ELECTRICITY SUPPLY ACT 1995

Notice of Approval of Energy Savings Scheme (Amendment No. 2) Rule 2014

I, Anthony Roberts, Minister for Resources and Energy, pursuant to section 167(4) of the *Electricity Supply Act 1995*, hereby approve the Energy Savings Scheme (Amendment No. 2) Rule 2014 (**Amending Rule**) attached to this notice.

The Amending Rule commences on 1 July 2014 and amends the Energy Savings Scheme Rule 2009.

This notice of approval of the Amending Rule is provided pursuant to section 167(5) of the *Electricity Supply Act 1995.*

A copy of the amended Energy Savings Scheme Rule 2009 may also be obtained through the NSW Trade & Investment website at http://www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/efficiency/scheme.

Dated at Sydney, this 28th day of May 2014.

The Hon Anthony Roberts, MP

Minister for Resources and Energy

Energy Savings Scheme (Amendment No. 2) Rule 2014

1. Name of Rule

This Rule is the *Energy Savings Scheme (Amendment No. 2) Rule 2014*.

2. Operation of Rule

This rule amends the Energy Savings Scheme Rule 2009. The amended Energy Savings Scheme Rule 2009 is set out in Schedule 1 of this Rule.

3. Commencement

This rule commences on 1 July 2014.

Note: Some clauses of the Energy Savings Scheme Rule 2009, as amended by this rule, commence on later dates. See clause 1.1 of Schedule 1.

SCHEDULE 1

Energy Savings Scheme Rule of 2009

The Hon Anthony Roberts, MP
Minister for Resources and Energy

Simplified outline

The following is a simplified outline of this Rule:

- clauses 1-4 set out the commencement of the Rule, the objects of the Rule, the application of the Rule, and status and operation of the Rule.
- clause 5 sets out the definitions of Energy Saver and Recognised Energy Saving Activity and eligibility requirements for accreditation as an Accredited Certificate Provider.
- clause 6 sets out the conditions on the creation of Energy Savings Certificates under the Rule.
- clause 7 sets out the calculation method for determining Energy Savings under the Project Impact Assessment Method.
- clause 7A sets out the calculation method for determining Energy Savings under the Project Impact Assessment with Measurement and Verification Method.
- clause 8 sets out the calculation method for determining Energy Savings under the Metered Baseline Method using one of the following sub-methods:
    - Baseline per unit of output (clause 8.5)
    - Baseline unaffected by output (clause 8.6)
    - Normalised baseline (clause 8.7)
    - NABERS baseline (clause 8.8)
    - Aggregated Metered Baseline (clause 8.9)
- clause 9 sets out the calculation method for determining Energy Savings under the Deemed Energy Savings Method using one of the following sub-methods:
    - Sale of New Appliances (clause 9.3)
    - Commercial Lighting Energy Savings Formula (clause 9.4)
    - High Efficiency Motor Energy Savings Formula (clause 9.5)
    - Power Factor Correction Energy Savings Formula (clause 9.6)
    - Removal of Old Appliances (clause 9.7)
    - Home Energy Efficiency Retrofits (clause 9.8).
    - Installation of High Efficiency Appliances for Businesses (clause 9.9)

- ‘1 for 1’ Residential Downlight Replacement (clause 9.10)

- clause 10 sets out the definitions and interpretation provisions.
- clause 11 sets out savings and transitional arrangements relating to the amendment of this Rule.
- Schedule A sets out Default Factors and Classifications.
- Schedule B sets out activity definitions for the Sale of New Appliances (clause 9.3)
- Schedule C sets out activity definitions for the Removal of Old Appliances (clause 9.7)
- Schedule D sets out activity definitions for General Activities for Home Energy Efficiency Retrofits (clause 9.8)
- Schedule E sets out activity definitions for Low Cost Activities for Home Energy Efficiency Retrofits (clause 9.8)
- Schedule F sets out activity definitions for the Installation of High Efficiency Appliances for Businesses (clause 9.9)
- Schedule G sets out the activity definition for ‘1 for 1’ Residential Downlight Replacement (clause 9.10)

1 Name and commencement

1.1 This Rule is the *Energy Savings Scheme Rule of 2009* and commences on 1 July 2014, with the following exceptions:

(a) Activities D6, D7, D8 and D9 (Insulation) of Schedule D commence on a date notified by the Minister responsible for the Act by notice published in the NSW Government Gazette;

(b) clause 9.8 (Home Energy Efficiency Retrofits sub-method of the Deemed Energy Savings Method) commences on 1 October 2014;

(c) clause 7A (Project Impact Assessment with Measurement & Verification Method) commences on 1 October 2014; and

(d) subclauses 6.8 (h), (i) and (j) commence on 1 October 2014.

2 Objects of the Rule

2.1 The object of this Rule is to provide specific arrangements for the creation and calculation of Energy Savings Certificates where energy is saved, with no negative effect on production or service levels, through increased efficiency of electricity consumption or reduction in electricity consumption. The Rule aims to save energy through measures that improve electricity end-use efficiency.

3 Application of the Rule

3.1 This Rule applies to Accredited Certificate Providers accredited to create Energy Savings Certificates in respect of Recognised Energy Saving Activities in accordance with Part 9 Division 8 of the Act, the Regulations and this Rule.

3.2 For the avoidance of doubt, unless expressly provided otherwise, this Rule applies to the calculation of Energy Savings used to create Energy Savings Certificates for which an application for registration is made on or after 1 July 2014.

4 Status and Operation of the Rule

4.1 This Rule is an Energy Savings Scheme Rule made under Part 9 Division 13 of the Act.

5 Definitions of Energy Saver and Recognised Energy Saving Activity and Eligibility Requirements

Note: Other definitions of terms used in this document are set out at clause 10.

5.1 (deleted)

Energy Saver

5.2 The Energy Saver with respect to Energy Savings arising from a Recognised Energy Saving Activity, as calculated according to a calculation method in this Rule, is either:

(a) the person defined as the Energy Saver in the relevant calculation method, provided that, as at the relevant Implementation Date, that person has not nominated another person to be the Energy Saver for those Energy Savings in accordance with clause 5.2 (b); or

(b) the person nominated to be the Energy Saver by the person in clause 5.2 (a), provided that:

(i) the nomination has been made in a form and manner approved by the Scheme Administrator; and

(ii) as at the relevant Implementation Date, another person has not been nominated as the Energy Saver with respect to the same Energy Savings.

Recognised Energy Saving Activity

5.3 A Recognised Energy Saving Activity is any activity that meets all of the following criteria:

(a) it increases the efficiency of electricity consumption, by:

(i) modifying End-User Equipment or the usage of End-User Equipment (including by installing additional components) with the result that there is a reduction in the consumption of electricity compared to what would have otherwise been consumed;

(ii) replacing End-User Equipment with other End-User Equipment that consumes less electricity;

(iii) installing New End-User Equipment that consumes less electricity than other comparable End-User Equipment of the same type, function, output or service; or

(iv) removing End-User Equipment with the result that there is a reduction in the consumption of electricity compared to what would have otherwise been consumed;

(b) it does not result in a reduction in electricity consumption by reducing production or service levels (including safety levels);

(c) it is implemented at a Site or Sites in an ESS Jurisdiction; and

(d) it is not unlawful to carry out in that ESS Jurisdiction as at the Implementation Date.

5.3A The replacement or removal of End-User Equipment only constitutes a Recognised Energy Saving Activity if the Accredited Certificate Provider does not refurbish, re-use or resell that End-User Equipment.

5.3B The installation of New End-User Equipment only constitutes a Recognised Energy Saving Activity if the Scheme Administrator is satisfied that the efficiency of electricity consumption of the New End-User Equipment is greater than the average energy efficiency of End-User Equipment that provides the same type, function, output or service. For these purposes, the energy efficiency of End-User Equipment may be estimated by reference to:

(a) baseline efficiency for that class of End-User Equipment which may, from time to time, be Published by the Scheme Administrator;

(b) sales-weighted market data for that class of End-User Equipment collected from installers, retailers, distributors or manufacturers; or

(c) product-weighted averages of Products registered as complying with an AS/NZS that defines how energy efficiency is to be measured for that class of End-User Equipment.

Activities which are not Recognised Energy Saving Activities

5.4 Recognised Energy Saving Activities do not include any of the following:

(a) the installation of End-User Equipment defined as a:

i. T5 Adaptor kit in Table A9.3 of Schedule A; or

ii. Retrofit Luminaire-LED Linear Lamp in Table A9.3 of Schedule A;

(b) an activity undertaken in order to comply with any mandatory legal requirement imposed through a statutory or regulatory instrument of any jurisdiction, including, but not limited to, compliance with BASIX and BCA requirements;

(c) an activity of a Network Service Provider that satisfies a regulatory investment test under the National Electricity (NSW) Law or rules made under it, disregarding the value of financial incentives provided by the Energy Savings Scheme;

(d) the supply of electricity by an Electricity Retailer, or the purchase of electricity from an Electricity Retailer by a customer, from the Electricity Network, under a representation by the Electricity Retailer that there is a reduction in greenhouse gas emissions because the electricity supplied is connected with, or represents an amount equal to, the generation of electricity from a particular energy source. This includes but is not limited to purchases of GreenPower;

Note: This excludes activities involving the purchase of electricity under "GreenPower" accredited or similar schemes that are eligible to create certificates or Renewable Energy Certificates at the point of generation.

(e) an activity that results in a reduction in the consumption of electricity by reducing production or service levels (including safety levels);

Note: Reduced energy consumption not directly due to specific actions to improve efficiency does not qualify as a Recognised Energy Saving Activity. Mild weather, lower production, closing down part of a Site, or reducing the quality or quantity of service derived from the use of that electricity do not qualify as a Recognised Energy Saving Activity.

Reducing electricity consumption where there is no negative effect on production or service levels (e.g. reduction of excessive lighting, removal of redundant installed capacity or the installation of more energy efficient equipment) is a Recognised Energy Saving Activity and is not excluded by this clause.

(f) an activity that reduces electricity consumption by generating electricity from any source or by converting non-renewable energy to provide equivalent goods or services;

Note: End-User Equipment that reduces electricity consumption by recovering electricity from its own electricity powered process (e.g. regenerative braking in electric motors, heat recovery from an electric furnace) is not taken to generate electricity if the recovered energy is used to provide the same End-Use Service (i.e. the recovered electricity is not exported for another purpose).

(g) an activity that is eligible to create tradeable certificates under the *Renewable Energy (Electricity) Act 2000 (Cth)*.

5.5 For the purposes of clause 5.3, a Recognised Energy Saving Activity may:

(a) involve multiple Activity Definitions or items of End-User Equipment; and

(b) occur at a single Site or across multiple Sites where each Implementation has a single Implementation Date.

Eligibility for accreditation

5.6 A person is only eligible for accreditation as an Accredited Certificate Provider if the person is a suitable person to be so accredited.

5.7 In considering the suitability of a person to be accredited as an Accredited Certificate Provider, the Scheme Administrator may take into account such matters as it thinks relevant, including:

(a) previous commercial dealings of the person and its associates; and

(b) the standard of honesty and integrity shown in previous commercial dealings of the person and its associates.

5.8 In clause 5.7, "associate", in relation to a person, has the same meaning it would have under Division 2 of Part 1.2 of the Corporations Act 2001 of the Commonwealth if only sections 10, 11, 12(2), 12(5), 15 and 16(1) formed part of that Division.

6 Creation of Energy Savings Certificates

Note: Only Accredited Certificate Providers may create Energy Savings Certificates (section 134 of the Act).

6.1 (deleted)

6.2 An Accredited Certificate Provider may only create Energy Savings Certificates in respect of the Energy Savings for an Implementation where:

(a) the Accredited Certificate Provider is the Energy Saver for those Energy Savings as at the Implementation Date; and

(b) the Accredited Certificate Provider's Accreditation Date for that Recognised Energy Saving Activity is prior to the Implementation Date.

6.3 (deleted)

6.4 An Accredited Certificate Provider may not create Energy Savings Certificates in respect of any Energy Savings for which Energy Savings Certificates have already been created.

6.5 An Accredited Certificate Provider may only create a certain Number of Certificates in respect of the Energy Savings arising from a Recognised Energy Saving Activity, calculated in accordance with **Equation 1**.

Equation 1

$$Number\ of\ Certificates = \sum_{Implementations} Energy\ Savings \times Certificate\ Conversion\ Factor$$

Where:

- *Number of Certificates* is rounded down to a whole number of Energy Savings Certificates;
- the summation is across the Energy Savings arising from one or more Implementations of the Recognised Energy Saving Activity;
- *Energy Savings* is the Energy Savings, in MWh, arising from each Implementation as calculated according to (as relevant):

  - the Project Impact Assessment Method (clause 7);

  - the Project Impact Assessment with Measurement and Verification Method (clause 7A);

  - the Metered Baseline Method (clause 8); or

  - the Deemed Energy Savings Method (clause 9).
- *Certificate Conversion Factor* is 1.06, as specified in Schedule 5B of the Act, or as amended by Regulation.

6.5A The method used to calculate the Energy Savings arising from a Recognised Energy Saving Activity must:

(a) be approved by the Scheme Administrator before any Energy Savings Certificates are created using that method. For the purposes of such an approval, the Scheme Administrator may impose additional conditions in respect of the use or application of that method; and

(b) produce a result reasonably reflecting, to the satisfaction of the Scheme Administrator, the Energy Savings arising from that Implementation.

6.5B Energy Savings may be totalled over more than one Implementations of the same Recognised Energy Saving Activity to create one or more Energy Savings Certificates.

6.5C Any Implementation that meets all of the Equipment Requirements, Eligibility Requirements and Implementation Requirements for the relevant Recognised Energy Saving Activity on the Implementation Date, is deemed to meet the requirements of this Rule for Energy Savings Certificate creation, unless otherwise advised in writing by the Scheme Administrator.

6.6 (deleted)

6.7 (deleted)

6.8 Before or when creating Energy Savings Certificates for one or more Implementations, an Accredited Certificate Provider must provide the following data to the Scheme Administrator in a manner and form determined by the Scheme Administrator:

(a) the Accredited Certificate Provider identifier;

(b) the Recognised Energy Saving Activity identifier;

(c) the Address of the Site or Sites where the Implementation(s) took place;

(d) any other identifiers required to identify the Site or Sites where the Implementation(s) took place;

(e) the Implementation Date of the Implementation(s);

(f) the Energy Savings from the Implementation(s);

(g) the Australian Business Number of the entity utilising the End-Use Service, where applicable;

(h) the cost to the person who pays for the goods or services that comprise the Implementation, excluding GST;

(i) the type of the End-Use Service for which energy was saved, if known, in accordance with Table A17 of Schedule A;

(j) the Business Classification of the entity utilising the End-Use Service, if known, in accordance with Table A18 of Schedule A; and

(k) any other data providing evidence of Energy Savings from the Implementation as specified and required by the Scheme Administrator.

6.9 Before registering the creation of an Energy Savings Certificate, the Scheme Administrator may review the data provided in accordance with clause 6.8 to ensure that the calculation of the Energy Savings used to create the Energy Savings Certificate is based on complete data.

Note: An Energy Savings Certificate has no force or effect until the creation of the certificate is registered by the Scheme Administrator (section 143 of the Act).

7 Project Impact Assessment Method

Note: The Project Impact Assessment Method may only be used in relation to Implementations with an Implementation Date on or before 30 June 2015. The Energy Savings for Implementations with an Implementation Date on or after 1 July 2015 must be calculated using the Project Impact Assessment Measurement & Verification Method under clause 7A.

7.1 Energy Savings under the Project Impact Assessment Method

(a) An Accredited Certificate Provider may only use the Project Impact Assessment Method to calculate the Energy Savings of Implementations if the Accredited Certificate Provider is authorised, on or before 30 September 2014, to use clause 7 to calculate those Energy Savings under its accreditation conditions.

(b) Energy Savings calculated in accordance with clause 7.4.4, may only be used to create Energy Savings Certificates where an application to register those Energy Savings Certificates is made on or before 30 June 2015.

(c) Energy Savings calculated in accordance with clause 7.4.4 or 7.4.6, may only be used to create Energy Savings Certificates where those Energy Savings are for Implementations with an Implementation Date on or before 30 June 2015.

(d) Using the Project Impact Assessment Method, the Energy Savings of an Implementation may be calculated using **Equation 2**.

Equation 2

Energy Savings = *Reduced Electricity Consumption* x *Confidence Factor*

Where:

- *Reduced Electricity Consumption* is the extent to which the electricity consumption of the equipment, process, or system is, as a consequence of the Recognised Energy Saving Activity, different to what it otherwise would have been, and is to be calculated in accordance with the engineering assessment in clause 7.2; and
- *Confidence Factor* is the number determined in accordance with clause 7.3 (depending on the type of engineering assessment performed).

7.2 Engineering assessment of reduced electricity consumption

Accredited Certificate Providers using the Project Impact Assessment Method in respect of any Recognised Energy Saving Activity must calculate the reduced electricity consumption of only the equipment, process, or system that is the subject of the Recognised Energy Saving Activity using an engineering assessment or model:

(a) that uses reasonable assumptions and generally accepted engineering methods, models, and formulae;

(b) in which the methods, models and formulae used to assess the Recognised Energy Saving Activity are chosen by the Accredited Certificate Provider, but the assessment is assigned a Confidence Factor under clause 7.3 reflecting the accuracy of the engineering assessment conducted; and

(c) that takes account of:

(i) the consumption of the existing equipment, systems or processes, or for the purposes of clause 5.3B, the average energy efficiency of comparable New End-User Equipment as described in that clause;

(ii) the performance of the equipment, systems or processes, including degradation over time;

(iii) the operating characteristics of the equipment, systems or processes, including hours of use, degree of loading, usage, operating patterns and behaviour, ambient conditions and any other relevant factors; and

(iv) any of the factors or constants used in a Deemed Energy Savings Method under clause 9, if the variable that the value represents is relevant to the assessment or, if the Accredited Certificate Provider proposes to use a different value for the same purpose, that value is acceptable to the Scheme Administrator.

7.3 Confidence Factor

The Confidence Factor is:

(a) 1.0, if the engineering assessment determines energy consumption to a high level of accuracy based on logged or equivalent data from the End-User Equipment such as:

(i) hours of operation for the End-User Equipment determined from measurements taken over time or other logged data, or a simpler method where this yields an equivalent level of accuracy;

(ii) allowances for any variance in input characteristics and usage, degree of loading, or output characteristics for the End-User Equipment over time determined from measurements or other logged data, or a simpler method where this yields an equivalent level of accuracy;

(iii) operating environment and ambient conditions over time for the End-User Equipment determined from measurements or other logged data, or a simpler method where this yields an equivalent level of accuracy;

(iv) End-User Equipment characteristics using a full performance curve from manufacturers' or measured data, or a simpler method where this yields an equivalent level of accuracy; and

(v) performance degradation of the End-User Equipment over time using detailed calculations and manufacturers' or measured degradation characteristics, or a simpler method where this yields an equivalent level of accuracy, (including where the engineering assessment relies upon factors or constants used in a Deemed Energy Savings method set out in this Rule);

or,

(b) 0.9, if the engineering assessment determines energy consumption to a lesser level of accuracy from that described in clause 7.3(a), based on estimations from logged data, records or equivalent data such as:

(i) hours of operation for the End-User Equipment estimated from records, or a simpler method where this yields an equivalent level of accuracy;

(ii) allowances for any variance in input characteristics and usage, degree of loading, or output characteristics for the End-User Equipment over time estimated from records, or a simpler method where this yields an equivalent level of accuracy;

(iii) operating environment and ambient conditions over time estimated for the End-User Equipment from records or average measurements, or a simpler method where this yields an equivalent level of accuracy;

(iv) End-User Equipment characteristics taking account of performance at full and part load or discrete operating modes, or a simpler method where this yields an equivalent level of accuracy; and

(v) estimates of performance degradation of the End-User Equipment over time using manufacturers' or other representative degradation characteristics, or a simpler method where this yields an equivalent level of accuracy,

or,

(c) 0.8, or another value approved by the Scheme Administrator, if the engineering assessment does not meet the level of accuracy set out in clause 7.3 (a) or (b).

7.4 Energy Savings able to be brought forward using the Project Impact Assessment Method

Note: Section 131 of the Act provides that the Rules may specify when Energy Savings arising from a Recognised Energy Saving Activity are considered to have occurred.

Therefore, under the Rule, Accredited Certificate Providers may elect to 'forward create' Energy Savings Certificates by deeming Energy Savings which will cumulatively occur for a future period of up to five years, to have occurred on the Implementation Date. However, a discount will be applied to the calculation of those Energy Savings.

If the Implementation continues to generate Additional Energy Savings, new Energy Savings Certificates can once again be forward created for those Additional Energy Savings.

7.4.1 For the purposes of section 131 of the Act, an Accredited Certificate Provider may elect for future Energy Savings for an Implementation to be deemed to have occurred on a date determined in accordance with clause 7.4.3.

7.4.2 The maximum time period of future Energy Savings for an Implementation which may be deemed to have occurred on a date determined by clause 7.4.3, is the lesser of:

(a) 5 years; or

(b) the life of the Implementation (in years) determined by the Accredited Certificate Provider, to the satisfaction of the Scheme Administrator, with reference to:

(i) the number of Energy Savings Certificates that are otherwise eligible to be created over a given period, determined in accordance with this Rule and to the satisfaction of the Scheme Administrator;

(ii) any likely performance degradation of the End-User Equipment that will tend to result in Energy Savings in one period being lower than Energy Savings in preceding periods of equal duration; and

(iii) the expected lifetime of the End-User Equipment, taking into account its characteristics, usage and typical frequency of replacement assuming that the use of the Site and End-User Equipment remains the same.

7.4.3 If an Accredited Certificate Provider makes the election in clause 7.4.1, the date on which the Energy Savings for that Implementation are deemed to occur is the later of:

(a) the Implementation Date; and

(b) in respect of an Implementation prior to 1 July 2014, the first date by which all the Energy Savings previously brought forward under clause 7.4.1 to create Energy Savings Certificates in respect of the same Recognised Energy Savings Activity have actually occurred.

7.4.4 The amount of Energy Savings deemed to occur on the date determined by clause 7.4.3 must be calculated in accordance with the method set out in **Equation 3.**

Equation 3

$Energy\ Savings = Reduced\ Electricity\ Consumption_n \times Confidence\ Factor \times Decay\ Factor_n$

Where:

- *Reduced Electricity Consumption* is the extent to which the electricity consumption of the equipment, process, or system is, as a consequence of the Recognised Energy Saving Activity, different to what it otherwise would have been in year *n*;
- *Confidence Factor* depends on the type of engineering assessment performed under clause 7.2 and is assigned according to clause 7.3;
- $Decay\ Factor_n$ is set out in Table A16 of Schedule A for year n; and
- *n* is the year from 1 (the first year of Energy Savings claimed) to 5.

Note: At the end of the period for which Energy Savings Certificates were 'forward created', Accredited Certificate Providers can apply to create Energy Savings Certificates for the Energy Savings which were previously discounted.

7.4.5 For the purposes of section 131 of the Act, Energy Savings which are used to create Energy Savings Certificates in accordance with clause 7.4.6 are taken to occur on the date on which the maximum time period as determined in clause 7.4.2 ends.

7.4.6 At the end of the maximum time period determined by clause 7.4.2, the Accredited Certificate Provider may create Energy Savings Certificates using Energy Savings for the relevant Implementation equal to:

(a) the Energy Savings for each year in the maximum time period other than the first year as calculated using Equation 2; less

(b) the Energy Savings for each year in the maximum time period other than the first year as calculated for the relevant year in Equation 3,

provided the Accredited Certificate Provider establishes, to the satisfaction of the Scheme Administrator, that the Energy Savings calculated in clause 7.4.6(a) have actually occurred.

Note: If the Recognised Energy Saving Activity is transitioned to clause 7A and the Implementation has previously been carried out under the Project Impact Assessment Method according to this Rule or the Previous Rule:

(a) the calculation of Energy Savings in clause 7.4.6 may use Energy Savings predicted by an energy model established in accordance with clause 7A.2; and

(b) the energy model in clause 7A.2 must be consistent with the method used to calculate Energy Savings in Equation 3.

7.5 The Implementation Date is the date that the Implementation commenced normal operations.

7.6 The Energy Saver is the Purchaser.

7.7 The Purchaser, for the purposes of clause 7, is the person who purchases or leases the goods or services that enable the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the End-User Equipment that is the subject of the Implementation.

7A Project Impact Assessment with Measurement and Verification Method

7A.1 Equations to calculate Energy Savings

Using the Project Impact Assessment with Measurement and Verification Method, the Energy Savings for an Implementation may be calculated using either:

(a) **Equations 7A.1 and 7A.2 for forward creation for a single Site model,** for Energy Savings calculated from a Baseline Energy Model and Operating Energy Model established to model performance before and after the Implementation; or

(b) **Equations 7A.3 and 7A.4 for annual creation or top-up,** for Energy Savings calculated from actual measurements taken after Implementation compared with expected performance of a Baseline Energy Model under the same conditions; or

(c) **Equations 7A.1 and 7A.5 for creation based on a multiple Site model**, for Energy Savings calculated from a Baseline Energy Model and Operating Energy Model using a Sampling Method.

7A.2 Acceptable energy models

(a) Baseline Energy Models and Operating Energy Models must be established in accordance with the following criteria:

(i) Regression Analysis that is based on measurements of energy consumption, Independent Variables and Site Constants, specifies a Measurement Period and meets the minimum statistical requirements as stated in Table A22; or

(ii) Computer Simulation that uses a commercially available software package accepted for use in modelling the relevant type of End-User Equipment and calibrated against measurements taken from the actual End-User Equipment being simulated to meet requirements as Published by the Scheme Administrator; or

(iii) a Sampling Method that is based on measurement and Regression Analysis or Computer Simulation of similar End-User Equipment at similar Sites, and meets any requirements Published by the Scheme Administrator.

(b) If Energy Savings Certificates have been created for an Implementation under the Project Impact Assessment Method according to this Rule or a Previous Rule, the energy models in clauses 7A.3 and 7A.4 must be consistent with the method used to previously calculate Energy Savings.

7A.3 Baseline Energy Model

The Baseline Energy Model estimates energy consumption in the absence of the Implementation and must:

(a) be dependent on Independent Variables and Site Constants that are established by measurements in accordance with clause 7A.5 of this Rule;

(b) if the model is for New End-User Equipment, the Independent Variables and Site Constants may incorporate the market average energy performance of the same type of equipment in accordance with clause 5.3B of this Rule;

(c) have an Effective Range determined in accordance with clause 7A.8 of this Rule;

(d) if using Equation 7A.1, estimate annual energy consumption based on a Normal Year established in accordance with clause 7A.7 of this Rule;

(e) if using Equation 7A.3, estimate annual energy consumption based on measurements of Independent Variables and Site Constants; and

(f) be deemed appropriate for the Implementation by a Measurement and Verification Professional, with their written explanatory reasoning provided.

7A.4 Operating Energy Model

The Operating Energy Model estimates energy consumption after an Implementation during a Normal Year and must:

(a) be dependent on Independent Variables and Site Constants that are established by measurements in accordance with clause 7A.5 of this Rule;

(b) have an Effective Range determined in accordance with clause 7A.8 of this Rule;

(c) estimate annual energy consumption based on a Normal Year established in accordance with clause 7A.7 of this Rule; and

(d) be deemed appropriate for the Implementation by a Measurement and Verification Professional, with their written explanatory reasoning provided.

7A.5 Measurements

When measuring energy consumption, Independent Variables and Site Constants, or any other relevant parameter, the Accredited Certificate Provider must:

(a) define the Measurement Period so that it consists of a start date and an end date, and optionally a time of day for each of those dates;

(b) define the Measurement Period so that it will have:

(i) in relation to the Baseline Energy Model under clause 7A.3 of this Rule, an end date that occurs before the Implementation Date;

(ii) in relation to the Operating Energy Model under clause 7A.4 of this Rule, a start date that occurs after the Implementation Date; and

(iii) in relation to Measured Annual Energy Savings under Equation 7A.3 of this Rule, a start date that occurs after the Implementation Date and an end date that is the day before the anniversary of the start date (such that the Measurement Period is for a full year).

(c) define the frequency of measurements over the Measurement Period;

(d) define which items of End-User Equipment will have their energy consumption measured;

(e) specify measurement equipment (meters) or other sources of measurements;

(f) define the accuracy and precision of such measurement methods;

(g) record any Non-Routine Adjustments of measured data, where time periods that cover non-routine events (e.g. unscheduled maintenance) are excluded from all measurements; and

(h) only use parameters that have been deemed appropriate for the Implementation by a Measurement and Verification Professional, with their written explanatory reasoning provided.

7A.6 Independent Variables and Site Constants

When identifying Independent Variables and Site Constants an Accredited Certificate Provider must:

(a) define the values for the Independent Variable or Site Constant that are within the Effective Range;

(b) provide formulas for converting measurements to estimates of the Independent Variables and Site Constants, if relevant; and

(c) have the method for selecting Independent Variables and Site Constants be deemed as appropriate for the Implementation by a Measurement and Verification Professional, with their written explanatory reasoning provided.

7A.7 Normal Year

When determining a Normal Year an Accredited Certificate Provider must:

(a) provide values for each Independent Variable and Site Constant over a full year;

(b) ensure the Normal Year represents a typical year for operation of the End-User Equipment within the maximum time period for forward creation determined in accordance with clause 7A.12;

(c) describe the assumptions used to establish the Normal Year; and

(d) have the methods to be used to establish the Normal Year deemed appropriate for the Implementation by a Measurement and Verification Professional, with their written explanatory reasoning provided.

7A.8 Effective Range

When defining the Effective Range of an energy model an Accredited Certificate Provider must:

(a) ensure that the Effective Range is consistent with the range of measured values for Independent Variables and Site Constants, where relevant;

(b) include any Normal Year values for Independent Variables or Site Constants under which the Implementation could reasonably be expected to increase energy consumption; and

(c) have the process for determining the Effective Range deemed as appropriate for the Implementation by a Measurement and Verification Professional, with their written explanatory reasoning provided.

7A.9 Interactive Energy Savings

When estimating Interactive Energy Savings an Accredited Certificate Provider, in relation to Equations 7A.1, 7A.4 or 7A.5, must:

(a) estimate the changes to energy consumption from End-User Equipment whose energy consumption will not be measured (is outside of the measurement boundary);

(b) ensure that Interactive Energy Savings are not greater than 10% of total energy savings, unless estimated in accordance with a Guide; and

(c) have the approach to estimating Interactive Energy Savings deemed as appropriate for the Implementation by a Measurement and Verification Professional, with their written explanatory reasoning provided.

7A.10 Accuracy Factor

The Accuracy Factor, in relation to Equations 7A.1 and 7A.3, is between 1 and 0; and is either:

(a) the value corresponding to the relative precision of the energy savings estimate at 95% confidence level as listed in Table A23; or

(b) determined by another process as Published by the Scheme Administrator.

7A.11 Energy Savings brought forward

(a) For the purposes of section 131 of the Act, the future Energy Savings for an Implementation calculated using Equation 7A.1, based on Normal Year Energy Savings calculated using Equation 7A.2, are taken to occur on the last date of the Measurement Period for the Operating Energy Model as defined in clause 7A.4 of this Rule.

(b) For the purposes of section 131 of the Act, the future Energy Savings for an Implementation calculated using Equation 7A.1, based on Normal Year Energy Savings calculated using Equation 7A.5, are taken to occur on the later of:

(i) the last date of the Measurement Period for the Operating Energy Model; and

(ii) the Implementation Date.

(c) A maximum of 50,000 MWh of Energy Savings can be brought forward from each Implementation.

7A.12 Maximum Time Period for Forward Creation

The maximum time period for forward creation of Energy Savings Certificates in respect of future Energy Savings for an Implementation calculated using Equation 7A.1, and for the purposes of clauses 7A.7 and 7A.13, is the lesser of:

(a) the expected lifetime of the End-User Equipment in whole years, as determined by a Persistence Model;

(b) if Energy Savings Certificates have previously been created for the Recognised Energy Saving Activity using the Project Impact Assessment Method according to this Rule or a Previous Rule, 5 years; and

(c) 10 years after the Implementation Date.

7A.13 Persistence Model

A Persistence Model must:

(a) take into account:

(i) the Business Classification from Table A18 of the Site, if known and relevant;

(ii) the End-User Equipment type;

(iii) the operating hours (as determined by measurements) for the End-User Equipment; and,

(iv) typical ambient conditions for that Site, including temperature, humidity and salinity;

(b) estimate the expected lifetime of the End-User Equipment in whole years;

(c) estimate the Decay Factor for each future year within the Maximum Time Period for Forward Creation; and

(d) be accepted by the Scheme Administrator.

7A.14 Top-up certificate creation

(a) Accredited Certificate Providers may create new Energy Savings Certificates in respect of Additional Energy Savings calculated using Equation 7A.3 and 7A.4, provided that:

(i) the calculation is based on a full year of measurements;

(ii) the start date of the Measurement Period must fall on an anniversary of the Implementation Date; and

(iii) the end date of the Measurement Period is within the maximum time period for forward creation determined under clause 7A.12.

(b) For the purposes of section 131 of the Act, the Energy Savings for which Energy Savings Certificates are created under this clause are taken to occur on the end date of the Measurement Period of the Energy Savings

7A.15 Measurement and Verification Professional

A Measurement and Verification Professional is a person who:

(a) is able to demonstrate:

(i) an understanding of best practice measurement & verification techniques;

(ii) an understanding of how the relevant End-User Equipment converts energy into End-Use Services and is affected by the Independent Variables;

(iii) an ability to perform regression analysis, if relevant;

(iv) an ability to calibrate outputs from a computer simulation, if relevant;

(v) an ability to satisfy any other requirements as Published by the Scheme Administrator; and

(b) meets the requirements Published by the Scheme Administrator.

7A.16 Guides

The Scheme Administrator may Publish Guides that detail acceptable and unacceptable approaches for Accredited Certificate Providers and Measurement and Verification Professionals to meet the requirements of clause 7A of this Rule.

7A.17 Implementation date

The Implementation Date is the date that the Implementation commenced normal operations.

7A.18 Energy Saver

The Energy Saver is the Purchaser.

7A.19 The Purchaser

For the purposes of clause 7A, the Purchaser is the person who purchases or leases the goods or services that enable the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the End-User Equipment that is the subject of the Implementation.

Equation 7A.1

Energy Savings calculated from a Baseline Energy Model and Operating Energy Model

$$Energy\ Savings = \sum_i \left(Normal\ Year\ Energy\ Savings \times Accuracy\ Factor \times Decay\ Factor_i - Counted\ Energy\ Savings_i \right)$$

Where:

- the summation is over each year *i* over the *Maximum Time Period for Forward Creation* of the Energy Savings.
- *Normal Year Energy Savings*, in MWh, is the Energy Savings attributable to the Implementation from a Normal Year of operation before taking into account the accuracy of the measurement and estimation methods used, and is calculated using:
  - Equation 7A.5 if a Sampling Method is used, and
  - Equation 7A.2 in all other cases.
- *Accuracy Factor*, is a number between 0 and 1, as determined by clause 7A.10 of this Rule.
- *Decay Factor*$_i$, is a number between 0 and 1, which quantifies the decay of the Energy Savings in year *i* due to equipment degradation over time, and is determined by either:
  - applying the value corresponding to the relevant year in Table A16, or
  - assigning a value for that year from a Persistence Model in accordance with clause 7A.13 of this Rule.
- *Maximum Time Period for Forward Creation* is determined in accordance with clause 7A.12 of this Rule; and
- *Counted Energy Savings*$_i$ is the total Energy Savings for which Energy Savings Certificates have previously been created for the Implementation in the year *i*.

Equation 7A.2

Calculation of Normal Year Energy Savings

$$Normal\ Year\ Energy\ Savings = \sum_t \left(E_{Baseline}(\tilde{x}_1(t), \tilde{x}_2(t), \ldots \tilde{x}_p(t)) - E_{Operating}(\tilde{x}_1(t), \tilde{x}_2(t), \ldots \tilde{x}_p(t)) \right) + Interactive\ Energy\ Savings$$

where:

- the summation is over all time periods *t* in the Normal Year, excluding any time periods for which any of $\tilde{x}_1(t), \tilde{x}_2(t), \ldots \tilde{x}_p(t)$ fall outside of the Effective Range of either the Baseline Energy Model or Operating Energy Model; or where the Site Constants are not their standard value;
- $\tilde{x}_p(t)$ is the value of each of the Independent Variables x_p for time period *t* over the Normal Year determined in accordance with clause 7A.7 of this Rule;
- $E_{Baseline}$ is the energy consumption predicted by the Baseline Energy Model established in accordance with clauses 7A.2 and 7A.3;
- $E_{Operating}$ is the energy consumption predicted by the Operating Energy Model established in accordance with clauses 7A.2 and 7A.4; and

- *Interactive Energy Savings* (a component of the Energy Savings) are estimated in accordance with clause 7A.9 of this Rule.

Equation 7A.3

Energy Savings calculated from measurements and Baseline Energy Model

$$Energy\ Savings = Measured\ Annual\ Energy\ Savings \times Accuracy\ Factor\ - Counted\ Energy\ Savings_i$$

Where:

- *Measured Annual Energy Savings*, in MWh, is the Energy Savings attributable to the Implementation from the actual measured conditions over a full year *i*, before taking into account the accuracy of the measurement and estimation methods used, and is calculated in Equation 7A.4;
- *Accuracy Factor* is the number determined by clause 7A.10 of this Rule; and
- *Counted Energy Savings*$_i$ is the total of all Energy Savings for which Energy Savings Certificates have previously been created for the Implementation in the year *i*.

Equation 7A.4

Calculation of Measured Annual Energy Savings

$$Measured\ Annual\ Energy\ Savings = \sum_t \left(E_{Baseline}(x_1(t), x_2(t), \ldots x_p(t)) - E_{Measured}(t) \right) + Interactive\ Energy\ Savings$$

where:

- The summation is over all measurement time periods *t* in the year, excluding any time periods *t* for which any of the measured Independent Variable values $x_1(t), x_2(t), \ldots x_p(t)$ fall outside of the Effective Range of the Baseline Energy Model, or where the Site Constants are not their standard value;
- $x_j(t)$ is the value of the Independent Variable x_j measured during time period *t* determined in accordance with clause 7A.5;
- $E_{Measured}$ is the energy consumption measured during the time period *t* in accordance with clause 7A.5;
- $E_{Baseline}$ is the energy consumption predicted by the Baseline Energy Model established in accordance with clauses 7A.2 and 7A.3; and
- *Interactive Energy Savings* (a component of the Energy Savings) are estimated in accordance with clause 7A.9 of this Rule.

Equation 7A.5

Calculation of Normal Year Energy Savings using a Sampling Method

$$Normal\ Year\ Energy\ Savings = \sum_t \left(E_{Baseline}(\tilde{x}_1(t), \tilde{x}_2(t), \ldots \tilde{x}_p(t), y_1, y_2, \ldots y_q) - E_{Operating}(\tilde{x}_1(t), \tilde{x}_2(t), \ldots \tilde{x}_p(t), y_1, y_2, \ldots, y_q) \right) + Interactive\ Energy\ Savings$$

where:

- the summation is over all time periods t in the Normal Year, excluding any time periods for which any of $\tilde{x}_1(t), \tilde{x}_2(t), \ldots \tilde{x}_p(t)$ fall outside of the Effective Range of either the Baseline Energy Model or Operating Energy Model, or where the Site Constants are not their standard value;
- $\tilde{x}_j(t)$ is the value of the Independent Variable x_j for time period t in the Normal Year for the Site determined in accordance with clause 7A.7 of this Rule;
- y_k is the value of the Site Constant k for the Site measured in accordance with clause 7A.6;
- $E_{Baseline}$ is the energy consumption predicted by the Baseline Energy Model established in accordance with clauses 7A.2 and 7A.3;
- $E_{Operating}$ is the energy consumption predicted by the Operating Energy Model established in accordance with clauses 7A.2 and 7A.4; and
- *Interactive Energy Savings* (a component of the Energy Savings) are estimated in accordance with clause 7A.9 of this Rule.

8 Metered Baseline Method

Note: The Metered Baseline Method uses measurements of electricity consumption "before" the Implementation has been undertaken to establish a "baseline" electricity consumption standard for the Site being considered. The same measurements performed "after" the Implementation has been undertaken will establish new levels of electricity consumption, with the difference representing the impact of the Implementation.

Energy Savings are adjusted by a confidence factor that is calculated based on the size of the Energy Savings relative to the unexplained variance in the baseline.

8.1 The Metered Baseline Method in this clause 8 may only be used to calculate Energy Savings if measurements made are of a standard, duration, and to a level of accuracy, satisfactory to the Scheme Administrator.

8.2 Using the Metered Baseline Method, the Energy Savings are calculated under:

(a) clause 8.5, using the Baseline per unit of output sub-method;

(b) clause 8.6, using the Baseline unaffected by output sub-method;

(c) clause 8.7, using the Normalised baseline sub-method;

(d) clause 8.8, using the NABERS baseline sub-method; or

(e) clause 8.9, using the Aggregated Metered Baseline sub-method,

provided that all Energy Savings can (to the satisfaction of the Scheme Administrator) be attributed to the corresponding Recognised Energy Saving Activity.

8.3 The time period over which any baseline is determined under this clause 8, using electricity measurements before the Implementation Date of the Implementation, must include one or more time periods preceding the Implementation Date. The time period(s) used to determine the baseline must be acceptable to the Scheme Administrator.

8.4 The Accredited Certificate Provider must use utility meters or other metering equipment acceptable to the Scheme Administrator.

Note: Sub-metering may be used to effectively reduce the size of the Site considered for baseline calculations, thereby increasing the accuracy of the baseline and hence the Confidence Factor.

8.5 Baseline per unit of output

Note: This Metered Baseline Method is most appropriate where electricity consumption is strongly linked to output (for example, in aluminium smelting).

Where the relationship is non-linear, or there are multiple products or changes in raw materials affecting consumption, another method of normalising the baseline should be used.

8.5.1 The Energy Savings for an Implementation may be calculated using **Method 1**, provided that:

(a) the electricity consumption for the Site is a linear function of output;

(b) fixed electricity consumption, which is the electricity consumption of the Site that does not vary with variations in output, can be measured or estimated;

(c) output has not changed from the average output over the period during which the variable electricity baseline is measured by more than 50%; and

(d) the variable electricity baseline is calculated using data from periods immediately preceding the Implementation Date, up to a maximum of 5 years, excluding any periods that are not representative of the long term Site consumption due to factors including plant shutdown or major maintenance. Where this is not possible, due to data unavailability or other reasons, a baseline may be set using other periods acceptable to the Scheme Administrator.

8.5.2 The Implementation Date is the earlier of the start date of the first Measurement Period or the date on which the reduction of electricity consumption commenced due to the Implementation.

8.5.3 The Energy Saver is the person who is liable (contractually or otherwise) to pay for the electricity consumption at the Site at the Implementation Date.

8.5.4 For the purposes of section 131 of the Act, Energy Savings calculated under this clause 8.5 are taken to have occurred on the last date of the Measurement Period.

Method 1 – Baseline per unit of output

Step (1) Select a *Measurement Period* acceptable to the Scheme Administrator, that will be the duration of time over which all measurements in this Method will be taken and that is:

(a) a minimum of one day and a maximum of one year; and

(b) if there is a regular cycle to the consumption of electricity on the Site, an integer multiple of the period of that cycle.

Step (2) Determine *Energy Savings* by completing Steps (2A) to (2G), and for each time period T_a by reference to which the Accredited Certificate Provider seeks to create Energy Savings Certificates by repeating Steps (2E) to (3) for each such period.

Step (2A) Determine the *Fixed Electricity Consumption* (in MWh), which is the consumption of electricity for the Site that does not vary with variations in output, and is:

- determined by estimating or extrapolating from measurements taken during plant downtime or estimated or determined mathematically from multiple periods;
- a reasonable reflection of the consumption unaffected by output, and will lead to Energy Savings calculations that are reasonable, and
- over a period T_b before Energy Savings commence and the duration of which is equal to the Measurement Period.

Step (2B) Calculate *Variable Consumption*$_{Tb}$ (in MWh / unit of output) for *n* time periods T_b as follows:

$$\textit{Variable Consumption}_{Tb} = (\textit{Total Consumption}_{Tb} - \textit{Fixed Electricity Consumption}) / \textit{Output}_{Tb}$$

Where:

- T_b denotes a time period, before the Implementation Date, the duration of which is equal to the Measurement Period, and where each time period is mutually exclusive with each other such time period;
- *Total Consumption*$_{Tb}$ (in MWh) is the consumption of electricity for the Site measured by metering that consumption over each time period T_b;
- *Output*$_{Tb}$ is the number of units of output during each time period T_b; and
- *n* is the number of time periods, T_b, where *n* must be at least 1.

Step (2C) Calculate *Variable Electricity Baseline* (in MWh / unit of output):

$$\textit{Variable Electricity Baseline} = \{\sum_{T\ 1}^{n} \textit{Variable Consumption}_{Tb}\} / n$$

Step (2D) Calculate *Baseline Variability* (in MWh / unit of output), which is the unexplained variance in the baseline, as follows:

If n > 2:

$$\textit{Baseline Variability} = (\text{maximum } \textit{Variable Consumption}_{Tb} - \text{minimum } \textit{Variable Consumption}_{Tb}) / 2$$

Where:

- *m*aximum *Variable Consumption*$_{Tb}$ is the maximum value of *Variable Consumption*$_{Tb}$ over *n* time periods T_b; and
- *m*inimum *Variable Consumption*$_{Tb}$ is the least value of *Variable Consumption*$_{Tb}$ over *n* time periods T_b.

If n≤ 2:

$$\textit{Baseline Variability} = 10\% \text{ of } \textit{Variable Electricity Baseline}$$

Step (2E) Calculate *Reduced Electricity Consumption* (in MWh) for the time period T_a (after the Implementation Date) for which the Accredited Certificate Provider seeks to create Energy Savings Certificates as follows:

$$\textit{Reduced Electricity Consumption} = (\textit{Output}_{Ta} \times \textit{Variable Electricity Baseline} + \textit{Fixed Electricity Consumption}) - \textit{Total Consumption}_{Ta}$$

Where:

- T_a denotes a time period, after the Implementation Date, the duration of which is equal to the *Measurement Period*;
- *Total Consumption*$_{Ta}$ (in MWh) is the consumption of electricity for the Site measured by metering that consumption over a time period T_a; and
- *Output*$_{Ta}$ is the number of units of output during the time period T_a.

Step (2F) Calculate the *Confidence Factor* as follows:

Confidence Factor = 1 - (*Baseline Variability* / *Variable Electricity Baseline*)

Step (2G) Calculate *Energy Savings* (in MWh) for each time period T_a by reference to which the Accredited Certificate Provider seeks to create Energy Savings Certificates as follows:

Energy Savings = *Reduced Electricity Consumption* x *Confidence Factor*

Step (3) Ensure *Energy Savings* are non-negative.

If *Energy Savings* < 0:

Energy Savings = 0

8.6 Baseline unaffected by output

Note: This Metered Baseline Method is most appropriate where consumption is not linked to output. For example, schools and swimming pools.

8.6.1 The Energy Savings for an Implementation may be calculated using **Method 2**, provided that:

(a) the consumption of all energy sources for the Site is independent of output; and

(b) the Electricity Baseline is calculated using data from periods immediately preceding the Implementation Date, to a maximum duration of 5 years, and excluding any periods that are not representative of long term Site consumption due to factors including plant shutdown or major maintenance. Where this is not possible, due to data unavailability or other reasons, a baseline may be set using other periods acceptable to the Scheme Administrator.

8.6.2 The Implementation Date is the earlier of the start date of the first Measurement Period or the date on which the reduction of electricity consumption commenced due to the Implementation.

8.6.3 The Energy Saver is the person who is liable (contractually or otherwise) to pay for the electricity consumption at the Site at the Implementation Date.

8.6.4 For the purposes of section 131 of the Act, Energy Savings calculated under this clause 8.6 are taken to have occurred on the last date of the Measurement Period.

Method 2 – Baseline unaffected by output

Step (1) Select a *Measurement Period* acceptable to the Scheme Administrator, that will be the duration of time over which all measurements in this Method will be taken and that is:

(a) a minimum of one day and a maximum of one year; and

(b) if there is a regular cycle to the consumption of electricity on the Site, an integer multiple of the period of that cycle.

Step (2) Determine *Energy Savings* by completing Steps (2A) to (2E), and for each time period T_a by reference to which the Accredited Certificate Provider seeks to create Energy Savings Certificates by repeating Steps (2C) to (3) for each such period.

Step (2A) Calculate *Electricity Baseline* (in MWh) as follows:

$$Electricity\ Baseline = \{ \sum_{T\ 1}^{n} Total\ Consumption_{Tb} \} / n$$

Where:

- T_b denotes a time period, before the Implementation Date, the duration of which is equal to the Measurement Period, and where each time period is mutually exclusive with each other such time period
- *Total Consumption*$_{Tb}$ (in MWh) is the consumption of electricity for the Site measured by metering that consumption over each time period T_b; and
- *n* is the number of time periods, T_b, where *n* must be at least 1.

Step (2B) Calculate *Baseline Variability* (in MWh), which is the variance in the baseline, as follows:

If n > 1:

Baseline Variability = (maximum *Total Consumption*$_{Tb}$ – minimum *Total Consumption*$_{Tb}$) / 2

Where:

- maximum *Total Consumption*$_{Tb}$ is the maximum value of *Total Consumption*$_{Tb}$ over *n* time periods T_b; *and*
- minimum *Total Consumption*$_{Tb}$ is the least value of *Total Consumption*$_{Tb}$ over *n* time periods T_b

If n =1:

Baseline Variability = 10% of *Electricity Baseline*

Step (2C) Calculate *Reduced Electricity Consumption* (in MWh) for the time period T_a (after the Implementation Date) for which the Accredited Certificate Provider seeks to create Energy Savings Certificates as follows:

Reduced Electricity Consumption = *Electricity Baseline* – *Total Consumption*$_{Ta}$

Where:

- T_a denotes a time period, after the Implementation Date, the duration of which is equal to the Measurement Period; and
- *Total Consumption*$_{Ta}$ (in MWh) is the consumption of electricity for the Site measured by metering that consumption over a time period T_a

Step (2D) Calculate *Confidence Factor* as follows:

Confidence Factor = 1 - (*Baseline Variability* / *Electricity Baseline*)

Step (2E) Calculate *Energy Savings* (in MWh) for the time period T_a for which the Accredited Certificate Provider seeks to create Energy Savings Certificates as follows:

- *Energy Savings* = *Reduced Electricity Consumption* x *Confidence Factor*

Step (3) Ensure *Energy Savings* are non-negative.

If *Energy Savings* < 0:

Energy Savings = 0

8.7 Normalised baseline

Note: This Metered Baseline Method normalises energy consumption for a Site to remove explainable variation

from the baseline, for example, adjusting for variations in ambient conditions or variations in input characteristics. The factors chosen for the normalisation must cause the variability (that is the subject of removal) and not be the result of spurious correlations.

Option C of the IPMVP can be used for guidance as to the normalisation of baselines, particularly for complex cases.

8.7.1 The Energy Savings for an Implementation may be calculated using **Method 3**, provided that:

(a) the *Normalisation Variables* in respect of which the *Total Consumption* is normalised are variables corresponding to the specific activities that are a reason for change in *Total Consumption*; and

(b) the *Normalised Energy Baseline* is calculated using data from periods immediately preceding the Implementation Date, to a maximum duration of 5 years, and excluding any periods that are not representative of long term Site consumption due to circumstances such as plant shutdown or major maintenance. Where this is not possible, due to data unavailability or other reasons, a baseline may be set using other periods acceptable to the Scheme Administrator.

8.7.2 The Implementation Date is the earlier of the start date of the first Measurement Period or the date on which the reduction of electricity consumption commenced due to the Implementation.

8.7.3 The Energy Saver is the person who is liable (contractually or otherwise) to pay for the electricity consumption at the Site at the Implementation Date.

8.7.4 For the purposes of section 131 of the Act, Energy Savings calculated under this clause 8.7 are taken to have occurred on the last date of the Measurement Period.

Method 3 – Normalised baseline

Step (1) Select a *Measurement Period* acceptable to the Scheme Administrator, that will be the duration of time over which all measurements in this Method will be taken and that is:

(a) a minimum of one day and a maximum of one year; and

(b) if there is a regular cycle to the consumption of electricity on the Site, an integer multiple of the period of that cycle.

Step (2) Determine Energy Savings by completing Steps (2A) to (2F) and for the time period T_a for which the Accredited Certificate Provider seeks to create Energy Savings Certificates, by repeating Steps (2D) to (3) for each such period.

Step (2A) Calculate *Normalised Consumption*$_{Tb}$ (in MWh) for n time periods T_b by normalising the *Total Consumption*$_{Tb}$ to determine the consumption that would have occurred for period T_b had the conditions at time T_a existed, using:

(a) a set of normalisation coefficients, which are one or more coefficients calculated to account for the variation in *Total Consumption*$_{Tb}$ per unit of change for each corresponding normalisation variable used in Step(2A)(b); and

(b) a set of values, which are the difference between the values of the normalisation variables for each time period T_b, and the values of the normalisation variables for one time period T_a, determined by measurements or other data sources.

Where:

- T_b denotes a time period, before the Implementation Date, the duration of which is equal to the Measurement Period, and where each time period is mutually exclusive with each other

such time period

- T_a denotes a time period, after the Implementation Date, the duration of which is equal to the Measurement Period
- *Total Consumption*$_{Tb}$ (in MWh) is the consumption of electricity for the Site measured by metering that consumption over each time period T_b
- *n* is the number of time periods, T_b, where *n* must be at least 1; and
- *Normalisation Variables* are the variables in respect of which the *Total Consumption*$_{Tb}$ is normalised and must correspond to factors that are a reason for change in *Total Consumption*$_{Tb}$

Step (2B) Calculate *Normalised Energy Baseline* (in MWh) as follows:

$$\textit{Normalised Energy Baseline} = \{ \sum_{T\ 1}^{n} \textit{Normalised Consumption}_{Tb} \} / n$$

Step (2C) Calculate *Baseline Variability* (in MWh), which is the unexplained variance in the baseline, as follows:

If n > 1:

Baseline Variability = (maximum *Normalised Consumption*$_{Tb}$ – minimum *Normalised Consumption*$_{Tb}$) / 2

Where:

- maximum *Normalised Consumption*$_{Tb}$ is the maximum value of *Normalised Consumption*$_{Tb}$ over *n* time periods *Tb*; and
- minimum *Normalised Consumption*$_{Tb}$ is the least value of *Normalised Consumption*$_{Tb}$ over *n* time periods *Tb*

If n =1:

Baseline Variability = 10% of *Normalised Energy Baseline*

Step (2D) Calculate *Reduced Electricity Consumption* (in MWh) for the time period T_a (after the Implementation Date) for which the Accredited Certificate Provider seeks to create Energy Savings Certificates, as follows:

Reduced Electricity Consumption = *Normalised Electricity Baseline* – *Total Consumption*$_{Ta}$

Where:

- *Ta* denotes a time period, after the Implementation Date, the duration of which is equal to the Measurement Period; and
- *Total Consumption*$_{Ta}$ (in MWh) is the consumption of electricity for the Site measured by metering that consumption over a time period *Ta*

Step (2E) Calculate Confidence *Factor*:

Confidence Factor = 1 - (*Baseline Variability* / *Normalised Electricity Baseline*)

Step (2F) Calculate *Energy Savings* (in MWh) for each time period T_a by reference to which the Accredited Certificate Provider seeks to create Energy Savings Certificates:

Energy Savings = *Reduced Electricity Consumption* x *Confidence Factor*

Step (3) Ensure *Energy Savings* are non-negative:

If *Energy Savings* < 0:

Energy Savings = *0*

8.8 NABERS baseline

8.8.1 The Energy Savings for an Implementation may be calculated using **Method 4a, Method 4b or Method 4c** for a NABERS Building, provided that:

(a) the NABERS Rating is calculated using one of the following NABERS tools:

(i) NABERS for Offices;

(ii) NABERS for Hotels;

(iii) NABERS for Shopping Centres; or

(iv) NABERS for Data Centres.

(b) the NABERS Rating excludes any GreenPower in accordance with clause 5.4(d);

(c) the NABERS Rating is at least 1 star greater than the Benchmark NABERS Rating Index as determined in Step 2 of Method 4c;

(d) all sources of on-site electricity generation have been identified; and

(e) all electricity generated from sources of On-site Unaccounted Electricity (as referred to in Method 4c) has been metered and recorded over the NABERS Rating Period.

8.8.2 For the purposes of this clause 8.8:

(a) the NABERS Rating Period is the time over which measurements were taken to establish the NABERS Rating for the NABERS Building;

(b) the Current Rating Year is the year for which Energy Savings Certificates will be created , and is the year that the NABERS Rating Period ended; and

(c) the Implementation Date is the end date of the first NABERS Rating Period for which Energy Savings will be calculated under clause 8.8.5.

8.8.3 When calculating the Benchmark NABERS Rating Index for a NABERS Building using Calculation Method 2 at Step 2 of Method 4c:

(a) the Benchmark NABERS Rating Index can only be calculated using a fixed Baseline NABERS Rating which was calculated no more than 7 years before the end date of the Current Rating Year; or

(b) if this calculation method is to be used for Additional Energy Savings and the fixed Baseline NABERS Rating does not meet the requirements of clause 8.8.3(a), the new baseline must be reset using a NABERS Rating that is at least 7 years later than the end date of the previous fixed Baseline NABERS Rating.

8.8.4 The Energy Saver is the person whose name is identified on the NABERS Rating certificate, as issued by the NABERS National Administrator, in respect of the NABERS Rating.

8.8.5 For the purposes of section 131 of the Act, Energy Savings are taken to occur at the date that the Scheme Administrator determines that the relevant NABERS Rating was completed.

8.8.6 Energy Savings Certificates cannot be created for a NABERS Rating more than twelve months after the end of the Measurement Period applicable to that NABERS Rating.

8.8.7 The requirements of clause 6.8(h) and 6.8(i) do not apply in relation to Energy Savings Certificates for Energy Savings calculated in accordance with this clause 8.8.

Method 4a

Refer to Method 4c, where Existing NABERS Building under the Previous Rule means a NABERS Building in this Rule

Method 4b

Refer to Method 4c, where New NABERS Building under the Previous Rule means a NABERS Building in this Rule

Method 4c – NABERS Benchmark

Step 1 – Calculate Measured Electricity Consumption

Using the measurements taken to establish the NABERS Rating, and other measurements taken as necessary, calculate total energy consumption for the NABERS Building as follows:

Measured Electricity Consumption (MWh)

= NABERS Electricity + On-site Unaccounted Electricity

Where:

- *NABERS Electricity*, in MWh, is the electricity purchased or imported from the Electricity Network and accounted for in the NABERS Rating, including electricity purchased as GreenPower; and
- *On-site Unaccounted Electricity*, in MWh, is electricity generated on-site from energy sources which have not been accounted for in the NABERS Rating, including electricity generated from photovoltaic cells or gas generators fed from on-site biogas sources, but excluding gas generators where the imported gas has been accounted for in the NABERS Rating.

Step 2 – Calculate Benchmark NABERS Rating

Calculate the Benchmark NABERS Rating Index, by using either:

(a) Calculation Method 1: Look up the Benchmark NABERS Rating Index in Table A20 of Schedule A which corresponds to the relevant Current Rating Year, NABERS Rating tool and building category; or

(b) Calculation Method 2: Calculate the Benchmark NABERS Rating Index based on an historical Baseline NABERS Rating as follows:

Benchmark NABERS Rating Index = Baseline NABERS Rating + Annual Rating Adjustment × (Current Rating Year – Baseline Rating Year)

Where:

- *Baseline NABERS Rating* is a previous NABERS Rating for the same NABERS Building and similar configuration (for example, metering arrangements and on-site energy generation), as determined by the Scheme Administrator in accordance with clause 8.8.3. The *Baseline Rating Year* must not be more than 7 years prior to the *Current Rating Year*;
- *Annual Rating Adjustment* is the amount by which average NABERS Ratings increase each year and is the value in **Table A21** which corresponds to the relevant NABERS Rating tool and building category; and

- *Baseline Rating Year* is the year in which the measurements correspond with the end date of the *Baseline NABERS Rating*.

Step 3 – Calculate Benchmark Electricity Consumption

Benchmark Electricity Consumption is the electricity consumption that would be required for that same NABERS Building to achieve the *Benchmark NABERS Rating Index* over the NABERS Rating Period, assuming the same breakdown of energy consumption. It is the electricity component of maximum allowable electricity consumption, converted to MWh.

Calculate the *Benchmark Electricity Consumption* by using the NABERS Reverse Calculator for the relevant NABERS method, setting the target star rating to the *Benchmark NABERS Rating Index*, and giving all other input parameters the same value as for the actual NABERS Rating over that NABERS Rating Period, including:

- Rating type;
- Building information (e.g. Rated Area, number of computers); and
- Percentage breakdown of energy consumption (on an energy content (e.g. GJ) basis).

If necessary for use with the relevant NABERS Reverse Calculator, round the down the *Benchmark NABERS Rating Index* to the nearest half or whole star increment.

Step 4 – Calculate Energy Savings

Calculate *Energy Savings*, in MWh as follows:

If *Benchmark Electricity Consumption* $\leq$ *Measured Electricity Consumption*:

Energy Savings = 0

otherwise:

Energy Savings = Benchmark Electricity Consumption - Measured Electricity Consumption

8.9 Aggregated Metered Baseline

Note: The Aggregated Metered Baseline sub-method allows for Energy Savings to be calculated on the basis of measured savings across a group of electricity customers, using statistical techniques. To use this method, the Accredited Certificate Provider must engage an Accredited Statistician to verify the Site allocation and statistical method prior to the Implementation Date. This method may be used for any Recognised Energy Saving Activity, but it is best suited to those activities where:

- Energy Savings are small on a Site by Site basis; and/or
- Energy Savings can vary greatly from Site to Site; and/or
- there is insufficient evidence that the Recognised Energy Saving Activity will not be reversed.

This method requires a group of electricity customers (the Population) to be assigned without bias into a Treatment Group and a Control Group. The Treatment Group is offered goods or services that are designed to deliver Energy Savings over the Implementation Period. The Treatment is the offering of goods and services (and any subsequent provision, engagement and promotion activities) and is not just the provision of goods and services. The Control Group is not offered the Treatment, but instead is used to estimate what the electricity consumption of the Treatment Group would have been in the absence of the Treatment.

8.9.1 The Energy Savings for an Implementation may be calculated using **Method 5.1** provided that all of the conditions in clauses 8.9.2 to 8.9.11 are met.

8.9.2 For each Implementation, a number of Sites must be identified and assigned to a Population, and every Site in that Population must be allocated to either a Treatment Group or a Control Group prior to the Implementation Date. Additionally:

(a) a Site may choose to join the Population, but once in the Population, must be allocated to the Treatment Group or the Control Group using an Unbiased Selection method;

(b) persons at Sites must not be informed explicitly that they have been allocated to the Treatment Group or the Control Group;

(c) once a Site has been allocated to the Treatment Group and the Implementation Date has occurred, persons managing End-User Equipment at that Site may be offered a choice as to whether they wish to receive the goods and services component of the Treatment;

(d) if a Site chooses not to receive the goods and services component of the Treatment, that Site must be retained in the Treatment Group for measurement purposes, except where clauses 8.9.2(f) and 8.9.2(g) apply;

(e) the Population should not be targeted with the offer of goods and services aimed at increasing electricity use with the intent of creating a greater difference in electricity use between the Control Group and Treatment Group;

(f) a Site must be removed from the Population, and hence Treatment Group or Control Group, if no Measured Electricity Consumption data are available for that Site during the Implementation Period;

(g) all Sites with Measured Electricity Consumption data for only part of an Implementation Period due to Attrition, must be:

(i) removed from the Population; or

(ii) included in the Population until the last date Measured Electricity Consumption data are available for a given Site; and

(h) if data for a Pre-Implementation Period are used, the Accredited Certificate Provider must specify prior to the Implementation Date a period for which the data are available for the total Population.

8.9.3 Measurements of electricity consumption under this method must use Measured Electricity Consumption data for each Site in the Population, where the Measured Electricity Consumption for a Measurement Period means the metered amount of electricity used by a Site:

(a) as determined by the metering data held by the Electricity Retailer or Network Service Provider for that Site, pro-rated across the period, as measured and estimated in accordance with the provisions of the National Energy Retail Rules under the National Energy Retail Law, and in accordance with the provisions of the *Electricity Supply (General) Regulation 2001* (NSW); or

(b) from a metering arrangement compliant with the accuracy requirements of National Measurement Institute document M6 (Electricity Meters), or another metering benchmark accepted by the Scheme Administrator, provided that:

(i) all metering devices are installed without bias as to whether that Site is in the Treatment Group or Control Group, and by parties who have no knowledge of whether each Site is part of the Treatment Group or Control Group; and

(ii) the reading of metering devices and checking, measurement, estimation and pro-rating of data is done without bias as to whether that Site is in the Treatment Group or Control Group, and by parties who have no knowledge of whether each Site is part of the Treatment Group or Control Group.

8.9.4 For the purposes of calculating Energy Savings, the Measured Electricity Consumption for a given Population must be recorded over one or more Measurement Periods, where:

(a) Implementation Periods and Pre-Implementation Periods are both Measurement Periods;

(b) the Implementation Period and the Pre-Implementation Period do not have to be immediately sequential in time;

(c) Measurement Periods must not overlap; and

(d) each Implementation Period must be at least 3 months and no more than 15 months in length.

8.9.5 For the purposes of section 131 of the Act, Energy Savings for each Implementation are taken to have occurred on the last date of that Implementation Period.

8.9.6 Where required, the Energy Savings for the Implementation will be the sum of estimated Energy Savings for all Sites in a Treatment Group for each Implementation Period.

8.9.7 The records that must be kept of the method, data and assumptions used to calculate Energy Savings under Method 5.1 must include:

(a) the Addresses of the Sites in the Population and whether they are allocated to the Treatment Group or the Control Group;

(b) evidence that Sites were assigned to the Population and were allocated to the Treatment Group and Control Group in accordance with clause 8.9.2;

(c) information on metering arrangements used according to clause 8.9.3;

(d) information on the Treatment offered to the Treatment Group;

(e) verification in writing (together with reasoning) from an Accredited Statistician prior to the Implementation Date, that the:

(i) method that will be used to allocate Sites from the Population into the Control Group and the Treatment Group is unbiased;

(ii) analysis method used to calculate the observed Energy Savings in Step 2 of Method 5.1 has been selected and is valid;

(iii) explanatory variables, including any interactions between them, have been documented if Method 5.4 is used;

(iv) lengths of the Implementation Period and the Pre-Implementation Period (if applicable) have been determined and documented;

(f) information on Sites removed from the Population in accordance with clauses 8.9.2(f) and 8.9.2(g), including reasoning for each Site's removal;

(g) documentation of reproducible steps and log files for the calculations performed; and

(h) any additional requirements as may be Published by the Scheme Administrator from time to time.

8.9.8 The Accredited Certificate Provider can only modify the methods in clause 8.9.7(e) for subsequent Implementation Periods. If modified, the Accredited Certificate Provider must obtain from an Accredited Statistician prior to the Implementation Date of the subsequent Implementation Periods, a new verification in writing.

8.9.9 The Implementation Date is the start date of the Implementation Period.

8.9.10 The Energy Saver is the person who holds the Measured Electricity Consumption data for all Sites in a Population in accordance with clause 8.9.3.

8.9.11 For the purposes of this clause 8.9, the requirements under clause 6.8 are as Published by the Scheme Administrator for the purposes of this calculation method.

Method 5.1

Calculation of Energy Savings under the Aggregated Metered Baseline sub-method

Step (1) – For each Population, adjust the Control Group and the Treatment Group for Attrition at the end of each Implementation Period, in accordance with clause 8.9.2. The number of Sites in the Treatment and Control Groups will be designated N_T and N_C respectively.

Step (2) – Calculate the *Observed Energy Savings*, $ES_{observed}$, in MWh, over the Implementation Period using one of the following methods:

(a) Method 5.2 (Time-Aggregated Energy Consumption During the Implementation Period); or

(b) Method 5.3 (Time-Aggregated Energy Consumption During the Implementation and Pre-Implementation Periods - Difference in Differences); or

(c) Method 5.4 (Regression Modelling).

Step (3) – The Scheme Administrator may provide the Accredited Certificate Provider with an estimate of *Uplift Energy Savings*, ES_{uplift}, over the Implementation Period using:

(a) Method 5.5 (Estimation of Uplift Energy Savings); or

(b) another method as published by the Scheme Administrator.

If the Scheme Administrator does not provide an estimate of *Uplift Energy Savings*, the value of *Uplift Energy Savings* must be taken to be zero.

Unless otherwise notified by the Scheme Administrator, the Accredited Certificate Provider must provide the Scheme Administrator with data required to estimate *Uplift Energy Savings*, including the Addresses of Sites in the Treatment Group and Control Group; the Implementation Period data; and any other data, as requested by the Scheme Administrator.

For Sites with Measured Electricity Consumption data for part of an Implementation Period due to Attrition, the date of Attrition is considered the last date of the Implementation Period for those given Sites.

Step (4) - Calculate *final Energy Savings* in MWh, by subtracting the effect of *Uplift Energy Savings* from the *Observed Energy Savings*, ensuring the result is non-negative:

$$Energy\ Savings = \max\left(0, ES_{observed} - ES_{uplift}\right)$$

Method 5.2

Calculation of *Observed Energy Savings* from Time-Aggregated Energy Consumption During the Implementation Period

Step (1) - Calculate the mean daily energy use of the Treatment Group (E_T) over the Implementation Period:

$$E_T = \left(\sum_s E_s\right) \Big/ \left(\sum_s D_s\right)$$

where:

- s indexes over Sites in the Treatment Group
- E_s is the Measured Electricity Consumption for Site (s) in the Treatment Group over the Implementation Period, measured in accordance with clause 8.9.3 of this Rule; and
- D_s is number of days of Measured Electricity Consumption at Site (s) in the Treatment Group over the Implementation Period

Step (2) - Calculate the mean daily energy use of the Control Group (E_C) over the Implementation Period:

$$E_C = \left(\sum_s E_s\right) \Big/ \left(\sum_s D_s\right)$$

where:

- s indexes over Sites in the Control Group
- E_s is the Measured Electricity Consumption for Site (s) in the Control Group over the Implementation Period, measured in accordance with clause 8.9.3 of this Rule; and
- D_s is number of days of Measured Electricity Consumption at Site (s) in the Control Group over the Implementation Period

Step (3) - Using the Treatment Group measurements, the Control Group measurements and the standard error for the Control Group mean, perform the following hypothesis test:

$H_0 : E_C \leq E_T$

$H_{alt} : E_C > E_T$

Calculate $t = (E_C - E_T) \Big/ \left(sd * \sqrt{\frac{fpc_T}{N_T} + \frac{fpc_C}{N_C}}\right)$

Reject H_0 (and accept H_{alt}) if $t > T_{(p=0.95)}$

where:

- sd is the standard deviation calculated on the Control Group
- $T_{(p=0.95)}$ is the value from standard T tables with $(N_C - 1)$ degrees of freedom. For degrees of freedom exceeding 2400 use the value of 1.6449. Note that 0.95 values of the T statistic are from the upper 5% points of the distribution;
- fpc_C is an optional finite population correction for estimating the Population mean from the Control Group, $fpc_C = (N - N_C)/(N - 1)$; and
- fpc_T is an optional finite population correction when using the Population mean to predict the Treatment Group mean, $fpc_T = (N - N_T)/(N - 1)$.

If able to reject H_0, proceed to step (4). Otherwise, E_C is taken to be less than or equal to E_T and $ES_{observed}$ is taken to be zero.

Step (4) - Calculate the *Observed Energy Savings*, $ES_{observed}$, in MWh, over the Implementation Period:

$$ES_{observed} = (E_C - E_T) * \left(\sum_s D_s\right)$$

where:

- s indexes over Sites in the Treatment Group; and
- D_s is number of days of Measured Electricity Consumption at Site (s) in the Treatment Group over the Implementation Period

Method 5.3

Calculation of *Observed Energy Savings* from Time-Aggregated Energy Consumption During the Implementation and Pre-Implementation Periods – Difference in Differences

Step (1) - Calculate the change in mean daily energy use (C_s) between the Implementation Period and the Pre-Implementation Period for each Site in the Population:

$$C_s = \frac{E_{s,i}}{D_{s,i}} - \frac{E_{s,p}}{D_{s,p}}$$

where:

- $E_{s,i}$ is the Measured Electricity Consumption for each Site (s) over the Implementation Period, measured in accordance with clause 8.9.3 of this Rule;
- $E_{s,p}$ is the Measured Electricity Consumption at each Site (s) over the Pre-Implementation Period, measured in accordance with clause 8.9.3 of this Rule;
- $D_{s,i}$ is the number of days of Measured Electricity Consumption at Site (s) over the Implementation Period; and
- $D_{s,p}$ is the number of days of Measured Electricity Consumption across Site (s) over the Pre-Implementation Period and must cover the same period of time in a previous year as $D_{s,i}$.

Step (2) - Calculate the mean change in energy use of the Treatment Group (C_T) between the Implementation Period and the Pre-Implementation Period:

$$C_T = {(\sum_s C_s)}/{N_T}$$

where:

- s indexes over Sites in the Treatment Group; and
- N_T is number of Sites in the Treatment Group.

Step (3) - Calculate the mean change in energy use of the Control Group (C_C) between the Implementation Period and the Pre-Implementation Period as follows:

$$C_C = {(\sum_s C_s)}/{N_C}$$

where:

- s indexes over Sites in the Control Group; and
- N_C is number of Sites in the Control Group

Step (4) - Using the Treatment Group measurements, the Control Group measurements and the standard error for the Control Group mean difference, perform the following hypothesis test:

$H_0 : C_C \leq C_T$

$H_{alt} : C_C > C_T$

Calculate $t = (C_C - C_T) / \left(sd * \sqrt{\frac{fpc_T}{N_T} + \frac{fpc_C}{N_C}} \right)$

Reject H_0 (and accept H_{alt}) if $t > T_{(p=0.95)}$

where:

- sd is the standard deviation calculated on the change in daily energy consumption between the Implementation Period and the Pre-Implementation Period for each Site in the Control Group;
- $T_{(p=0.95)}$ is the value from standard *T* tables with $(N_C - 1)$ degrees of freedom. For degrees of freedom exceeding 2400 use the value of 1.6449. Note that 0.95 values of the T statistic are from the upper 5% points of the distribution;
- fpc_C is an optional finite population correction for estimating the Population mean from the Control Group, $fpc_C = (N - N_C)/(N - 1)$; and
- fpc_T is an optional finite population correction when using the Population mean to predict the Treatment Group mean, $fpc_T = (N - N_T)/(N - 1)$.

If able to reject H_0, proceed to step (5). Otherwise, C_C is taken to be less than or equal to C_T and $ES_{observed}$ is taken to be zero

Step (5) – Calculate the *Observed Energy Savings*, $ES_{observed}$, in MWh, over the Implementation Period:

$$ES_{observed} = (C_C - C_T) * \left(\sum_s D_s \right)$$

where:

- s indexes over Sites in the Treatment Group; and
- D_s is the number of days of Measured Electricity Consumption at Site (s) in the Treatment Group over the Implementation Period.

Method 5.4

Calculation of *Observed Energy Savings* from Regression Modelling

Step (1) - Calculate the mean daily energy use $(DE_{s,i})$ for each Site in the Population for the Implementation Period:

$$DE_{s,i} = E_{s,i} / D_{s,i}$$

where:

- $E_{s,i}$ is the Measured Electricity Consumption for Site (s) over the Implementation Period, measured in accordance with clause 8.9.3 of this Rule; and
- $D_{s,i}$ is the number of days of Measured Electricity Consumption at Site (s) over the Implementation Period

Step (2) - Calculate the mean daily energy use $(\text{DE}_{s,p})$ for each Site in the Population for the Pre-

Implementation Period:

$$DE_{s,p} = E_{s,p}/D_{s,p}$$

where:

- $E_{s,p}$ is the Measured Electricity Consumption for each Site (s) over the Pre-Implementation Period, measured in accordance with clause 8.9.3 of this Rule; and
- $D_{s,p}$is the number of days of Measured Electricity Consumption at Site (s) over the Pre-Implementation Period.

Step (3) - Create the evaluation data set consisting of one observation for each Site in the Population containing $DE_{s,i}$, $DE_{s,p}$, T_s and other appropriate explanatory variables, where:

- T_s is a variable taking the value 1 if a Site (s) is in the Treatment Group and 0 if it is in the Control Group; and
- OtherVariables_s is the vector of other appropriate explanatory variables.

Step (3B) – For cases where there are Sites with Measured Electricity Consumption data for part of an Implementation Period due to Attrition, create another variable $W_{s,m}$, where:

- $W_{s,m}$ is a variable taking the value 1 if the Site (s) is still in the Treatment Group during time period m and 0 otherwise. m = 1 … NTP; and
- NTP is the number of non-overlapping and exhaustive time periods for the implementation.
- The time periods are to be allocated so that each time period has (as close as is possible) the same number of Sites subject to Attrition during that period.

Step (4) - Estimate the average treatment effect per day $(\hat{\beta})$ by estimating the following regression via Weighted Least Squares (WLS) and weighting by $D_{s,i}$:

$$DE_{s,i} = \alpha + \beta T_s + \delta DE_{s,p} + \sum \lambda_m W_{s,m} + \sum \gamma_k OtherVariables_{s,k} + \varepsilon_s$$

where:

- α is the intercept;
- β is the treatment effect;
- δ is the impact of Pre-Implementation Period energy consumption;
- λ_m accounts for time period (m) variation;
- γ_k is the effect of the kth other explanatory variable; and
- ε_s is the error term.

Step (5) – Using the estimated treatment effect (denoted as $\hat{\beta}$) and its standard error perform the following hypothesis test:

$H_0: \hat{\beta} \geq 0$

$H_{alt}: \hat{\beta} < 0$

Calculate $t = \hat{\beta} / se(\hat{\beta})$

Reject H_0 (and accept H_{alt}) if $t < T_{(p=0.05)}$

where:

- $se(\hat{\beta})$ is the standard error of $\hat{\beta}$; and
- T(p=0.05) is the value from the standard T table with $(N_T + N_C - 2)$ degrees of freedom. For degrees of freedom exceeding 2400 use the value of -1.6449. Note that 0.05 values of the T statistic are from the lower 5% points of the distribution.

A negative value for $\hat{\beta}$ indicates a reduction in energy usage. Therefore, if able to reject H_0, proceed to step (6). Otherwise, $\hat{\beta}$ is taken to be non-negative and $ES_{observed}$ is taken to be zero.

Step (6) – Calculate the *Observed Energy Savings*, $ES_{observed}$, in MWh, over the Implementation Period*:*

$$ES_{observed} = -\hat{\beta} * \left(\sum_{s} D_s\right)$$

where:

- s indexes over Sites in the Treatment Group; and
- D_s is the number of days of Measured Electricity Consumption at Site (s) in the Treatment Group over the Implementation Period.

Method 5.5 - Estimation of *Uplift Energy Savings*

Step (1) – Estimate the *Lifetime Energy Savings*, $LES_{s,a}$, from each *Other Activity (a)* implemented in each Site (s) in the Population, within the Implementation Period.

Where:

- *Other Activity* (*a)* means either:
  - any other Recognised Energy Saving Activity, apart from the Recognised Energy Saving Activity that is the subject of this calculation; or
  - an activity referred to in clauses 5.4(f) or 5.4(g) of this Rule.

Step (2) – Calculate the Energy Savings, $ES_{s,a}$, for each Site *s* due to each *Other Activity a* during the Implementation Period:

$$ES_{s,a} = LES_{s,a} * \left(\frac{Overlap_a}{Lifetime_a}\right)$$

where:

- $Lifetime_a$, in years, is the Lifetime of the Energy Savings for each *Other Activity (a)*, or 10 years if it is not defined in this Rule; and
- $Overlap_a$, in years, is the length of time of the Implementation Period that overlaps with the Lifetime of the Energy Savings for each *Other Activity (a)*.
- If the *Other Activity (a)* had one or more Energy Savings calculated using the Metered Baseline Method, then the Lifetime of the Energy Savings is the length of the Measurement Period of that calculation.
- The calculation of the duration of overlap must take account of Attrition of Sites.

Step (3) - Calculate the average Energy Savings, $ES_{T,all\ Other\ Activities}$ and $ES_{C,all\ Other\ Activities}$, due to all *Other Activities* (*a)* for all Sites in the Treatment Group and Control Group respectively, over the Implementation Period:

$$ES_{T,all\ Other\ Activities} = \frac{\sum_{s\ in\ Treament\ Group,a} ES_{s,a}}{N_T}$$

and

$$ES_{C,all\ Other\ Activities} = \frac{\sum_{s\ in\ Control\ Group,a} ES_{s,a}}{N_C}$$

where:

- The summation is over all Sites (s) in the Treatment Group (for $ES_{T,all\ Other\ Activities}$) and Control Group (for $ES_{C,all\ Other\ Activities}$), respectively, and all Other Activities that overlap with the Implementation Period; and
- The N_T and N_C are the number of Sites in the Treatment Group and Control Group respectively for Implementation Period.

Step (4) - Calculate the *Uplift Energy Savings*, ES_{uplift}, from *Other Activities* due to participation in the program:

$$ES_{uplift} = \left(ES_{T,all\ Other\ Activities} - ES_{C,all\ Other\ Activities}\right) * N_T$$

Step (5) – Ensure the *Uplift Energy Savings*, ES_{uplift}, are non-negative:

$$ES_{uplift} = \max\left(0, ES_{uplift}\right)$$

9 Deemed Energy Savings Method

Note: The Deemed Energy Savings Method can be used for the replacement, installation and delivery of common End-User Equipment such as lighting, refrigerators and electric motors.

9.1 Energy Savings for Implementations may be calculated in accordance with:

(a) clause 9.3 (Sale of New Appliances), for the Activity Definitions set out in Schedule B;

(b) clause 9.4 (Commercial Lighting Energy Savings Formula);

(c) clause 9.5 (High Efficiency Motor Energy Savings Formula);

(d) clause 9.6 (Power Factor Correction Energy Savings Formula);

(e) clause 9.7, (Removal of Old Appliances), for the Activity Definitions set out in Schedule C;

(f) clause 9.8, (Home Energy Efficiency Retrofits), for the Activity Definitions set out in Schedules D and E;

(g) clause 9.9, (High Efficiency Appliances for Businesses), for the Activity Definitions set out in Schedule F; or

(h) clause 9.10, (1-for-1 Residential Downlight Replacement), for the Activity Definitions set out in Schedule G.

9.2 For the purposes of section 131 of the Act, where the Energy Savings for an Implementation are calculated using the Deemed Energy Savings Method in this clause 9, those Energy Savings are taken to occur on the Implementation Date.

9.2A Acceptable End-User Equipment

9.2A.1 In addition to any other requirements set out in this Rule (such as Equipment Requirements), the Scheme Administrator may Publish further requirements for End-User Equipment that may be used for the purposes of any method under this clause 9.

9.2A.2 The Scheme Administrator may Publish, from time to time, a list of Products that are accepted by the Scheme Administrator as meeting the Equipment Requirements referred to in clause 9 by:

(a) Publishing a detailed list identifying each Product;

(b) Publishing a reference to a list from a certifying body, along with any restrictions on that list; and/or

(c) Publishing a requirement for labelling in accordance with a labelling scheme, along with any restrictions on that labelling.

9.2A.3 Subject to clause 9.2A.4, any Accredited Certificate Provider (or other persons as Published by the Scheme Administrator), may apply to the Scheme Administrator to have a Product accepted as meeting such Equipment Requirements, provided that they:

(a) apply in a form and manner required by the Scheme Administrator;

(b) pay any fee required by the Scheme Administrator in respect of the investigation and determination of the application on a cost recovery basis and including an allowance for:

(i) the recovery by the Scheme Administrator of its costs in establishing, operating and maintaining the systems and databases required in connection with the assessment, acceptance and rejection of applications made under this clause 9.2A.3;

(ii) the exercise of the Scheme Administrator's powers under clauses 9.2A.2 and 9.2A.5; and

(iii) the payment and collection of fees under this clause 9.2A.3(b);

(c) identify the Product; and

(d) provide evidence that the Product meets all of the Equipment Requirements.

9.2A.4 The Scheme Administrator may limit the number of applications that may be made during a period under clause 9.2A.3, either in aggregate or by particular persons or classes of persons, by Publishing a notice that sets out that period and limit.

9.2A.5 The Scheme Administrator may, at any time, cease to accept a Product as meeting the Equipment Requirements, provided that it:

(a) notifies all Accredited Certificate Providers accredited for the relevant Recognised Energy Saving Activity of the change and the reason for the change, prior to the Product ceasing to be accepted for this purpose; and

(b) ensures that all Published lists reflect the change in a timely manner.

9.3 Sale of New Appliances

9.3.1 The Energy Savings for an Implementation may be calculated using **Equation 5**, provided that:

(a) each item of End-User Equipment meets the Equipment Requirements in one of the Activity Definitions set out in Schedule B;

(b) each item of End-User Equipment was sold by an Appliance Retailer;

(c) each item of End-User Equipment was new at the time it was sold by the Appliance Retailer;

(d) each item of End-User Equipment was delivered to an Address, or was sold to a Purchaser with an Address recorded by the Appliance Retailer; and

(e) compliance with the requirements in clauses (a) to (d) above is evidenced by a tax invoice and/or other evidence acceptable to the Scheme Administrator.

9.3.2 For the purposes of clause 5.3(a), End-User-Equipment under clause 9.3 is deemed to be installed upon its sale;

9.3.3 For the purposes of clause 6.8, the Site of the Implementation is the Address referred to in clause 9.3.1 (d) of this Rule.

9.3.4 The Implementation Date is the date that the End-User Equipment was sold.

9.3.5 The Energy Saver is the Appliance Retailer who sells the End-User Equipment to a Purchaser.

9.3.6 The Purchaser, for the purposes of this clause 9.3, is the person who purchases or leases the goods or services that enable the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the End-User Equipment that is the subject of the Implementation.

Equation 5

For each Implementation:

$$Energy\ Savings = \sum (Deemed\ Equipment\ Energy\ Savings)$$

Where:

- the summation is over all items of End-User Equipment that have been sold as part of the Implementation; and
- *Deemed Equipment Energy Savings*, in MWh, for each item of End-User Equipment are calculated according to the respective Activity Definition **B1, B2, B3, B4, B5, B6, or B7** of Schedule B.

9.4 Commercial Lighting Energy Savings Formula

9.4.1 The Energy Savings for an Implementation may be calculated using **Equations 6** and **9** and either **7** or **8**, provided that:

(a) the activity is a Lighting Upgrade of:

(i) Lighting for Roads and Public Spaces;

(ii) traffic signals; or

(iii) Building Lighting;

(b) the Lighting Upgrade meets or exceeds the relevant lighting standards for each upgrade, to the satisfaction of the Scheme Administrator;

(c) if the Lighting Upgrade is of Building Lighting, then each space, after implementation of the Lighting Upgrade must, to the satisfaction of the Scheme Administrator, achieve:

(i) the relevant requirements of AS/NZS 1680, specifically including but not limited to maintained illuminance accounting for lumen depreciation, control of glare, and uniformity of illuminance, or another benchmark approved by the Scheme Administrator where the Lighting Upgrade is outside the scope of AS/NZS1680;

(ii) the requirements of the BCA section F4.4, Safe Movement (as updated from time to time);

(iii) an IPD that equals or is less than the maximum IPD for each space, as defined in Part J6 of the BCA; and

(iv) any other minimum performance requirements as Published by the Scheme Administrator;

(d) the Lighting Upgrade is performed by appropriately trained persons, according to requirements Published by the Scheme Administrator, and is undertaken by or under the supervision of a licensed electrician;

(e) the Purchaser pays a net amount of at least $5 (excluding GST) per MWh of Energy Savings, for the goods or services making up the Implementation, as evidenced by a tax invoice and/or other evidence acceptable to the Scheme Administrator; and

(f) each item of End-User Equipment used in the Lighting Upgrade is listed in Table A9.1 or Table A9.3, and if it is End-User Equipment listed in Table A9.3, that item is accepted by the Scheme Administrator as meeting the Equipment Requirements specified in Table A9.4.

9.4.2 The Implementation Date is the date when the Lighting Upgrade was completed.

9.4.3 The Energy Saver is the Purchaser.

9.4.4 The Purchaser, for the purposes of this clause 9.4, is the person who purchases or leases the goods or services that enable the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the End-User Equipment that is the subject of the Implementation.

Equation 6

For each Implementation:

Energy Savings = Baseline Energy Consumption - Upgrade Energy Consumption

Where:

- *Baseline Energy Consumption*, in MWh, is calculated:
  - using **Equation 7**, if the Lighting Upgrade is part of a refurbishment that would not have been required to comply with the BCA Part J6, had the Lighting Upgrade component of the refurbishment not occurred;
  - using **Equation 7** if the Lighting Upgrade is part of a refurbishment that would have been required to comply with the BCA Part J6, had the Lighting Upgrade component of the refurbishment not occurred and where the existing lighting meets or is below the maximum IPD requirements of the BCA Part J6; or
  - using **Equation 8** if the Lighting Upgrade is part of a refurbishment that would have been required to comply with the BCA Part J6, had the Lighting Upgrade component of the refurbishment not occurred, and where the existing lighting does not meet the IPD

requirements of the BCA Part J6.

- *Upgrade Energy Consumption*, in MWh, is calculated using **Equation 9**

Equation 7

Baseline Energy Consumption (MWh) =

$$\sum_{Each\ Incumbent\ Lamp} (LCP \times Asset\ Lifetime \times Annual\ Operating\ Hours \times CM \times AM) \div 10^6$$

Where:

- *Each Incumbent Lamp* means each Lamp and Control Gear in the pre-existing lighting system;
- *LCP*, in Watts, is the default lamp circuit power corresponding to that type of Lamp and Control Gear for that End-User Equipment as set out in **Table A9.2** or **Table A9.4** of Schedule A, representing the power drawn by the Lamp, plus the losses of its Control Gear;
- *Asset Lifetime*, in years, is the default lifetime of the Lighting Upgrade for the relevant End-User Equipment as used in Equation 9;
- *Annual Operating Hours*, in hours/year, is the default number of hours per annum that the upgraded lighting system is expected to operate for the relevant building and space type as set out in **Table A10.2** of Schedule A ;
- *CM* is the control multiplier. If the Lamp is connected to a Control System, the factor for the control multiplier shall be applied for the relevant End-User Equipment or activity as set out in **Table A10.4** of Schedule A to this Rule, otherwise CM = 1.0; and.
- *AM* is the air-conditioning multiplier for the space as used in Equation 9.

Equation 8

Baseline Energy Consumption (MWh)=

$$\sum_{Each\ Space} (IPD \times Area \times Asset\ Lifetime \times Annual\ Operating\ Hours \times AM) \div 10^6$$

Where:

- *Each Space* means each portion of space within the Site requiring a different IPD as defined in Part J6 of the BCA;
- *IPD*, in Watts/m^2, is the maximum allowable IPD for each space, as required by Table J6.2b of the BCA. For simplicity, the Scheme Administrator may take a weighted average of similar IPDs in the Commercial Lighting Energy Savings Formula. The IPD should not be adjusted by the adjustment factors tabled in Table 6.2c of the BCA (Lighting Power Density Calculations: Adjustment);
- *Area*, in m^2, is the area of Each Space;
- *Asset Lifetime*, in years, is the default lifetime of the Lighting Upgrade for the relevant End-User Equipment as used in Equation 9;
- *Annual Operating Hours*, in hours/year, is the default number of hours per annum that the upgraded lighting system is expected to operate for the relevant building and space type as set out in **Table A10.2** of Schedule A; and
- *AM* is the air-conditioning multiplier for the space as used in Equation 9.

Equation 9

Upgrade Energy Consumption (MWh) =

$$\sum_{Each\ Upgrade\ Lamp} (LCP \times Asset\ Lifetime\ x\ Annual\ Operating\ Hours \times CM \times AM) \div 10^6$$

Where:

- *Each Upgrade Lamp* means each Lamp and Control Gear in the upgraded lighting system.
- *LCP*, in Watts, is the default lamp circuit power corresponding to that type of Lamp and Control Gear for that End-User Equipment as set out in **Table A9.2** or **Table A9.4** of Schedule A, representing the power drawn by the Lamp, plus the losses of its Control Gear;
- *Asset Lifetime*, in years, is the default lifetime of the Lighting Upgrade for the relevant End-User Equipment as set out in **Table A10.1** of Schedule A, or another value accepted by the Scheme Administrator;
- *Annual Operating Hours*, in hours/year, is the default number of hours per annum that the upgraded lighting system is expected to operate for the relevant building and space type as set out in **Table A10.2** of Schedule A.
- *CM* is the control multiplier. If the Lamp is connected to a Control System, the factor for the control multiplier shall be applied for the relevant End-User Equipment or activity as set out in **Table A10.4** of Schedule A, otherwise CM = 1.0; and
- *AM* is the air-conditioning multiplier for the space, after Implementation, as set out in **Table A10.5** of Schedule A.

9.5 High Efficiency Motor Energy Savings Formula

9.5.1 The Energy Savings may be calculated using **Equation 12**, provided that:

(a) the End-User Equipment is a new High Efficiency Motor; and

(b) the High Efficiency Motor is installed.

9.5.2 The Implementation Date is the date that the High Efficiency Motor was installed.

9.5.3 The Energy Saver is the Purchaser.

9.5.4 The Purchaser, for the purposes of this clause 9.5, is the person who purchases or leases the High Efficiency Motor that enables the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the High Efficiency Motor that is the subject of the Implementation.

Equation 12

For each Implementation:

$$Energy\ Savings = P \times LUF \times DEI \times Asset\ Life \times 8760 \div 1000$$

Where:

- *P*, in kW, is the rated output of the High Efficiency Motor
- *LUF* is the Default Load Utilisation Factors for the relevant High Efficiency Motor as set out in **Table A12** of Schedule A, where the Business Classification and End-Use Service relevant to the Energy Savings is known, or **Table A13** of Schedule A otherwise;
- *DEI* is the default efficiency improvement (as a fraction, not as a percentage) for the relevant High Efficiency Motor as set out in **Table A11** of Schedule A; and
- *Asset Life*, in years, of the High Efficiency Motor is set out in **Table A14** of Schedule A to this Rule for the corresponding rated output of the High Efficiency Motor.

9.6 Power Factor Correction Energy Savings Formula

9.6.1 The Energy Savings may be calculated using **Equations 13 and 14**, provided that:

(a) the capacitors to provide the power factor correction services are installed at a Site where electricity is supplied from the Electricity Network at less than 50 kilovolts (kV);

(b) the capacitors improve the power factor of the Site to achieve a minimum of 0.9 lagging;

(c) the capacitors are not installed as part of a mandatory program of installation;

(d) the capacitors are installed at the main switchboard, where the Site is connected to the Electricity Network; and

(e) the capacitors are new.

9.6.2 The Implementation Date is the date on which the capacitors were installed.

9.6.3 The Energy Saver is the Purchaser.

9.6.4 The Purchaser, for the purposes of this clause 9.6, is the person who purchases or leases the capacitors that enable the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the capacitors that are the subject of the Implementation.

Equation 13

For each Implementation:

$$Energy\ Savings = (Power\ Savings) / 1000 \times (Annual\ operating\ hours) \times (Site\ Life)$$

Where:

- *Power Savings*, in kW, is the line loss power savings, less capacitor losses, during operating hours, and is calculated according to **Equation 14;**
- *Annual operating hours*, in hours/year, is the number of hours per year that the Site is operating and equals 1750; and
- *Site Life*, in years, is the expected remaining lifetime of the Site and the capacitors and equals 10.

Equation 14

$$Power\ Savings\ (kW) = Real\ Power \times 0.7 \times (DLF - 1) \times (1 - (Initial\ power\ factor)^2 / (Final\ power$$

factor)^2) – 0.0039 x (Rating of installed capacitors)

Where:

- *Real Power*, in kW, is the real power component of the average Site load during operating hours;
- *DLF* is the distribution loss factor for the Distribution District that the Site is connected to, as detailed in Table A19 of Schedule A;
- *Initial power factor* is the power factor of the load before the capacitors are installed, or 0.9, whichever is greater;
- *Final power factor* is the power factor of the load after the capacitors have been installed, or 0.98, whichever is lesser; and
- *Rating of installed capacitors*, in kvar, is the rated reactive power of the installed capacitors.

9.7 Removal of Old Appliances

9.7.1 The Energy Savings for an Implementation may be calculated using **Equation 15**, provided that:

(a) the Site is a Residential Building or a Small Business Building;

(b) each item of End-User Equipment meets one of the Equipment Requirements in Activity Definition C1 or C2 of Schedule C, and any additional requirements Published by the Scheme Administrator, noting that the Scheme Administrator may Publish, from time to time, lists of Products that they are satisfied meet those requirements;

(c) each item of End-User Equipment is removed from the Site and disposed of; and

(d) compliance with the requirements in clauses 9.7.1(a) to (c) above is evidenced by a copy of the disposal agent's refrigerant handling licence, and/or other evidence acceptable to the Scheme Administrator.

9.7.2 The Implementation Date is the date that the End-User Equipment was removed from the Site.

9.7.3 The Energy Saver is the person who is contracted to remove the End-User Equipment.

Equation 15

For each Implementation:

$$Energy\ Savings = \sum (Deemed\ Equipment\ Energy\ Savings)$$

Where:

- the summation is over all items of End-User Equipment that have been removed as part of the Implementation; and
- *Deemed Equipment Energy Savings*, in MWh, are calculated according to **Activity Definition C1 or C2** of Schedule C.

9.8 Home Energy Efficiency Retrofits

9.8.1 The Energy Savings for an Implementation may be calculated using **Equation 16**, provided that:

(a) the Site is a Residential Building or a Small Business Building;

(b) prior to the Implementation Date, Site Assessment has been conducted by an Accredited Energy Assessor and the results of this assessment have been recorded in a Home Energy Assessment Tool approved by the Scheme Administrator;

(c) prior to the Implementation Date, the proposed activities that make up the Implementation are identified and recorded using a Home Energy Assessment Tool approved by the Scheme Administrator;

(d) the Eligibility Requirements for the relevant Activity Definition are met immediately prior to the Implementation Date;

(e) installed End-User Equipment or Products that modify End-User Equipment meet all of the Equipment Requirements for the relevant Activity Definition, and any additional requirements Published by the Scheme Administrator, noting that the Scheme Administrator may Publish, from time to time, lists of Products that it is satisfied meet those requirements;

(f) the completed Implementation satisfies all of the relevant Implementation Requirements;

(g) the Accredited Certificate Provider has implemented sufficient Schedule E Activity Definitions to meet a minimum percentage of:

(i) 25% of the maximum Schedule E Energy Savings identified in the Site Assessment if one or more Activity Definitions from Schedule D have been implemented at the Site;

(ii) 50% of the maximum Schedule E Energy Savings identified in the Site Assessment if no Activity Definitions from Schedule D have been implemented at the Site; or

(iii) another percentage Published by the Scheme Administrator, which may be subject to any conditions, of the maximum Schedule E Energy Savings identified in the Site Assessment; or

(iv) another percentage Published by the Scheme Administrator, which may be subject to any conditions, of the maximum Schedule E Energy Savings if delivered through a Low-income Energy Program;

(h) unless delivered through a Low-income Energy Program, the Energy Saver has paid an amount of at least $90, excluding GST, for the Implementation, assessment and other associated works carried out at the Site, as evidenced by a tax invoice and/or other evidence acceptable to the Scheme Administrator.

9.8.2 The Implementation Date is the earliest date that all of the conditions of clause 9.8.1 are met.

9.8.3 The Energy Saver is the Purchaser.

9.8.4 The Purchaser, for the purposes of this clause 9.8, is the person who purchases or leases the goods or services that enable the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the End-User Equipment that is the subject of the Implementation.

Equation 16

For each Implementation:

$$Energy\ Savings = \sum (Deemed\ Activity\ Energy\ Savings)$$

Where:

- the summation is over all activities at the Site in accordance with this clause 9.8; and
- *Deemed Activity Energy Savings*, in MWh, are calculated according to the Activity Energy Savings formula set out in the relevant **Activity Definition** in **Schedule D** or **Schedule E** for each Implementation at the Site.

9.9 Installation of High Efficiency Appliances for Businesses

9.9.1 The Energy Savings for an Implementation may be calculated using **Equation 17**, provided that:

(a) each item of End-User Equipment meets the Equipment Requirements in an Activity Definition listed in Schedule F;

(b) each item of End-User Equipment meets the Installation Requirements as specified in the relevant Activity Definition; and

(c) each item of End-User Equipment is installed at an Address in an ESS Jurisdiction.

9.9.2 The Implementation Date is the date that the End-User Equipment is installed.

9.9.3 The Energy Saver is the Purchaser.

9.9.4 The Purchaser, for the purposes of this clause 9.9, is the person who purchases or leases the goods or services that enable the relevant Energy Savings to be made, provided they directly benefit from the ongoing End-Use Services provided by the End-User Equipment that is the subject of the Implementation.

Equation 17

For each Implementation:

$$Energy\ Savings = \sum (Deemed\ Equipment\ Energy\ Savings)$$

Where:

- the summation is over all items of End-User Equipment that have been installed as part of the Implementation; and
- *Deemed Equipment Energy Savings*, in MWh, for each item of End-User Equipment are calculated according to **Activity Definition F1, F2, F3, F4 or F5** of **Schedule F.**

9.10 1-for-1 Residential Downlight Replacement

9.10.1 Subject to clause 9.10.5, the Energy Savings for an Implementation may be calculated using Equation 18, provided that:

(a) the Site is a Residential Building or a Small Business Building;

(b) the Eligibility Requirements for the Activity Definition G1 in Schedule G are met immediately prior to the Implementation Date;

(c) each item of End-User Equipment is accepted by the Scheme Administrator as meeting all of the Equipment Requirements set out in Activity Definition G1 in Schedule G;

(d) the completed Implementation satisfies all of the relevant Implementation Requirements; and

(e) the Purchaser has paid an amount of at least $90, excluding GST, for the Implementation and other associated works carried out at the Site, as evidenced by a tax invoice and/or other evidence acceptable to the Scheme Administrator.

9.10.2 The Implementation Date is the earliest date that all of the conditions of clause 9.10.1 are met.

9.10.3 The Energy Saver is the Purchaser.

9.10.4 The Purchaser, for the purposes of this clause 9.10, is the person who purchases or leases the goods or services that enable the relevant Energy Savings to be made provided they directly benefit from the ongoing End-Use Services provided by the End-User Equipment that is the subject of the Implementation.

9.10.5 An Accredited Certificate Provider cannot calculate the Energy Savings of an Implementation using Equation 18 unless:

(a) on or before 1 October 2014, the Accredited Certificate Provider is authorised to use Equation 18 to calculate the Energy Savings of a Recognised Energy Saving Activity in accordance with their accreditation conditions; and

(b) the Accredited Certificate Provider has duly applied for registration of an Energy Savings Certificate in respect of that Implementation on or before 31 January 2015.

Note: Clause 9.10 may only be used to calculate Energy Savings until 1 February 2015.

Equation 18

For each Implementation:

$$Energy\ Savings = \sum (Deemed\ Equipment\ Energy\ Savings)$$

Where:

- the summation is over all items of End-User-Equipment installed at the Site in accordance with this clause 9.10; and
- *Deemed Equipment Energy Savings*, in MWh, are calculated according to **Activity Definition G1 of** Schedule G for each Implementation at the Site.

10 Definitions and Interpretation

10.1 In this Rule:

"Accuracy Factor" has the meaning given to that term in clause 7A.10.

"Accreditation Date" means, with respect to a Recognised Energy Saving Activity, the date on which the Scheme Administrator approves an Accredited Certificate Provider's application:

(a) for accreditation with respect to that activity; or

(b) to amend its existing accreditation to add that activity.

"Accredited Certificate Provider" has the same meaning it has in the Act.

"**Accredited Energy Assessor**" means a person accepted by the Scheme Administrator as being qualified to undertake a Site Assessment under clause 9.8.

"Accredited Statistician" means a person:

(a) accredited by the Statistical Society of Australia Inc. at the time of carrying out the verification in accordance with clause 8.9.7(e); and

(b) accepted by the Scheme Administrator for the purposes of this Rule.

"Act" means the *Electricity Supply Act 1995*.

"Activity Definition" means an activity as specified in a Schedule to this Rule.

"Additional Energy Savings" means in respect of clauses 7, 7A and 8, Energy Savings for which no Energy Savings Certificates have been created, but which arise from an Implementation in relation to which Energy Savings Certificates have been created.

"Address" means a street address within an ESS Jurisdiction, in a format approved by the Scheme Administrator.

"ANZSIC" means the Australian and New Zealand Standard Industrial Classification developed by the Australian Bureau of Statistics and Statistics New Zealand.

"Appliance Retailer" means a person who has sold End-User Equipment which meets the Equipment Requirements of a Recognised Energy Saving Activity set out in Schedule B, in a new condition, to a Purchaser.

"Approved Corresponding Scheme" has the same meaning as it has in section 127 of the Act.

"**AS/NZS"** means an Australian/New Zealand Standard as Published by SAI Global.

"Attrition", in relation to clause 8.9, means the termination of the electricity account in relation to a specific Site, for example, due to electricity customers switching retailers, relocating to a different Site, or disconnection from their electricity service.

"Ballast EEI" means the ballast energy efficiency index as defined in AS/NZS 4783.2 *Performance of electrical lighting equipment - Ballasts for fluorescent lamps - Energy labelling and minimum energy performance standards requirements*.

"Baseline NABERS Rating" has the meaning given in Step 2 of Method 4c, under clause 8.8.

"Baseline Operating Model" is the model described in clause 7A.3.

"BASIX" means the NSW Building Sustainability Index established under the *Environmental Planning and Assessment Regulation 2000*.

"BCA" means the Building Code of Australia, forming part of the National Construction Code as updated from time to time.

"Building Lighting" means End-User-Equipment lighting affixed to a Commercial/Industrial premises which is classified under the BCA as Class 3, 5, 6, 7, 8, 9, or 10(b) buildings or the Common Area of a Class 2 building.

"Business Classification" is the primary classification of the business making use of the End-Use Service for which energy was saved, detailed in Table A18 of Schedule A.

"Certificate Conversion Factor" has the same meaning as in the Act.

"CFL" means compact fluorescent Lamp.

"CFLi" means a compact fluorescent Lamp with integrated ballast.

"CFLn" means a compact fluorescent Lamp with non-integrated ballast.

"Common Areas" means:

(a) for buildings owned under strata title, the common property as defined in either the *Strata Schemes (Freehold Development) Act* 1973 (NSW), or *Strata Schemes (Leasehold Development) Act* 1986 (NSW); or

(b) for buildings not owned under strata title (e.g. under company title), the non-residential property of BCA Class 2 buildings.

"Computer Simulation" means a method to establish an energy model that uses software to simulate energy consumption by End-User Equipment and can be tested against statistical requirements Published by the Scheme Administrator for the purposes of clause 7A of this Rule.

"Control Gear" means the lighting ballast, transformer or driver.

"Control Group" means, in relation to the Aggregated Metered Baseline sub-method set out in clause 8.9, the group of Sites selected to not be offered the Treatment.

"Control System" means a system for controlling the light output of a Luminaire, including:

(a) Occupancy Sensor;

(b) Daylight-Linked Control;

(c) Programmable Dimming;

(d) Manual Dimming; or

(e) Voltage Reduction Unit.

"Deemed Energy Savings Method" means the method in clause 9.

"Default Load Utilisation Factor" is a composite of a deemed load factor and a deemed utilisation factor for HEMs, as set out in Table A12 or Table A13 of Schedule A.

"Distribution District" has the same meaning as it has in the Act.

"Distribution System" has the same meaning as it has in the *National Electricity (NSW) Law*.

"Downward Light Output" means the luminous flux (measured in lumens) emitted in the downwards direction, equivalent to the Light Output from a Lamp or Luminaire when installed flush with a ceiling.

"Effective Range" means the range over which values of Independent Variables and / or Site Constants for which a Baseline Energy Model or Operating Energy model (as the case may be) is valid for the purposes of clause 7A of this Rule.

"Electricity Network" means all electricity Transmission Systems and Distribution Systems located in an ESS Jurisdiction.

"**Electricity Retailer**" has the same meaning as "retailer" in the *National Energy Retail Law*.

"Eligibility Requirements" means the eligibility requirements specified in an Activity Definition in the Schedules to this Rule.

"ELV" means extra low voltage, not exceeding 50 volts alternating current (AC) or 120 volts ripple free direct current (DC), as defined in *AS/NZS 3000 Wiring rules*.

"End-Use Service" is the primary service provided by End-User Equipment, such services being as detailed in Table A17 of Schedule A.

"End-User Equipment" means electricity consuming equipment, processes, or systems, including the equipment directly consuming electricity, and other equipment or products that cause, control or influence the consumption of electricity, and includes (in the context of clause 8.8) a NABERS Building.

"Energy Saver" means the person who has the right to create Energy Savings Certificates for particular Energy Savings arising from an Implementation of a Recognised Energy Saving Activity at a Site, as defined in the relevant calculation method of this Rule.

"Energy Savings" means the reduction of the amount of electricity consumption (in MWh) arising from the Implementation as calculated by the approved calculation method in clauses 7, 7A, 8 or 9.

"Energy Savings Certificate" has the same meaning as in the Act.

"Energy Star Rating" means an Energy Star Rating as defined in the relevant AS/NZS.

"Equipment Requirements" means the equipment requirements as specified in a Schedule in this Rule.

"ESS Jurisdiction" means the state of New South Wales, or a jurisdiction in which an Approved Corresponding Scheme is in operation in accordance with section 127 of the Act.

"GEMS Registry" means a published registry of products registered under either Greenhouse and Energy Minimum Standards or published Minimum Energy Performance Standards (MEPS).

"GreenPower" means renewable energy purchased in accordance with the National GreenPower Accreditation Program Rules.

"GST" is the Commonwealth's Goods and Services Tax.

"Guide" means a guidance document Published by the Scheme Administrator.

"High Efficiency Motor" (HEM) is an electric motor meeting the high efficiency requirements of AS/NZS 1359.5 (0.73 to <185kW).

"Home Energy Assessment Tool" is a documented method, such as a computer program or website, that:

(a) identifies all available energy savings opportunities in a home or small business;

(b) estimates energy savings from each opportunity;

(c) records all data required to support the calculation and creation of Energy Savings Certificates based on implementation of those opportunities; and

(d) has been approved by the Scheme Administrator.

"Implementation" means the delivery of a Recognised Energy Saving Activity at a Site, or for the purposes of clause 8.9, the delivery of a Recognised Energy Saving Activity across a Population.

"Implementation Date" is defined in each calculation method of this Rule.

"Implementation Period" means the Measurement Period for which Energy Savings Certificates may be created.

"Implementation Requirements" means the implementation requirements specified in an Activity Definition in the Schedules to this Rule.

"Independent Variable" means a parameter that varies over time, can be measured, and affects the End-User Equipment's energy consumption for the purposes of clause 7A of this Rule.

"Interactive Energy Savings" means a change in a Site's energy consumption due to interactions with other End-User Equipment whose energy consumption is not measured for the purposes of clause 7A of this Rule.

"Integrated Luminaire" means a Luminaire that integrates Lamp and Control Gear into a single item of End-User Equipment and connects to 240V supply.

"Installation Requirements" means the installation requirements specified in an Activity Definition in the Schedules to this Rule.

"IPD" means the illumination power density as defined in the BCA part J6.

"IPMVP" means the International Performance Measurement and Verification Protocol, published by the Efficiency Valuation Organization.

"kV" means a kilovolt of electrical potential.

"kvar" means a kilovolt-amperes reactive of reactive power.

"kW" means a kilowatt of electrical power.

"kWh" means a kilowatt-hour of electrical energy.

"Lamp" means an artificial source of visible light.

"Lamp Life" means the expected operating lifetime of a Lamp, in hours, measured in accordance with Table A9.6 of Schedule A.

"Lamp Only" means the replacement of an existing Lamp with a Lamp that consumes less electricity, and could include the installation or replacement of a Control System.

"LCP" means lamp circuit power, which is the power drawn by a single Lamp and its associated Control Gear. If the Control Gear supplies multiple Lamps, then the Control Gear losses are assigned pro rata to each Lamp, according to power drawn by each Lamp.

"LED" means light emitting diode.

"Lifetime" means the time period over which Energy Savings will be delivered and for the purposes of Schedules B, C, D, E, and G are for reference only, as the relevant time period is already taken into account in the savings factors in those Schedules.

"Light Output" means the luminous flux (measured in lumens) emitted by a Lamp or Luminaire.

"Lighting for Roads and Public Spaces" means lighting covered by *AS/NZS 1158: Lighting for roads and public spaces.*

"Lighting Upgrade" means the replacement of existing general lighting End-User Equipment with new general lighting End-User Equipment that consumes less electricity, or the modification of existing general lighting End-User Equipment resulting in a reduction in the consumption of electricity compared to what would have otherwise been consumed.

"Low-income Energy Program" means a New South Wales Government low income household energy initiative which has been notified to the Scheme Administrator by the New South Wales Government, and approved by the Scheme Administrator, as a Low-income Energy Program for the purposes of this Rule.

"LUF" means load utilisation factor.

"Luminaire" means the apparatus that distributes, filters or transforms the light emitted from a light source, including Lamps, Control Gear and all components necessary for fixing and protecting the Lamps, including the troffer.

"Maintained Emergency Lighting" means a Maintained emergency exit sign or always-on Maintained emergency luminaire as defined in AS 2293.1: *Emergency escape lighting and exit signs for buildings - System design, installation and operation.*

"Measured Electricity Consumption" means the electricity consumption as determined in accordance with clause 8.9.3.

"Measurement and Verification Professional" is defined in clause 7A.15 of this Rule.

"**Measurement Period**" means the duration of time over which measurement of energy consumption will be taken for the purposes of calculating the Energy Savings under clause 7, 7A or 8, and defined therein.

"**Metered Baseline Method**" means the method in clause 8.

"**Method 4c**" means the method in clause 8.8.

"MWh" means a megawatt-hour of electrical energy.

"NABERS" means the National Australian Built Environment Rating System.

"NABERS Building" means a building that has been rated under NABERS.

"NABERS Rating" means a rating, expressed as a number, for a NABERS Building.

"NABERS Reverse Calculator" means the tool provided by the NABERS National Administrator.

"National Energy Retail Law" means the *National Energy Retail Law (NSW)*.

"National GreenPower Accreditation Program Rules" mean the terms and conditions of participation in the National GreenPower Accreditation Program, available on the GreenPower website at http://www.greenpower.gov.au/Business-Centre/Rules-and-Accreditation/

"Network Service Provider" has the same meaning as it has in the *National Electricity (NSW) Law*.

"New End-User Equipment" means End-User Equipment where no End-User Equipment of the same type, function, output or service was previously in its place (but does not include additional components installed in the course of modifying existing End-User Equipment).

"NLP", or Nominal Lamp Power, means the manufacturer's rated value (or tested value, as acceptable to the Scheme Administrator) for power drawn by a single Lamp.

"Non-Habitable Building" means a building built as a BCA Class 10a or Class 10b building.

"Non-Routine Adjustments" means adjustments required to account for those characteristics of a facility which affect energy use, within the chosen Measurement Period, that are not used as the basis for any Independent Variables or Site Constants. They are required to enable like-for-like comparison of before and after energy savings scenarios. They are typically static factors that may include fixed, environmental, operational and maintenance characteristics.

"Normal Year" is a typical year for the operation of the End-User Equipment at the Site for the purposes of clause 7A of this Rule.

"Number of Certificates" means the number of Energy Savings Certificates permitted to be created by an Accredited Certificate Provider for Energy Savings calculated in accordance with clause 6.5 and the methods set out in clause 7, 7A, 8 or 9.

"Operating Energy Model" is the model described in clause 7A.4.

"Persistence Model" means a model that is able to forecast the continuation of Energy Savings from a Recognised Energy Saving Activity over its useful lifetime.

"Population", in relation to the Aggregated Metered Baseline sub-method, means the set of all Sites in the Control Group and Treatment Group.

"Pre-Implementation Period" means the Measurement Period prior to the Implementation Period. If Method 5.3 is used, the Pre-Implementation Period must cover the same period of time in a previous year as the Implementation Period.

"Previous Rule" means the Energy Savings Scheme Rule of 2009 as in force before 1 July 2014.

"Prior Accreditation" means an accreditation with respect to a Recognised Energy Saving Activity where the Accreditation Date is earlier than 1 July 2014 and that accreditation has not been cancelled.

"Prior Accreditation Conditions" means any conditions of accreditation imposed by the Scheme Administrator earlier than 1 July 2014 that have not been rescinded or replaced.

"Product" means a class of End-User Equipment identified uniquely by its manufacturer identifier and manufacturer's model identifier and, in some cases, model year or year of manufacture.

"Project Impact Assessment Method" means the method in clause 7.

"Project Impact Assessment with Measurement and Verification Method" means the method in clause 7A.

"Publish" means to document and make publicly available, on the Energy Savings Scheme website, www.ess.nsw.gov.au.

"Purchaser" means the person defined as the Purchaser in the relevant calculation method of this Rule.

"Recognised Energy Saving Activity" has the same meaning as it has in the Act.

"Regression Analysis" means a method to establish an energy model that determines coefficients for the relationship between energy consumption and Independent Variables and / or Site Constants for the purposes of clause 7A of this Rule.

"Regulations" means regulations made for the purposes of Part 9 of the Act.

"Residential Building" means a building classified by the BCA as a Class 1 or Class 2 building, and may include any Non-Habitable Building on the same site.

"Sampling Method" means the statistical method for conducting measurements on a subset of a population to estimate the characteristics of the entire population for the purposes of clause 7A of this Rule.

"Scheme Administrator" has the same meaning as in the Act.

"Site" means the location of the End-User Equipment affected by a Recognised Energy Saving Activity, as defined by:

(a) an Address; or

(b) a unique identifier, as specified for the relevant Implementation that identifies the affected End-User Equipment; or

(c) determined by a method accepted by the Scheme Administrator.

"**Site Assessment**" means identification of all Energy Savings that may be generated at a Site using Equation 16 with reference to all possible activities identified in Schedule D and Schedule E.

"Site Constant" means a parameter that varies between Sites, does not vary over time under normal operating conditions, and affects the End-User Equipment's energy consumption for the purposes of clause 7A of this Rule.

"Small Business Building" means a building comprising total floor space less than 200 square metres and classified by the BCA as a Class 6 building.

"System U-Value" is a measure of the thermal transmittance, in W/m^2K, of a window system including glass, sash and frame, as registered under WERS.

"Transmission System" has the same meaning as it has in the *National Electricity (NSW) Law*.

"Treatment" is the offering of goods and services (and any subsequent provision, engagement and promotion activities) to the Treatment Group to deliver Energy Savings.

"Treatment Group", in relation to clause 8.9, means the group of Sites selected to be offered the Treatment.

"Unbiased Selection Method" means a randomisation technique which ensures that every Site in the Population has an equal chance of being selected into the Treatment Group. This does not require Treatment Group and Control Group to be of an equal size.

"Uplift Energy Savings", in relation to clause 8.9 is the difference in energy consumption between the Control Group and Treatment Group that is estimated to have taken place due to other Recognised Energy Saving Activities or activities excluded as ineligible under clause 5.4 of this Rule.

"VEET" means the Victorian Energy Efficiency Target Scheme established under the *Victorian Energy Efficiency Target Act 2007 (Victoria).*

"WERS" means the Window Energy Rating Scheme managed by the Australian Window Association.

10.2 Simplified outlines and notes in this Rule do not form part of this Rule.

10.3 (deleted)

10.4 The terms and expressions used in this Rule have the same meaning as they have for the purposes of Part 9 of the Act, unless otherwise defined by this clause 10.

10.5 A reference to accreditation with respect to a Recognised Energy Saving Activity means accreditation as an Accredited Certificate Provider in respect of that Recognised Energy Saving Activity.

11 Savings and Transitional Arrangements

General

11.1 An Accredited Certificate Provider may calculate Energy Savings pursuant to the Previous Rule to create an Energy Savings Certificate registered after 1 July 2014 if all of the following criteria are satisfied:

(a) the Implementation Date of the relevant Implementation is prior to 1 July 2014;

(b) no previous applications to register Energy Saving Certificates in respect of that Implementation have been made prior to 1 July 2014; and

(c) subject to clause 11.7, an application to register Energy Savings Certificates in respect of those Energy Savings is made on or before 30 September 2014.

Definitions of Energy Saver and Recognised Energy Saving Activity

11.2 Notwithstanding clause 5.2, an Accredited Certificate Provider may create Energy Savings Certificates referred to in this clause 11 for Energy Savings for which they are the Energy Saver in accordance with their Prior Accreditation Conditions and the Previous Rule.

11.3 Clause 5.4(a) does not apply to the installation of End-User Equipment referred to in that subclause if:

(a) the Lighting Upgrade was completed on or before 31 May 2014; and

(b) an application to register Energy Savings Certificates in respect of those Energy Savings is duly made on or before 30 September 2014.

Creation of Energy Savings Certificates

11.4 Clause 6.2 does not apply to Energy Savings Certificates created under clause 11.1 in respect of Implementations for which a person has applied for, but not been granted, accreditation in relation to that Recognised Energy Saving Activity on or before 31 May 2014 under the provisions and requirements of the Previous Rule.

11.5 Clause 6.2 does not apply to Energy Savings Certificates created in respect of the Additional Energy Savings of an Implementation if:

(a) the initial Energy Savings Certificates for that Implementation were created on or before 30 June 2014; or

(b) the initial Energy Savings Certificates for that Implementation were created under the provisions of clause 11.1 and the Accredited Certificate Provider's application for accreditation in relation to that Recognised Energy Saving Activity was duly made and submitted to the Scheme Administrator, but not granted on or before 30 June 2014.

11.6 Clause 6.2 (b) does not apply to Energy Savings Certificates created in respect of the Energy Savings for an Implementation where all of the following criteria are satisfied:

(a) the Energy Savings for that Implementation are calculated in accordance with clause 7, clause 8.5, 8.6 or 8.7;

(b) the Implementation Date for that Implementation occurred on or before 30 June 2014;

(c) an application to register those Energy Savings Certificates is duly made within 18 months of the Implementation Date; and

(d) that Accredited Certificate Provider's application for accreditation in relation to that Recognised Energy Saving Activity was duly made and submitted to the Scheme Administrator on or before 30 June 2014.

NABERS Baseline

11.7 Notwithstanding clause 11.1(c), an Accredited Certificate Provider may use the methods set out in clause 8.8 of the Previous Rule to calculate Energy Savings of Implementations for which an application for registration of an Energy Savings Certificate is duly made on or before 31 December 2014.

End-User Equipment Requirements

11.8 End-User-Equipment is not required to meet the Equipment Requirements specified in Table A9.4 for an Implementation which has an Implementation Date on or before 30 June 2015 if:

(a) clause 9.4 is used to calculate the Energy Savings, and the Scheme Administrator has accepted the LCP value applied for by the Accredited Certificate Provider for that End-User-Equipment; or

(b) clause 9.10 is used to calculate the Energy Savings, and the Accredited Certificate Provider has notified the Scheme Administrator of, and the Scheme Administrator has accepted, the use of that End-User Equipment for their Recognised Energy Savings Activity on or before 31 May 2014.

Schedule A – Default Factors and Classifications

Table 1: Replacement of 50W ELV halogen lamp with a 35W ELV halogen lamp (deleted)

Table 2: Replacement of 50W ELV halogen lamp and magnetic transformer with a 35W ELV halogen lamp and electronic transformer (deleted)

Table 3: Replacement of 50W ELV halogen lamp and transformer with CFL, CCFL, LED or CMH lamp with lifetime ≥ 10,000 hours (refer to Activity Definition G1)

Table 4: Showerhead replacement (deleted)

Table 5: Purchase of a new high efficiency Clothes Washer (refer to Activity Definition B1)

Table 6: Purchase of a new high efficiency Dishwasher (refer to Activity Definition B3)

Table 7: Destruction of refrigerator or freezer (refer to see Activity Definitions C1 & C2)

Table 8a: Purchase of a new high efficiency 1 door refrigerator (refer to Activity Definition B4)

Table 8b: Purchase of a new high efficiency 2 door refrigerator (refer to Activity Definition B5)

Table 8c: Purchase of new high efficiency chest freezer (refer to Activity Definition B6)

Table 8d: Purchase of new high efficiency upright freezer (refer to Activity Definition B6)

Table 9: Default LCP for Commercial Lighting Energy Savings Formula (refer to Table A9.2 and Table A9.4)

Table 10: Default Operating Factors for Commercial Lighting Energy Savings Formula (refer to Table A9.6, Table A10.1, Table A10.2, Table A10.3, Table A10.4, and Table A10.5)

Table 11: Default Efficiency Improvements for High Efficiency Motors (refer to Table A11)

Table 12: Default Load Utilisation Factor for High Efficiency Motors – Where End-User Equipment Industry and End-use are known (refer to Table A12)

Table 13: Default Load Utilisation Factor for High Efficiency Motors – Where End-User Equipment Industry and End-use are not known (refer to Table A13)

Table 14: Asset Life for High Efficiency Motors (t) (refer to Table A14)

Table 15: Default Efficiencies (deleted)

Table 16: Discount Factors for calculating forward creation of Certificates under the Project Impact Assessment Method (refer to Table A16)

Note: the deletion of previous Tables 1, 2, 4, 15 and of the Previous Rules means that Energy Savings Certificates cannot be created or registered after 1 July 2014 using a method referred to in those Tables.

Table A9.1: Standard Equipment Classes for Lighting Upgrades

Equipment Class	Definition
T12 linear fluorescent Lamp	A double-capped fluorescent Lamp as defined by *AS/NZS 4782.1 Double-capped fluorescent lamps – Performance specifications* with a tube diameter of 38.1mm. These are also referred to as T38
T8 linear fluorescent Lamp	A double-capped fluorescent Lamp as defined by *AS/NZS 4782.1 Double-capped fluorescent lamps – Performance specifications* with a tube diameter of 25.4mm. These are also referred to as T26
T5 linear fluorescent Lamp	A double-capped fluorescent Lamp as defined by *AS/NZS 4782.1 Double-capped fluorescent lamps – Performance specifications* with a tube diameter of 15.9mm. These are also referred to as T16
T5 or T8(T9) Circular fluorescent Lamp	A circular double-capped circular fluorescent Lamp with a typical tube diameter of 16mm or 29mm as defined by *AS/NZS 4782.1 Double-capped fluorescent lamps – Performance specifications*. These are also referred to as T9
Compact fluorescent Lamp with non-integrated ballast (CFLn)	An externally ballasted single-capped fluorescent Lamp as defined by *AS/NZS 60901 Single-capped fluorescent lamps-Performance specifications*. The Lamp may include an internal means of starting and pre-heated cathodes.
Compact fluorescent Lamp with integrated ballast (CFLi)	A Self-ballasted compact fluorescent Lamp as defined by *AS/NZS 4847 Self-ballasted lamps for general lighting services*
Tungsten halogen Lamp (240V)	A Tungsten halogen Lamp as defined in *AS 4934 Incandescent lamps for general lighting service*, with a rated voltage of 240V.
Tungsten halogen Lamp (ELV)	A Tungsten halogen Lamp as defined in *AS 4934 Incandescent lamps for general lighting service*, with a ELV rating, typically 12V. These amps run off an Extra-low voltage lighting converter (ELC) as defined in *AS 4879.1*
Infrared coated (IRC) halogen Lamp (ELV)	A ELV Tungsten halogen Lamp as defined in *AS 4934* where the halogen globe is coated with a reflective infrared coating this improves the efficiency of the globe.
Metal halide Lamp	A discharge Lamp classified as a Metal halide Lamp as defined *by IEC 61167 Metal halide lamps – Performance specification*
Mercury vapour Lamp	A discharge Lamp classified as a High-pressure mercury vapour Lamp as defined by *IEC 60188 High-pressure mercury vapour lamps – Performance specifications*
High pressure sodium (HPS) Lamp	A discharge Lamp classified as a High pressure sodium vapour Lamp as defined by *IEC 60662 High-pressure sodium vapour lamps*
Lighting for Roads and Public Spaces or traffic signals (other than LED lighting)	Lighting for Roads and Public spaces as defined by *AS 1158 Lighting for roads and public spaces*

Table A9.2: Lamp Circuit Power (LCP) values for Standard Equipment Classes

Equipment Class	Control Gear	LCP (Watts)	Notes
T8 or T12 linear fluorescent Lamp or T8(T9) or T12 circular fluorescent Lamp	Electronic ballast, EEI = A1	NLP + 2	If EEI of Electronic ballast is not known, use EEI = A3
	Electronic ballast, EEI = A2	NLP	
	Electronic ballast, EEI = A3	NLP + 2	
	Magnetic ballast, EEI = B1	NLP + 6	If EEI of Magnetic ballast is not known use EEI = C
	Magnetic ballast, EEI = B2	NLP + 8	
	Magnetic ballast, EEI = C	NLP + 10	
	Magnetic ballast, EEI = D	NLP + 12	
T5 linear fluorescent Lamp or T5 circular fluorescent Lamp	Electronic ballast, EEI = A1	1.13 × NLP + 2.5	If EEI of Electronic ballast is not known, use EEI = A3
	Electronic ballast, EEI = A2	1.08 × NLP + 1.5	
	Electronic ballast, EEI = A3	1.13 × NLP + 2.5	

Equipment Class	Control Gear	LCP (Watts)	Notes
Compact fluorescent Lamp with non-integrated ballast (CFLn)	Electronic ballast, EEI = A1	NLP + 3	If EEI of Electronic ballast is not known, use EEI = A3
	Electronic ballast, EEI = A2	NLP + 1	
	Electronic ballast, EEI = A3	NLP + 3	
	Magnetic ballast, EEI = B1	NLP + 5	If EEI of Magnetic ballast is not known use EEI = C
	Magnetic ballast, EEI = B2	NLP + 7	
	Magnetic ballast, EEI = C	NLP + 9	
	Magnetic ballast, EEI = D	NLP + 11	
Compact fluorescent Lamp with integrated ballast (CFLi)	Built In	NLP	
Tungsten halogen Lamp (240V)	Built In	NLP	
Tungsten halogen Lamp (ELV) or Infrared coated (IRC) halogen Lamp (ELV)	Magnetic transformer	1.25 × NLP	Maximum NLP of removed Lamp = 35W
	Electronic transformer	1.08 × NLP	
Metal halide Lamp	Magnetic ballast (reactor type)	1.05 × NLP + 14	
	Magnetic ballast (constant wattage type)	1.07 × NLP + 22	
	Electronic ballast	1.10 × NLP + 0.9	
Mercury vapour Lamp	Magnetic ballast	1.03 × NLP + 11	
High pressure sodium (HPS) Lamp	Magnetic ballast	1.05 × NLP + 13	
Lighting for Roads and Public Spaces or traffic signals (other than LED lighting)	Built in or Independent	Lighting Load Table Published by AEMO or relevant regulator.	An entire traffic signal unit or Integrated Luminaire is used as the basis for calculation, rather than individual Lamps.

Table A9.3: Other Equipment Classes for Lighting Upgrades

Equipment Class	Definition
T5 adaptor kit	Any equipment that enables a T8 or T12 Luminaire to accommodate or provide physical support to a T5 Lamp or Luminaire.
Retrofit Luminaire - LED Linear Lamp	A T5, T8 or T12 Luminaire that has been retrofitted with an LED linear Lamp in place of the linear fluorescent Lamp. This cannot involve modification to the wiring of the Luminaire other than removal, replacement or modification of the starter.
LED Lamp Only – ELV	A LED Lamp that runs off an existing Extra-low voltage lighting converter (ELC) designed for retrofitting into an existing Luminaire or Lamp holder. These are typically used as a replacement for ELV Tungsten halogen Lamps
LED Lamp Only – 240V Self Ballasted	A self-ballasted LED Lamp as defined by IEC 62560 Self-ballasted LED lamps for general lighting services by voltage > 50 V. These Lamps are connected directly to a 240V supply.
Induction Luminaire	A gas discharge Lamp in which the power required to generate light is transferred from outside the Lamp envelope to the gas via electromagnetic induction.
LED Lamp and Driver	A LED-reflector Lamp and matching LED Driver intended as an alternative to a Mirrored Reflector Halogen Lamp
Modified Luminaire – LED Linear Lamp	A T5, T8 or T12 luminaire that has been modified for use with an LED linear Lamp. This involves modifying, removing or rendering redundant any wiring or structure of the Luminaire, beyond the replacement of a starter.

Equipment Class	Definition
LED Luminaire – fixed type	A LED Luminaire intended for use as a fixed luminaire as defined in AS/NZS 60598.2.1 Luminaires – Particular requirements – Fixed general purpose luminaires
LED Luminaire – Linear Lamp	An LED Luminaire intended for use as an alternative to a linear fluorescent Luminaire, where the Luminaire houses a matching Linear LED tube or a linear array of integrated LEDs. Where the Luminaire uses a Linear LED tube, the Luminaire must not be compatible with a linear fluorescent Lamp.
LED Luminaire – floodlight	A LED Luminaire intended for use as a floodlight as defined in AS/NZS 60598.2.5 Luminaires – Particular requirements - Floodlights
LED Luminaire – recessed	A LED Luminaire intended for use as a recessed luminaire as defined in AS/NZS 60598.2.2 Luminaires – Particular requirements – Recessed luminaires
LED Luminaire – high/lowbay	A LED Luminaire intended for use as high-bay or low-bay lighting
LED Luminaire – streetlight	A LED Luminaire intended for use as a streetlight as defined in AS/NZS 60598.2.3 Particular requirements – Luminaires for road and street lighting
LED Luminaire – emergency lighting	A LED Luminaire intended for use as an Emergency lighting luminaire as defined in AS/NZS 60598.2.22 Particular requirements – Luminaires for emergency lighting
LED Luminaire – hospital use	A LED Luminaire intended for use in the clinical areas of a hospital or health care building as defined in AS/NZS 60958.2.25 Particular requirements – Luminaires for use in clinical areas of hospitals and health care buildings
Other Emerging Lighting Technology	Any lighting equipment not defined above.

Table A9.4: Lamp Circuit Power (LCP) values and Equipment Requirements for other Equipment Classes for Lighting Upgrades

Equipment Class	Control Gear	LCP Value	Equipment Requirement
T5 Adaptor Kit	Not Applicable (ineligible)	Not Applicable (ineligible)	Ineligible
Retrofit Luminaire - LED Linear Lamp	Not Applicable(ineligible)	Not Applicable (ineligible)	Ineligible
LED Lamp Only – ELV	Built In + Existing Magnetic Transformer	1.25 × NLP as Published by Scheme Administrator	Must meet product requirements and minimum performance specifications for Lamp Life, electro-magnetic compatibility (where applicable), lumen efficacy, power factor, LCP, and any other requirements as Published by the Scheme Administrator, as evidenced by: (a) a certification scheme accepted by the Scheme Administrator; and (b) test reports from an accredited laboratory, in accordance with requirements Published by the Scheme Administrator; or (c) compliance with a relevant AS/NZS standard for the relevant Equipment Class recognised by the Scheme Administrator; or (d) demonstrated product acceptance under schedules of the VEET scheme recognised as relevant by the Scheme Administrator including compliance with any additional Equipment Requirements Published by the Scheme Administrator.
	Built In + Existing Electronic Transformer	1.08 × NLP as Published by Scheme Administrator	
LED Lamp Only – 240V Self Ballasted	Built In	As Published by the Scheme Administrator	
Induction Luminaire	Built In or Independent		
LED Lamp and Driver			
Modified Luminaire- LED Linear Lamp			
LED Luminaire – fixed type			
LED Luminaire – Linear Lamp			
LED Luminaire – floodlight			
LED Luminaire – recessed			
LED Luminaire – high/lowbay			
LED Luminaire – streetlight			
LED Luminaire – emergency lighting			
LED Luminaire – hospital use			
Other Emerging Lighting Technology			

Table A9.5: Control gear for Lighting Upgrades

Control Gear	Definition
Magnetic ballast	A Ferromagnetic ballast as defined in *AS/NZS 4783 Performance of electrical lighting equipment – Ballasts for fluorescent lamps*
Electronic ballast	An A.C. supplied electronic ballast as defined in *AS/NZS 4783 Performance of electrical lighting equipment – Ballasts for fluorescent lamps*
Magnetic ballast (reactor type)	An electromagnetic ballast that use an inductor or autotransformer to limit the current and provide the voltage necessary to ignite the Lamp. These ballasts do not include any means of regulating the light output.
Magnetic ballast (constant wattage type)	An electromagnetic ballast that uses a combination of inductive and capacitive components to provide a regulated power output (constant wattage) to the Lamp
Magnetic transformer	A magnetic isolating transformer as defined in *AS/NZS 4879.1 Performance of transformers and electronic step-down convertors for ELV lamps - Test method - Energy performance*.
Electronic transformer	An electronic step-down convertor as defined in *AS/NZS 4879.1 Performance of transformers and electronic step-down convertors for ELV lamps - Test method - Energy performance.*

Table A9.6: Default Lamp Life for Lighting Upgrades

Type of Lamp	Lamp Life (hours)
Standard equipment classes defined in Table A9.1	As per product labelling.
Other equipment classes defined in Table A9.3	As Published by the Scheme Administrator.

Table A10.1: Asset Lifetimes for Lighting Upgrades

Activity	Asset Lifetime (years)
Replacement of : • Luminaire, or • Control Gear (not integrated into Lamp).	Lighting for Roads and Public Spaces or traffic signals: 12 years All other lighting: 10 years
Replacement of: • Lamp Only.	Lamp Life ÷ Annual Operating Hours (Where Lamp Life is measured in accordance with Table A9.6 and is a maximum of 30,000 hours) Maximum Asset Lifetime = 10 years for Buildings and 12 years for Lighting for Roads and Public Spaces or traffic signals
Installation of: • Control System as listed in Table A10.4 where the Lighting Upgrade only consists of the installation of a Control System	Maximum Asset Lifetime = 5 years

Table A10.2: Operating Hours for Lighting Upgrades by space type

Space Type	Annual Operating Hours (hours per annum)
Auditorium, church and public hall	2,000
Board room and conference room	3,000
Carpark – general (undercover) and Car Park - entry zone (first 20 m of travel)	7,000
Carpark – general (open air)	4,500

Space Type	Annual Operating Hours (hours per annum)
Common rooms, spaces and corridors in a Class 2 building	7,000
Control room, switch room, and the like	Value in Table A10.3 for BCA Classification of the surrounding space
Corridors	Value in Table A10.3 for BCA Classification of the surrounding space
Courtroom	2,000
Dormitory of a Class 3 building used for sleeping only or sleeping and study	3,000
Entry lobby from outside the building	Value in Table A10.3 for BCA Classification of the surrounding space.
Health-care - children's ward, examination room, patient ward, all patient care areas including corridors where cyanosis lamps are used	6,000
Kitchen and food preparation area	Value in Table A10.3 for BCA Classification surrounding space
Laboratory - artificially lit to an ambient level of 400 lx or more	3,000
Library - stack and shelving area, reading room and general areas	3,000
Lounge area for communal use in a Class 3 building or Class 9c aged care building	7,000
Maintained Emergency Lighting	8,500
Museum and gallery - circulation, cleaning and service lighting	2,000
Office	3,000
Plant room	Value in Table A10.3 for BCA Classification of the surrounding space
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks	5,000
Retail space including a museum and gallery whose purpose is the sale of objects	5,000
School - general purpose learning areas and tutorial rooms	3,000
Sole-occupancy unit of a Class 3 building	3,000
Sole-occupancy unit of a Class 9c aged care building	6,000
Storage with shelving no higher than 75% of the height of the aisle lighting	5,000
Storage with shelving higher than 75% of the height of the aisle lighting	5,000
Service area, cleaner's room and the like	Value in Table A10.3 for BCA Classification of the surrounding space
Toilet, locker room, staff room, rest room and the like	Value in Table A10.3 for BCA Classification of the surrounding space
Wholesale storage and display area	5,000
Other spaces not defined above	Value in Table A10.3 for BCA Classification of space

Table A10.3: Annual Operating Hours for Lighting Upgrades by building type

Building Classification	Annual Operating Hours (hours per annum)
BCA Class 2 buildings (Common Areas)	7,000
BCA Class 3 buildings (Common Areas)	7,000
BCA Class 3 buildings (other than Common Areas)	3,000
BCA Class 5 buildings	3,000
BCA Class 6 buildings	5,000
BCA Class 7 buildings	5,000
BCA Class 7 (a) buildings (open air car parks)	4,500
BCA Class 7 (a) buildings (undercover car parks)	7,000
BCA Class 8 buildings (other than ANZSIC Division C, Manufacturing)	3,000
BCA Class 8 buildings (ANZSIC Division C, Manufacturing)	5,000
BCA Class 9a and 9c buildings	6,000
BCA Class 9b buildings	2,000
BCA Class 10b buildings	1,000
Roads and Public Spaces	4,500
Traffic Signals	8,760

Table A10.4: Control Systems and Control Multipliers for Lighting Upgrades

Control System	Definition	Control Multiplier (CM)
Occupancy Sensor	Control device that uses a motion sensor to detect the presence of people in the Space and adjusts the light output of the Luminaire. Each Occupancy Sensor must control a maximum of 6 Luminaires.	0.7
Daylight-Linked Control	Control device that uses a photoelectric cell to measure ambient daylight levels to automatically vary Luminaire light output. Each Luminaire must be located close to a significant source of daylight.	0.7
Programmable Dimming	Luminaire light output controlled by pre-selected light levels (scenes) which are automatically selected according to time of day, photoelectric cell and/or Occupancy Sensor. Scenes must reduce lighting power.	0.85
Manual Dimming	Control device that allows a user to control Luminaire light output using a knob, slider or other manual input mechanism or by manually selecting a pre-programmed light level (scene).	0.9
Multiple Control Systems	Programmable Dimming and Manual Dimming	0.76
	Any other combination of 2 or more control systems above.	0.6
Voltage Reduction Units (VRU)	A control device that reduces the voltage applied to the Luminaire after start-up, when used with appropriate Luminaires.	As approved by Scheme Administrator

Table A10.5: Air-conditioning Multipliers for Lighting Upgrades

Air-conditioning system	Air-conditioning Multiplier (AM)
Air-conditioned	1.3
Not air-conditioned	1

Table A11: Default Efficiency Improvement (DEI) for High Efficiency Motors

Rated output (kW)	DEI by number of poles			
	2 pole	4 pole	6 pole	8 pole
0.73 to < 2.6	0.033	0.030	0.039	0.047
2.6 to < 9.2	0.021	0.020	0.024	0.027
9.2 to < 41	0.014	0.014	0.016	0.017
41 to <100	0.010	0.009	0.010	0.010
100 to < 185	0.008	0.007	0.008	0.008

Table A12: Default Load Utilisation Factor for High Efficiency Motors – Where Business Classification and End-Use Service are known

Load Utilisation Factor	Refrigeration and freezing	Water/liquid pumping	Air compression	Air handling, fans, ventilation	Process Drives	Milling, mixing, grinding	Material handling/ conveying
Division A Agriculture, Forestry and Fishing	0.14	0.32	0.27	0.28	0.32	0.2	0.2
Division B Mining	0.09	0.36	0.32	0.41	0.32	0.32	0.28
Division C Manufacturing	0.28	0.32	0.27	0.32	0.27	0.24	0.28
Division D Electricity, Gas, Water and Waste Services	0.11	0.32	0.24	0.28	0.28	0.12	0.17
Division E Construction	0.09	0.24	0.15	0.15	0.17	0.14	0.2
Division F Wholesale Trade	0.2	0.14	0.07	0.13	0.13	0.03	0.11
Division G Retail Trade	0.17	0.09	0.07	0.13	0.13	0.03	0.07
Division H Accommodation and Food Services	0.24	0.11	0.04	0.14	0.13	0.09	0.11
Division I Transport, Postal and Warehousing	0.17	0.11	0.08	0.13	0.17	0.03	0.16
Division J Information Media and Telecommunications	0.11	0.09	0.04	0.1	0.11	0.03	0.03
Division K Financial and Insurance Services	0.09	0.05	0.04	0.06	0.06	0.03	0.03
Division L Rental, Hiring and Real Estate Services	0.09	0.05	0.04	0.06	0.06	0.03	0.03
Division M Professional, Scientific and Technical Services	0.17	0.07	0.05	0.08	0.08	0.04	0.03
Division N Administrative and Support Services	0.11	0.05	0.04	0.06	0.04	0.03	0.03
Division O Public Administration and Safety	0.09	0.05	0.04	0.06	0.04	0.03	0.03
Division P Education and Training	0.11	0.05	0.04	0.06	0.04	0.03	0.03
Division Q Health Care and Social Assistance	0.11	0.08	0.11	0.06	0.06	0.03	0.03
Division R Arts and Recreation Services	0.09	0.05	0.04	0.06	0.04	0.03	0.03
Division S Other Services	0.07	0.05	0.04	0.06	0.04	0.03	0.03

Table A13: Default Load Utilisation Factor for High Efficiency Motors – Where Business Classification or End-Use Service are not known

Rated output (kW)	LUF
0.73 to < 2.6	0.09
2.6 to < 9.2	0.10
9.2 to < 41	0.11
41 to < 100	0.13
100 to < 185	0.15

Table A14: Asset Life for High Efficiency Motors (t)

Rated output (kW) of High Efficiency Motor	t (Asset life (years))
0.73 to < 2.6	12
2.6 to < 9.2	15
9.2 to < 41	20
41 to < 100	22
100 to < 185	25

Table A16: Decay Factors for calculating future Energy Savings under the Project Impact Assessment Method (clause 7) or the Project Impact Assessment with Measurement and Verification Method (clause 7A)

Year	Decay Factor		
	Energy Savings Calculated using clause 7	Energy Savings calculated using clause 7A	
		Default	Persistence Model
1	1.00	1.00	The Scheme Administrator may accept the use of Site-specific Decay Factors assigned to the equipment, process or system that is the subject of the Recognised Energy Saving Activity by a publicly accessible persistence model accepted for use by the Scheme Administrator
2	0.80	0.80	
3	0.60	0.64	
4	0.40	0.51	
5	0.20	0.41	
6	Not applicable	0.33	
7	Not applicable	0.26	
8	Not applicable	0.21	
9	Not applicable	0.17	
10	Not applicable	0.13	

Table A17: End-Use Services

End-Use Services
Air heating and cooling
Air handling, fans, ventilation
Water heating
Water/liquid pumping
Refrigeration and freezing
Lighting
Cooking
Home entertainment
Computers, office equipment
Communications

End-Use Services
Cleaning, washing
Process heat
Air compression
Process drives
Milling, mixing, grinding
Transport
People movement, lifts, escalators
Materials handling, conveying
Other machines
Electricity supply
Unknown
Other End-Use Services as Published by the Scheme Administrator

Table A18: Business Classifications

Business Classification	Economic Sector
A Agriculture, Forestry and Fishing	Industrial
B Mining	Industrial
C Manufacturing	Industrial
D Electricity, Gas, Water and Waste Services	Industrial
E Construction	Industrial
F Wholesale Trade	Commercial
G Retail Trade	Commercial
H Accommodation and Food Services	Commercial
I Transport, Postal and Warehousing	Industrial
J Information Media and Telecommunications	Commercial
K Financial and Insurance Services	Commercial
L Rental, Hiring and Real Estate Services	Commercial
M Professional, Scientific and Technical Services	Commercial
N Administrative and Support Services	Commercial
O Public Administration and Safety	Commercial
P Education and Training	Commercial
Q Health Care and Social Assistance	Commercial
R Arts and Recreation Services	Commercial
S Other Services	Commercial
Residential	Residential
Unknown	Unknown

Table A19: Distribution Loss Factors (DLF) for losses between the Subtransmission network and Low Voltage connection points

Distribution Network Service Provider	Distribution District	DLF
Endeavour Energy	Endeavour Energy	1.054
Essential Energy	Essential Energy	1.074
AusGrid	AusGrid	1.043

Table A20: Benchmark NABERS Ratings Index

NABERS Rating tool	Building category	Year of NABERS Rating End Date							
		2013	2014	2015	2016	2017	2018	2019	2020
Offices	Built prior to 1 November 2006	3.7	3.9	4.0	4.2	4.3	4.5	4.6	4.8
Offices	Built after 1 November 2006	4.7	4.9	5.0	5.2	5.3	5.5	5.6	5.8
Hotels	Built prior to 1 November 2006	2.8	3.0	3.1	3.3	3.4	3.6	3.7	3.9
Hotels	Built after 1 November 2006	3.8	4.0	4.1	4.3	4.4	4.6	4.7	4.9
Shopping Centres	Built prior to 1 November 2006	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4
Shopping Centres	Built after 1 November 2006	4.3	4.5	4.6	4.8	4.9	5.1	5.2	5.4
Data Centres	Built prior to 1 November 2006	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1
Data Centres	Built after 1 November 2006	4.0	4.2	4.3	4.5	4.6	4.8	4.9	5.1

Table A21: NABERS Annual Ratings Adjustment

NABERS Rating tool	Building category	Annual Ratings Adjustment
Offices	All	0.15
Hotels	All	0.15
Shopping Centres	All	0.15
Data Centres	All	0.15

Table A22: Minimum statistical requirements for Regression Analysis

Modelling Criteria	Minimum Requirement
t-statistic of Independent Variables measurements	> 2
The lesser of R^2 or Adjusted R^2 of the regression equation	> 0.75
Relative precision of the mean energy consumption predicted by the energy model calculated at 95% confidence level.	within ± 100%
Non Routine Adjustments as a proportion of the Measurement Period	< 20%

Table A23: Accuracy Factor according to relative precision of energy savings estimate

Relative precision of energy savings estimate at a 95% confidence level	Accuracy Factor
< 25%	1
25% - 50%	0.9
50% - 75%	0.8
75% - 100%	0.6
100% - 150%	0.4
150% - 200%	0.2
> 200%	0

Schedule B – Activity Definitions for the Sale of New Appliances (clause 9.3)

Activity Definition B1

Name of Activity

SELL A HIGH EFFICIENCY CLOTHES WASHING MACHINE

Equipment Requirements

1. The End-User Equipment must be a Clothes Washing Machine as defined in *AS/NZS 2040:2005 Performance of household electrical appliances—Clothes washing machines.*
2. The Clothes Washing Machine must be registered for energy labelling.
3. The Clothes Washing Machine must be either a top loader or a front loader.
4. The Clothes Washing Machine must have a rated capacity, load in kilograms, recorded in the GEMS Registry.

Equipment Energy Savings

Energy Star Rating	Deemed Equipment Energy Savings (MWh per washing machine sold)	
	Rated capacity > 4kg to < 8kg	Rated capacity ≥ 8kg
3.5	0.4	0.9
4.0	1.1	1.7
4.5	1.6	2.5
5.0	2.1	3.1
5.5	2.6	3.6
6.0	2.9	4.1

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition B2

Name of Activity

SELL A HIGH EFFICIENCY CLOTHES DRYER

Equipment Requirements

1. The End-User Equipment must be a Clothes Dryer as defined by "Rotary clothes dryer" in *AS/NZS 2442.1:1996 and 2442.2:2000 Performance of household electrical appliances—Rotary clothes dryers*
2. The Clothes Dryer must be registered for energy labelling.
3. The Clothes Dryer must not form part of a combination washer/dryer.
4. The Clothes Dryer must have a rated capacity, load in kilograms, recorded in the GEMS registry.

Equipment Energy Savings

Energy Star Rating	Deemed Equipment Energy Savings (MWh per clothes dryer sold)		
	Rated capacity < 5kg	Rated capacity ≥ 5kg to <7kg	Rated capacity ≥ 7kg
2.0	0.1	0.0	0.0
2.5	0.3	0.2	0.0
3.0	0.4	0.4	0.0
3.5	0.5	0.5	0.4
4.0	0.6	0.7	0.6
4.5	0.7	0.8	0.7
5.0	0.8	1.0	0.9
5.5	0.9	1.1	1.1
6.0	1.0	1.2	1.2

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition B3

Name of Activity

SELL A HIGH EFFICIENCY DISHWASHER

Equipment Requirements

1. The End-User Equipment must be a Dishwasher as defined in *AS/NZS 2007:2005 Performance of household electrical appliances—Dishwashers.*
2. The Dishwasher must be registered for energy labelling.
3. The Dishwasher must have a rated capacity, in number of place settings, recorded in the GEMS Registry.

Equipment Energy Savings

Energy Star Rating	Deemed Equipment Energy Savings (MWh per dishwasher sold)		
	Rated capacity < 9 place settings	Rated capacity ≥ 9 place settings to < 13 place settings	Rated capacity ≥ 13 place settings
3.0	0.1	0.4	0.0
3.5	0.4	0.9	0.1
4.0	0.6	1.3	0.6
4.5	0.8	1.6	0.9
5.0	1.0	1.9	1.2
5.5	1.1	2.1	1.5
6.0	1.2	2.3	1.7

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition B4

Name of Activity

SELL A HIGH EFFICIENCY 1-DOOR REFRIGERATOR

Equipment Requirements

1. The End-User Equipment must be a 1-door Refrigerator of Groups 1, 2, or 3 as defined in *AS/NZS 4474.1:2007 and 4474.2:2009 Performance of household electrical appliances—Refrigerating appliances.*
2. The Refrigerator must be registered for energy labelling.
3. The Refrigerator must have a rated capacity, volume in litres, recorded in the GEMS Registry.

Equipment Energy Savings

Energy Star Rating	Deemed Equipment Energy Savings (MWh per refrigerator sold)	
	Rated capacity < 300 litres	Rated capacity ≥ 300 litres
2.0	0.2	0.1
2.5	0.6	0.5
3.0	0.9	1.0
3.5	1.2	1.3
4.0	1.5	1.7
4.5	1.8	2.0
5.0	2.0	2.2

Lifetime (for information purposes only)

Lifetime = 12 years.

Activity Definition B5

Name of Activity

SELL A HIGH EFFICIENCY 2-DOOR REFRIGERATOR

Equipment Requirements

1. The End-User Equipment must be a 2-door Refrigerator of Groups 4, 5B, 5T or 5S as defined in *AS/NZS 4474.1:2007 and 4474.2:2009 Performance of household electrical appliances—Refrigerating appliances.*
2. The Refrigerator must be registered for energy labelling.
3. The Refrigerator must have a rated capacity, volume in litres, recorded in the GEMS Registry.

Equipment Energy Savings

Energy Star Rating	Deemed Equipment Energy Savings (MWh per refrigerator sold)		
	Rated capacity < 300 litres	Rated capacity ≥ 300 litres to < 500 litres	Rated capacity ≥ 500 litres
2.5	0.6	0.3	0.6
3.0	1.1	1.0	1.5
3.5	1.6	1.6	2.2
4.0	2.0	2.1	2.9
4.5	2.4	2.6	3.4
5.0	2.7	3.0	3.9

Lifetime (for information purposes only)

Lifetime = 12 years.

Activity Definition B6

Name of Activity

SELL A HIGH EFFICIENCY CHEST FREEZER OR UPRIGHT FREEZER

Equipment Requirements

1. The End-User Equipment must be a Chest Freezer or Upright Freezer of Groups 6C, 6U or 7 as defined in *AS/NZS 4474.1:2007 and 4474.2:2009 Performance of household electrical appliances—Refrigerating appliances.*
2. The Freezer must be registered for energy labelling.
3. The Freezer must have a rated capacity, volume in litres, recorded in the GEMS Registry.

Equipment Energy Savings

Energy Star Rating	Deemed Equipment Energy Savings (MWh per freezer sold)		
	Rated capacity < 300 litres	Rated capacity ≥ 300 litres to < 500 litres	Rated capacity ≥ 500 litres
2.5	0.2	0.7	0.0
3.0	0.7	1.4	0.8
3.5	1.0	2.0	1.6
4.0	1.4	2.5	2.3
4.5	1.7	2.9	2.9
5.0	2.0	3.3	3.5

Lifetime (for information purposes only)

Lifetime = 12 years.

Activity Definition B7

Name of Activity

SELL A HIGH EFFICIENCY TELEVISION

Equipment Requirements

1. The End-User Equipment must be a Television as defined in *AS/NZS 62087.1:2010 Power consumption of audio, video and related equipment; and 62087.2.2:2011 Power consumption of audio, video and related equipment—Minimum energy performance standards (MEPS) and energy rating label requirements for Television Sets.*
2. The Television must be registered for energy labelling.
3. The Television must have a rated capacity, diagonal screen size in centimetres, recorded in the GEMS Registry.

Equipment Energy Savings

Energy Star Rating	Deemed Equipment Energy Savings (MWh per television sold)		
	Rated capacity Diagonal screen size > 40cm to ≤ 80cm	**Rated capacity Diagonal screen size > 80cm to ≤ 120cm**	**Rated capacity Diagonal screen size > 120cm**
Tier 2 MEPS: 4.5	0.2	0.3	0.2
Tier 1 MEPS: 8 Tier 2 MEPS: 5	0.3	0.5	0.7
Tier 2 MEPS: 5.5	0.4	0.7	1.1
Tier 1 MEPS: 9 Tier 2 MEPS: 6	0.5	1.0	1.5
Tier 1 MEPS: 10 Tier 2 MEPS: 7	0.7	1.3	2.2
Tier 2 MEPS: 8	0.8	1.6	2.8
Tier 2 MEPS: 9	0.9	1.8	3.2
Tier 2 MEPS: 10	1.0	2.0	3.6

Lifetime (for information purposes only)

Lifetime = 10 years.

Schedule C – Activity Definitions for the Removal of Old Appliances (clause 9.7)

Activity Definition C1

Name of Activity

REMOVE A SPARE REFRIGERATOR OR FREEZER

Equipment Requirements

1. The Site where the End-User Equipment is located must be a Residential Building.
2. The End-User Equipment must be a Refrigerator or Freezer (or combination) that may be classified as Group 1, 2, 3, 4, 5T, 5B, 5S, 6C, 6U or 7 according to *AS/NZS 4474.1:2007 and 4474.2:2009 Performance of household electrical appliances—Refrigerating appliances.*
3. The Capacity of the Refrigerator or Freezer (as defined in AS/NZS 4474) must be 200 litres or more.
4. The Refrigerator or Freezer must be in working order.
5. There must be another Refrigerator or Freezer (as appropriate) at the Site that provides primary refrigeration or freezing services, located in, or closer to, the kitchen.
6. As a result of the activity there must be 1 fewer spare refrigerators and freezers at the Site.

Equipment Energy Savings

Deemed Equipment Energy Savings = 5.7 MWh per spare refrigerator or freezer removed

Lifetime (for information purposes only)

Lifetime = 7 years.

Activity Definition C2

Name of Activity

REMOVE A PRIMARY REFRIGERATOR OR FREEZER

Equipment Requirements

1. The Site where the End-User Equipment is located must be a Residential Building or Small Business Building.
2. The End-User Equipment must be a Refrigerator or Freezer (or combination) that may be classified as Group 1, 2, 3, 4, 5T, 5B, 5S, 6C, 6U or 7 according to *AS/NZS 4474.1:2007 and 4474.2:2009 Performance of household electrical appliances—Refrigerating appliances.*
3. The Capacity of the Refrigerator or Freezer (as defined in AS/NZS 4474) must be 200 litres or more.
4. The Refrigerator or Freezer must be in working order.
5. The activity may be carried out in combination with the delivery of a new refrigerator or freezer.

Equipment Energy Savings

Deemed Equipment Energy Savings = 2.4 MWh per primary refrigerator or freezer removed

Lifetime (for information purposes only)

Lifetime = 7 years.

Schedule D – Activity Definitions for General Activities for Home Energy Efficiency Retrofits (clause 9.8)

Activity Definition D1

Name of Activity

REPLACE AN EXTERNAL SINGLE-GLAZED WINDOW WITH A THERMALLY EFFICIENT WINDOW

Eligibility Requirements

1. The existing window must be single glazed.
2. The existing window must be an external window of a Residential Building; or Small Business Building.

Equipment Requirements

1. The new End-User Equipment must be a window product (glazing and frame) rated by WERS.
2. The new End-User Equipment can be either a single glazed or double glazed or triple glazed insulating glass unit.
3. The window must comply with the effective version of AS 2047 and AS 1288.
4. The window must be either a 4 or 5 Star Window, or a 6 Star Window in accordance with the minimum requirements for a thermally efficient window as detailed in Table D1.1.
5. The window must have a warranty of at least 5 years.

Table D1.1 – Minimum requirements for a thermally efficient window

Window rating	Minimum WERS star rating in heating mode	Minimum WERS rating in cooling mode	Maximum System U-Value (W/m^2K)
4 or 5 Star Window	4 stars	1.5 stars	3.1
6 Star Window	6 stars	3.5 stars	2.3

Implementation Requirements

The window must be installed in compliance with the effective versions of AS 2047 and AS 1288.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × Window Area

Where:

- *Savings Factor*, in MWh/m^2, is the value from Table D1.2 corresponding to the type of window and the Site's location; and
- *Window Area*, in m^2, is the total window area of the thermally efficient window installed.

Table D1.2 – Savings Factor for thermally efficient windows (MWh per m^2 of window replaced)

Window rating	BCA Climate Zones 2 and 3	BCA Climate Zones 4	BCA Climate Zones 5 and 6	BCA Climate Zones 7 and 8
4 or 5 Star Window	0.14	0.20	0.11	0.24
6 Star Window	0.24	0.41	0.22	0.59

Lifetime (for information purposes only)

Lifetime = 30 years.

Activity Definition D2

Name of Activity

MODIFY AN EXTERNAL WINDOW BY INSTALLING SECONDARY GLAZING

Eligibility Requirements

1. The existing window must be single glazed.
2. The existing window must be an external window of a Residential Building or Small Business Building.

Equipment Requirements

1. The End-User Equipment must be a secondary glazing product that retrofits a second glazing sheet (e.g. glass or acrylic or polycarbonate) to an existing single glazed window so as to form a still air gap between the specified product and the existing glazing.
2. The secondary glazing product when retrofitted must produce a window that is either a 4 or 5 Star Window or a 6 Star Window in accordance with the minimum requirements for a thermally efficient window as detailed in Table D2.1.
3. The secondary glazing product must have a warranty of at least 5 years.

Table D2.1 – Minimum requirements for a thermally efficient window fitted with secondary glazing

Window rating	Minimum WERS star rating in heating mode	Minimum WERS rating in cooling mode	Maximum System U-Value (W/m^2K)
4 or 5 Star Window	4 stars	1.5 stars	3.1
6 Star Window	6 stars	3.5 stars	2.3

Implementation Requirements

The secondary glazing product must be fitted in compliance with the effective versions of AS 2047 and AS 1288 and in accordance with the manufacturer's instructions.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × Window Area

Where:

- *Savings Factor*, in MWh per m^2, is the value from Table D2.2 corresponding to the type of window and the Site's location; and
- *Window Area*, in m^2, is the total window area of the thermally efficient window installed.

Table D2.2 – Savings Factor for secondary glazing products (MWh per m^2 of window modified)

Window rating	BCA Climate Zones 2 and 3	BCA Climate Zones 4	BCA Climate Zones 5 and 6	BCA Climate Zones 7 and 8
4 or 5 Star Window	0.05	0.07	0.04	0.08
6 Star Window	0.08	0.14	0.07	0.20

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition D3

Name of Activity

REPLACE AN EXISTING AIR CONDITIONER WITH A HIGH EFFICIENCY AIR CONDITIONER

Eligibility Requirements

The existing air conditioner must be in working order at time of replacement.

Equipment Requirements

1. The new End-User Equipment must be an air conditioner as defined in AS/NZS 3823.2:2011.
2. The unit must be assigned a minimum star rating for cooling, as outlined in Table D3.1, and heating, if relevant under Table D3.2, under AS/NZS 3823.2:2011.
3. The replacement unit must have a cooling capacity the same as or smaller than the unit that it replaces.
4. Where the unit being replaced has a star rating, the replacement unit must be assessed under the AS/NZS 3823.2:2011 as having a higher star energy rating than the unit it replaces.
5. The new End-User Equipment must have a warranty of at least 5 years.

Implementation Requirements

1. The new air-conditioner must be installed.
2. The existing air-conditioner must be removed.
3. The activity must be performed or supervised by a licensed electrician.

Activity Energy Savings

Deemed Activity Energy Savings = Cooling Capacity × Cooling Energy Savings Factor + Heating Capacity × Heating Energy Savings Factor

Where:

- *Cooling Capacity*, in kW, is the rated cooling capacity of the system from the GEMS Registry;
- *Cooling Energy Savings Factor*, in MWh/kW, is the lifetime energy savings per unit of capacity in cooling mode, as specified in Table D3.1 below, according to the type of system, climate zone, and rated cooling capacity (kW);
- *Heating Capacity*, in kW, is the rated heating capacity of the system from the GEMS Registry; and
- *Heating Energy Savings Factor*, in MWh/kW, is the lifetime energy savings per unit of capacity in heating mode as specified in Table D3.2 below according to the type of system, climate zone, and rated heating capacity (kW).

Table D3.1 – Cooling Energy Savings Factor (MWh per kW of cooling capacity replaced)

Product category	Star Rating	BCA Climate Zones 2 & 3	BCA Climate Zone 4	BCA Climate Zones 5 & 6	BCA Climate Zones 7 & 8
Non ducted split systems – all types, <4kW, all phases	4.0 Stars	0.30	0.18	0.16	0.14
	4.5 Stars	0.36	0.22	0.19	0.17
	5.0 Stars	0.42	0.25	0.22	0.19
	5.5 Stars	0.47	0.28	0.25	0.21
	6.0 Stars	0.51	0.31	0.27	0.23
	7.0 Stars	0.59	0.36	0.32	0.27
	8.0 Stars	0.65	0.40	0.35	0.30
	9.0 Stars	0.71	0.43	0.38	0.32
	10.0 Stars	0.76	0.46	0.41	0.34
Non ducted split systems – all types, 4kW to <10kW all phases	3.0 Stars	0.35	0.21	0.19	0.16
	3.5 Stars	0.43	0.26	0.23	0.19
	4.0 Stars	0.49	0.30	0.26	0.22
	4.5 Stars	0.55	0.34	0.30	0.25
	5.0 Stars	0.61	0.37	0.33	0.28

	5.5 Stars	0.66	0.40	0.35	0.30
	6.0 Stars	0.70	0.43	0.38	0.32
	7.0 Stars	0.78	0.47	0.42	0.35
	8.0 Stars	0.84	0.51	0.45	0.38
	9.0 Stars	0.90	0.55	0.48	0.41
	10.0 Stars	0.95	0.58	0.51	0.43
All other product description in AS/NZS 3823.2:2011	2.5 Stars	0.36	0.22	0.19	0.16
	3.0 Stars	0.45	0.27	0.24	0.21
	3.5 Stars	0.53	0.32	0.28	0.24
	4.0 Stars	0.60	0.36	0.32	0.27
	4.5 Stars	0.66	0.40	0.35	0.30
	5.0 Stars	0.71	0.43	0.38	0.32
	5.5 Stars	0.76	0.46	0.41	0.35
	6.0 Stars	0.81	0.49	0.43	0.37
	7.0 Stars	0.88	0.54	0.47	0.40
	8.0 Stars	0.95	0.58	0.51	0.43
	9.0 Stars	1.00	0.61	0.54	0.46
	10.0 Stars	1.05	0.64	0.56	0.48

Table D3.2 – Heating Energy Savings Factor (MWh per kW of heating capacity replaced)

Product category	**Star Rating**	**BCA Climate Zones 2 & 3**	**BCA Climate Zone 4**	**BCA Climate Zones 5 & 6**	**BCA Climate Zones 7 & 8**
Non ducted split systems – all types, <4kW, all phases	4.0 Stars	0.10	0.45	0.16	1.37
	4.5 Stars	0.13	0.54	0.19	1.64
	5.0 Stars	0.14	0.62	0.22	1.89
	5.5 Stars	0.16	0.69	0.24	2.11
	6.0 Stars	0.18	0.76	0.27	2.31
	7.0 Stars	0.20	0.88	0.31	2.66
	8.0 Stars	0.23	0.97	0.34	2.95
	9.0 Stars	0.24	1.05	0.37	3.20
	10.0 Stars	0.26	1.12	0.39	3.41
Non ducted split systems – all types, 4kW to <10kW all phases	3.0 Stars	0.12	0.52	0.18	1.57
	3.5 Stars	0.15	0.63	0.22	1.92
	4.0 Stars	0.17	0.73	0.26	2.23
	4.5 Stars	0.19	0.82	0.29	2.50
	5.0 Stars	0.21	0.91	0.32	2.75
	5.5 Stars	0.23	0.98	0.34	2.97
	6.0 Stars	0.24	1.04	0.37	3.17
	7.0 Stars	0.27	1.16	0.41	3.52
	8.0 Stars	0.29	1.26	0.44	3.81
	9.0 Stars	0.31	1.34	0.47	4.06
	10.0 Stars	0.33	1.41	0.49	4.27
All other product description in AS/NZS 3823.2:2011	2.5 Stars	0.13	0.54	0.19	1.64
	3.0 Stars	0.16	0.67	0.24	2.04
	3.5 Stars	0.18	0.79	0.28	2.39
	4.0 Stars	0.21	0.89	0.31	2.70
	4.5 Stars	0.23	0.98	0.34	2.97
	5.0 Stars	0.25	1.06	0.37	3.22
	5.5 Stars	0.26	1.13	0.40	3.44

	6.0 Stars	0.28	1.20	0.42	3.64
	7.0 Stars	0.30	1.31	0.46	3.99
	8.0 Stars	0.33	1.41	0.49	4.28
	9.0 Stars	0.35	1.49	0.52	4.53
	10.0 Stars	0.36	1.56	0.55	4.74

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition D4

Name of Activity

INSTALL A HIGH EFFICIENCY AIR CONDITIONER

Eligibility Requirements

1. No existing air conditioner is fixed in place that provides cooling and/or heating to the conditioned space.

Equipment Requirements

1. The new End-User Equipment must be an air conditioner as defined in AS/NZS 3823.2:2011.
2. The unit must be assigned a minimum star rating for cooling, as outlined in Table D4.1, and heating, if relevant under Table D4.2, under AS/NZS 3823.2:2011.
3. The new End-User Equipment must have a warranty of at least 5 years.

Implementation Requirements

1. The new air conditioner must be installed.
2. The activity must be performed or supervised by a licensed electrician.

Activity Energy Savings

Deemed Activity Energy Savings = Cooling Capacity × Cooling Energy Savings Factor + Heating Capacity × Heating Energy Savings Factor

Where:

- *Cooling Capacity*, in kW, is the rated cooling capacity of the system from the GEMS Registry;
- *Cooling Energy Savings Factor*, in MWh/kW, is the lifetime energy savings per unit of capacity in cooling mode, as specified in Table D4.1 below, according to the type of system, climate zone, and rated cooling capacity (kW);
- *Heating Capacity*, in kW, is the rated heating capacity of the system from the GEMS Registry; and
- *Heating Energy Savings Factor*, in MWh/kW, is the lifetime energy savings per unit of capacity in heating mode as specified in Table D4.2 below, according to the type of system, climate zone, and rated heating capacity (kW).

Table D4.1 – Cooling Energy Savings Factor (MWh per kW of cooling capacity installed)

Product category	Star Rating	BCA Climate Zones 2 & 3	BCA Climate Zone 4	BCA Climate Zones 5 & 6	BCA Climate Zones 7 & 8
Non ducted split systems – all types, <4kW, all phases	4.0 Stars	0.08	0.05	0.04	0.04
	4.5 Stars	0.14	0.08	0.07	0.06
	5.0 Stars	0.19	0.12	0.10	0.09
	5.5 Stars	0.24	0.15	0.13	0.11
	6.0 Stars	0.29	0.17	0.15	0.13
	7.0 Stars	0.36	0.22	0.19	0.16
	8.0 Stars	0.43	0.26	0.23	0.19
	9.0 Stars	0.48	0.29	0.26	0.22
	10.0 Stars	0.53	0.32	0.28	0.24
Non ducted split systems – all types, 4kW to <10kW all phases	3.0 Stars	0.11	0.07	0.06	0.05
	3.5 Stars	0.19	0.11	0.10	0.08
	4.0 Stars	0.25	0.15	0.14	0.12
	4.5 Stars	0.31	0.19	0.17	0.14
	5.0 Stars	0.37	0.22	0.20	0.17
	5.5 Stars	0.42	0.25	0.22	0.19

	6.0 Stars	0.46	0.28	0.25	0.21
	7.0 Stars	0.54	0.33	0.29	0.25
	8.0 Stars	0.60	0.37	0.32	0.27
	9.0 Stars	0.66	0.40	0.35	0.30
	10.0 Stars	0.71	0.43	0.38	0.32
All other product description in AS/NZS 3823.2:2011	2.5 Stars	0.12	0.08	0.07	0.06
	3.0 Stars	0.21	0.13	0.11	0.10
	3.5 Stars	0.29	0.18	0.16	0.13
	4.0 Stars	0.36	0.22	0.19	0.16
	4.5 Stars	0.42	0.26	0.23	0.19
	5.0 Stars	0.47	0.29	0.25	0.22
	5.5 Stars	0.52	0.32	0.28	0.24
	6.0 Stars	0.57	0.35	0.30	0.26
	7.0 Stars	0.65	0.39	0.35	0.29
	8.0 Stars	0.71	0.43	0.38	0.32
	9.0 Stars	0.77	0.47	0.41	0.35
	10.0 Stars	0.81	0.49	0.44	0.37

Table D4.2 – Heating Energy Savings Factor (MWh per kW of heating capacity installed)

Product category	**Star Rating**	**BCA Climate Zones 2 & 3**	**BCA Climate Zone 4**	**BCA Climate Zones 5 & 6**	**BCA Climate Zones 7 & 8**
Non ducted split systems – all types, <4kW, all phases	4.0 Stars	0.27	1.16	0.40	0.55
	4.5 Stars	0.29	1.25	0.44	0.83
	5.0 Stars	0.31	1.33	0.46	1.07
	5.5 Stars	0.32	1.40	0.49	1.29
	6.0 Stars	0.34	1.47	0.51	1.49
	7.0 Stars	0.37	1.58	0.55	1.84
	8.0 Stars	0.39	1.68	0.59	2.13
	9.0 Stars	0.41	1.76	0.62	2.38
	10.0 Stars	0.42	1.83	0.64	2.60
Non ducted split systems – all types, 4kW to <10kW all phases	3.0 Stars	0.29	1.27	0.44	0.54
	3.5 Stars	0.32	1.38	0.48	0.89
	4.0 Stars	0.34	1.48	0.52	1.19
	4.5 Stars	0.36	1.57	0.55	1.47
	5.0 Stars	0.38	1.65	0.58	1.72
	5.5 Stars	0.40	1.73	0.60	1.94
	6.0 Stars	0.42	1.79	0.63	2.14
	7.0 Stars	0.44	1.91	0.67	2.48
	8.0 Stars	0.46	2.00	0.70	2.78
	9.0 Stars	0.48	2.09	0.73	3.03
	10.0 Stars	0.50	2.16	0.76	3.24
All other product description in AS/NZS 3823.2:2011	2.5 Stars	0.31	1.32	0.46	0.50
	3.0 Stars	0.34	1.45	0.51	0.90
	3.5 Stars	0.36	1.57	0.55	1.25
	4.0 Stars	0.39	1.67	0.58	1.56
	4.5 Stars	0.41	1.76	0.62	1.83

	5.0 Stars	0.43	1.84	0.64	2.08
	5.5 Stars	0.44	1.91	0.67	2.30
	6.0 Stars	0.46	1.98	0.69	2.50
	7.0 Stars	0.49	2.09	0.73	2.85
	8.0 Stars	0.51	2.19	0.77	3.14
	9.0 Stars	0.53	2.27	0.80	3.39
	10.0 Stars	0.54	2.34	0.82	3.61

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition D5

Name of Activity

REPLACE AN EXISTING POOL PUMP WITH A HIGH EFFICIENCY POOL PUMP

Eligibility Requirements

1. The existing pool pump must be in working order at time of replacement.

Equipment Requirements

1. The new End-User Equipment must be a product for use with a domestic pool or spa that is a single phase, single speed, dual speed, multiple speed or variable speed pump unit with an input power of not less than 300W and not more than 2500W when tested in accordance with AS 5102.1–2009.
2. The new End-User Equipment must be listed as part of a labelling scheme determined in accordance with the Equipment Energy Efficiency (E3) Committee's Voluntary Energy Rating Labelling Program for Swimming Pool Pump-units: Rules for Participation, April 2010, and achieve a minimum 5.5 star rating when determined in accordance with AS 5102.2–2009.
3. The new End-User Equipment must have a warranty of at least 5 years.

Implementation Requirements

1. The pool pump must be installed by a licensed plumber and/or electrician, where required by relevant legislation.
2. The decommissioned pool pump must be removed in accordance with relevant safety standards and legislation.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh, is the value from Table D5.1 corresponding to the pool pump's flow rate (in L/min) and energy star rating

Table D5.1 – Savings Factor (MWh per pool pump installed)

Energy Star Rating	**Pump flow rate > 120 to < 200 L/min**	**Pump flow rate ≥ 200 to < 275 L/min**	**Pump flow rate ≥ 275 to < 350 L/min**
5.5	0.7	1.1	1.4
6	1.4	2.1	2.7
7	2.4	3.6	4.7
8	3.2	4.7	6.2
9	3.7	5.6	7.4
10	4.2	6.3	8.2

Lifetime (for information purposes only)

Lifetime = 12 years.

Activity Definition D6

Name of Activity

INSTALL CEILING INSULATION IN AN UNINSULATED CEILING SPACE

Eligibility Requirements

1. There must be no existing roof or ceiling insulation present in the ceiling space.
2. For the purposes of this Activity, ceiling spaces with single sheet reflective foil insulation hung below the roofing material are deemed to be uninsulated ceiling spaces.

Equipment Requirements

1. The insulation product used must comply with the performance requirements of the effective version of AS/NZS 4859.1, as evidenced by test reports from an accredited NATA laboratory.
2. The insulation product must achieve a minimum winter R-value, when measured in accordance with the effective version of AS/NZS 4859.1, of:
    - R3.0 if the Site is in BCA Climate Zone 2 or 3;
    - R3.5 if the Site is in BCA Climate Zone 4, 5 or 6;
    - R5.0 if the Site is in BCA Climate Zone 7 or 8

   after being adjusted for perimeter insulation in accordance with the effective version of AS3999.
3. The insulation product must have a warranty of at least 25 years.
4. Foil insulation products are not eligible to be used in this activity.

Implementation Requirements

1. The insulation product used must be installed in compliance with the effective version of AS 3999 and the National Construction Code BCA Section J1.
2. Installers are required to have completed training courses CPCCOHS1001A; CPCCCM2010A; CPCCOHS2001A; CPCCPB3027A; CPCCPB3014A and other training requirements as Published by the Scheme Administrator.
3. Insulation must only be installed in ceiling spaces with an exposed roof.
4. Insulation must be installed in at least 95% of the ceiling area able to have insulation installed, after being adjusted for perimeter insulation in accordance with the effective version of AS3999.
5. Cut outs around ceiling penetrations such as downlights must be kept to the minimum permitted by regulation.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × Insulation Area

Where:
Savings Factor, in MWh/m^2, is the value from Table D6.1 corresponding to the Site's building construction and location; and
Insulation Area, in m^2, is the total ceiling area that has had insulation product installed.

Table D6.1 – Savings Factor (MWh per m^2 of ceiling insulation installed)

Climate zone	**BCA Climate Zones 2 and 3 Minimum R3.0**	**BCA Climate Zones 4 Minimum R3.5**	**BCA Climate Zones 5 and 6 Minimum R3.5**	**BCA Climate Zones 7 and 8 Minimum R5.0**
MWh per m^2	0.16	0.29	0.17	0.47

Lifetime (for information purposes only)

Lifetime = 25 years.

Activity Definition D7

Name of Activity

INSTALL CEILING INSULATION IN AN UNDER-INSULATED CEILING SPACE

Eligibility Requirements

1. There must be existing roof or ceiling insulation present in the ceiling space.
2. For the purposes of this Activity, ceiling spaces with single sheet reflective foil insulation hung below the roofing material are deemed to be uninsulated ceiling spaces.
3. The R-value of existing roof or ceiling insulation must be below 3.0 when measured in accordance with the effective version of AS/NZS 4859.1.

Equipment Requirements

1. The insulation product used must comply with the performance requirements of the effective version of AS/NZS 4859.1, as evidenced by test reports from an accredited NATA laboratory.
2. The insulation product must achieve a minimum winter R-value, when measured in accordance with the effective version of AS/NZS 4859.1, of:
    - R3.0 if the Site is in BCA Climate Zone 2 or 3;
    - R3.5 if the Site is in BCA Climate Zone 4, 5 or 6;
    - R5.0 if the Site is in BCA Climate Zone 7 or 8

   after being adjusted for perimeter insulation in accordance with the effective version of AS3999.
3. The insulation product must have a warranty of at least 25 years.
4. Foil insulation products are not eligible to be used in this activity.

Implementation Requirements

1. The insulation product used must be installed in compliance with the effective version of AS 3999 and the National Construction Code BCA Section J1.
2. Installers are required to have completed training courses CPCCOHS1001A; CPCCCM2010A; CPCCOHS2001A; CPCCPB3027A; CPCCPB3014A and other training requirements as Published by the Scheme Administrator.
3. Insulation must only be installed in ceiling spaces with an exposed roof.
4. Insulation must be installed in at least 95% of the ceiling area able to have insulation installed, after being adjusted for perimeter insulation in accordance with the effective version of AS3999.
5. Cut outs around ceiling penetrations such as downlights must be consistent with regulation requirements.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × insulation area

Where:

- *Savings Factor*, in MWh/m^2, is the value from Table D7.1 corresponding to the Site's building construction and location; and
- *Insulation Area*, in m^2, is the total ceiling area that has had insulation product installed.

Table D7.1 – Savings Factor (MWh per m^2 of ceiling insulation installed)

Climate zone	**BCA Climate Zones 2 and 3 Minimum R3.0**	**BCA Climate Zones 4 Minimum R3.5**	**BCA Climate Zones 5 and 6 Minimum R3.5**	**BCA Climate Zones 7 and 8 Minimum R5.0**
MWh per m^2	0.01	0.03	0.02	0.04

Lifetime (for information purposes only)

Lifetime = 25 years.

Activity Definition D8

Name of Activity

INSTALL UNDER-FLOOR INSULATION

Eligibility Requirements

1. There must be no existing ground floor insulation present.
2. The dwelling must have a suspended timber floor.

Equipment Requirements

1. The insulation product used must comply with the performance requirements of the effective version of AS/NZS 4859.1 and achieve a minimum winter R-value of R2.5 when measured in accordance with the effective version of AS/NZS 4859.1, as evidenced by test reports from an accredited NATA laboratory.
2. The insulation product must have a warranty of at least 25 years.
3. Foil insulation products are not eligible to be used in this activity.

Implementation Requirements

1. The Activity is restricted to ground floor suspended timber floor spaces.
2. Installers are required to have completed training courses CPCCOHS1001A; CPCCCM2010A; CPCCOHS2001A; CPCCPB3014A; and other training requirements as Published by the Scheme Administrator.
3. The insulation product must be installed in accordance with the effective version of AS 3999 and the National Construction Code BCA Section J1.
4. Insulation must be installed in at least 95% of the ground floor area able to have insulation installed.
5. Insulation may only be applied to areas that have not been previously insulated.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × insulation area

Where:

- *Savings Factor*, in MWh/m^2, is the value from Table D8.1 corresponding to the Site's building construction and location; and
- *Insulation Area*, in m^2, is the total ground floor area that has had insulation product installed.

Table D8.1 – Savings Factor (MWh per m^2 of under -floor insulation installed)

Climate zone	**BCA Climate Zones 2 and 3 Minimum R2.5**	**BCA Climate Zones 4 Minimum R2.5**	**BCA Climate Zones 5 and 6 Minimum R2.5**	**BCA Climate Zones 7 and 8 Minimum R2.5**
MWh per m^2	n/a	0.02	0.01	0.05

Lifetime (for information purposes only)

Lifetime = 25 years.

Activity Definition D9

Name of Activity

INSTALL WALL INSULATION

Eligibility Requirements

1. There must be no existing wall insulation present.
2. For the purposes of this activity, wall cavities that contain reflective foil sarking only shall be deemed to be uninsulated spaces.

Equipment Requirements

1. The insulation product used must comply with the performance requirements of the effective version of AS/NZS 4859.1 and achieve a minimum winter R-value of 2.0 when measured in accordance with AS/NZS 4859.1, as evidenced by test reports from an accredited NATA laboratory.
2. The insulation product used must have a warranty of at least 25 years.
3. Foil insulation products are not eligible to be used in this activity.

Implementation Requirements

1. The insulation product used must be installed in accordance with the effective version of AS 3999 and the National Construction Code BCA Section J1.
2. Installers are required to have completed training courses CPCCOHS1001A; CPCCCM2010A; CPCCOHS2001A; CPCCPB3014A; and other training requirements as Published by the Scheme Administrator.
3. The insulation product must be installed in an external wall space (or part of an external wall space) but not in any common walls (as defined by the National Construction Code).
4. Insulation must be installed in at least 95% of the wall area able to have insulation installed.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × Insulation Area

Where:

- *Savings Factor*, in MWh/m^2, is the value from Table D9.1 corresponding to the Site's building construction and location; and
- *Insulation Area*, in m^2, is the total wall area that has had insulation product installed.

Table D9.1 – Savings Factor (MWh per m^2 of wall insulation installed)

Climate zone	**BCA Climate Zones 2 and 3 Minimum R2.0**	**BCA Climate Zones 4 Minimum R2.0**	**BCA Climate Zones 5 and 6 Minimum R2.0**	**BCA Climate Zones 7 and 8 Minimum R2.0**
MWh per m^2	0.05	0.09	0.05	0.15

Lifetime (for information purposes only)

Lifetime = 25 years.

Schedule E – Activity Definitions for Low Cost Activities for Home Energy Efficiency Retrofits (clause 9.8)

Activity Definition E1

Name of Activity

REPLACE HALOGEN DOWNLIGHT WITH EFFICIENT LUMINAIRE AND/OR LAMP

Eligibility Requirements

1. The existing Lamp must be a Tungsten halogen Lamp (240V), Tungsten halogen Lamp (ELV) or Infrared coated (IRC) halogen Lamp (ELV) as defined in Table A9.1 of this Rule.
2. The existing Lamp must be a multifaceted reflector lamp.
3. The existing Lamp must be rated at either 35W or 50W.
4. The existing Lamp and Luminaire must be in working order.

Equipment Requirements

1. The new End-User Equipment must be a LED Lamp and Driver, CFLi, LED Luminaire-recessed, or an LED Lamp Only – 240V Self Ballasted, as defined in Table A9.1 or Table A9.3 of Schedule A.
2. Any End-User Equipment classified under Table A9.3 must meet the requirements of Table A9.4 of Schedule A.
3. CFLs must have a Lamp Life of at least 10,000 hours when measured in accordance with Table A9.6 of Schedule A.
4. The new End-User Equipment must have an initial Downward Light Output of ≥500 lumens.
5. The new End-User Equipment must have a beam angle consistent with the original Lamp being replaced.

Implementation Requirements

1. The activity must be performed or supervised by a licensed electrician.
2. ELV halogen Control Gear must be removed or replaced.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh, is the value from Table E1.1 corresponding to the existing Lamp or Luminaire where the Lamp Circuit Power of the replacement Lamp being installed (in Watts); and
- *Lamp Circuit Power* is the Lamp Circuit Power of the replacement Lamp being installed (in Watts) and is measured in accordance with Table A9.4 of Schedule A.

Table E1.1 Savings Factors (MWh per Lamp replaced)

Existing Lamp and/or Luminaire	**New Lamp and/or Luminaire**	**New Lamp Circuit Power (Watts)**		
		≤5 W	≤10 W	≤15 W
Tungsten halogen Lamp (ELV) with Electronic Transformer or Infrared coated (IRC) halogen Lamp (ELV) with Electronic Transformer.	LED Lamp and Driver	0.33	0.28	0.23
	CFLi			
Tungsten halogen Lamp (ELV) with Magnetic Transformer or Infrared coated (IRC) halogen Lamp (ELV) with Magnetic Transformer.	LED Lamp and Driver	0.39	0.34	0.29
	CFLi			
Luminaire with Tungsten halogen Lamp (ELV) and Electronic Transformer, or Luminaire with Infrared coated (IRC) halogen Lamp (ELV) and Electronic Transformer.	LED Luminaire - recessed	0.33	0.28	0.23
	CFLi			
Luminaire with Tungsten halogen Lamp (ELV) and Magnetic Transformer, or Luminaire with Infrared coated (IRC) halogen Lamp (ELV) and Magnetic Transformer.	LED Luminaire - recessed	0.39	0.34	0.29
	CFLi			

Tungsten halogen Lamp (240V)	LED Lamp only – 240V Self Ballasted	0.45	0.40	0.35
	LED Lamp and Driver			
	CFLi			
Tungsten halogen Lamp (240V) and Luminaire	LED Luminaire – recessed	0.45	0.40	0.35
	CFLi with Luminaire			

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition E2

Name of Activity

REPLACE A LINEAR HALOGEN FLOODLIGHT WITH A HIGH EFFICIENCY LAMP

Eligibility Requirements

1. The existing Lamp must be a linear halogen floodlight.
2. The existing Lamp must be rated at more than 100W.
3. Existing equipment must be in working order at time of replacement.

Equipment Requirements

1. The new End-User Equipment must be a CFLi or an LED Luminaire – Floodlight, as defined in Table A9.1 or Table A9.3 of Schedule A.
2. Any End-User Equipment classified under Table A9.3 must meet the requirements of Table A9.4 of Schedule A.
3. CFLs must have a Lamp Life of at least 10,000 hours when measured in accordance with Table A9.6 of Schedule A.
4. The new End-User Equipment must have a beam angle consistent with that of the original Lamp being replaced.

Implementation Requirements

1. The activity must be performed or supervised by a licensed electrician.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh, is the value from Table E2.1 corresponding to the Lamp Circuit Power of the existing Lamp and the replacement Lamp being installed (in Watts); and
- *Lamp Circuit Power* is measured in Accordance with Table A9.2 of Schedule A.

Table E2.1 – Savings Factors (MWh per linear halogen floodlight replaced)

Lamp Circuit Power of existing Lamp	**New End-User Equipment**	**Initial Light Output of new End-User Equipment (lm)**	**Lamp Circuit Power of replacement Lamp (W)**				
			≤30W	**≤45W**	**≤60W**	**≤90W**	**≤150W**
100W ≤ LCP < 150W	LED Luminaire – Floodlight or CFLi	≥1,500	0.33				
150W ≤ LCP < 200W	LED Luminaire – Floodlight or CFLi	≥2,500	0.55	0.46			
200W ≤ LCP < 300W	LED Luminaire – Floodlight or CFLi	≥3,500		0.68	0.61		
300W ≤ LCP < 500W	LED Luminaire – Floodlight or CFLi	≥5,700			1.05	0.88	
500W ≤ LCP	LED Luminaire – Floodlight or CFLi	≥10,000				1.75	1.40

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition E3

Name of Activity

REPLACE PARABOLIC ALUMINISED REFLECTOR (PAR) LAMP WITH EFFICIENT LUMINAIRE AND/OR LAMP

Eligibility Requirements

1. The existing Lamp must be a 240V parabolic aluminised reflector (PAR) Lamp.
2. The existing Lamp must be rated at between 80W and 160W.
3. Existing lighting equipment must be in working order at time of replacement.

Equipment Requirements

1. The new End-User Equipment must be a LED Lamp Only – 240V Self Ballasted, CFLi or LED Luminaire – Floodlight as defined in Table A.9.1 or Table A9.3
2. Any End-User Equipment classified under Table A9.3 must meet the requirements of Table A9.4 of Schedule A.
3. CFL Lamps must have a Lamp Life of at least 10,000 hours when measured in accordance with Table A9.6 of Schedule A.
4. The new End-User Equipment must have a beam angle consistent with that of the original Lamp being replaced.

Implementation Requirements

1. The activity must be performed or supervised by a licensed electrician.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh, is the value from Table E3.1 corresponding to the lighting retrofit activity and the Lamp Circuit Power of the replacement lamp being installed (in Watts); and
- Lamp Circuit Power is measured in accordance with Table A9.2 of Schedule A.

Table E3.1 Savings Factors (MWh per PAR lamp replaced)

LCP of Existing Lamp	**Initial Light output of new End-User Equipment**	**Lamp Circuit Power of the replacement lamp (Watts)**			
		≤15 W	**≤25 W**	**≤30 W**	**≤40 W**
80W ≤ LCP < 100W	≥ 1200 lm	0.60	-	-	-
100W ≤ LCP < 120W	≥ 1500 lm	0.80	0.75	-	-
120W ≤ LCP < 140W	≥ 1900 lm	1.00	0.95	0.90	-
140W ≤ LCP < 160W	≥ 2300 lm	1.20	1.15	1.10	1.00

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition E4

Name of Activity

REPLACE A T8 OR T12 LUMINAIRE WITH A T5 LUMINAIRE

Eligibility Requirements

1. Must be an existing 2 foot, 3 foot, 4 foot, or 5 foot T8 or T12 Luminaire.
2. Existing lighting equipment must be in working order at time of replacement.

Equipment Requirements

1. The new End-User equipment must be a T5 linear fluorescent Luminaire.
2. The new End-User Equipment must not be a T5 Adaptor kit.
3. The new Luminaire must have a length consistent with the existing Luminaire.
4. Lamp Life must be at least 20,000 hours when measured in accordance with Table A9.6.

Implementation Requirements

1. The activity must be performed or supervised by a licensed electrician.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh, is the value from Table E4.1 corresponding to the Lamp size.

Table E4.1 – Savings Factors (MWh per T8 or T12 Luminaire replaced)

Luminaire and Lamp size	**Savings Factor (MWh)**
2 foot (600mm)	0.10
3 foot (900mm)	0.12
4-foot (1200mm)	0.14
5-foot (1500mm)	0.16

Lifetime **(for information purposes only)**

Lifetime = 10 years.

Activity Definition E5

Name of Activity

REPLACE A T8 OR T12 LUMINAIRE WITH A LED LUMINAIRE

Eligibility Requirements

1. Must be an existing 2 foot, 3 foot, 4 foot or 5 foot T8 or T12 Luminaire.
2. Existing lighting equipment must be in working order at time of replacement.

Equipment Requirements

1. The new End-User Equipment must be a LED Lumininaire – Linear Lamp as defined in Table A9.3.
2. The new End-User Equipment must not be a Retrofit Luminaire – LED Linear Lamp or Modified Luminaire – LED Linear Lamp as defined in Table A9.3.
3. Any End-User Equipment classified under Table A9.3 must meet the requirements of Table A9.4 of Schedule A.
4. Lamp Life must be at least 20,000 hours when measured in accordance with Table A9.6.

Implementation Requirements

The activity must be performed or supervised by a licensed electrician.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh, is the value from Table E5.1 below corresponding to the Lamp Circuit Power (LCP) specified in Table A9.2.

Table E5.1 – Savings Factors (MWh per T8 or T12 Luminaire replaced)

Lamp type	Initial Light Output of new End-User Equipment (lm)	Lamp Circuit Power of the replacement lamp (Watts)				
		≤10W	≤20W	≤30W	≤ 40W	≤50W
2 foot (600mm)	≥ 1000	0.16	0.06	-	-	-
3 foot (900mm)	≥ 1600	-	0.15	0.05	-	-
4 foot (1200mm)	≥ 2500	-	-	0.14	0.04	-
5 foot (1500mm)	≥ 3200	-	-	-	0.26	0.16

Lifetime (for information purposes only)

Lifetime = 10 years.

Activity Definition E6

Name of Activity

REPLACE AN EXISTING SHOWERHEAD WITH AN ULTRA LOW FLOW SHOWERHEAD

Eligibility Requirements

1. The hot water service supplying the shower must be provided by an electric resistance water heater, an electrically boosted solar water heater or an electric heat pump water heater.
2. There must be an existing showerhead on each shower.

Equipment Requirements

1. The End-User Equipment must be a showerhead as defined in the effective version of *AS/NZS 3662– Performance of showers for bathing*.
2. The showerhead must be assigned a minimum 3 Star WELS Rating with a nominal flow rate of ≤ 6 litres/minute when tested according to *AS/NZS 6400:2005 – Water efficient products.*
3. The showerhead must have a warranty of at least 2 years.

Implementation Requirements

1. The replacement of the showerhead must be performed or supervised by a licensed plumber in accordance with the Plumbing Code of Australia.
2. A maximum of one showerhead per shower can be replaced.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh per showerhead, is the value from Table E6.1 corresponding to the type of water heating system servicing the shower.

Table E6.1 – Savings Factor (MWh per showerhead replaced)

Type of water heating system	Savings Factor (MWh)
Electric resistance water heater	1.9
Electrically boosted solar water heater	1.1
Electric heat pump water heater	1.1

Lifetime (for information purposes only)

Lifetime = 7 years.

Activity Definition E7

Name of Activity

MODIFY AN EXTERNAL DOOR WITH DRAUGHT-PROOFING

Eligibility Requirements

1. Doors to be draught-proofed must have gaps between the door and frame and/or threshold that permit the infiltration of air into or out of the dwelling.
2. Only external doors may be draught-proofed.

Equipment Requirements

1. The equipment to be applied must be a retail door bottom sealing product or door perimeter weather-stripping product or a combination of the two.
2. The product must be fit for purpose.
3. The product's sealing surface must be made of a durable compressible material such as foam, polypropylene pile, flexible plastic, rubber compressible strip, fibrous seal or similar.
4. The product must not impair the proper operation of the door.
5. The product must have a warranty of at least 2 years.

Implementation Requirements

1. The product must be applied to a door bottom seal or a set of door jamb and head seals or a combination of both.
2. The product, once applied, must effectively restrict the airflow into or out of the dwelling around the perimeter of the door.
3. The product must be installed in strict accordance with the manufacturer's instructions.
4. All external doors (excluding sliding doors) at the Site that meet the Eligibility Requirements must be draught-proofed.
5. The product must be installed in accordance with the National Construction Code BCA Section J3 and any relevant AS/NZS as required by the Scheme Administrator.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh per door, is the value from Table E7.1 corresponding to the type of building construction and the BCA Climate Zone of the Site.

Table E7.1 – Savings Factor (MWh per door modified)

Climate zone	**BCA Climate Zones 2 and 3**	**BCA Climate Zones 4**	**BCA Climate Zones 5 and 6**	**BCA Climate Zones 7 and 8**
MWh per door	0.14	0.12	0.09	0.22

Lifetime (for information purposes only)

Lifetime = 5 years.

Activity Definition E8

Name of Activity

MODIFY AN EXTERNAL WINDOW WITH DRAUGHT-PROOFING

Eligibility Requirements

1. Windows to be draught-proofed must present with gaps between the sash and frame that permit the infiltration of air into or out of the dwelling
2. Only external windows may be draught-proofed.

Equipment Requirements

1. The equipment to be applied must be a retail window sealing or weather stripping product or a combination of the two.
2. The product must be fit for purpose.
3. The product's sealing surface must be made of a durable compressible material such as foam, polypropylene pile, flexible plastic, rubber compressible strip, fibrous seal or similar.
4. The product must not impair the proper operation of the window.
5. The product must have a warranty of at least 2 years.

Implementation Requirements

1. The product must be applied to the perimeter of the window sash.
2. The product, once applied, must effectively restrict the airflow into or out of the dwelling around the perimeter of the window.
3. The product must be installed in strict accordance with the manufacturer's instructions.
4. All external windows at dwelling that meet the Eligibility Requirements must be draught-proofed
5. The draught-proofing product (or products) must be installed in accordance with the National Construction Code BCA Section J3 and any relevant AS/NZS as required by the Scheme Administrator.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × Length

Where:

- *Savings Factor*, in MWh per metre, is the value from Table E8.1 corresponding to the type of building construction and the BCA Climate Zone of the Site; and
- *Length*, in metres, is the length of window perimeter to which the product has been applied.

Table E8.1 – Savings Factor (MWh per metre of window perimeter modified)

Climate zone	BCA Climate Zones 2 and 3	BCA Climate Zones 4	BCA Climate Zones 5 and 6	BCA Climate Zones 7 and 8
MWh per metre of window perimeter	0.02	0.03	0.02	0.05

Lifetime (for information purposes only)

Lifetime = 5 years.

Activity Definition E9

Name of Activity

MODIFY A FIREPLACE CHIMNEY BY SEALING WITH A DAMPER

Eligibility Requirements

1. The fireplace that the damper is to be installed in must be within a Residential Building or Small Business Building.
2. The fireplace must:
    a. be an open fireplace; and
    b. not have an existing damper.

Equipment Requirements

1. The damper must be fit for purpose and capable of effectively sealing the flue or chimney of an open fireplace.
2. If the damper is designed to be used in an operable fireplace then it must be of a durable construction such that its operation is not adversely affected by the heat of a fire and when open it must not adversely affect the operation of the fireplace, in particular the chimney/flue's capacity to "draw" smoke out of the firebox.
3. The chimney damper must, to the satisfaction of the Scheme Administrator, be a durable product that will deliver long-lasting energy savings.
4. The damper installed must have a warranty of at least 5 years

Implementation Requirements

1. The damper must be installed in accordance with the manufacturer's instructions.
2. If the damper is not designed to be used in an operable fireplace (i.e. permanent sealing) the fireplace must be sealed such that access to the combustion chamber is also permanently sealed or if the firebox is not to be sealed then the fuel burning device must be clearly tagged as having been sealed.
3. If the damper is designed to be used in an operable fireplace it must be installed in a manner that ensures that the safe operation of the fireplace is not compromised.
4. Works must be carried out in accordance with the National Construction Code BCA Section J3 and any relevant AS/NZS as required by the Scheme Administrator.
5. All fireplaces at the Site that meet the Eligibility Requirements must be sealed.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh per fireplace, is the value from Table E9.1 corresponding to the type of building construction and the BCA Climate Zone of the Site.

Table E9.1 – Savings Factor (MWh per fireplace modified)

Climate zone	**BCA Climate Zones 2 and 3**	**BCA Climate Zones 4**	**BCA Climate Zones 5 and 6**	**BCA Climate Zones 7 and 8**
MWh per fireplace	1.4	2.4	1.3	2.5

Lifetime (for information purposes only)

Lifetime = 5 years.

Activity Definition E10

Name of Activity

MODIFY A SINGLE-GLAZED WINDOW BY APPLYING A WINDOW FILM

Eligibility Requirements

1. The Site must be in BCA Climate Zones 2, 3, or 4.
2. The Site must be a Residential Building or Small Business Building.
3. The window must be an external window.
4. The window must not face south (between 135^{o} and 225 ^{o} of true north).
5. The window must not be shaded by any existing external shading device (including, but not limited to, window film, roller blinds, awnings or louvres, but excluding roof eaves).

Equipment Requirements

1. The End-User Equipment to be applied to the window must be a window film product certified under WERS for Film.
2. The window film product must, as registered with WERS, when applied to a single clear glazed window that is set within a standard aluminium frame deliver a thermal efficiency equivalent to a minimum 3 star WERS rating in cooling mode.
3. The product must have a warranty of at least 10 years.

Implementation Requirements

1. The window insulating film must be applied according to the manufacturer's instructions.
2. The window film must be applied by a person holding a WERS for Film licence or equivalent accreditation as accepted by the Scheme Administrator.

Activity Energy Savings

Deemed Activity Energy Savings = Savings Factor × Area

Where:

- *Savings Factor*, in MWh per m^2, is the value from Table E10.1 corresponding to the BCA Climate Zone of the Site; and
- *Area*, in m^2, is the area of window glazing to which window insulating film is applied.

Table E10.1 – Savings Factor (MWh per m^2 or window film applied)

	BCA Climate Zones 2 and 3	**BCA Climate Zones 4**
MWh per m^2	0.07	0.03

Lifetime (for information purposes only)

Lifetime = 10 years.

Schedule F – Activity Definitions for Installation of High Efficiency Appliances for Businesses (clause 9.9)

Activity Definition F1

Name of Activity

INSTALL A NEW HIGH EFFICIENCY REFRIGERATED DISPLAY CABINET

Equipment Requirements

1. The End-User Equipment must be a Refrigerated Display Cabinet (RDC) rated 'high efficiency' within the meaning of AS1731.14-2003 when tested in accordance with AS 1731.9-2003 and AS 1731.12-2003.
2. The RDC must be a registered product under GEMS and comply with the Greenhouse and Energy Minimum Standards (Refrigerated Display Cabinets) Determination 2012.

Installation Requirements

1. The RDC must be installed.

Equipment Energy Savings

Deemed Equipment Energy Savings = (Baseline Efficiency × TDA – TEC) x 365.24 × Lifetime / 1000

Where:

- *TEC*, in kWh/day, is the daily Total Energy Consumption of the new RDC model as determined using AS1731.9-2003 and AS1731.12-2003 (as applicable) and recorded in the GEMS Registry;
- *Baseline Efficiency*, in kWh/day/m^2, is the corresponding figure for the type and temperature class of the new RDC model as determined by AS1731.14-2003 in Table F1.1 below.
- *TDA*, in m^2, is the Total Display Area of the new RDC model as determined using AS1731.14-2003 and recorded in the GEMS Registry;
- *Lifetime*, in years, is the expected lifetime of the new RDC model, and is the corresponding figure for the type and temperature class of the new RDC model in Table F1.2 below

Table F1.1

Refrigerated Display Cabinet Type	Temperature class	Baseline efficiency (kWh/day/m^2)
RS1 - Unlit shelves	all	8.37
RS1 - Lit shelves	all	10.66
RS2 - Unlit shelves	all	8.49
RS2 - Lit shelves	all	11.32
RS3 - Unlit shelves	all	10.32
RS3 - Lit shelves	all	12.26
RS4 - Glass door	all	6.48
RS6 - Gravity coil	all	7.62
RS6 - Fan coil	all	6.19
RS7 - Fan coil	all	6.68
RS8 - Gravity coil	all	8.52
RS8 - Fan coil	all	6.26
RS9 - Fan coil	all	6.03
RS10 - Low	all	10.80
RS11	all	26.52
RS12	all	46.14
RS13 - Solid sided	all	12.99
RS13 - Glass sided	all	12.47
RS14 - Solid sided	all	11.45
RS14 - Glass sided	all	12.59

RS15 - Glass door	all	20.22
RS16 - Glass door	all	20.12
RS18	all	29.92
RS19	all	29.57
HC1	M1	7.86
HC1	M2	8.50
HC4	M1	10.47
HC4	M2	11.40
HF4	L1	19.50
HF4	L2	19.50
HF6	L1	5.90
HF6	L2	5.46
VC1	M1	24.24
VC1	M2	14.22
VC2	M1	15.97
VC2	M2	14.72
VC4 (a) - Solid Door	M1	5.37
VC4 (a) - Solid Door	M2	7.30
VC4 (b) - Glass Door	M1	8.37
VC4 (b) - Glass Door	M2	9.70
VF4 (b) - Solid Door	L1	32.40
VF4 (b) - Solid Door	L2	28.70
VF4 (b) - Glass Door	L1	23.94
VF4 (b) - Glass Door	L2	28.70

Lifetime

The Energy Savings from the installation of a new Refrigerated Display Cabinet are assumed to persist at a constant level for the expected lifetime of the RDC. The Lifetime, in years, is the figure corresponding to the display type and temperature class in Table F1.2 below.

Table F1.2

Refrigerated Display Cabinet Type	Temperature class	Lifetime (years)
all	all	8

Activity Definition F2

Name of Activity

INSTALL A NEW HIGH EFFICIENCY LIQUID CHILLING PACKAGE

Equipment Requirements

1. The End-User Equipment must be a Liquid Chilling Package (LCP) that meets minimum energy performance standards (MEPS) in accordance with AS/NZS4776.2:2008, when tested in accordance with AS/NZS 4776.1.1:2008 and AS/NZS 4776.1.2:2008.
2. The LCP must be a registered product under GEMS and comply with the Greenhouse and Energy Minimum Standards (Liquid-chilling Packages Using the Vapour Compression Cycle) Determination 2012.
3. The LCP must have an IPLV at least 10% greater than the *Baseline* for the corresponding figure for the type and cooling capacity in Table F2.1.

Installation Requirements

1. The LCP must be installed.

Equipment Energy savings

Deemed Equipment Energy Savings = (Capacity ÷ Baseline - Capacity ÷ IPLV) x EFLH x Lifetime / 1000

Where:

- *Capacity*, in kWR, is the total rated cooling capacity of the new Liquid Chilling Package as determined using AS/NZS 4776 Series of Standards and recorded in the GEMS Registry.
- *Baseline* is the corresponding figure for the cooling capacity class and type of the new Liquid Chilling Package as determined by AS/NZS 4776 Series of Standards in Table F2.1 below. The *Baseline* has been determined using the lower value of either the minimum standard using AS/NZS 4776 or the average efficiency of registered products on the GEMS Registry.
- IPLV is the Integrated Part Load Value of the new Liquid Chilling Package as determined using AS/NZS 4776 and recorded in the GEMS Registry.
- *EFLH* is the Equivalent Full Load Hours and is the corresponding figure for the cooling capacity class and type of the new Liquid Chilling Package in Table F2.1 below. The EFLH has been estimated using the low estimate of operating hours in the *Decision Regulation Impact Statement: Minimum Energy Performance Standards and Alternative Strategies for Chillers, July 2008.*
- *Lifetime*, in years, is the corresponding figure for the cooling capacity class and type of the new Liquid Chilling Package as determined by AS/NZS 4776 in Table F2.2 below.

Table F2.1

LCP type	Cooling capacity	Baseline (IPLV)	EFLH (hours)
Air cooled	350 to 499 kWR	4.6	1500
Air cooled	500 to 699 kWR	4.7	1500
Air cooled	700 to 999 kWR	4.7	1500
Air cooled	1000 to 1499 kWR	4.5	1500
Air cooled	Greater than 1500 kWR	4.1	1500
Water cooled	350 to 499 kWR	9.0	1500
Water cooled	500 to 699 kWR	8.6	1500
Water cooled	700 to 999 kWR	9.7	1500
Water cooled	1000 to 1499 kWR	9.0	1500
Water cooled	Greater than 1500 kWR	9.9	1500

Lifetime

The Energy Savings from the installation of a new Liquid Chilling Package are assumed to persist at a constant level for the expected lifetime of the LCP. The Lifetime, in years, is the figure corresponding to the type and capacity class in Table F2.2.

Table F2.2

LCP Type	Capacity class	Lifetime (years)
all	all	10

Activity Definition F3

Name of Activity

INSTALL A NEW HIGH EFFICIENCY CLOSE CONTROL AIR CONDITIONER

Equipment Requirements

1. The End-User Equipment must be a Close Control Air Conditioner (CCAC) that meets minimum energy performance standards (MEPS) in accordance with AS/NZS4965.2:2008, when tested in accordance with AS/NZS 4965.1:2008.
2. The CCAC must be a registered product under GEMS and comply with the Greenhouse and Energy Minimum Standards (Close Control Air Conditioner) Determination 2012.
3. The CCAC must have an EER at least 20% greater than the *Baseline* for the corresponding figure for the type and cooling capacity in Table F3.1.

Installation Requirements

1. The CCAC must be installed.

Equipment Energy savings

Deemed Equipment Energy Savings = (Capacity ÷ Baseline - Capacity ÷ EER) x Hours x Lifetime / 1000

Where:

- *Capacity*, in kW, is the total cooling capacity of the new CCAC as determined using AS/NZS 4965.1:2008 and recorded in the GEMS Registry.
- *Baseline* is the corresponding figure for the cooling capacity class of the new CCAC as determined by AS/NZS 4965.1:2008 in Table F3.1 below. The *Baseline* has been determined using the lower value of either the minimum standard using AS/NZS 4965.2:2008 or the average efficiency of registered products on the GEMS registered products for sale in Australia.
- *EER* is the Energy Efficiency Ratio as determined using AS/NZS 4965.1:2008 and recorded in the GEMS Registry.
- *Hours* is the annual operating hours and is the corresponding figure for the cooling capacity class of the new CCAC. The *Hours* has been estimated using the estimate of operating hours in the *Decision Regulation Impact Statement: Minimum Energy Performance Standards and Alternative Strategies for Close Control Air Conditioners, December 2008.*
- *Lifetime*, in years, is the corresponding figure for the cooling capacity class of the new CCAC as determined by AS/NZS 4965.1:2008 in Table F3.2 below.

Table F3.1

CCAC cooling capacity class	Baseline (EER)	Hours (hours p.a.)
Less than 19.05 kW	3.21	5694
19.05 to less than 39.5 kW	3.18	5694
39.5 to less than 70.0 kW	3.20	5694
Greater than or equal to 70.0 kW	3.18	5694

Lifetime

The Energy Savings from the installation of a new CCAC are assumed to persist at a constant level for the expected lifetime of the CCAC. The Lifetime, in years, is the figure corresponding to the type and capacity class in Table F3.2 below.

Table F3.2

CCAC capacity class	Capacity class	Lifetime (years)
all	all	10

Activity Definition F4

Name of Activity

INSTALL A NEW HIGH EFFICIENCY AIR CONDITIONER

Equipment Requirements

1. The End-User Equipment must be an Air to Air Heat Pump or Air Conditioner (AC) as defined in AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012.
2. The AC must be a registered product under GEMS and comply with the Greenhouse and Energy Minimum Standards (Air to Air Heat Pump or Air Conditioner) Determination 2012
3. The AC must have an AEER at least 20% greater than the *Baseline Cooling AEER* for the corresponding figure for the type and cooling capacity in Table F4.1.
4. If the AC has a Heating Capacity registered in the GEMS Registry, the AC must have an AEER at least 20% greater than the *Baseline Heating AEER* for the corresponding figure for the type and heating capacity in Table F4.2.

Installation Requirements

1. The AC must not be installed in a Residential Building or Small Business Building.

Equipment Energy savings

Equation F4.1
Deemed Equipment Energy Savings = Cooling Energy Savings + Heating Energy Savings

Where:

- *Cooling Energy Savings Capacity*, in MWh, is the lifetime energy savings in cooling mode, as calculated in Equation F4.2 below; and
- *Heating Energy Savings Capacity*, in MWh, is the lifetime energy savings in heating mode:
- as calculated in Equation F4.3 below; or
- is 0 MWh if the AC does not have a Heating Capacity registered in the GEMS Registry.

Equation F4.2
Cooling Energy Savings = (Cooling Capacity ÷ Baseline Cooling AEER – Cooling Capacity ÷ AEER) x Cooling Hours x Lifetime / 1000

Where:

- *Cooling Capacity*, in kW, is the total cooling capacity of the new AC as determined using AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 and recorded in the GEMS Registry;
- *Baseline Cooling AEER* is Annual Energy Efficiency Ratio and is the corresponding figure for the cooling capacity of the new AC as determined by AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 in Table F4.1 or F4.2 below. The *Baseline Cooling AEER* has been determined using the lower value of either the minimum standard using AS/NZS 3823.2:2013 or the average efficiency of GEMS registered products for sale in Australia.
- *AEER* is the Annual Energy Efficiency Ratio for cooling as determined using AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 and recorded in the GEMS Registry
- *Cooling Hours*, in hours per annum, is the annual operating hours and is the corresponding figure for the cooling capacity of the new AC. *Cooling Hours* has been estimated using the estimate of operating hours in the *Decision Regulation Impact Statement: Minimum Energy Performance Standards for Air Conditioners, December 2010.*
- *Lifetime*, in years, is the corresponding figure for the cooling capacity of the new AC as determined by AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 in Table F4.3 below.

Table F4.1

AC type	Cooling capacity (kW)	Baseline Cooling AEER	Cooling Hours (hours p.a.)
Non ducted unitary	Less than 10kW	3.2	175
Non ducted unitary	10kW to <19kW	3.1	175
Non ducted split systems	Less than 4kW	3.7	175
Non ducted split systems	4kW to <10kW	3.2	175

Non ducted split systems	10kW to <19kW	3.1	175
Ducted systems	Less than 10kW	3.1	175
Ducted systems,	10kW to <19kW	3.1	175
All configurations,	19kW to <39kW	3.1	175
All configurations	39kW to 65kW	3.0	175

Equation F4.3
Heating Energy Savings = (Heating Capacity ÷ Baseline Heating ACOP – Heating Capacity ÷ ACOP) x Heating Hours x Lifetime / 1000

Where:

- *Heating Capacity*, in kW, is the total heating capacity of the new AC as determined using AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 and recorded in the GEMS Registry;
- *Baseline Heating ACOP* is Annual Coefficient of Performance and is the corresponding figure for the heating capacity of the new AC as determined by AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 in Table F4.1 or F4.2 below. The *Baseline Heating ACOP* has been determined using the lower value of either the minimum standard using AS/NZS 3823.2:2013 or the average efficiency of GEMS registered products for sale in Australia.
- *ACOP* is the Annual Coefficient of Performance for heating as determined using AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 and recorded in the GEMS Registry
- *Heating Hours*, in hours per annum, is the annual operating hours and is the corresponding figure for the heating capacity of the new AC. *Heating Hours* has been estimated using the estimate of operating hours in the *Decision Regulation Impact Statement: Minimum Energy Performance Standards for Air Conditioners, December 2010.*
- *Lifetime*, in years, is the corresponding figure for the heating capacity of the new AC as determined by AS/NZS 3823.1.1:2012, AS/NZS 3823.1.2:2012, or AS/NZS 3823.1.4:2012 in Table F4.3 below.

Table F4.2

AC type	Heating Capacity (kW)	Baseline Heating ACOP	Heating Hours (hours p.a.)
Non ducted unitary	Less than 10kW	3.2	88
Non ducted unitary	10kW to <19kW	3.1	88
Non ducted split systems	Less than 4kW	3.7	88
Non ducted split systems	4kW to 10kW	3.2	88
Non ducted split systems	10kW to 19kW	3.1	88
Ducted systems	Less than 10kW	3.1	88
Ducted systems,	10kW to 19kW	3.1	88
All configurations,	19kW to 39kW	3.1	88
All configurations	39kW to 65kW	3.0	88

Lifetime

The Energy Savings from the installation of a new AC are assumed to persist at a constant level for the expected lifetime of the AC. The Lifetime, in years, is the figure corresponding to the phase and capacity class in Table F4.3 below.

Table F4.3

Phase	**Cooling Capacity or Heating Capacity**	**Lifetime (years)**
all	all	10

Activity Definition F5

Name of Activity

INSTALL A FAN POWERED BY AN ELECTRONICALLY COMMUTATED MOTOR IN AN INSTALLED REFRIGERATED DISPLAY CABINET, FREEZER OR COOL ROOM

Equipment Requirements

1. The End-User Equipment must be a refrigeration fan powered by an electronically commutated (brushless DC) motor.
2. The nominal input power (W) of the End-User Equipment as declared by the manufacturer must be less than or equal to 500 W at full capacity with the impeller fitted.
3. The output power (W) or airflow volume (m^3/hour) of the End-User Equipment as declared by the manufacturer must be equal to or greater than the existing refrigeration fan it replaces.
4. The End-User Equipment must meet any other requirements specified by the Scheme Administrator.

Installation Requirements

1. The End-User Equipment must be installed into a refrigerated display cabinet or reach in freezer as defined by AS1731.1, or a cool room evaporator unit that is in use (i.e. not a new refrigeration system).
2. The End-User Equipment must replace a fan powered by a shaded pole motor or a permanent split capacitor motor that is an equivalent fan as identified by the manufacturer of the End-User Equipment and accepted by the Scheme Administrator.
3. The installation must be according to manufacturer guidelines and any requirements specified by the Scheme Administrator.

Equipment Energy savings

$$\textit{Deemed Equipment Energy Savings} = (\textit{Input Power} \times (a - \textit{Average Power}) + b) \times (1 + (1 \div \textit{COP})) \times \textit{Hours} \times \textit{Lifetime} / 10^6$$

Where:

- *Input Power*, in Watts, is the nominal input power of the new End User-Equipment at full throttle with the impeller fitted.
- *a* is the regression coefficient and *b* is the error in Regression Analysis between the nominal input power of a sample of fans powered by an electronically commutated motor and fans powered by a shaded pole motor or a permanent split capacitor motor and are the corresponding figures for the End-User Equipment nominal power consumption in table F5.1.
- *Average Power* is the average input power of the new End-User Equipment over a year compared to its nominal input power and is the corresponding figure the End-User Equipment's control system in Table F5.2 below.
- *COP* is the co-efficient of performance of the refrigeration system and is the corresponding figure for the refrigeration system in table F5.3.
- *Hours* is the number of hours the fan is active per year and is the corresponding figure for the refrigeration system in table F5.3.
- *Lifetime*, in years, is the useful life of the End-User Equipment and is the corresponding figure for the refrigeration system in table F5.4.

Table F5.1

End-User Equipment nominal input power	***a***	***b***
Less than or equal to 34 W	1.7692	19.385
Greater than 34W and less than or equal to 500 W	1.2698	6.453

Table F5.2

Control system	***Average Power***
No control system in place	1
Temperature or pressure dependent speed control	0.8

Timer speed control (with low speed setting at least 8 hours per day)	0.8

Table F5.3

Refrigerator system type	***COP***	***Hours***
Refrigerated display cabinet	2.8	8000
Reach in freezer	1.8	8000
Cool room	2.6	8000

Lifetime

The energy savings from the new End User Equipment are assumed to persist at a constant level for the expected lifetime of the equipment. The Lifetime, in years, is the corresponding figure for the refrigerator system type in Table F5.4 below.

Table F5.4

Refrigerator type	**Years**
Refrigerated display cabinet	4
Reach in freezer	4
Cool room	7

Schedule G – Activity Definitions for '1 for 1' Residential Downlight Replacement (clause 9.10)

Activity Definition G1

Name of Activity

REPLACE HALOGEN DOWNLIGHT WITH EFFICIENT LUMINAIRE AND/OR LAMP

Eligibility Requirements

1. The existing Lamp must be a Tungsten halogen Lamp (240V), Tungsten halogen Lamp (ELV) or Infrared coated (IRC) halogen Lamp (ELV) as defined in Table A9.1 of this Rule.
2. The existing Lamp must be a multifaceted reflector lamp.
3. The existing Lamp must be rated at either 35W or 50W.
4. The existing Lamp and Luminaire must be in working order.

Equipment Requirements

1. The new End-User Equipment must be a LED Lamp and Driver, CFLi, LED Luminaire-recessed, or an LED Lamp Only – 240V Self Ballasted, as defined in Table A9.1 or Table A9.3 of Schedule A.
2. Any End-User Equipment classified under Table A9.3 must meet the requirements of Table A9.4 of Schedule A.
3. CFLs must have a Lamp Life of at least 10,000 hours when measured in accordance with Table A9.6 of Schedule A.
4. The new End-User Equipment must have an initial Downward Light Output of ≥500 lumens.
5. The new End-User equipment must have a beam angle consistent with the original Lamp being replaced.

Implementation Requirements

1. The activity must be performed or supervised by a licensed electrician.
2. ELV halogen Control Gear must be removed or replaced.

Equipment Energy Savings

Deemed Equipment Energy Savings = Savings Factor

Where:

- *Savings Factor*, in MWh, is the value from Table G1.1 corresponding to the existing Lamp or Luminaire where the Lamp Circuit Power of the replacement Lamp being installed (in Watts); and
- *Lamp Circuit Power* is the Lamp Circuit Power of the replacement Lamp being installed (in Watts) and is measured in accordance with Table A9.4 of Schedule A.

Table G1.1 Savings Factors (MWh per Lamp replaced)

Existing Lamp and/or Luminaire	New Lamp and/or Luminaire	New Lamp Circuit Power (Watts)		
		≤5W	≤10W	≤15W
Tungsten halogen Lamp (ELV) with Electronic Transformer or Infrared coated (IRC) halogen Lamp (ELV) with Electronic Transformer.	LED Lamp and Driver	0.33	0.28	0.23
	CFLi			
Tungsten halogen Lamp (ELV) with Magnetic Transformer or Infrared coated (IRC) halogen Lamp (ELV) with Magnetic Transformer.	LED Lamp and Driver	0.39	0.34	0.29
	CFLi			
Luminaire with Tungsten halogen Lamp (ELV) and Electronic Transformer, or Luminaire with Infrared coated (IRC) halogen Lamp (ELV) and Electronic Transformer.	LED Luminaire - recessed	0.33	0.28	0.23
	CFLi			
Luminaire with Tungsten halogen Lamp (ELV) and Magnetic Transformer, or Luminaire with Infrared coated (IRC) halogen Lamp (ELV) and Magnetic Transformer.	LED Luminaire - recessed	0.39	0.34	0.29
	CFLi			
Tungsten halogen Lamp (240V)	LED Lamp only –240V Self Ballasted	0.45	0.40	0.35

	LED Lamp and Driver			
	CFLi			
Tungsten halogen Lamp (240V) and Luminaire	LED Luminaire – recessed	0.45	0.40	0.35
	CFLi with Luminaire			

Lifetime (for information purposes only)

Lifetime = 10 years.