNZ rating, data defined in **Table 10.4** must be recorded and retained for audit:

Table 10.4: Data required for non-utility metering systems

Data required	Acceptable record or format	Unacceptable record or format
All meters		
Date and time of reading or interval	Day/month/year Time in 24-hour format (HH:MM)	Month/year; day/month; month Hour only
Meter identification	Meter number or label that can be directly cross-referenced to the single-line diagram	No identification; label not clearly identifiable on single-line diagram
Meter reading from cumulative meters	Cumulative meter reading, either direct from the meter or from the metering interface	No meter reading
Consumption data from non-cumulative meters	Consumption data with clear units and time period.	No consumption data or consumption data without clear units.
Electricity meters		
K factor (CT multiplier)	Meter K factor	No K factor
Calculated electricity reading	Calculated consumption figure in kWh, based on meter readings and k-factor	Any consumption figure that cannot be derived from the meter reading and k-factor; any figure without units
Gas meters		
Meter pressure	Meter pressure, with units	No meter pressure; no units

Data required	Acceptable record or format	Unacceptable record or format
Meter pressure correction factor for inclusions	The utility pressure correction factor	No meter pressure correction factor
Meter pressure correction factor for exclusions	Pressure correction factor of '1'*	No meter pressure correction factor
Monthly energy density	Energy density or heating value of gas (MJ/m³) from utility bill	No energy density data; no units on energy density data; energy density data not supported by evidence from utility
Calculated gas reading	Calculated gas consumption figure in MJ	Any figure that cannot be derived from the gas meter reading, pressure correction factor and monthly energy density; any figure without units
Water meters		
Meter multiplier	Meter multiplier to convert readings to kL or m³	No meter multiplier
Calculated water reading	Calculated water consumption figure in kL or m³	Any figure that cannot be derived from a meter reading or meter multiplier; any figure without units
*To ensure accuracy of calculations, it is recommended that a measured meter pressure correction factor be used where available.		

Note: Where current transformer ratios (CT ratios) are taken into account in the consumption data, it is acceptable to enter a CT ratio of 1 into the **NABERSNZ online calculator**.

Where non-cumulative data is used from a validated non-cumulative meter, the initial meter reading can be set to "0" in the **NABERSNZ online calculator**.

10.6.6 Use of non-utility metering systems

Non-utility metering systems can be used in the following circumstances:

a) In the absence of a complete set of **utility** data; or

b) Where the data from **non-utility metering systems** provides more reliable data, such as when **utility** reads are too infrequent and require adjustment or the **utility metering systems** are on the high-voltage side of the transformers; or

c) Where a **non-utility metering system** is a more direct source of consumption data, for example where the alternative would be a **utility meter** and a significant number of exclusions.

Where a **non-utility metering system** is used as primary data source, it is entered into the **NABERSNZ online calculator** as if it were a **utility metering system**. Normal **validation** requirements for the **non-utility metering system** still apply.

Where **non-utility metering systems** are used, the **Accredited Assessor** must record and retain documentation that identify all **non-utility metering systems**. This include written reports and diagrams.

Note 1: Where a rating is carried out based on inputs from only **non-utility metering systems,** the **Accredited Assessor** should, where possible, reconcile all meters against a **utility meter**.

Note 2: Advice from **utility** companies about which meters service the building always needs to be cross-checked on site to ensure errors that have not been made. It is recommended that the meter reading on each meter is recorded at the time of the site inspection.

10.7 Adjusting for missing or estimated utility metering system data

10.7.1 General

The **Accredited Assessor** must check that the data from **utility metering system** readings do not rely on estimates by the **utility**. If it does, then the method outlined in this Section 10.7 must be followed.

The frequency of meter readings should be both:

a) At least as frequent as the **utility** meter's billing frequency, and

b) At least quarterly (i.e. four readings spaced evenly throughout the year).

For documentation requirements, see Section 11.8.4.

10.7.2 Adjusting for gaps at the start or end of the billing period

A **utility metering system** may be missing a valid meter reading at the start and/or end of the billing period because the bills are missing or the reading was estimated by the **utility**. To resolve this, meter data can be used if no bills are available.

All meter readings used for this adjustment must comply with the data requirements of Section 10.5.

Where they are available, the **Accredited Assessor** should check these readings against **utility** readings.

10.7.3 Adjusting for gaps during the billing period – where cumulative meter readings are not available

Where there is an unresolvable gap in the billing data, (e.g. due to a change of supplier or meter), the **Accredited Assessor** may calculate an **acceptable estimate** of the unrecorded consumption by interpolating between adjacent bills. The interpolation must be based on the average daily consumption figures of the adjacent bills.

The **Accredited Assessor** must add the entire **acceptable estimate** of unrecorded consumption to the relevant **potential error**.

Under no circumstances is it permissible to extrapolate outside the available data. The premises cannot be rated if the data does not cover a full continuous 12-month period.

10.7.4 Adjusting for gaps during the billing period – where cumulative meter readings are available

10.7.4.1 General

In some cases, an energy or water source can be missing a valid **utility metering system** reading during the billing period (e.g. if the bill was not available or if the reading was estimated by the utility).

The total consumption for the missing period can be accurately determined using the method(s) below (Sections 10.7.4.2 and 10.7.4.3) when valid **metering system** readings are available for the period immediately before and immediately after the missing readings.

The calculated consumption is considered to be **acceptable data** and may be used in the assessment without being added to the relevant **potential error**.

10.7.4.2 Energy sources other than natural gas

For energy sources other than natural gas, the **Accredited Assessor** must:

a) Calculate the total metered consumption in the period by using the meter readings before and after the missing or estimated reading(s); and

b) Obtain any relevant factor required to convert the metered consumption to actual consumption; and

c) Use the actual consumption, as calculated using the relevant factor, as the total consumption for the period.

Note: **Assessors** are to exercise care when performing these calculations and obtain written documentation to confirm the use of any conversion factors if not documented on the relevant **utility** bills.

10.7.4.3 Natural gas

Missing gas consumption can also be determined using cumulative meter readings. However, additional consideration is required due to the complexities of converting gas **metering system** readings to energy consumption.

Where a bill is missing or estimated, but valid **metering system** readings are available before and after the missing period, the gas consumption can be determined by using the following method:

a) Calculate the total metered gas flow in the period by using the readings before and after the missing or estimated reading(s).

b) Obtain the correction factor (CF) for the gas meter from:

1) The estimated bill for the period (if available), or

2) The utility bills before or after the missing period, or

3) Written documentation provided by the utility.

Note: The correction factor is used to convert the metered consumption from the meter pressure to standard atmospheric pressure. It is sometimes in utility bills under an alternative name, such as “pressure correction factor” or “conversion factor”.

c) Obtain the Heating Value (HV) at atmospheric pressure for the gas during the period between the valid readings. This value must be obtained from one of the following sources, listed in order of preference:

1) Written documentation provided by the utility for the period between the two readings; or, if not available

2) The average heating value for the period between the two readings, in the case there are utility bills (estimated or actual) fully covering such period; or, if not available

3) The New Zealand weighted average for natural gas (38.5);

d) Calculate the gas consumption by using the following formula:

$$Gas\ Consumption = (R_E - R_B)\ x\ CF\ x\ HV$$

where:

R_B and R_E = the meter reading at the beginning and end of the missing bill period, respectively,

CF = the correction factor, and

HV = the heating value (MJ/m3).

Example: Two consecutive monthly bills have been estimated by the **utility**. Estimated readings were taken on 31 March and 30 April. Valid meter readings for the period immediately before and immediately after the estimated readings were available in adjacent **utility** bills. The reading for 1 March was 10,000 m^3 and the reading for 31 May was 12,150 m^3.

The pressure correction factor was obtained from the utility bills and was equal to 1.1. The average heating value for all the bills between the two accurate readings (including the two estimated bills) was 39 MJ/m^3.

The total gas consumption between 1 March and 31 May can be calculated as:

(12,150 m^3 – 10,000 m^3) x 1.1 x 39 MJ/m^3 = 92,235 MJ

10.7.5 Estimating unrecorded consumption from non-cumulative meters

The purpose of this section is to enable a rating to proceed if the record of bills throughout the **rating period** is not continuous.

Some utilities will bill a **metering system** based on a **Remote Meter Reading System (RMRS)** that transmits the consumption data but not the cumulative readings. This makes it impossible to reconcile an estimated bill as meter readings before and after are not available.

Where there is an unresolvable gap in the primary billing data (e.g. caused by a change of supplier or meter) the **Accredited Assessor** may estimate the unrecorded consumption by interpolating between adjacent bills – but only under the following conditions:

a) If the consumption of the relevant source is climate-independent, the interpolation must be based on the average daily consumption figures of the adjacent bills.

b) If the **utility** consumption is climate-dependent, then the interpolation must use a climate-based correlation.

Full details of the associated calculations must be included in the **Online Rating Calculator**. If a climate-based correlation is used, the **Accredited Assessor** must provide details of the correlation method and the climate data used, and explain why the correlation method was chosen.

Regardless of the interpolation method used, the **Accredited Assessor** must add the entire estimate of unrecorded consumption to the relevant **potential error**.

Under no circumstances is it permissible to extrapolate outside available data. If the bills do not cover a full 12-month period, the premises cannot be rated.

10.8 Adjusting for missing or estimated non-utility metering system data

10.8.1 General

This section only applies to consumption data from cumulative **non-utility metering systems**. For non-cumulative **non-utility metering systems**, the requirements specified in Section 9.4 should be followed.

The **Accredited Assessor** must check that the data from **non-utility metering system** readings does not rely on estimates. If it does, then the method outlined in this section must be followed.

The **Accredited Assessor** is required to enter the meter reading dates for each **non-utility metering system** into the **NABERSNZ Online Rating Calculator**.

The **Accredited Assessor** must have a record of readings that is both:

a) At least as frequent as the **utility meter** under which the non-utility meter lies, and

b) At least quarterly (i.e. four readings spaced evenly throughout the year).

Where a cumulative meter is not connected to an **RMRS** that has been validated in accordance with Section 9.5.4, it must be read on-site and a record of these readings must be kept in case of audit.

Note: Cumulative meter readings can be recorded by personnel other than the **Accredited Assessor**.

For documentation requirements, see Section 11.8.6.

10.8.2 Adjusting gaps at the start or end of the rating period

If the meter data is used for an exclusion and there are gaps at the start and/or end of the **rating period** then the data must be entered without adjustment.

If the meter data is used as for an inclusion then the data must be adjusted as described below:

a) If cumulative **Remote Meter Reading System (RMRS)** or manual readings, which comply with the data recording requirements of Section 9.5.4 are available, the **Accredited Assessor** may use the cumulative meter readings to calculate the consumption.

b) If the meter readings match the frequency of data recording requirements in Section 10.8.1, the readings can be entered into the **NABERSNZ Online Rating Calculator** on the day they were taken.

c) If the readings were taken less frequently, cumulative reads available before and after must be treated as if they were taken on the first and/or last day (as appropriate) of the **rating period**. This is to prevent unrealistic apportioning of data where regular reads are not available.

10.8.3 Adjusting gaps during the rating period

10.8.3.1 Energy sources other than natural gas

Where missing consumption can be calculated from meter readings, the **Accredited Assessor** can include this data and must follow the process listed in Section 10.7.4.2.

10.8.3.2 Natural gas

Where missing consumption can be calculated from meter readings, the **Accredited Assessor** can include this data and must follow the process listed in Section 10.7.4.3, except for part (b) which refers to the correction factor to be used.

When calculating gas consumption for **non-utility metering systems**, the **Accredited Assessor** must use the measured meter pressure correction factor where it is known.

> **Note:** It is preferable to obtain the pressure correction factor through measurement as this will result in more accurate gas consumption at the **rated premises**, although the **Administrator** recognises this may be a costly endeavour.
>
> For new installations, the pressure correction factor would be provided as part of gas meter commissioning documentation.

If the measured meter pressure correction factor is not known and cannot be easily obtained, then the **Accredited Assessor** can:

a) Use the default pressure correction factor of ‘1’ where data is used for an exclusion; or,

b) Use the utility meter pressure correction factor in conjunction with a heating value where data is used for an inclusion.

10.8.4 Adjusting for gaps in non-utility non-cumulative metering system data

Consumption data from non-cumulative **non-utility metering systems** must not be adjusted (see Section 9.3.2.3).

11 Documentation required for certified ratings

11.1 Summary

The **Accredited Assessor** must keep all records on which an assessment is based such that the entire rating can be recreated for audit based only on those documents. Data retained for audit must be in a form which facilitates reviews and makes anomalies easily apparent.

Access to original documents, if available, is highly desirable. Copies of original documents may be used as evidence as long as the **Accredited Assessor** is satisfied that they are, or can be verified to be, true and complete records of the original documents or files.

The information in the tables below will assist in determining the documentation required for a rating. The required documentation includes but is not limited to the documents in this section. It is organised based on the divisions of previous chapters (Chapter 4 through to Chapter 10). All the required information should be obtained from the building owner/manager before a site inspection, and then confirmed during the site inspection and subsequent assessment. A site inspection is required to verify that the information provided is accurate, current and complete. Comprehensive site inspection notes and photographs are required documents.

Individual ratings may require additional information or documentation depending on the individual circumstances of the **rated premises**.

11.2 Documentation required for Chapter 4: Rated areas

Topic	Requirements	Documentation
11.2.1 Office rateable area	Section 4.3	To confirm and validate the office **rentable area**, the following is required**,** in order of preference: a) Surveys; b) Leases (including information about tenancy types, hours of operation and subsequent negotiations and changes); c) Other third-party documentation; d) Direct measurement from drawings, plans or prints; and/or e) Site measurement verified by the **Accredited Assessor** identifying the **rated premises.** All of the documentation listed above must be made to/based on the **measurement standard for rated area**.
11.2.2 Functional space	Section 4.4	To confirm the division of office **rentable area** into **functional spaces**, the following is required: a) A complete list of **functional spaces** identified by the **Accredited Assessor,** including details of— 1) Each individual and distinct tenancy, and 2) All spaces with different AHAC zones or operating hours, and 3) **Office support facilities**. b) Measurements and calculations for the **functional spaces** and the method of measurement employed in these determinations (e.g. **measurement standard for rated area**). c) Any documentation relating to significant construction activity during the **rating period.**

Topic	Requirements	Documentation
		d) Evidence of any smaller divisions of spaces made by the **Accredited Assessor** in order to improve the rating accuracy.
11.2.3 Exclusions	Section 4.5.1	For an excluded **functional space**, the following is required: a) Written information and/or **Accredited Assessor's** notes relating to the usage of spaces and the services provided to them; and b) The grounds for their exclusion from the **rated area** calculation.
	Section 4.5.2	A list of all areas which cannot be considered offices must be retained. The appropriate reason for exclusion of the space must be stated in terms of the following categories: a) It cannot be used as an office or **office support facility**; or b) It is not **occupied**; or c) It is not **fit for office use**.
11.2.4 Computer server rooms	Section 0	For the exclusion of **computer server rooms** from Base Building ratings, the following must be retained: a) Location of the **computer server room**; b) Details of air conditioning arrangements; c) Documentation regarding the area to be excluded from **rated area** calculation; d) Energy and water usage for the area to be excluded (if metering permits); e) Any thermal energy to be excluded from the rating (if metering permits).
		For the exclusion of **computer server rooms** from Tenancy and Whole Building ratings, the following must be retained:

Topic	Requirements	Documentation
		a) Written documentation from the tenant that confirms that the **computer server room** is either used entirely for **external users** or as a disaster recovery site for another external **data centre**; or b) Written documentation from the tenant that confirms that the IT equipment in the excluded area is either used entirely for **external users** or as a disaster recovery site for another external **data centre**; or c) Credible written documentation provided by the tenant, completed and signed by an appropriate person, that either: 1) States the number of **external users** of the **computer server room**, or 2) Contains records which allow the **Accredited Assessor** to accurately calculate (not estimate) the number of **external users**.
11.2.5 Data centres	Section 0	For **data centres**, the following documentation is required: a) Fitout drawings that show the size of the **data centre** or lease plans/drawings that clearly define the area of the **data centre**; and b) A list of active users identified as either internal users or **external users**. A signed letter from the **data centre** confirming the percentage of **external users** is also permissible. The **Accredited Assessor** is required to sight and obtain copies of the kinds of documentation listed above to demonstrate the **data centre** meets the criteria to qualify as a **data centre**.
11.2.6 Excluding other office support facilities	Section 4.5.4	The documentation required for the exclusion of other **office support facilities** (not classified as **computer server rooms** or **data centres**) is as follows: a) For Base Building ratings: 1) Location of the **meeting room**; 2) Details of air conditioning arrangements; 3) Documentation regarding the area to be excluded from **rated area** calculation;

Topic	Requirements	Documentation
		4) Energy and water usage for the area to be excluded (if metering permits); 5) Any thermal energy to be excluded from the rating (if metering permits). b) For Tenancy and Whole Building ratings: documentation of the floor area.
11.2.7 Functional spaces without consumption data	Section 4.5.5	Where either a whole or a part of a **functional space** is excluded, full documentation in relation to the space must be retained. Detailed reason(s) why acceptable consumption data or estimates were not available for the **rating period** must also be included.
11.2.8 Limiting public access spaces	Section **Error! Reference source not found.**	Documentation such as measurements and calculations must be retained of the floor area of the **public access spaces**. The **Accredited Assessor** must report if such spaces comprise more than 10% of the **rated area** and, if so, what proportion cannot be included in the rating.
11.2.9 Limiting medical and educational office facilities	Section 4.6.2	For all Base Building ratings, any **medical** and **educational office facilities** must be identified and the following documentation retained: a) The nature of the facility (e.g. consulting room, store room, **meeting room**, etc.); b) Information regarding whether the space is serviced by the **direct HVAC energy** provided Base Building; c) All calculations and measurements used to determine whether or not the space **occupied** by the **medical office facility** or **educational office facility** can be included in the rating. The **Accredited Assessor** must retain documentation substantiating the grounds for any exclusion from the **rated area** calculation for the rating.

Topic	Requirements	Documentation
11.2.10 Adjustments for unoccupied spaces	Section 4.7	The documentation required for adjusting for unoccupied spaces includes: a) Written evidence obtained from building manager, owner or tenants confirming the number of fitout days for the space and evidence showing that Base Building air conditioning services were required. This may include notes that fitout days occurred during the lease period and tenant confirmation that they did not require Base Building air conditioning services to be turned off or down. b) Written evidence confirming the number of occupation days. Depending on the rating scope, this might include evidence showing that the space was **ready for occupation** and evidence showing that the space was used by the tenants during these days. For Base Building and Whole Building ratings, the **Accredited Assessor** must obtain documentation that shows for how much of the **rating period** the occupiers— 1) Had the right to make exclusive use of that part of the **rated premises** (e.g. leases or similar agreements when the **fitout works** days are before the start date of the lease), and 2) Required services to be supplied to that part of the **rated premises** (e.g. copies of requests to the building owner for service, or a statement by the building owner or facility manager). For Whole Building and Tenancy ratings, the **Accredited Assessor** must also obtain documentation that shows for how much of the **rating period** the occupiers were actively using the space as an office (e.g. **Tenant Occupancy Survey** or confirmation from the building manager that the space has been used by the tenants).

11.3 Documentation required for Chapter 5: Rated hours

The documentation required to determine correctly the **rated hours** depends on the data available and the method used. For each rating, the **Accredited Assessor** must ensure that the method used is clearly stated and any documentation listed below is included, relevant to the methods used.

Topic	Requirements	Documentation
11.3.1 Core Hours	Section 5.3.2	For the confirmation of the **rated hours** under this method, the following documentation is required: a) Written documentation stating the **hours of service** for normal and after-hours operation as agreed upon by the building manager and tenant; b) Copies of most up-to-date **OTA**; c) Records of specific lease clauses referring to Lessor's obligations; and d) Details of any conflicting information regarding Core Hours (if applicable). If the **OTA Hours** and BMS data method is used, the **Accredited Assessor** must retain BMS data representative of the plant operation for the **rating period** – meaning at a minimum one day from each of the four seasons for each primary air handling system serving the space under the **OTA**. The **Accredited Assessor** must obtain additional evidence to determine the **OTA** hours can be interpreted as 'hours of comfort' when: 1) The plant starts with a small start-up time before **OTA Hours** (e.g. 30 minutes prior), or 2) Air conditioning plants with an optimised start strategy are present. The additional evidence may include a BMS or mechanical contractor signed statement or temperature data within the space from the BMS, demonstrating that the system is programmed to bring the space to comfort conditions in time for the start of **OTA** Hours. This evidence should represent at minimum one day from each of the four seasons for each primary air handling system serving the space under the **OTA**.

Topic	Requirements	Documentation
		The **Administrator** may allow alternative documentation on a case-by-case basis for the use of **OTA Hours** and BMS data. If an **Accredited Assessor** is unable to provide documentation matching the above, they should contact the **Administrator**.
11.3.2 AHAC	Section 5.3.3	For the confirmation of the **rated hours** under this method, the following documentation is required: a) Copies of AHAC request data showing the date and time of each request and the space to which it applied; and b) Evidence of run times for each request showing that the tenant requested that run time, or agreed to it in an **OTA** or related written agreement with the building owner; and c) Evidence that no AHAC has been counted during the Core Hours and during the plant start-up period or the hour before the start of Core Hours if the plant start-up period is unknown; d) Drawings and measurements showing AHAC zones for requests serving different zones within a single **functional space**.
11.3.3 TOS	Section 5.3.4	For the confirmation of the **rated hours** under this method, a completed and signed **TOS** for each **functional space** and shift must be retained.
11.3.4 Average Core Hours	Section 5.3.5	For the confirmation of the **rated hours** under this method, the following evidence must be retained: a) Details of how the estimates have been calculated; b) A clear list of **functional spaces**; and c) Associated Core Hours used to determine average Core Hours for each space.
11.3.5 Default Core Hours	Section 5.3.6	For the confirmation of the **rated hours** under this method, evidence that no other method with a higher priority could be used for the **functional space** must be retained (i.e. evidence that **OTA** and AHAC, **TOS** or average Core Hours could not be used for the **functional space**). **Note:** Tenancy ratings and **co-assess** applications are not required to provide this documentation.

Topic	Requirements	Documentation
		The **Accredited Assessor** must state his/her reasons if giving an estimate of less than the Default Hours of 45 hours per week.
11.3.6 Computer server rooms	Section 5.3.7	For confirmation of the **rated hours** for **computer server rooms**, the following must be retained: a) Evidence showing if Base Building **direct HVAC energy** is serving the space (for Base Building rating only); and b) BMS data showing **computer server room** air conditioning hours for a typical week or facility manager confirmation of air conditioning hours for the space. These hours must be Base Building **direct HVAC energy** hours for a Base Building rating or air conditioning hours for a Tenancy or Whole Building rating.
11.3.7 Other office support facilities	Section 5.3.8	Depending on the method used, confirmation of the **rated hours** for other **office support facilities** including **meeting rooms** must be retained in the following formats: a) For Base Building ratings: copies of **OTA** and AHAC requests, or evidence on how the average Core Hours have been calculated or, if default values are used, evidence that no other method could be used. b) For Tenancy and Whole Building ratings: copies of booking system records or evidence of area-weighted average calculations, or evidence on how the average Core Hours have been calculated or, if default values are used, evidence that no other method could be used.
11.3.8 Verifying long OTA and AHAC hours	Section 5.4.2	Depending on the process used, confirmation of the **rated hours** must be retained as follows for long **OTA** and AHAC hours: a) Where the hours are obviously as expected and reasonable for the space: **Accredited Assessor's** notes explaining the reasons why long hours are obviously expected and reasonable; or b) Where the hours are not obviously as expected and reasonable for the space: written and signed tenant confirmation that the **rated hours** are as expected and reasonable and the reasons why they are considered so.

Topic	Requirements	Documentation
11.3.9 Verifying long TOS hours	Section 5.4.3	Depending on the process used, confirmation of the **rated hours** must be retained as follows for long **TOS** hours: a) Where the hours are obviously as expected and reasonable for the space: **Accredited Assessor's** notes explaining the reasons why long hours are obviously expected and reasonable; or b) Where the hours are not obviously as expected and reasonable for the space: written evidence showing that the **TOS** questions have been properly interpreted by the person surveyed. This can take the form of copies of email exchanges or detailed minutes of a phone conversation.
11.3.10 Checking expected hours	Section 5.4.4	For confirmation of the **rated hours** for all **functional spaces,** a common-sense check of the hours must be performed. This must take the form of the **Accredited Assessor's** notes stating their judgment of whether the hours are 'obviously as expected and reasonable for the space' and giving reasons why or why not.

11.4 Documentation required for Chapter 6: Counting computers

Computer counts are applicable for Tenancy and Whole Building ratings only.

Topic	Requirements	Documentation
11.4.1 Principle and definitions	Section 6.3.2	As evidence of a site visit to count computers, the following must be retained: a) A record of how many personal computer systems have been identified within each **functional space**. b) Where necessary, evidence of regular use of computers, such as: 1) A report by a manager or other authoritative source that a system is in regular use;

Topic	Requirements	Documentation
		2) For computers in training rooms, etc, booking or attendance records that the **Accredited Assessor** has verified to be accurate and which show both the number of computers used and the amount of time they were used for.
11.4.2 Conducting a count	Section 6.3.3	As evidence a computer count has been conducted, the following must be retained: a) Marked-up desk layouts for all spaces in the **rated premises**, if available; b) Marked-up desk layouts completed by the **Accredited Assessor** and showing the computer count; or c) Copies of the **Accredited Assessor**'s site notes taken during the count, if desk layouts are not available. In addition, the **Accredited Assessor** must identify which spaces (if any) are agile and ABW spaces, and document at which times counts have been conducted.
11.4.3 Estimating numbers of computers	Section 6.3.4	Whenever an estimate of computer numbers has been made, the following must be retained for each **functional space**: a) Statements giving reason(s) why the estimate had to be made; and b) Calculations of the figure used (including all assumptions, estimates and interpretations involved).

Topic	Requirements	Documentation
11.4.4 Default method	Section 6.3.5	The **Accredited Assessor** must list each **functional space** for which the default method of counting computers has been used.
11.4.5 Conducting a survey	Section 6.3.6	Whenever a survey has been conducted, the following must be retained: a) A record of the sampling method used, including a copy of the random list that clearly shows which of the **functional spaces** were selected. b) For each **functional space** in which a computer count was conducted: 1) Marked-up desk layouts completed by the **Accredited Assessor** and showing the computer count; or 2) If desk layouts are not available, copies of the **Accredited Assessor's** site notes taken during the count.

11.5 Documentation required for Chapter 7: Minimum energy coverage

Topic	Requirements	Documentation
11.5.1 Minimum energy coverage	Section 7.2.1	To confirm minimum energy coverage requirements have been met, the **Accredited Assessor** must retain evidence identifying all supply points and the distribution of energy through the premises, including at the main switchboards and distribution boards throughout the premises. In addition, the **Accredited Assessor** must retain evidence of checks which confirm how each of the required **end uses** are covered by the supply points included in the rating. Such evidence is expected to include single line diagrams, metering schematics, **Accredited Assessor** site notes and/or site photos. All documents may be marked up by hand.

		The **Accredited Assessor** must keep notes and photos as evidence of their site visit, and collect all information available relating to **end uses**, sources and meters relevant to the inspection. The presence of any unmetered energy sources must be checked during the site inspection and recorded by the **Accredited Assessor** in their site notes. The **Accredited Assessor** must explain how any unmetered sources are treated within the rating and how they relate to the minimum energy coverage.
11.5.2 Computer server room energy coverage	Section 7.3.1	The documentation required for energy consumption exclusions for **computer server rooms** is the same as the documentation required for exclusions from the **rated area** calculation as specified in Section 11.2.4.
11.5.3 Energy use allocations for services	Section 7.3.2.1	For the determination of all energy use allocations, the following is required: a) Existing agreements and other official documentation between the builder, owner and tenants, or between tenants; and b) Descriptions and/or drawings of service arrangements, including exclusions. The preference is a service drawing, however detailed reports and **Accredited Assessor's** sketches are permissible; c) Where possible, list of tenant supplementary units in the building in order to determine any spaces that need to be excluded. Any instances of **special tenant requirements** must also be documented. If such requirements exist, the **Accredited Assessor** must obtain evidence to establish that an unusual usage of the space has resulted in an increased intensity of the service required. Such documentation includes: 1) Documentation that either: i) Confirms the building has been checked and no such systems exist, or ii) Identifies all tenant powered supplementary A/C systems serving open office or cell office spaces within the **rated area**. This must include location and type of area served.

		2) Documentation that verifies a **special tenant requirement** exists. This must include details of unusual usage of the space and increased intensity of the services compared to the bulk of the office, as per the building design criteria (see **Table 7.1,** Step 3). 3) Additional documentation associated with the relevant procedures of **Tables 7.1** to **7.3**. Where applicable, this may include: i) Method of control of supplementary systems by Base Building or Tenant control systems (see **Table 7.3**, Rule B3 and **Table 7.1**, Step 1). ii) Location of similar supplementary systems throughout the building (see **Table 7.1**, Step 2). iii) Chilled water, heating water, condenser water, air supply and electric schematics for tenant supplementary and Base Building services (see **Table 7.3**, Rule B2). iv) Base Building and tenant fitout mechanical and electrical services drawings (see **Table 7.3**, Rule B1). v) Percentage area and tenant calculations for centrally provided services (see **Table 7.3**, Rule B2). vi) Documents identifying Base Building amenities on each floor which may be serviced from tenant switchboards/meters. (see **Table 7.3**, Rule B4).
11.5.4 Energy consumption in excluded spaces	Section 7.3.3	For energy consumption in excluded spaces, the following must be retained: a) A comprehensive list of all spaces for the **exclusive use of office tenants**, whether or not the space is included or excluded from the **rated area** calculation; b) Calculations and information relating to the energy use of other spaces which are not for the **exclusive use of office tenants**, with reference to the metering and exclusion requirements of other NABERSNZ **Rules** documents, as appropriate.
11.5.5 Car parks	Section 7.3.5	The **Accredited Assessor** must fully document both the method and all data used to proportion car park energy usage. Dedicated parking space, pass or key allocation data must be sourced from the lease documentation.

		Documentation to support the proportioning of energy use, includes either: a) Lease documentation, or b) Documentation signed by office tenants that identifies the proportion of allocation, or c) The **Accredited Assessor's** calculation of relevant proportions.

11.6 Documentation required for Chapter 8: Minimum water coverage

Topic	Requirements	Documentation
11.6.1 Minimum water coverage	Section 8.2.1	To confirm minimum coverage requirements have been met, the **Accredited Assessor** must retain evidence identifying all supply points and the distribution of water through the premises. In addition, the **Accredited Assessor** must retain evidence of checks which confirm how each of the required **end uses** are covered by the supply points included in the rating. Such evidence is expected to include single line diagrams, metering schematics, **Accredited Assessor** site notes and/or site photos. All documents may be marked up by hand. The **Accredited Assessor** must keep notes and photos as evidence of their site visit, and collect all information available relating to **end uses**, sources and meters relevant to the inspection.
11.6.2 Unmetered sources	Section 8.2.2	The presence of any unmetered water sources must be checked during the site inspection and recorded by the **Accredited Assessor** in their site notes. The **Accredited Assessor** must explain how any unmetered sources are treated within the rating and how they relate to the minimum water coverage.

Topic	Requirements	Documentation
11.6.3 On-site capture and recycling	Section 8.3	The documentation required for any water collected and/or recycled at a **rated premises** must include a statement by the **Accredited Assessor** affirming that recycled water has not been deducted from the consumption data.

11.7 Documentation required for Chapter 9: Metering systems

Topic	Requirements	Documentation
11.7.1 High Voltage electricity metering	Section 9.2	For HV electricity metering, the following must be provided: a) Where LV meters are used in place of a utility HV meter, a single line diagram showing the locations of the LV meters used respective to the HV meter; and b) The energy balance used to justify the use of LV meters
11.7.2 Confirmation of metering systems	Section 9.3.1	The location of all **utility** and **non-utility metering systems** used in the rating must be identified on a single line diagram, metering schematic or reticulation diagram and be retained by the **Accredited Assessor**. Where no documentation is available for a **metering system**, the **Accredited Assessor** must document this information (by hand or otherwise), to the best of their knowledge. Note that this information is required to satisfy the requirements of the **Rules** and if the **Accredited Assessor** is unable to document it based on their site observations then it is expected that a third party would be engaged by the building owner to draft a single line diagram, metering schematic or reticulation diagram. The document must also include a mark-up (by hand or otherwise) of the meter identification used when entering the **metering system** into the **NABERSNZ Online Rating Calculator**.

Topic	Requirements	Documentation
		The type of each **non-utillity metering system** should be confirmed and recorded by the **Accredited Assessor** in their site notes. The types to be recorded are those listed in Section 9.3.2 (e.g. cumulative, non-cumulative, soft, virtual or high voltage). **Note:** It is sufficient for the **Accredited Assessor** to confirm "all **non-utility metering systems** used in the rating are cumulative meters" in their site visit notes.
11.7.3 Meters in embedded networks	Section 9.4	Where **embedded networks** are identified within the **rated premises** and meters within these are to be treated as a **utility metering system**, the **Accredited Assessor** must document and retain evidence of licencing of the **embedded network** operator to sell energy. If the **embedded network** has a valid exemption and this is pre-approved by the **Administrator**, this must also be retained. **Note:** It is sufficient for the **Accredited Assessor** to include a current printout from the website listing the licenses.
11.7.4 Validation of metering systems	Section 9.5	Evidence of **validation** for each **non-utility metering system** must be retained. The **Accredited Assessor** must review the evidence of **validation** provided by the building owner or their contractor and check them for completeness. If the document is completed correctly, and does not contain any obvious errors, then the **Accredited Assessor** can accept the evidence and use it in the rating. Templates for **validation** of **non-utility metering systems** can be found in Appendix D.
11.7.5 Adjustment resulting from validation checks	Section 9.6	For all **non-utility metering systems** needing adjustment as a result of **validation** checks, the following must be provided: a) Type of fault found and the consumption data; b) Full documentation of the error found, the incorrect records from the **metering system**, and the calculations used to correct the data for audit;

Topic	Requirements	Documentation
		A record of the **validation** of any altered **non-utility metering systems.**

11.8 Documentation required for Chapter 10: Consumption data

Topic	Requirements	Documentation
11.8.1 Confirm all sources	Section 10.2.2	Retain evidence that confirms any source or **end use** to be excluded from the rating and substantiates the grounds for the exclusion. The evidence supporting the above should be summarised in a single document, such as a marked up single line diagram, metering schematic or reticulation diagram, or otherwise a list of sources/supply points to the building with notes to confirm whether they are included or excluded. Evidence supporting the grounds for exclusion of supply points is expected to include site photos, notes and other reticulation documentation. It is acknowledged that access to and labelling of distribution boards may not always be sufficient to fully substantiate the grounds for exclusion of a supply point. In these cases the **Accredited Assessor** may need to make educated assumptions regarding coverage of individual distribution boards. The basis of these assumptions should be fully documented. If an **Accredited Assessor** is uncertain they should contact the **Administrator**.
11.8.2 Methods for estimating small amounts of data	Section 10.3	The documentation required for instances of **end use** estimation includes the following: **a) Small end use electricity inclusions:** 1) The calculations, including a clear explanation of method and all assumptions; and 2) Photos/records of name plate capacities; and 3) Documentation used to determine duty capacity if it is not 100%; and

		4) Documentation used to determine annual hours, including full justification for any reduction in hours. **b) Exclusions based on financially reconciled utility costs:** 1) Documentation of any estimated consumption outside the coverage; and 2) Any associated documentation or agreements that outlines mutual agreement signed by the parties affected by the **end uses** that identifies the proportion of allocation. **c) Energy exclusions based on area weighting:** Marked up **rateable area** plans and calculations showing the proportion of **rateable area** excluded to arrive at the area weighted excluded energy and metering arrangements associated with the excluded energy.
11.8.3 Batch delivered supplies	Section 10.4	The documentation required for batch-delivered supplies includes the following: **a) Batch deliveries:** 1) Record of the measurement method or estimation for each source entered into the **NABERSNZ Online Rating Calculator**; 2) Supplier invoices or similar documentation which states the quantity data delivered; 3) The written statements of what deliveries occurred during the **rating period**, including contact details for the responsible person who supplied the information; 4) A description of the measurement or estimation method(s) used. 5) All data used to calculate the measurements or **acceptable estimates**; and 6) Details of all calculations, including those for alternative estimates. **b) Batch-delivered recycled water (NABERSNZ Water ratings only):** 1) Written confirmation from the supplier that states that the water supplied is recycled or reused, whether potable or not, including the percentage of recycled or reclaimed water within the supply; and 2) The source of the water (such as the location of the supplier).

11.8.4 12 months of acceptable data for each utility metering system	Section 10.5 Section 10.7.1	Billed quantities provided by the **utility** must be retained by the **Accredited Assessor** and take the form of either of the following: a) **Utility** bills for a minimum of 12 months showing consumption records for the **billing periods**; or b) A spreadsheet or other electronic record from the **utility** showing consumption for the **billing periods**, with a clear indication of the meter identification and reading, and at least one **utility** bill that can be shown to reconcile against the electronic data. Where the **utility** provides an online portal with billing information, actual bills for reconciliation are not required. However, the billing information from the portal must still be provided as documentation. The **Accredited Assessor** must also retain evidence of estimated bills (where applicable) and document how these estimates were resolved, if this is not evident in the **NABERSNZ Online Rating Calculator**. Documentation of any related investigation and resolution of anomalies or estimations in the data should be retained by the **Accredited Assessor** if it is not evident from the data entered into the **NABERSNZ Online Rating Calculator.**
11.8.5 Consumption data for non-utility metering systems	Section 10.6 Section 10.7	All relevant data from **non-utility metering systems** as listed in **Table 10.4** must be provided for a minimum period of 12 months. Documentation of any related investigation and resolution of anomalies or estimations in the data should be retained by the **Accredited Assessor** if it is not evident from the data entered into the **NABERSNZ Online Rating Calculator**.
11.8.6 Adjusting for missing or estimate non-utility metering system data	Section 10.8	The **Accredited Assessor** must retain evidence of adjustments made to **non-utility metering systems** as a result of **validation** checks. The documentation must outline the following information: a) Type of fault found and the consumption data; b) Full documentation of the error found, the incorrect records from the **metering system**, and the calculations used to correct the data for audit; A record of the **validation** of any altered **non-utility metering systems.**

Appendices

Summary

Appendix A – Tenant Occupancy Survey

The following form must be completed by a staff manager or supervisor responsible for the nominated **functional space**. At least one form must be printed and completed for every shift operating in each **functional space**, and kept on file for auditing purposes.

The questions in this survey are aimed at finding the average number of hours per week that at least 20% (1 in 5) of people who work in the **functional space** were present for the **rating period**. This information is only used to assess the energy and water consumption of the building relative to how many hours it is used.

Functional space:		
Rating period:	From	to
	(to be completed by the **Accredited Assessor**)	

Please answer the following questions with respect to the space and period shown above.

Name of manager/supervisor:	
Position:	
Location of staff under your supervision:	
What are the typical days of work within the area you manage?	
By what time at the start of the typical day have approximately 20% (1 in 5) people arrived within the area you manage?	
By what time at the end of the typical day have most people gone except for approximately 20% (1 in 5) people who are still in the area you manage?	
Describe any periods where more than 20% of people would be present outside these typical hours: (For example, '4 hours one Saturday each month', or 'a total of 50 hours at the end of financial year'.)	
Do all the answers above apply for the whole **rating period** (shown at top)?	
If not, what period do the answers apply to? Please give alternative responses for the rest of the **rating period** (ignoring periods when the space was vacant):	
Signature of manager/supervisor:	
Date:	

Appendix B – The rating period

A NABERSNZ rating is based on 12 months of **acceptable data**, called the **rating period**. Once certified, the rating is valid for up to 12 months, called the **validity period**.

It takes time for the **Accredited Assessor** to complete a rating. Therefore 4 months are given to have the rating certified after the end of the **rating period**. Ratings certified after the 4 months will have a reduced **validity period** to ensure all ratings are based on current data.

The following scenarios illustrate this principle.

Scenario 1

A NABERSNZ rating is certified within 4 months after the end of the **rating period**. It will be valid for 365 days from the date of certification. See **Figure B.1**.

Example:

a) The **rating period** is 1 January 2017 to 31 December 2017. The certification due date is therefore 30 April 2018.

b) The **Accredited Assessor** submits the rating on 1 February 2018 and the rating is certified by an **Auditor** on 5 February 2018. This is before the due date.

c) The rating will therefore be valid for 365 days from the date of certification, e.g. 5 February 2018. And it will expire on 5 February 2019.

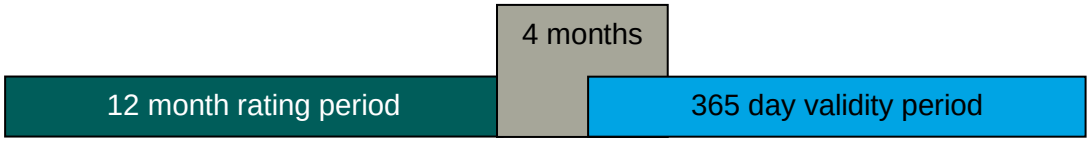


Figure B.1: A rating certified within 4 months after the end of rating period

Scenario 2

A NABERSNZ rating is certified more than 4 months after the end of the **rating period,** and the **Administrator** has not approved an extension of time to compensate for delay, the rating will be valid for 365 days from the end of the **rating period**. See **Figure B.2**.

Example:

a) The **rating period** is 1 January 2017 to 31 December 2017. The due date is therefore 30 April 2018.

b) The **Accredited Assessor** submits the rating on 25 April 2018 and an **Auditor** certifies the rating on 6 June 2018. The **Administrator** has not approved an extension. This is after the due date.

c) The rating will therefore be valid for 365 days from the end of the **rating period** (31 December 2017). And it will expire on 31 December 2018.

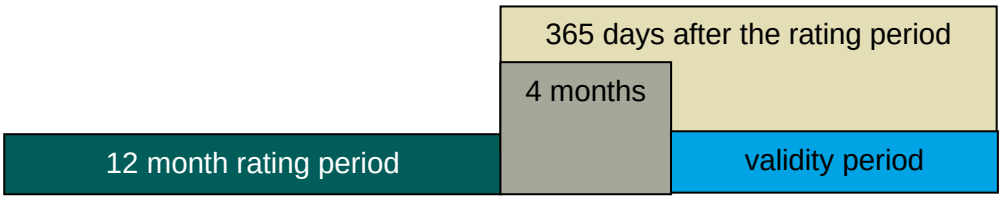


Figure B.2: A rating certified after 4 months from the end of rating period

Appendix C – Calculations

C.1 Rated area calculation

Calculate the **rated area** as follows:

a) Identify the **functional spaces** according to the rules in Section 4.4.

b) For each **functional space** determine the proportion of time the space is **occupied** (not vacant).

c) For each **functional space** determine the time-weighted area by multiplying the floor area of the space by the proportion of time the area was **occupied**.

d) Determine the **rated area** by adding all the time-weighted areas for each of the **functional spaces**.

This calculation is expressed as:

$$A = \sum_{i=1}^{N} o_i a_i$$

where:

A = **rated area** (m^2)

i = each **functional space**

a_i = floor area of each **functional space** (m^2)

o_i = the proportion of the **rating period** that the space was **occupied**.

Example: A building has two 1,000 m² **functional spaces**, but one of them has been vacant for three months during the **rating period**.

The **rated area** is assessed as:

$$A = \left(\frac{12}{12}\right) 1{,}000 + \left(\frac{9}{12}\right) * 1{,}000 = 1{,}000 + 750 = 1{,}750$$

C.2 Tenancy and Whole Building rated hours calculation

The **rated hours** for tenancies and Whole Buildings are calculated through the **Tenant Occupancy Survey** data, and should not be calculated by other means.

The occupation-weighted area is calculated by the **Online Rating Calculator** with data input by the **Accredited Assessor**. The **Online Rating Calculator** does this for each **functional space** determined in Section 4.4 with the following methodology:

a) For each distinct period during the **rating period** in which the space was **occupied** and the hours of occupation were constant, multiply its hours per week by the proportion of the 12-month **rating period** that the distinct period represents.

b) Add the hours for each such distinct period.

c) Multiply the area of the **functional space** by the total number of hours per week.

d) Add the occupation-weighted areas of all the **functional spaces** together and then divide by the total **rated area** to calculate the area-weighted average hours per week for the **rated premises**.

This method applies equally to normal and after-hours operation. This calculation is expressed in the formula below:

$$H = \frac{\sum_{i=1}^{N} h_i o_i a_i}{A} H = \frac{\sum_{i=1}^{N} h_i o_i a_i}{A}$$

where:

$\boldsymbol{H}$ = **rated hours** (hours/week)

$\boldsymbol{A}$ = **rated area** (m^2)

$\boldsymbol{i}$ = each **functional space**

$\boldsymbol{h_i}$ = hours allocated to each **functional space** (hours/week)

$\boldsymbol{a_i}$ = area of each **functional space** (m^2)

$\boldsymbol{o_i}$ = the proportion of the **rating period** that the space is **occupied**

C.3 Base Building rated hours calculation

Calculate the core hours $\boldsymbol{H_c}$ according to the calculation method described above and as shown in the following formula:

$$H_c = \frac{\sum_{i=1}^{N} h_{c,i} o_i a_i}{A} H_c = \frac{\sum_{i=1}^{N} h_{c,i} o_i a_i}{A}$$

Determine the after-hours times $\boldsymbol{H_a}$ using the calculation method described below:

a) For each **functional space**, determine the after-hours air conditioning (AHAC) hours in equivalent hours per week. For instance, if you have a total amount of after-hours service for the year, divide this amount by 52 to obtain the AHAC hours for the space in hours per week.

b) Apply the formula below to determine the equivalent AHAC hours for the **rated premises** $\boldsymbol{Ha}$:

$$H_a = \frac{\sum_{i=1}^{N} h_{a,i} o_i a_i}{A} H_a = \frac{\sum_{i=1}^{N} h_{a,i} o_i a_i}{A}$$

where:

$\boldsymbol{H_a}$ = equivalent AHAC hours for the rated premises

$\boldsymbol{h_{a,i}}$ = equivalent AHAC hours for each functional space (hours/week)

c) Add this figure to the core hours $\boldsymbol{H_c}$ to calculate the total **rated hours** $\boldsymbol{H}$:

$$H = H_c + H_a H = H_c + H_a$$

C.4 Sampling uncertainty for estimated computer counts

Analyse the sample data to determine an estimate of the total number of computers, as follows:

a) Calculate the computer density (average number of computers per unit floor area) for each individual **functional space**, x; and the sample mean (average over the whole sample of spaces) X = total computers divided by total floor area of the sampled **functional spaces**.

b) Calculate the sample standard deviation, S, of the individual computer density figures, x, using the formula:

$$S = \sqrt{\frac{\sum_j [(x_j - X)^2 a_j]}{a - 0.05A}} S = \sqrt{\frac{\sum_j [(x_j - X)^2 a_j]}{a - 0.05A}}$$

where:

j is the number of spaces surveyed to date

A is the total area subject to the sampling methodology, and

$$a = \sum_j a_j \; a = \sum_j a_j$$

c) Calculate the sampling uncertainty, U, in the **functional spaces** you have sampled, as follows:

$$U = 0.44S\sqrt{\frac{A}{a} - 1} U = 0.44S\sqrt{\frac{A}{a} - 1}$$

If $U \geq 0.1X$ then the sampling uncertainty is 10% or more, and the sample is too small. Take the next **functional space** from the random list, count the number of computers in regular use, add this data to the data already collected, and repeat the estimation of the sampling uncertainty. Repeat adding data for additional spaces while $U \geq 0.1X$.

When $U < 0.1X$ the statistical uncertainty in your figure is now less than 10%, and the figure can be used. If you have collected more data than essential it is better to use the extra data to improve the uncertainty.

d) Multiply the sample mean, X, by the total area subject to the sampling methodology, A. This is the **rated area** excluding any **functional spaces** in which you counted computers separately in the first step of this process.

C.5 Accuracy calculation procedure

Note: The **Online Rating Calculator** automatically calculates the error associated with a rating assessment. It is important that the degree of error is minimised and is kept within limits so that NABERSNZ ratings can be relied upon for comparison.

C.5.1 Potential error – area, computer count, energy and water consumption

For all **data types** except hours, the **potential error** is the total of all estimates (including assumptions, approximations, and un-verified data) used in place of **acceptable data** for that data type.

C.5.2 Potential error – hours

Potential error is calculated differently for hours because potential inaccuracy in the area-weighted average is not readily apparent from the raw occupancy data. The calculations are based on the following procedure:

a) Calculate the **rated hours** as specified in Chapter 5 Rated hours and record the result.

b) Set the hours for all **functional spaces** with uncertain hours to zero and record the value for **rated hours** that would result. This is the worst-case figure. Return the hours to their 'rated' values.

c) The overall **potential error** in hours is then the **rated hours** from step a) above minus the worst-case total calculated in step b).

C.5.3 Total rating accuracy

The combined effect of all assumptions, estimates, and un-verified data on a rating is calculated as follows:

a) Calculate a 'case A' rating using all the assumptions, estimates, and un-verified data intended to be used in the assessment.

b) Calculate the **potential error** for each data type.

c) Calculate a 'case B' rating in which the **potential errors** are:

1) (for **rated area**, **rated hours** and computer count data) added to the 'case A' inputs; or

2) (for energy and water consumption data) subtracted from the 'case A' inputs.

d) The 'case A' rating meets the accuracy requirements of this section if the results from the rating calculator for the 'case A' and 'case B' ratings differ by no more than 5% (in $kgCO_2/m^2$ or kL/m^2, as appropriate).

Appendix D – Guide to non-utility metering system validation

The following templates are examples of **validation** records for electrical, gas and **RMRS non-utility metering systems**.

Example of a validation record for electrical non-utility metering systems

Validation record for electrical non-utility metering systems

See Section 9.5.2 on requirements for validating electrical non-utility metering systems

Name of premises:		**Name of person undertaking validation:**	
Address of premises:		**Qualification and/or certified licence number:**	
		Date of validation:	

ID (meter no. or tenancy / unit no.)	Description (meter brand and type)	Wiring check*	CT Ratio (of the installed CTs)	Where multipliers are applied to a meter reading after output:		Where multipliers are applied to a meter reading prior to output:			
				Does the meter face reading need to be multiplied to calculate the true consumption?	If so, confirm the multiplication factor to be applied to account for the CT Ratio:	Can the meter multiplier be interrogated on the meter face?	If so, record the meter multiplier and attach photographic evidence	If not, use tong-testing or a hand-held meter to compare measured current and meter face current per phase	
								Sub-meter current per phase	Comparison meter current per phase
				Yes / No		Yes / No		/ /	/ /
				Yes / No		Yes / No		/ /	/ /

* Wiring check including reverse CT connection errors, cross phase CT connection errors, phase sequence connection errors and faulty or missing potential fuses..

Signed to record that the above non-utility meters are correctly configured and have been validated:

.....

Example of a validation record for gas non-utility metering systems

Validation record for gas non-utility metering systems

See Section 9.5.3 on requirements for validating gas non-utility metering systems

Name of premises:		**Name of person undertaking validation:**	
Address of premises:		**Qualification and/or certified licence number:**	
		Date of validation:	
Non-utility meter ID (meter no. or tenancy / unit no.)	**Non-utility meter description** (meter brand and type)	**Meter pressure (kPa)**	**Correction factor**

Signed to record that the above **non-utility metering systems** are correctly configured and have been validated:

.....

Example of a validation record for Remote Meter Reading Systems (RMRS)

Validation record for Remote Meter Reading Systems (RMRS)

See Section 9.5.4 on requirements for validating Remote Meter Reading Systems (RMRS)

Name of premises:		**Name of person undertaking validation:**	
Address of premises:		**Qualification and/or certified licence number:**	
		Date of validation:	
ID of meter connected to RMRS (Meter no. or tenancy / unit no.)			
Description of meter connected to RMRS (Meter brand and type)			

Remote Meter Reading System readings

Confirmation of the accurate interpretation of system reading the non-utility meter at the same two time periods (where applicable)

Time A		Time B	
Remote Metering Reading System readings	Corresponding manual non-utility meter readings from meter face	Remote Metering Reading System readings	Corresponding manual non-utility meter readings from meter face
Time A:		Time B:	
Time A:		Time B:	
Time A:		Time B:	

Signed to record that the above **non-utility metering systems** are correctly configured and have been validated:

.....

Appendix E – List of changes

The following tables document the history of the content of *NABERSNZ Rules – Energy and Water for Offices* v1.2.

Chapter 1 **The structure and contents of Chapter 1 has been largely revised and updated. Several new sections were added: Interpretation of the Rules (1.2), Situations not covered by the Rules (1.3), Purpose and overview (1.4.1) and Formatting conventions and referencing (1.4.4). The summary about the NABERSNZ rating system and assessment has been re-written.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
1.1 About NABERSNZ Energy and Water for Offices ratings	1.1, 1.4.2 and 1.4.3	Section rearranged and expanded upon, based on the NABERS updated Office Rules.
1.2 About this document	1.2 and 1.5	Table of main changes – updated and included now in this Appendix. Related documents section expanded to list secondary material referenced in the text: *The Rules – NABERS Energy and Water for Offices (v4.1)*, 2020 *NABERSNZ Energy for Offices – Ruling for Thermal Energy Exclusions*, 2008 Property Council of New Zealand Incorporated / Property Institute of New Zealand Incorporated, *Guide for the Measurement of Rentable Areas*, 2013
Chapter 1	Chapter 1	New structure: • Summary

		• Interpretation of the Rules • Situations not covered by the Rules • How to use this document • Related documents

Chapter 2 **Chapter 2 has undergone considerable editing and has had a title change from 'Key concepts' to 'Terms and definitions'. Most of its content moved to other chapters (or documents). Chapter 2 in v1.2 contains solely the terms and definitions integral to the proper understanding and use of the document.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
2.1 The Assessment Process	–	Removed.
2.2 Definitions	Chapter 2	Upgraded to its own standalone chapter. All terms and definitions were reviewed, and most definitions were clarified. The following have had updates: • Acceptable data • Acceptable estimate • Educational office facility • End use • External user • Hours of occupancy • Measurement standard for rated area • Medial office facility • Metering system • Non-utility metering system • Occupied • Office support facility

		• Rated area • Rated hours: The two definitions for rated hours have been combined into one and a note added to explain the difference in terminology between the types of ratings. The third definition for rated hours: this has been deleted as it does not seem necessary if the info is the same for water as for energy. • Rules • Tenant Occupancy Survey (TOS) • Validation The following new definitions were added: • Rated premises • Cloud metering system • Co-assess: Definition added of a new rating approach that allows tenancy, Base Building and Whole Building ratings to be conducted with default rated hours and computer numbers. • Comfortable for office work: Definition revised to remove ‘safe, lit’ from the definition of conditions of office spaces that are suitable for normal use. • Computer server room • Data centre • Direct HVAC energy • Embedded network • End of trip facility • Non-utility metering system • Online Rating Calculator • Owner/Tenant Agreement (OTA): Definition added to align with the acceptable documentation that is used to determine rated hours. • Public access space • Rated premises • Supplementary air conditioning equipment • Utility metering system • Validity period The following definitions have been deleted: • Alternative method • Assumption • Average • Data

		• Data type • Estimate • Metering systems requiring validation • Non-utility meter • Safe, lit and comfortable for office work • Source • Supplementary equipment • Unvalidated metering systems • Use by the tenants • Verification
2.3 Interpretation	Chapter 1	Integrated into the Introductory chapter.
2.4 Proposed New Methods	–	Removed.
2.5 Summary of Data & Documentation Needed	Chapter 11	Content incorporated into new Chapter 11. Definitions removed.
2.6 The rating period	Section 3.2 and Appendix B	Content incorporated into new Appendix B and greatly expanded on. Update based on the NABERS Rules. Figure 2 deleted. 4 months specified rather than 120 days in relation to the rating period (Section 3.2).
2.7 Acceptable Data & Acceptable Estimates	Section 3.3	Minor editorial changes.
2.8 Site inspection	Section 3.4	Section greatly expanded and clarification added explaining the process of confirming the energy and/or water sources during site inspection. Guidance added to allow another Accredited Assessor to undertake a site inspection.

		4 months specified rather than 120 days for the inspection. Requirement for Administrator approval of another Accredited Assessor added.
2.9 Documentation and record-keeping	Section 11.1	Second and third sections combined and rearranged. content essentially the same. Some content incorporated into new Chapter 11.

Chapter 3 **Chapter 3 of v1.0 is now Chapter 4 of v1.2.** **The structure and general content are essentially the same, but important updates have been made in relation to determining and dividing the rateable area, excluding functional space areas and medical / educational office facilities.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
3.1 Summary	4.1	Small editorial changes. Process now described in following section.
3.2 Definitions	–	Removed. All definitions now contained in Chapter 2.
3.3 Process overview	4.2	First paragraph reworded for clarity. References to ‘net office rentable area’ changed to ‘rated area’ to simplify steps. Table revised and steps on exclusions and public access spaces added.
3.4 Determining office rentable area	4.3	• Table from previous section on calculating rated area added at the beginning of this section (wording largely unchanged except for ‘rentable area’ being changed to ‘rated area’ in some instances). • Figure 4 removed. • Section on currency of information integrated into this section and paragraphs rearranged. • Sections on area measurement estimates added and complete tenancy revised. Clarification added explaining the compliance pathways for leases with one or more sub-leases. • Documentation requirements moved to Chapter 11.

3.4 Dividing the rateable area into functional spaces	4.4	• Wording revised and minimum requirements separated out. Clarification added explaining the procedure of dividing functional spaces. • Requirements for computer server rooms and meeting rooms added. • Figure 5 deleted. • Note on small office support facilities added. • Example of meeting room changed to example of computer server room. • Documentation requirements moved to Chapter 11.

3.5 Excluding Functional Space areas	4.5	• Information revised and organised more clearly.
		• Figure 6 deleted.
		• Excluding computer server rooms reworded for clarity and the treatment of data centres added.
		• Excluding other office support facilities has undergone slight changes.
		• Spaces without consumption data has been clarified.
		• Examples in Table 4.3 added as follows:
		  • Clarifying the inclusions of end of trip facilities
		  • Area inclusions and exclusions

3.6 Limiting the proportion of Medical or Educational office facilities and public access spaces	4.6	• Format updated • NABERSNZ concepts of medical office facility and educational office facility have been clarified. • Formula regarding total rated area removed. • Text edited for clarity and information included in notes and examples revised, including change of wording from ‘net office rentable area’ to ‘rated area’.
3.7 Adjusting for unoccupied spaces	4.7 and Chapter 11	• Format updated. • Documentation requirements moved to Chapter 11.

Chapter 4 **Chapter 4 of v1.0 is now Chapter 5 of v1.2. Important updates have been made in relation to determining rated hours section. Repetitious information has been removed and the procedures have been clarified.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
4.1 Summary	5.1	Reworded but essentially the same.
4.2 Process overview	5.2	No change, only reformatted.
4.3 Determining Rated Hours	5.3	• Determining rated hours; introductory section revised • Core hours have been reviewed and clarified. Paragraph added explaining that the OTA might be another document specifying information about Core Hours. Step 1 expanded; Step 2 rewritten for clarity; Steps 3 and 4 are the same. Clarification added explaining the steps used to determine hours for Base Building ratings. • Application of individual requests for AHAC hours and examples; revised and clarified. • OTA – Clarification added explaining the wording when it can or cannot be accepted to demonstrate 'comfort conditions'. Notes added for clarity. • AHAC requests – same • TOS – Clarification added explaining in which situations a Tenancy Occupancy Survey cannot be used. Clarification added explaining where it is reasonable that a Tenancy Occupancy Survey across multiple functional spaces completed by a single manager or supervisor. • Table 5.4 added. • Average core hours – same • Default core hours – wording relating to adding Default Core Hours to a rating's potential error reworded slightly. • Other office support facilities, Base Building – clarified and some requirements moved. • Example added clarifying the hours for computer server rooms for Base Building and Whole Building/Tenancy ratings • Requirements relating to computer server rooms and co-assess applications removed. • Information on alternative methods, including table, removed. • All documentation requirements have been moved to Chapter 11.

4.4 Verifying long hours	5.4	• Format updated • Wording of the third steps of the verification procedure updated for clarification. • Same content but title of last section (Section 5.4.4) changed to Checking expected hours. • Documentation requirements moved to Chapter 11.

Chapter 5 **Chapter 5 of v1.0 is now Chapter 6 of v1.2.** **The process overview has been moved from Section 5.2.3 in v1.0 to Section 6.2 in v1.2, in keeping with flow of previous chapters. Minimal new information added; wording and formatting clarified throughout. Counting occupancy requirements have been removed completely from chapter.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
5.1 Summary	6.1	Reworded for clarity.
–	6.2	Section added.
5.2 Counting computers	6.3	• Standard for acceptable data clarified. • Clarification added explaining the approach of counting computers in Agile and Activity Based Working (ABW) spaces. • Estimating numbers of computers revised for clarity. • Process for conducting a survey clarified and messages relating to data entry in NABERSNZ Online Rating Calculator removed. • Figure describing a random survey removed. • Definition added for default computer count for co-assess applications (Note 1 and Note 2 in Section 6.3.5). • Mention of the Rating Assessment Form removed. • Documentation requirements moved to Chapter 11. • Counting occupancy requirements removed completely from chapter.

Chapter 6 **Chapter 6 of v1.0 is now Chapter 7 of v1.2.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**

6.1 Interpretation of scope	7.1, 7.2 and 7.3	• The following sections were moved to Section 7.2 and reworded as necessary: General, Interpretation of scope (Base Building, Tenancy and Whole Building ratings), Unoccupied spaces, Exclusions.
		• Allocating energy use for services moved to Section 7.3.2 with minor changes.
		• Energy consumption of included and excluded spaces are the same.
		• Exterior signage revised and moved to Section 7.3.4. Clarification added explaining the inclusion of exterior signage into Base Building rating.
		• Further items under Exclusions section added, including:
		  • Electric vehicle charging points – guidance added;
		  • Transmission towers – guidance added;
		  • Computer server rooms / data centres.
		• Computer room energy coverage re-worded.

6.2 On-site generation	7.4	• Reference to *NABERSNZ Ruling – Thermal Energy Exclusions* added • Clarification added that where energy generated on-site is for off-site usage, the externally supplied energy sources can be excluded.
6.4 Documentation required	Chapter 11	All documentation requirements revised and moved to Chapter 11.

Chapter 7 **Chapter 7 of v1.0 is now Chapter 8 of v1.2.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
7.1 Interpretation of scope	8.1	• Interpretation of scope section of water sources incorporated into other sections including 8.2 and documentation requirements. • Unmetered supplies – wording revised.
7.2 On-site generation	8.2	• Required minimum water coverage – same, but title changed to 'water ratings' in Section 7.1 (interpretation of scope). • Water consumption in excluded spaces – slight changes. • Unoccupied spaces – same with slight rewording. • Fire system water consumption – same.
7.1.3 Water consumption in excluded spaces	8.3	On-site capture and recycling – wording revised. Clarification added that where energy generated on-site is for off-site usage, the externally supplied energy sources can be excluded.
7.2 Documentation required	Chapter 11	All documentation requirements revised and moved to Chapter 11.

Chapter 8 **Chapter 8 of v1.0 is now Chapter 9 of v1.2. Significant content from Appendix D is now contained in Chapter 9.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
8.1 Summary	9.1	Minor editorial changes.
8.2 Definitions	Chapter 2	Definitions updated and moved to Chapter 2.
8.3 **High-voltage electricity metering**	9.2	Additional information on losses above 10% and the use of high-voltage metering in certain circumstances.
8.4 Non-utility meter records	10.6	• Table 10.4: 'All meters' Section: 'meter reading' changed to 'meter reading from cumulative meters'; • Line added on 'Consumption data from non-cumulative meters' 'Gas meters' Section: 'meter pressure correction factor' split into inclusions and exclusions and factor of '1' added for exclusions
8**.5 Non-utility metering system validation**	9.3 9.4 9.5	• Introductory section reworded and some information made into a note • Process table (Table 9.1) for calculating validation added • Pulse meter section removed and added to other sections in Chapter 9 on RMRS and types of non-utlity meters • All information relating to non-utility meter management plans removed, including figures • Method of selecting a random sample of metering systems removed • Clarification added explaining types of non-utility meters • Section on validation of cloud metering added • Clarifications added explaining the validation procedure for CT meters and embedded networks.

Appendix D – 10.4 – Guide to non-utility metering system validation	9.5	[See table below on Appendices for changes.]

Chapter 9 **Chapter 9 of v1.0 is now Chapter 10 of v1.2. This chapter on Measuring Consumption has been considerably revised in parts and some sections have been rearranged for a better flow of information according to the changes.**		
Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
9.1 Summary	10.1	Minor editorial changes.
9.2 Definitions	Chapter 2	Definitions updated and moved to Chapter 2.

9.3 **Measuring consumption**	10.2	• In Section 10.2.2, the first two paragraphs were added. Other changes include:
		  • ‘recycled water’ added to point a);
		  • points d), e) and f) added;
		  • Examples added in points b) and c)
		  • Note removed.
		• Figures 18, 19 and 20 were removed.
		• Sections 10.2.2.2 and 10.2.2.3 on ‘checks of sources and supply points’ were added
		• Clarification added about the checks the Assessors should undertake of all energy sources and supply points.

9.4 **Including or excluding consumption**	10.3	• ‘Determining the fixed proportion’ – documentation requirements clarified.
		• ‘Energy exclusions based on area weighting’ – note added regarding treatment of spaces not included in office rentable area, and reference made to use of method for small retail spaces and small educational or medical spaces.
		• ‘Estimating small un-metered end uses’ –
		  • title changed to ‘Including small un-metered electricity uses’.
		  • Method revised and wording clarified

		• Notes, example and footnote removed • 'Thermal energy measurements' – note added
9.5 Batch-delivered supplies	10.4	• Note made into body text and wording revised • Guidance added if all bills available and note in Section 10.4.1. • Section 'estimating from capacity measurements' changed to 'calculating an alternative measurement'. Section completely revised • 'batch-delivered recycled water' and 'batch-delivered water for direct uses' revised for clarity and wording simplified • 'Standard for acceptable data' and 'documentation required' sections removed/added to Chapter 11.
9.6 Utility bill units and formats	10.5	• Title changed to 'Consumption data from utility meters' • First section (10.5.1) about billed quantities – added • Table 10.3 – same • 'energy bill formats' – wording simplified • 'minimum frequency of bills' (Section 10.5.4) – added
9.7 Periods covered by utility data	10.5.5	• Information organised more clearly but content the same (Sections 10.5.5.1 and 10.5.5.2) • Section 10.5.5.3 on co-assess energy ratings added
	10.8.2	• 'Adjusting for gaps at the start or end of the rating period' – process revised in terms of meter data being used for inclusions and exclusions, and linked to sections on cumulative meter readings in Chapter 9 • Figure 21 removed
	10.7.5	• Title changed to 'estimating unrecorded consumption for non-cumulative meters' • Main content is the same but final two paragraphs added
	10.5.6	'adjusting consumption data to match the rating period' – same
	10.7.4	• Title changed to 'Adjusting for gaps during the billing period – where cumulative meter readings are available' • Content in Section 10.7.4.1 is essentially the same but reworded in parts for clarity • Section 10.7.4.2 – point c) added • Section 10.7.4.3 – same

	10.8.1 10.8.3 10.8.4	These sections were written based on the division between cumulative and non-cumulative non-utility metering systems.
9.8 Correcting non-utility meter readings	9.6	• Level 2 title changed to 'Adjustments resulting from validation checks' • Level 3 title changed from 'Assessments where corrections can be made' to 'Assessments where adjustment is needed' and two requirements a) and b) and following paragraph added. • Figure 22 removed but content of Section 9.6.3 is the same
9.9 **Documentation required**	Chapter 11	• All documentation requirements moved to Chapter 11

Appendices

The Appendices have been renumbered alphabetically in order to distinguish them from numerical chapters in the texts. They have mostly been reproduced in *NABERSNZ The Rules – Energy and Water for Offices* with the exception of Appendix D of v1.0 that was (mostly) incorporated into Chapter 9.

Appendix B in *NABERSNZ The Rules – Energy and Water for Offices v1.2* has been created from information from Section 2.6 of v1.0, The Rating Period.

Version 1.0 (old location)	**Version 1.2** (new location)	**Changes made**
Appendix A	Chapter 11	• Information in table of previous Appendix A combined with individual documentation requirements of each chapter to form a new Chapter 11.
Appendix B	Appendix A	No changes except updated formatting.
–	Appendix B	Appendix added based on expanded information from Section 2.6. This appendix on the rating period is considerably shorter than the same appendix in the Australian Rules.

Appendix C	Appendix C	• Updated formatting, including level 3 headings made into level 2 headings. • 'tenancy and Whole Building rated hours calculation' – the function of the Online Rating Calculator added. The methodology in this section is the same but the example has been removed.
Appendix D	Appendix D and Chapter 9	• All textual content incorporated into Chapter 9. • Figures of various types of meters – removed. • Validation record templates separated to form new Appendix D. • Validation record for water – removed. • Separate RMRS validation record created, and other non-utility validation forms simplified.