Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings[1]

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

1. PURPOSE

This document sets out the approved methodology for calculating a reasonable estimate of cost savings made, and to be made by lessees of a building as a consequence of upgrade works under a building upgrade agreement, including calculations for annual reporting purposes.

This methodology applies if:

- The upgrade works improve the efficiency of a utility that is normally paid for by the lessee, either directly to the utility supplier or through provisions of a lease; and
- The lessor intends to require that the lessee make a contribution towards a building upgrade charge.

This methodology calculates the cost savings made or to be made by lessees for efficiency improvements to a building for a number of utilities. Where the upgrade improves the efficiency of multiple utilities, the methodology should be applied separately for each utility.

All terminology used in this document is to be interpreted in accordance with Schedule 1B of the *Local Government Act 1999* unless otherwise defined.

2. DEFINITIONS

This section outlines the terminology used in the approved methodology and a corresponding guide for easy reference. Further definitions are defined in relevant sub-methods.

Attribution Factor is the proportion of the Utility Savings that may be attributed to the lessee subject to this calculation.

Billing Unit is the physical unit that the Utility Supplier uses to measure and bill utility use, such as kilowatt-hours (kWh) or megalitres (ML).

Confidence Factor is the proportion of Utility Savings that may be confidently attributed to the lessee, as defined by this methodology.

[1] A Guide to the methodology has been developed and is available at www.environment.sa.gov.au/climatechange-buf.

As approved by the Minister by notice in the Gazette on 8 August 2017.

Conversion Factor is the appropriate factor to convert Utility Savings into Billing Units.

Estimate Period is the time period for which this estimate is determined in years.

Lessee Savings is the reasonable estimate of cost savings to a particular lessee arising from upgrade works.

Method Boundary is the scope of the upgrade works for the purpose of undertaking the estimate. The Method Boundary may be a whole building (for example, a whole building retrofit) or a specific component within a building (for example, the lifts in a commercial building).

NABERS is the National Australian Built Environment Rating System, a national rating system that measures the energy efficiency, water usage, waste management and indoor environment quality of a building or tenancy and its impact on the environment. Note that only Energy and Water NABERS ratings may be used to calculate lessee savings for the upgrade works.

Predicted Savings is an estimate of Lessee Savings that forecasts the expected savings arising from the upgrade works over an Estimate Period.

Savings Made is an estimate of Lessee Savings that is made for annual reporting purposes in accordance with the Regulations and is based on the measured savings arising from the upgrade works over the previous 12 months.

Total Savings is the total annual financial savings from the upgrade works for a Utility.

Utility is the service that is the subject of the upgrade works, including electricity, gas or water, which is normally paid for by the tenant either directly to a Utility Supplier or indirectly through the lessor. Utilities that are billed separately to multiple parties in the building should be treated separately. For example, common area electricity and lessee electricity, if billed separately, are considered separate utilities.

Utility Savings is the total annual efficiency improvement arising from the upgrade works, expressed in appropriate units for that utility and calculated in accordance with this methodology.

Utility Supplier is the entity that the lessor or lessee pays for the use of the utility, such as an energy retailer or water utility.

Utility Tariff is the volume based cost of the utility to the lessee, expressed in dollars per Billing Unit.

3. METHOD APPLICABILITY

This methodology applies to upgrade works that are the subject of a building upgrade agreement where all of the following apply:

- The upgrade works improve the efficiency of a utility in the building
- The lessee would normally pay for part or all of this utility consumption, either directly to the utility supplier or through provisions of a lease
- The lessor intends to require that the lessee make a contribution towards a building upgrade charge
- The upgrade works fall within the following categories:
    - A lighting upgrade that meets the requirements in sub-method P1 –Lighting
    - A renewable energy installation that meets the requirements of sub-method P2 – Renewable Energy
    - A building upgrade that improves the NABERS Energy or Water rating of a commercial building, and meets the requirements of sub-method P3 – NABERS
    - Any project that improves the electricity and/or gas efficiency of the building, and meets the requirements of sub-method P4 – Energy Audit

- Any project that improves the electricity, gas or water efficiency of the building, and meets the requirements of sub-method P5 – Project Impact Assessment with Measurement and Verification.

Note that non-utility savings arising from the building upgrade are deemed to have zero financial benefit to lessees under this method.

4. METHOD BOUNDARY

The method boundary must be established prior to applying this cost savings methodology. The boundary should identify:

- Building upgrade details, including:
  - A summary of upgrade works – e.g. common area lighting upgrade
  - Utilities affected by the upgrade works – e.g. common area electricity, lessee electricity, gas or water
  - Any other upgrades to the building for which this methodology will be applied, and confirmation that method boundaries do not overlap and that savings are mutually exclusive – e.g. where Lessee Savings are estimated separately for upgrades affecting multiple building elements or for staged upgrades
- Details of affected lessees – name, location in building
- How lessees normally pay for the affected utilities, including summary of utility supply details for each utility affected by the upgrade works and billing arrangements showing how lessees normally pay for the utility – e.g. lessor requires all lessees to pay a contribution towards common area electricity bills through lease agreement
- The type of Lessee Savings estimate – whether the estimate of Lessee Savings is Predicted Savings or Savings Made
- Estimate Period – the start and end dates for the period to which the estimate of Lessee Savings applies.

5. CALCULATE TOTAL ANNUAL UPGRADE WORKS SAVINGS

A reasonable estimate of total annual cost savings arising from each utility improved by the upgrade works must be made in accordance with the following calculation:

$$TS = US \times CV \times CF \times UT$$

Where:

TS = Total Savings for a utility, expressed in $

US = Utility Savings, expressed as kilowatt-hours (kWh), megajoules (MJ), kilolitres (kL), etc., as calculated in accordance with Step 8 below

CV = Conversion Factor as calculated in accordance with step 9 below

CF = Confidence Factor, set in accordance with Step 11 below

UT = Utility Tariff, expressed in $/Billing Unit.

Where the upgrade works result in Utility Savings for more than one utility, Step 5 must be repeated to establish Total Savings for each utility.

For Estimate Periods extending over multiple years, the Total Savings is to be calculated for each year in the Estimate Period using the Utility Tariff applying to that year.

6. CALCULATE LESSEE SAVINGS

A reasonable estimate of cost savings for each lessee for each utility must be made in accordance with one of the following calculations:

If the Estimate Period is less than one year:

$$LS = TS \times AF \times EP$$

If the Estimate Period is greater than one year:

$$LS = \sum_{n} TS_n \times AF$$

Where:

LS = Lessee Savings, expressed in $

TS_n = Total Annual Savings in year *n*, expressed in $, as calculated in accordance with Step 5 above

AF = Attribution Factor (percentage attribution) as calculated in accordance with Step 10 below

EP = Estimate Period as calculated in accordance with Step 13 below.

n = years in the Estimate Period

Where the upgrade works will result in savings for more than one utility, Step 6 must be repeated to establish Lessee Savings for each utility.

7. LESSEE SAVINGS FOR UPGRADE WORKS WITH MULTIPLE UTILITY SAVINGS

Where the upgrade works will result in Utility Savings for more than one utility, the total Lessee Savings for each lessee is calculated in accordance with the following calculation:

$$LS_{total} = LS_1 + LS_2 + \cdots + LS_n$$

Where:

LS_{total}= total Lessee Savings for a particular lessee, expressed in $

LS_1= Lessee Savings for utility 1, as calculated in accordance with Step 6 above

LS_2= Lessee Savings for utility 2, as calculated in accordance with Step 6 above

LS_n= Lessee Savings for utility n, as calculated in accordance with Step 6 above

Note that step 5 and 6 above must be repeated to establish Lessee Savings for each utility that is affected by these upgrade works.

8. UTILITY SAVINGS

The Utility Savings attributable to the upgrade works must be calculated in accordance with one of the following sub-methods:

- Lighting sub-methods as set out at sub-method P1 (for Predicted Savings) and sub-method M1 (for Savings Made), or
- Renewable Energy sub-methods as set out at sub-method P2 (for Predicted Savings) and sub-method M2 (for Savings Made), or
- NABERS sub-method as set out at sub-method P3 (for Predicted Savings) and sub-method M3 (for Savings Made), or.
- Energy Audit sub-method as set out at sub-method P4 (for Predicted Savings), or

- Project Impact Assessment with Measurement and Verification sub-methods as set out at sub-method P5 (for Predicted Savings) and sub-method M5 (for savings made).

Note that estimates of Savings Made must use the sub-method that corresponds to the estimate of Predicted Savings for the upgrade works as outlined in the table below.

Sub-method type	**Predicted Savings sub-method**	**Corresponding Savings Made sub-method**
Lighting	P1	M1
Renewable Energy	P2	M2
NABERS	P3	M3
Energy Audit	P4	M5 or M3
Project Impact Assessment with Measurement and Verification	P5	M5

Note that where sub-method P4 (Energy Audit) is used to estimate Predicted Savings for an upgrade works, estimates of Savings Made will use sub-method M5 (Project Impact Assessment with Measurement and Verification) or M3 (NABERS).

9. CONVERSION FACTOR

The Conversion Factor attributable to the upgrade works is to convert the calculated Utility Savings into the Billing Units in which the utility is billed. The Billing Unit for each utility subject to the upgrade work is to be established from utility bills.

The following table shows common Conversion Factors that may apply for upgrade works that result in electricity savings.

	Convert to electricity Billing Units		
Convert from Utility Savings unit	MWh	kWh	GJ
MWh	-	1000	3.6
kWh	0.001	-	0.0036
GJ	0.2778	277.78	-

For example, if the Utility Savings for an electricity upgrade project are measured in megawatt-hours (MWh), and the Billing Unit for electricity is kilowatt-hours (kWh), the Conversion Factor is 1000.

10. ATTRIBUTION FACTOR

The Attribution Factor is to be set at the proportion that the lessee pays for the utility subject to this calculation. That is:

- For upgrade works that improve the efficiency of a utility that is normally wholly paid by the lessee, either directly to the utility provider or to the lessor, the attribution factor is 1
- For upgrade works that improve the efficiency of a utility that is normally paid for by a number of parties including the lessee, the attribution factor is to be set using the same formula that determines the proportion of the total bill that the lessee would normally pay (this is normally established in the building lease)
- If the lessee does not normally pay for the utility, the attribution factor is 0.

The Attribution Factor must be calculated for each lessee making contributions towards a building upgrade charge.

11. CONFIDENCE FACTOR

The confidence factor is to be set at:

- 0.8 for Predicted Savings calculations using sub-methods P1, P2, P3 and P4
- 1 for Predicted Savings calculations using sub-method P5
- 1 for Savings Made calculations using sub-methods M1, M2, M3 and M5.

12. UTILITY TARIFF[2]

The tariff to be used for the reasonable estimate is to be based on the applicable contracted tariff for the utility as purchased by the Lessee for the Estimate Period.

Where the contracted tariff changes based on the level of consumption, the marginal rate for the most recent billing period will be used (even though the consumption level may decrease due to the upgrade).

For large electricity customers, the Utility Tariff should include all volume based charges levied on electricity use, including distribution and network loss factors, government and network charges. It does not include fixed charges or charges based on maximum electricity demand.

If the Utility Supplier applies a discount to the total bill (for example, a Guaranteed Discount negotiated as part of the utility contract) any utility tariffs sourced from that bill must be discounted by this amount.

For Estimate Periods extending over multiple years, the Utility Tariff will be calculated for each year in the Estimate Period. Where the estimate period extends beyond contracted dates, the last contracted utility price is to be applied from that date. A CPI of +3% per annum may be incorporated in the calculations.

Where multiple tariffs are used during the Estimate Period, for example where an electricity tariff changes based on time of day, or the tariff changes during the Estimate Period, a weighted value will be used for the tariff, based on total utility consumption within each tariff period:

$$UT = \sum_i (UT_i \times E_i) \Big/ \sum_i E_i$$

Where:

- i sums across each different tariff

[2] For water utility tariff is taken to have the same meaning as rate.

- UT_i is the i^{th} utility tariff for the contracted billing period (discounted if the Utility Supplier applies a discount to the bill)
- E_i is the utility consumption corresponding to the i^{th} utility tariff for the contracted billing period.

When the upgrade works include a renewable energy installation and the energy generated is sold to the lessee, the Utility Tariff applied to savings for this energy is to be discounted by the tariff charged for the renewable energy:

$$UT = UT_{network} - UT_{renewable}$$

Where:

- $UT_{network}$ is the utility tariff charged to the lessee for electricity purchased from the electricity network, and;
- $UT_{renewable}$ is the utility tariff charged to the lessee for electricity generated by the renewable energy installation that is part of the upgrade works.

13. ESTIMATE PERIOD

The Estimate Period is calculated as:

$$EP = \frac{Number\ of\ days\ for\ which\ the\ estimate\ applies}{365}$$

Where:

- For Predicted Savings estimates, the estimate period must match the corresponding contribution that the lessor requires the lessee to pay towards a building upgrade charge.
- For Savings Made estimates, the estimate period must match the corresponding reporting period for the upgrade works.

14. SUPPORTING EVIDENCE

The building owner should retain the following records in relation to the calculation of the reasonable estimate:

- Method boundary documented as detailed in step 3
- Records supporting the estimated Utility Savings as specified in the sub-method used
- Formula used to establish the Attribution Factor
- Supporting documentation for the Utility Tariff, such as a copy of the contract under which the utility is provided, or bills from the utility supplier showing the appropriate tariff.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method P1 – Lighting (predicted savings)

1. PURPOSE

This document sets out the sub-method for estimating the predicted electricity savings arising from upgrade works under a building upgrade agreement that improves the efficiency of lighting equipment in a building.

2. DEFINITIONS

Control Gear means the lighting ballast, transformer or driver.

ESS Commercial Lighting Calculation Tool means the calculation tool published by the NSW Energy Savings Scheme Administrator to assist with the calculation of energy savings under the NSW Energy Savings Scheme.

Existing Lighting Equipment means the equipment that provides lighting services that was already installed and in working order at the time of implementation, including luminaires and/or lamps, control gear, and control systems.

Lifetime Electricity Savings is the electricity savings delivered by the Lighting Upgrade over the Lighting System Lifetime.

Lighting is defined as lighting equipment in use in South Australia for the purpose of lighting for a building.

Lighting System Lifetime is the period over which the Lighting Upgrade will effectively deliver savings, expressed in years, as calculated by the ESS Commercial Lighting Calculation Tool.

Lighting Upgrade means the replacement and/or modification of Existing Lighting Equipment with New Lighting Equipment resulting in a reduction in the consumption of electricity compared to what would have otherwise been consumed.

New Lighting Equipment means the equipment that provides lighting services that is installed as a result of the Upgrade, including luminaires and/or lamps, Control Gear, and control systems.

As approved by the Minister by notice in the Gazette on 8 August 2017.

3. ELIGIBILITY TO USE THIS SUB-METHOD

1. This calculation sub-method may be applied to a lighting upgrade where the existing lighting equipment is in working order at the time of the upgrade.
2. The following Activities are excluded:
   - Non-fixed task lighting equipment such as portable lighting or desk lamps
   - Installing T5 adaptor kits.
3. The calculations in this sub-method should be made by a suitably qualified individual, such as:
   - A Certified Energy Efficiency Specialist (CEES) or Certified Energy Efficiency Leader (CEEL) with the Energy Efficiency Council
   - A Certified Energy Manager (CEM) or Certified Energy Auditor (CEA) with the Association of Energy Engineers
   - A Registered Lighting Practitioner with the Illuminating Engineering Society of Australia and New Zealand
   - An individual with proven experience in delivering energy efficiency lighting upgrades.

4. UTILITY SAVINGS

The utility savings for this upgrade works is equal to:

$$Utility\ Savings\ (MWh) = \frac{Lifetime\ Electricity\ Savings\ (MWh)}{Lighting\ System\ Lifetime\ (yrs)}$$

Where:

- Lifetime Electricity Savings are calculated using the ESS Commercial Lighting Calculation Tool as expressed in "saved MWh"
- Lighting System Lifetime is calculated using the ESS Commercial Lighting Calculation Tool as expressed in 'Effective Deemed Lifetime".

With the exception of lamp only replacements of fluorescent tubes with LED tube products, energy savings for this Activity will be calculated using Equations 6, 7 and 9 of the commercial lighting energy savings formula in Section 9 of the NSW 'Energy Savings Scheme (Amendment No.2) Rule 2014'.

For lamp only replacements of fluorescent tubes with LED tube products energy savings will be calculated using the ESS Commercial Lighting Calculation Tool using the lighting category 'LED Lamp Only 240V'.

Calculations will use the factors and values from Schedule A – Default Factors and Classifications of the NSW 'Energy Savings Scheme (Amendment No. 2) Rule 2014'.

5. SUPPORTING EVIDENCE

For verification purposes, the following records should be retained in relation to the Activity:

- An output report from the ESS Commercial Lighting Calculation Tool (http://www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lighting) - produced using the version of the Calculation Tool current at the time the Activity is undertaken
- Details of the original and upgraded lighting system, including number and type of lights.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method M1 – Lighting (savings made)

1. PURPOSE

This document sets out the sub-method for estimating the electricity savings made from upgrade works under a building upgrade agreement for which the estimate of predicted savings was determined using sub-method P1 – Lighting (Predicted Savings).

2. DEFINITIONS

Control Gear means the lighting ballast, transformer or driver.

ESS Commercial Lighting Calculation Tool means the calculation tool published by the NSW Energy Savings Scheme Administrator to assist with the calculation of energy savings under the NSW Energy Savings Scheme.

Existing Lighting Equipment means the equipment that provides lighting services that was already installed and in working order at the time of implementation, including luminaires and/or lamps, control gear, and control systems.

Lifetime Electricity Savings is the electricity savings delivered by the Lighting Upgrade over the Lighting System Lifetime.

Lighting is defined as lighting equipment in use in South Australia for the purpose of lighting for a building.

Lighting System Lifetime is the period over which the Lighting Upgrade will effectively deliver savings, expressed in years, as calculated by the ESS Commercial Lighting Calculation Tool.

Lighting Upgrade means the replacement and/or modification of Existing Lighting Equipment with New Lighting Equipment resulting in a reduction in the consumption of electricity compared to what would have otherwise been consumed.

New Lighting Equipment means the equipment that provides lighting services that is installed as a result of the Upgrade, including luminaires and/or lamps, Control Gear, and control systems.

As approved by the Minister by notice in the Gazette on 8 August 2017.

3. ELIGIBILITY TO USE THIS SUB-METHOD

1. This calculation sub-method may be applied to a building upgrade where the Predicted Savings for the upgrade have been estimated using sub-method P1 – Lighting.
2. The calculations in this sub-method should be made by a suitably qualified individual, such as:
   - A Certified Energy Efficiency Specialist (CEES) or Certified Energy Efficiency Leader (CEEL) with the Energy Efficiency Council
   - A Certified Energy Manager (CEM) or Certified Energy Auditor (CEA) with the Association of Energy Engineers
   - A Registered Lighting Practitioner with the Illuminating Engineering Society of Australia and New Zealand
   - An individual with proven experience in delivering energy efficiency lighting upgrades.

4. UTILITY SAVINGS

The utility savings for this upgrade works is equal to:

$$Utility\ Savings\ (MWh)\ = \frac{Lifetime\ Electricity\ Savings\ (MWh)}{Lighting\ System\ Lifetime\ (yrs)}$$

Where:

- Lifetime Electricity Savings are calculated using the ESS Commercial Lighting Calculation Tool as expressed in "saved MWh"
- Lighting System Lifetime is calculated using the ESS Commercial Lighting Calculation Tool as expressed in 'Effective Deemed Lifetime".

Inputs to the ESS Commercial Lighting Calculation Tool must be based on a count of the number and types of lamps as installed, operating and in working condition at the time of calculation.

With the exception of lamp only replacements of fluorescent tubes with LED tube products, energy savings for this Activity will be calculated using Equations 6, 7 and 9 of the commercial lighting energy savings formula in Section 9 of the NSW 'Energy Savings Scheme (Amendment No.2) Rule 2014', or a current Rule that supersedes this.

For lamp only replacements of fluorescent tubes with LED tube products energy savings will be calculated using the ESS Commercial Lighting Calculation Tool using the lighting category 'LED Lamp Only 240V'.

Calculations will use the factors and values from Schedule A – Default Factors and Classifications of the NSW 'Energy Savings Scheme (Amendment No. 2) Rule 2014', or a current Rule that supersedes this.

5. SUPPORTING EVIDENCE

For verification purposes, the following records should be retained in relation to the Activity:

- An output report from the ESS Commercial Lighting Calculation Tool (http://www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lighting) - produced using the version of the Calculation Tool current at the time that Utility Savings is calculated
- Details of the original and upgraded lighting system, including number and type of lights present during the reporting year.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method P2 – Renewable Energy (predicted savings)

1. PURPOSE

This document sets out the sub-method for estimating the predicted electricity savings arising from upgrade works under a building upgrade agreement that installs new renewable energy equipment.

2. DEFINITIONS

Exported Energy is annual electricity generated by the installed renewable energy system and exported from the building

Generated energy is the annual electricity generated by the installed renewable energy system

Number of RECs is the RECs created for the system installed as part of the upgrade works, as detailed in the REC Registry

REC is a Renewable Energy Certificate that can been created and registered under the *Renewable Energy (Electricity) Act 2000* as part of the upgrade works, and includes small-scale technology certificate (STCs) created under the Small-scale Renewable Energy Scheme and large-scale generation certificates (LGCs) created under the Large-scale Renewable Energy Target

REC Registry is the public registry of RECs maintained by the Australian Government

REC registration period is the number of years for which the RECs have been calculated for the system installed under the upgrade works, as recorded in the REC Registry

Utility meters are meters that comply with the accuracy requirements set out in the National Measurement Institute documents M6 (for electricity meters), R 137 (for gas meters), or R 49 (for water meters)

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As approved by the Minister by notice in the Gazette on 8 August 2017.

3. ELIGIBILITY TO USE THIS SUB-METHOD

This calculation sub-method may be applied where RECs can been created and registered for a renewable energy system installed as part of the upgrade works.

The calculations in this sub-method should be made by a suitably qualified individual, such as a Clean Energy Council Accredited Designer.

4. UTILITY SAVINGS

The utility savings for this upgrade works is equal to:

$$Utility\ Savings\ (MWh) = \ Generated\ energy\ (MWh) - Exported\ energy\ (MWh)$$

Where:

1. Exported Energy is an estimate of energy generated by the system and exported from the building on an annual basis; and
2. Generated Energy is either
    a. an estimate of energy that will be generated by the system on an annual basis;
    b. an annualised Number of RECs that may be created by the system, calculated as:

$$Generated\ Energy\ (MWh) = \frac{Number\ of\ RECs}{REC\ registration\ period}$$

5. SUPPORTING EVIDENCE

For verification purposes, the following records should be retained in relation to the Activity:

- A copy of the REC Registry records for the installed renewable energy system
- A record of generated energy and/or exported energy estimate calculations.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method M2 – Renewable Energy (savings made)

1. PURPOSE

This document sets out the sub-method for estimating the electricity savings made from upgrade works under a building upgrade agreement that installs new renewable energy equipment.

2. DEFINITIONS

Exported energy is electricity generated by the installed renewable energy system and exported from the building

Generated energy is the total electricity generated by the installed renewable energy system

Utility meters are meters that comply with the accuracy requirements set out in the National Measurement Institute documents M6 (for electricity meters), R 137 (for gas meters), or R 49 (for water meters)

3. ELIGIBILITY TO USE THIS SUB-METHOD

This calculation sub-method may be applied to a building upgrade where the Predicted Savings for the upgrade have been estimated using sub-method P2 – Renewable Energy.

4. UTILITY SAVINGS

The utility savings for this upgrade works is equal to:

$$Utility\ Savings\ (MWh) = \ Generated\ Energy\ (MWh) - Exported\ Energy\ (MWh)$$

Where Exported Energy is measured using utility meters for the estimate period.

5. SUPPORTING EVIDENCE

For verification purposes, the following records should be retained in relation to the Activity:

- A record of energy generation and exported energy for the calculation period.

As approved by the Minister by notice in the Gazette on 8 August 2017.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method P3 – NABERS (predicted savings)

1. PURPOSE

This document sets out the sub-method for estimating the predicted utility savings from upgrade works under a building upgrade agreement that aim to improve the NABERS rating of a commercial building.

2. DEFINITIONS

Benchmark NABERS rating is the rating that the building would have achieved if the upgrade was not installed using the configuration of the building after the upgrade, (e.g. the size, hours and other comparison factors used by NABERS).

ERF tab is the worksheet in a NABERS Reverse Calculator developed to assist proponents using the NABERS rating to estimate savings from building upgrades using NABERS ratings.

Predicted Rating Year is the year for which the savings estimate is calculated, and is the year of the last date in the Rating Period for the Predicted NABERS rating.

Historical Baseline NABERS rating is a NABERS rating for the Rated Building with a Rating Period completed before the building upgrade is implemented.

NABERS is the National Australian Built Environment Rating System.

NABERS Accredited Assessor is a person authorised to conduct accredited NABERS ratings in accordance with the NABERS Rules.

NABERS rating is an accredited NABERS rating completed by a NABERS Accredited Assessor in accordance with the NABERS Rules.

NABERS Rules is the NABERS Rules for Collecting and Using Data, the quality standard for a NABERS rating. For a rating to be accredited by NABERS, the assessment on which it is based must be performed by a NABERS Accredited Assessor and comply with the NABERS Rules that set out principles and rules for gathering, interpreting and using data. The NABERS Rules are published on the NABERS website.

NABERS Reverse Calculator is a calculator published on the NABERS website to determine the maximum amounts of energy and water a building can use to achieve a specified NABERS rating.

As approved by the Minister by notice in the Gazette on 8 August 2017.

Predicted NABERS rating means the NABERS rating that the building is predicted to achieve as a result of the upgrade.

Rated Building is the building subject to the upgrade works.

Rating Period is the time over which measurements were taken to establish the Predicted NABERS rating or the Historical Baseline NABERS rating.

3. ELIGIBILITY TO USE THIS SUB-METHOD

1. This calculation sub-method may be applied to upgrade works where the Rated Building is a building in use in South Australia that is eligible for a NABERS Energy or Water rating calculated using one of the following tools:
   - NABERS for Offices
   - NABERS for Hotels
   - NABERS for Shopping Centres
   - NABERS for Data Centres.
2. The Historical Baseline NABERS Rating and Predicted NABERS rating must be based on a similar configuration. In particular, any energy end uses excluded from the Predicted NABERS rating must also be excluded from the Historical Baseline NABERS rating.
3. Energy and water use estimates based on energy audits, energy simulations and water audits should be made by a suitably qualified individual, such as:
   - For energy audits: A Certified Energy Efficiency Specialist (CEES) or Certified Energy Efficiency Leader (CEEL) with the Energy Efficiency Council; a Certified Energy Manager (CEM) or Certified Energy Auditor (CEA) with the Association of Energy Engineers; or an individual with proven experience in delivering energy audits
   - For energy simulations, an individual with proven experience in undertaking energy simulations, particularly for buildings seeking to achieve high NABERS ratings
   - For water audits, an individual with proven experience in delivering water audits.
   - Alongside these qualifications, all calculations in this sub-method must be made by a NABERS Accredited Assessor.

4. UTILITY SAVINGS - ENERGY

Where the utility is electricity and/or gas, the utility savings for this upgrade are calculated as follows:

Step 1 – Calculate Predicted Electricity Consumption and Predicted Gas Consumption for the Predicted Rating Year

Use appropriate engineering methods to estimate the building energy use after the building upgrade taken to calculate total energy consumption for the NABERS Building, such as:

- An energy audit that meets the Australian Standard 3598:2014 (Type 2 or 3), or a current standard that supersedes this
- An energy simulation consistent with the NABERS Energy Guide to Building Energy Estimation as published by the NABERS National Administrator.

The total energy consumption is calculated as:

Predicted Electricity Consumption (MWh) = NABERS Electricity + On-site Unaccounted Electricity

Predicted Gas Consumption (MWh) = NABERS Gas

Where:

- *NABERS Electricity*, in MWh, is the predicted electricity that will be purchased or imported from the electricity network and accounted for in the Predicted NABERS Rating, including electricity purchased as GreenPower™
- *On-site Unaccounted Electricity*, in MWh, is electricity that is predicted to be generated on-site from energy sources which will not been accounted for in the Predicted 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 will be accounted for in the Predicted NABERS Rating
- *NABERS Gas*, in MWh, is the total of the predicted gas that will be accounted for in the Predicted NABERS Rating.

Step 2 – **Calculate Benchmark NABERS Rating**

Calculate the Benchmark NABERS Rating by using either:

(a) Calculation Method 1: Look up the Benchmark NABERS Rating in Table A20 of Schedule A of the Energy Savings Scheme Rule (NSW) which corresponds to the relevant Predicted Rating Year, NABERS Rating tool and building category; or

(b) Calculation Method 2: Calculate the Benchmark NABERS Rating based on a Historical Baseline NABERS Rating as follows:

Benchmark NABERS Rating = Historical Baseline NABERS Rating

Where:

- *Historical Baseline NABERS Rating* is a previous NABERS rating for the building, as defined in section 2 of this sub-method, as reported to one decimal place.

Step 3 – Calculate Benchmark Electricity Consumption and Benchmark Gas Consumption

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

Benchmark Gas Consumption is the Gas consumption that would be required for that same Rated Building to achieve the Benchmark NABERS Rating over the Predicted NABERS Rating Period. It is the Gas component of maximum allowable energy consumption, converted to MWh.

Calculate the Benchmark Electricity Consumption and Benchmark Gas Consumption in MWh by using the "ERF tab" in the NABERS Reverse Calculator for the relevant NABERS method with input parameters set to:

- Rating type matching the Predicted NABERS Rating type
- Star Rating matching the Benchmark NABERS Rating
- Building information (e.g. Rated Area, Rated Hours, number of computers etc.) matching the Predicted NABERS Rating building information
- Percentage breakdown of energy consumption (on an energy use basis in MWh) matching the Historical Baseline NABERS Rating (if available), or matching the Predicted NABERS Rating if no Historical Baseline NABERS Rating is available for the building.

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

Step 4 – **Calculate Utility Savings**

Calculate *Utility Savings* as follows for electricity and gas:

Utility Savings (electricity) = Benchmark Electricity Consumption - Predicted Electricity Consumption

Utility Savings (gas) = Benchmark Gas Consumption – Predicted Gas Consumption

Note that these savings are calculated in MWh.

5. UTILITY SAVINGS - WATER

Where the measured utility is water, the utility savings for this upgrade works is:

Step 1 – **Calculate Predicted Water Consumption**

Use appropriate engineering methods to estimate the building water use after the building upgrade to calculate total water consumption for the NABERS Building, such as:

- A water audit
- Estimates by a qualified building services engineer.

Predicted Water Consumption (ML) = NABERS Water

Where:

- *NABERS Water*, in ML, is the total of the water predicted to be used by the building after upgrade.

Step 2 – **Calculate Benchmark NABERS Rating**

Calculate the Benchmark NABERS Rating based on a Historical Baseline NABERS Rating as follows:

Benchmark NABERS Rating = Historical Baseline NABERS Rating

Where:

- *Historical Baseline NABERS Rating* is a previous NABERS rating for the building, as defined in section 2 of this sub-method.

Step 3 – Calculate Benchmark Water Consumption

Benchmark Water Consumption is the water consumption that would be required for that same NABERS Building to achieve the Benchmark NABERS Rating over the Predicted NABERS Rating Period.

Calculate the Benchmark Water Consumption in ML by using the NABERS Reverse Calculator for the relevant NABERS method, setting the target star rating to the Benchmark NABERS Rating, and giving all other input parameters the same value as are expected to be used for an actual NABERS Rating in the Predicted Rating Year, including:

- Rating type; and
- Building information (e.g. Rated Area).

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

Step 4 – **Calculate Utility Savings (water)**

Calculate *Utility Savings* as follows:

Utility Savings = Benchmark Water Consumption - Predicted Water Consumption

Note that these savings are calculated in ML.

6. SUPPORTING EVIDENCE

For verification purposes, the following records should be retained in relation to the Activity:

- An output report from the NABERS reverse calculator showing the relevant target star rating and input parameters used in the calculation
- Copies of accredited NABERS Rating Certificates for the Rated Building.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method M3 – NABERS (savings made)

1. PURPOSE

This document sets out the sub-method for calculating savings made from upgrade works under a building upgrade agreement that improve the NABERS rating of a commercial building.

2. DEFINITIONS

Benchmark NABERS rating is the rating that the building would have achieved if the upgrade was not installed using the configuration of the building after the upgrade (e.g. the size, hours and other comparison factors used by NABERS).

Current NABERS rating means the NABERS rating of the building at the time of the calculation used to calculate Utility Savings

Current Rating Year is the year for which the Lessee Savings is calculated, and is the year of the last date in the Rating Period for the Current NABERS rating

ERF tab is the worksheet in a NABERS Reverse Calculator developed to assist proponents using the NABERS rating to estimate savings from building upgrades using NABERS ratings

Historical Baseline NABERS rating is a NABERS rating for the Rated Building with a Rating Period completed before the building upgrade is implemented.

NABERS is the National Australian Built Environment Rating System

NABERS Accredited Assessor is a person authorised to conduct accredited NABERS ratings in accordance with the NABERS Rules.

NABERS rating is an accredited NABERS rating completed by a NABERS Accredited Assessor in accordance with the NABERS Rules.

NABERS Rules is the NABERS Rules for Collecting and Using Data, the quality standard for a NABERS rating. For a rating to be accredited by NABERS, the assessment on which it is based must be performed by a NABERS Accredited Assessor and comply with the NABERS Rules that set out principles and rules for gathering, interpreting and using data. The NABERS Rules are published on the NABERS website.

As approved by the Minister by notice in the Gazette on 8 August 2017.

NABERS Reverse Calculator is a calculator published on the NABERS website to determine the maximum amounts of energy and water a building can use to achieve a specified NABERS rating.

Rated Building is the building subject to the upgrade works

Rating Period is the time over which measurements were taken to establish the Current NABERS rating or the Historical Baseline NABERS rating

3. ELIGIBILITY TO USE THIS SUB-METHOD

1. This calculation sub-method may be applied to a building upgrade where the Predicted Savings for the upgrade have been estimated using sub-method P3 – NABERS or sub-method P4 – Energy Audit.
2. The Rated Building is a building in use in South Australia that is eligible for a NABERS Energy or Water rating calculated using one of the following tools:
   - NABERS for Offices
   - NABERS for Hotels
   - NABERS for Shopping Centres
   - NABERS for Data Centres.
3. The Historical Baseline NABERS Rating and Current NABERS rating must be based on a similar configuration. In particular, any energy end uses excluded from the Current NABERS rating must also be excluded from the Historical Baseline NABERS rating.
4. The calculations in this sub-method must be made by a NABERS Accredited Assessor.

4. UTILITY SAVINGS - ENERGY

Where the measured utility is electricity and/or gas, the utility savings for this upgrade are calculated as follows.

Step 1 – Calculate Current Electricity Consumption and Current Gas Consumption for the Current Rating Year

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

Current Electricity Consumption (MWh) = NABERS Electricity + On-site Unaccounted Electricity

Current Gas Consumption (MWh) = NABERS Gas

Where:

- *NABERS Electricity*, in MWh, is the electricity purchased or imported from the electricity network and accounted for in the Current 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 Current 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 Current NABERS Rating; and
- *NABERS Gas*, in MWh, is the total of the purchased Gas accounted for in the Current NABERS Rating.

Step 2 – Calculate Benchmark NABERS Rating

Calculate the Benchmark NABERS Rating by using either:

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

(b) Calculation Method 2: Calculate the Benchmark NABERS Rating based on a Historical Baseline NABERS Rating as follows:

Benchmark NABERS Rating = Historical Baseline NABERS Rating

Where:

- *Historical Baseline NABERS Rating* is a previous NABERS rating for the building, as defined in section 2 of this sub-method, as reported to one decimal place.

Step 3 – Calculate Benchmark Electricity Consumption and Benchmark Gas Consumption

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

Benchmark Gas Consumption is the Gas consumption that would be required for that same NABERS Building to achieve the Benchmark NABERS Rating over the Current NABERS Rating Period. It is the Gas component of maximum allowable energy consumption, converted to MWh.

Calculate the Benchmark Electricity Consumption and Benchmark Gas Consumption in MWh by using the "ERF tab" in the NABERS Reverse Calculator for the relevant NABERS method with input parameters set to:

- Rating type matching the Current NABERS Rating type
- Star Rating matching the Benchmark NABERS Rating
- Building information (e.g. Rated Area, Rated Hours, number of computers etc.) matching the Current NABERS Rating building information
- Percentage breakdown of energy consumption (on an energy use basis in MWh) matching the Historical Baseline NABERS Rating (if available), or matching the Current NABERS Rating if no Historical Baseline NABERS Rating is available for the building.

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

Step 4 – Calculate Utility Savings

Calculate *Utility Savings* as follows for electricity and gas:

Utility Savings (electricity) = Benchmark Electricity Consumption - Current Electricity Consumption

Utility Savings (gas) = Benchmark Gas Consumption – Current Gas Consumption

Note that these savings are calculated in MWh.

5. UTILITY SAVINGS - WATER

Where the measured utility is water, the utility savings for this upgrade works is:

Step 1 – **Calculate Current Water Consumption**

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

Current Water Consumption (ML) = NABERS Water

Where:

- *NABERS Water*, in ML, is the total of the water accounted for in the Current NABERS Rating, including any recycled water.

Step 2 – Calculate Benchmark NABERS Rating

Calculate the Benchmark NABERS Rating based on a Historical Baseline NABERS Rating as follows:

Benchmark NABERS Rating = Historical Baseline NABERS Rating

Where:

- *Historical Baseline NABERS Rating* is a previous NABERS rating for the building, as defined in section 2 of this sub-method, as reported to one decimal place.

Step 3 – Calculate Benchmark Water Consumption

Benchmark Water Consumption is the water consumption that would be required for that same NABERS Building to achieve the Benchmark NABERS Rating over the Current NABERS Rating Period.

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

- Rating type; and
- Building information (e.g. Rated Area).

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

Step 4 – Calculate Utility Savings (water)

Calculate *Utility Savings* as follows:

Utility Savings = Benchmark Water Consumption - Current Water Consumption

Note that these savings are calculated in ML.

6. SUPPORTING EVIDENCE

For verification purposes, the following records should be retained in relation to the Activity:

- An output report from the NABERS reverse calculator showing the relevant target star rating and input parameters used in the calculation
- Copies of accredited NABERS Rating Certificates for the Rated Building.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method P4 – Energy Audit (predicted savings)

1. PURPOSE

This document sets out the sub-method for predicting the electricity and/or gas savings arising from eligible upgrade works under a building upgrade agreement that improve the end-use efficiency energy services.

2. DEFINITIONS

Eligible means eligible in accordance with the requirements of this calculation methodology, as set out in section 3 of the Methodology and in section 3 of this sub-method.

End-use efficiency means upgrade works that result in the reduction of utility metered energy or water consumption for a building, associated with a given energy service for that building, without a reduction in the production, service or safety levels provided. These upgrade works can include modifying or replacing existing end use energy service equipment, or installing new equipment.

Energy services means the individual or combined services provided to the occupants of a building, which consume energy and include, but are not limited to, heating, cooling and ventilation, lighting, water handling, water heating, lifts, fire and security systems, energy management systems, computing, printing and publishing, refrigeration, cooking, communications and entertainment.

3. ELIGIBILITY TO USE THIS SUB-METHOD

1. This calculation sub-method may be applied to any upgrade works that improve the electricity and/or gas efficiency of the building. Utility savings cannot be calculated from a reduction in production or service levels. For example, reducing the tenancy space in a building is not an eligible upgrade works.
2. This method applies to upgrades with a predicted energy savings calculated by a Type 2 or Type 3 energy audit that meets the Australian Standard 3598:2014, or a current standard that supersedes this. The calculations in this sub-method should be made by a suitably qualified individual, such as:
   - A Certified Energy Efficiency Specialist (CEES) or Certified Energy Efficiency Leader (CEEL) with the Energy Efficiency Council

As approved by the Minister by notice in the Gazette on 8 August 2017.

- A Certified Energy Manager (CEM) or Certified Energy Auditor (CEA) with the Association of Energy Engineers
- An individual with proven experience in delivering energy audits.

3. UTILITY SAVINGS

The utility savings for this upgrade works is equal to:

Utility Savings (MWh) = Electricity Savings arising from the building upgrade, as calculated through a Type 2 or Type 3 energy audit; and/or

Utility Savings (MWh) = Gas Savings arising from the building upgrade, as calculated through a Type 2 or Type 3 energy audit.

4. SUPPORTING EVIDENCE

For verification purposes, the building owner should retain the following records in relation to this method:

- A copy of the completed energy audit for the building showing the predicted electricity and gas savings for the building upgrade.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method P5 – Project Impact Assessment with Measurement and Verification (predicted savings)

1. PURPOSE

This document sets out the sub-method for calculating the predicted utility savings from upgrade works under a building upgrade agreement that improve the efficiency of energy or water services. This analysis should be conducted by a Measurement and Verification Professional.

2. DEFINITIONS

Baseline Utility Model has the same meaning as Baseline Energy Model as defined in clause 7A.3 of the ESS Rule.

Effective Range has the same meaning as in Clause 7A of the ESS Rule.

Energy services means the individual or combined services provided to a building, which consume energy and include, but are not limited to, heating, cooling and ventilation, lighting, water handling, water heating, lifts, fire and security systems, energy management systems, computing, printing and publishing, refrigeration, cooking, communications and entertainment.

ESS Rule means the NSW Energy Savings Scheme Rule made under Part 9 of the NSW *Electricity Supply Act 1995*.

Independent variable has the same meaning as in Clause 7A of the ESS Rule.

Measurement and Verification Professional is a person who is a Certified Measurement and Verification Professional (CMVP), having demonstrated their proficiency in best practice measurement & verification techniques to the satisfaction of the Efficiency Valuation Organization, or a person certified by the Energy Efficiency Council as a Certified Energy Efficiency Leader or Certified Energy Efficiency Specialist.

Normal Year represents a typical year for operation of the building after the upgrade works are completed and within the time period for which lessees are expected to make contributions towards the building upgrade charge.

As approved by the Minister by notice in the Gazette on 8 August 2017.

Operating Utility Model has the same meaning as Operating Energy Model as defined in clause 7A.4 of the ESS Rule.

Production levels means the amount of output delivered by the building and its occupants, which could be measured by operating hours, occupancy and/or an amount of goods or services produced.

Services levels means the amount of services or production provided by a utility to a building, its occupants and its equipment, being either energy services or water services.

Site constant has the same meaning as in Clause 7A of the ESS Rule.

Utility Consumption has the same meaning as Energy Consumption in Clause 7A of the ESS Rule.

Utility Model has the same meaning as Energy Model in Clause 7A of the ESS Rule.

Utility Savings means the reduction of the amount or equivalent amount of electricity consumption (in MWh), gas consumption (in MWh) or water consumption (in ML) arising from the upgrade as calculated by this sub-method. Utility Savings may be negative for electricity or gas for fuel switching activities

Water services means the individual or combined services provided to a building, which consume water and include, but are not limited to, the provision of water for drinking, bathrooms, cooling or cleaning.

3. ELIGIBILITY TO USE THIS SUB-METHOD

1. This sub-method may be applied to any upgrade works that improve the electricity, gas or water efficiency of the building. This method requires measured utility consumption from before and after the building upgrade. It takes utility information measured both before the upgrade and over a period after the building upgrade to predict future utility savings.
2. Utility savings cannot be due to reduced service levels or production levels. For example, reducing the tenancy space in a building is not considered to improve the efficiency of the building.
3. To address this issue, production, occupancy or service levels must be considered for inclusion as independent variables or site constants and accounted for in the utility models. Their inclusion must be done in a way that allows direct comparison of performance before and after the upgrade works.
4. The calculations in this sub-method should be made by a Measurement and Verification Professional.

4. UTILITY SAVINGS

Step 1 – Measure building performance before and after the upgrade

Take measurements of building performance, including Utility Consumption, Independent Variables and Site Constants, for a measurement period before the building upgrade commences.

The measurements taken will determine the Effective Range of the Utility Models for the upgrade, and so should represent as much as possible of the full range of expected values for the Independent Variables.

Step 2 – Establish the Baseline Utility Model, Operating Utility Model and Normal Year

Use those measurements to establish:

1. A Baseline Utility Model in accordance with Clause 7A.3 of the ESS Rule
2. An Operating Utility Model in accordance with Clause 7A.4 of the ESS Rule
3. A Normal Year in accordance with Clause 7A.7 of the ESS Rule.

Where:

- all references to "electricity consumption or gas consumption" are to be replaced with "electricity consumption or gas consumption or water consumption";
- clause 7A.7 b) is replaced with the following requirement:

  b) ensure the Normal Year represents a typical year for operation of the upgraded building within the maximum time period over which lessees will make contributions towards the building upgrade charge.

Step 3 – Calculate the predicted utility savings for each year

The predicted utility savings for the building upgrade is equal to:

For electricity savings:

> Utility Savings (MWh) = Normal Year Electricity Savings, as calculated in accordance with Equation 7A.2 of Clause 7A of the NSW Energy Savings Scheme Rule;

For gas savings:

> Utility Savings (MWh) = Normal Year Gas Savings, as calculated in accordance with Equation 7A.2 of Clause 7A of the ESS Rule;

For water savings:

> Utility Savings (ML) = Normal Year Water Savings, as calculated in accordance with Equation 7A.2 of Clause 7A of the ESS Rule, replacing the term 'Electricity' or 'Energy' with the term 'Water', and replacing the term 'MWh' with 'ML' (megalitres).

5. SUPPORTING EVIDENCE

For verification purposes, the building owner should retain the following records in relation to this method:

- A completed version of the ESS PIAM&V Tool (designed for calculating electricity savings), or equivalent analysis for the project, available at http://www.environment.nsw.gov.au/business/piamv-tool.htm - produced using the version of the PIAM&V Tool current at the time the Activity is undertaken (noting the substitution of gas or water measurements and measurement units if necessary)
- A report by a Measurement and Verification Professional, deeming the M&V design, data, calculations and use of the PIAM&V method to be appropriate, written explanatory reasoning, in accordance with the requirements of Clause 7A of the ESS Rule.

Building Upgrade Finance 'No worse off' Methodology for Estimating Tenant Cost Savings

The approved methodology for the purpose of Schedule 1B of the *Local Government Act 1999*

Sub-method M5 – Project Impact Assessment with Measurement and Verification (savings made)

1. PURPOSE

This document sets out the sub-method for calculating the utility savings made from past upgrade works under a building upgrade agreement that improve the efficiency of energy or water services. This analysis should be conducted by a Measurement and Verification Professional.

2. DEFINITIONS

Baseline Utility Model has the same meaning as Baseline Energy Model as defined in clause 7A.3 of the ESS Rule.

Energy services means the individual or combined services provided to a building, which consume energy and include, but are not limited to, heating, cooling and ventilation, lighting, water handling, water heating, lifts, fire and security systems, energy management systems, computing, printing and publishing, refrigeration, cooking, communications and entertainment.

ESS Rule means the NSW Energy Savings Scheme Rule made under Part 9 of the NSW *Electricity Supply Act 1995*.

Independent variable has the same meaning as in Clause 7A of the ESS Rule.

Measurement and Verification Professional is a person who is a Certified Measurement and Verification Professional (CMVP), having demonstrated their proficiency in best practice measurement & verification techniques to the satisfaction of the Efficiency Valuation Organization, or a person certified by the Energy Efficiency Council as a Certified Energy Efficiency Leader or Certified Energy Efficiency Specialist.

Production levels means the amount of output delivered by the building and its occupants, which could be measured by operating hours, occupancy and/or an amount of goods or services produced.

Services levels means the amount of services or production provided by a utility to a building, its occupants and its equipment, being either energy services or water services.

As approved by the Minister by notice in the Gazette on 8 August 2017.

Site constant has the same meaning as in Clause 7A of the ESS Rule.

Utility Consumption has the same meaning as Energy Consumption in Clause 7A of the ESS Rule.

Utility Model has the same meaning as Energy Model in Clause 7A of the ESS Rule.

Utility Savings means the reduction of the amount or equivalent amount of electricity consumption (in MWh), gas consumption (in MWh) or water consumption (in ML) arising from the upgrade as calculated by this sub-method. Utility Savings may be negative for electricity or gas for fuel switching activities

Water services means the individual or combined services provided to a building, which consume water and include, but are not limited to, the provision of water for drinking, bathrooms, cooling or cleaning.

3. ELIGIBILITY TO USE THIS SUB-METHOD

1. This sub-method may be applied to any upgrade works that improve the electricity, gas or water efficiency of the building. This method requires measured utility consumption after the building upgrade. This calculation sub-method may be applied to a building upgrade where the Predicted Savings for the upgrade have been estimated using sub-method P5 – PIAMV or sub-method P4 – Energy Audit.
2. Utility savings cannot be calculated from a reduction in production or service levels. For example, reducing the tenancy space in a building is not considered to improve the efficiency of the building.
3. To address this issue, production, occupancy or service levels must be considered for inclusion as independent variables or site constants and accounted for in the utility models. Their inclusion must be done in a way that allows direct comparison of performance before and after the upgrade works.
4. The calculations in this sub-method should be made by a Measurement and Verification Professional.

4. UTILITY SAVINGS

Step 1 – Establish the Baseline Utility Model

Take measurements of building performance, including Utility Consumption, Independent Variables and Site Constants, for a measurement period before the building upgrade commences. Use those measurements to establish a Baseline Utility Model in accordance with Clause 7A.3 of the ESS Rule. All references to "electricity consumption or gas consumption" in that clause are to be replaced with "electricity consumption or gas consumption or water consumption".

If predicted utility savings have previously been calculated for the building upgrade, then the same Baseline Utility Model must be used to calculate utility savings made.

Step 2 – Measure building performance after the upgrade

Take measurements of building performance, including Utility Consumption, Independent Variables and Site Constants, for a measurement period, equal to a reporting year following the completion of the upgrade.

Step 3 – Calculate the utility savings made for a year

The utility savings made for the building upgrade is equal to:

For electricity savings:

> Utility Savings (MWh) = Measured Annual Electricity Savings, as calculated in accordance with Equation 7A.4 of Clause 7A of the NSW Energy Savings Scheme Rule;

For gas savings:

Utility Savings (MWh) = Measured Annual Gas Savings, as calculated in accordance with Equation 7A.4 of Clause 7A of the ESS Rule;

For water savings:

Utility Savings (ML) = Measured Annual Water Savings, as calculated in accordance with Equation 7A.4 of Clause 7A of the ESS Rule, replacing the term 'Electricity' or 'Energy' with the term 'Water', and replacing the term 'MWh' with 'ML' (megalitres).

5. SUPPORTING EVIDENCE

For verification purposes, the building owner should retain the following records in relation to this method:

- A completed spreadsheet documenting the Baseline Utility Model calculations and utility savings calculations in a similar format to the ESS PIAM&V Tool (designed for electricity savings calculations), available at http://www.environment.nsw.gov.au/business/piamv-tool.htm (noting the substitution of gas or water measurements and measurement units if necessary)
- A report by a Measurement and Verification Professional, deeming the M&V design, data, calculations and use of the PIAM&V method to be appropriate, written explanatory reasoning, in accordance with the requirements of Clause 7A of the ESS Rule.