IPART

Independent Pricing and Regulatory Tribunal
New South Wales

Commercial Lighting Energy Savings Formula

Evidence Manual

Energy Savings Scheme

November 2018

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Document Control

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1 About this document

The NSW Energy Savings Scheme (**ESS**) seeks to reduce energy consumption in NSW by creating financial incentives for organisations to invest in energy savings projects. Electricity retailers and other mandatory participants (**Scheme Participants**) are obliged to meet energy saving targets. Energy savings can be achieved by installing, improving or replacing energy saving equipment. Persons that become Accredited Certificate Providers (**ACPs**) can create energy savings certificates (**ESCs**) from these activities and then sell those ESCs to Scheme Participants. The Independent Pricing and Regulatory Tribunal of NSW (**IPART**) is both the Scheme Administrator and Scheme Regulator of the ESS.[1]

This Evidence Manual (**the manual**) explains the minimum evidence requirements for ACPs seeking to create and register ESCs from upgrades of building lighting and/or lighting for roads and public spaces using the Commercial Lighting Energy Savings Formula of the Deemed Energy Savings method (**Commercial Lighting method**) of the ESS.

It should be read in conjunction with the:

- *Evidence Pack – Commercial Lighting Energy Savings Formula* (**Evidence Pack**),[2] which is a spreadsheet designed to record the required evidence, and
- *Method Guide – Commercial Lighting Energy Savings Formula* (**Method Guide**), which provides guidance on the Commercial Lighting method and key requirements that must be met when undertaking lighting upgrades.

The manual does not cover evidence requirements for upgrades of lighting for traffic signals. If ACPs plan to seek accreditation for such upgrades, they should contact the Scheme Administrator for guidance.

The manual does not provide information about the Public Lighting method, which provides an alternative method to calculate energy savings from upgrades of lighting for roads and public spaces where:

- the luminaire is owned and/or maintained by a distributor[3] or Roads and Maritime Services (**RMS**), or
- a council or RMS that is the customer of a distributor requests, in writing, the upgrade from the distributor that owns the luminaire.[4]

Please refer to the Public Lighting page of the ESS website for further information.[5]

1 *Electricity Supply Act 1995* (NSW), Sections 153(2) and 151(2).
2 The Evidence Pack, Method Guide and other relevant documents are available at: www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lighting.
3 *ESS Rule*, cl 10.1 (definition of 'Distributor').
4 *ESS Rule*, cl 9.4A.1 and 9.4A.3
5 Refer to: www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Public_Lighting_Method.

1.1 Who should use the manual

ACPs should use this manual if they are:

- Accredited to implement a Recognised Energy Saving Activity (**RESA**) that involves upgrades to building lighting and/or lighting for roads and public spaces. It will help ACPs ensure that all the evidence they need to calculate energy savings and register ESCs from that RESA is properly recorded and stored.
- Seeking accreditation for a RESA that will involve upgrades to building lighting and/or lighting for roads and public spaces. It will help ACPs to understand the evidence requirements.

1.2 The manual's purpose

The manual's purpose is to supplement the Method Guide by providing detailed guidance on the documents and records that ACPs are required to keep to demonstrate the eligible energy savings from their RESA before creating ESCs. This manual and the Method Guide, are not legal advice. The legal requirements of ACPs participating in the ESS are set out in:

- Part 9 of the *Electricity Supply Act 1995* (**Act**)
- Part 6 of the *Electricity Supply (General) Regulation 2014* (**Regulation**), and
- the *Energy Savings Scheme Rule of 2009* (**ESS Rule**).

ACPs are also required to meet any additional accreditation conditions as set out in their Accreditation Notice.

If there is any inconsistency between this manual and the provisions of the Act, Regulation, ESS Rule and accreditation conditions, then those regulatory materials will prevail.

ACPs are responsible for ensuring that all the ESCs they create from a RESA are created in accordance with the provisions of the Act, the Regulation and the ESS Rule.

1.3 The manual's structure

The manual is structured as follows:

- Section 2 outlines the process for creating and registering ESCs from energy savings under the Commercial Lighting method.
- Section 3 provides an overview of the Evidence Pack and guidance on when ACPs should complete the various sections.
- Section 4 provides detailed guidance on the evidence ACPs must collect and attach to the Evidence Pack to support claimed energy savings from upgrades of building lighting.
- Section 5 provides detailed guidance on the evidence ACPs must collect and attach to the Evidence Pack to support claimed energy savings from upgrades of lighting for roads and/or public spaces.
- Appendix A and Appendix B summarise all evidence requirements for upgrades of building lighting and roads and public spaces in table form.

2 Calculating and creating ESCs

As section 4 of the Method Guide explains, an implementation is the delivery of a RESA[6] at a site. In this case, it is a site-specific commercial lighting upgrade. The energy savings resulting from an implementation are calculated using:

- equations 6, 9 and either equation 7 or equation 8 from the ESS Rule
- the relevant tables from Schedule A to the ESS Rule, and
- the regional network factor from Table A24 of Schedule A to the ESS Rule.

Equation 1 of the ESS Rule is used to calculate the number of ESCs that may be created from the energy savings calculated in relation to an implementation.[7]

Equation 1

$$Number\ of\ Certificates = \Sigma_{Implementations}\ Electricity\ Savings \times Electricity\ Certificate\ Conversion\ Factor + Gas\ Savings \times Gas\ Certificate\ Conversion\ Factor$$

2.1 Applying to register ESCs

Certain information must be submitted to the Scheme Administrator by an ACP for the purpose of applying to register ESCs.[8] ACPs are to provide the required information by completing an *Implementation Data Sheet*[9] and submitting it through the ESS Portal.[10] The *Implementation Data Sheet* will include a calculation of the number of ESCs to be created in accordance with equation 1 in the ESS Rule.

This calculation involves multiplying the electricity savings arising from the implementation or implementations by the certificate conversion factor for electricity (1.06).[11] (Note that under the ESS Rule, gas savings from this method will always equal zero).

The result is the total number of ESCs that the ACP can apply to register from the implementation or implementations. If the result is not a whole number, it is rounded **down** to the nearest whole number.

There are no restrictions on how many implementations can be bundled together in the same *Implementation Data Sheet*. However:

- ACPs must apply to register all ESCs included in an *Implementation Data Sheet* in a single application
- ACPs cannot split energy savings calculated from a single implementation across two or more *Implementation Data Sheets*, and

6 A RESA must meet all of the criteria set out in clauses 5.3, 5.3A and 5.3B of the *ESS Rule* and does not include those activities set out in clause 5.4 of the *ESS Rule*.
7 *ESS Rule*, cl 6.5.
8 Refer to *ESS Rule*, cl 6.8 for details of the information required.
9 Available at: www.ess.nsw.gov.au/Registry/Registering_certificates.
10 Information and access to the ESS Portal is available at: www.ess.nsw.gov.au/ESS_Portal.
11 *Act*, s 130(1)(a).This may be amended by regulation: Act, s 130(3).

- each *Implementation Data Sheet* must only include the calculation of energy savings that are taken to have occurred in the same calendar year (commonly referred to as 'vintage').

When determining how many implementations to bundle in the same *Implementation Data Sheet*, ACPs should consider:

- the ESC creation limit specified in their Accreditation Notices, as they must be able to register all the ESCs in the bundle at the same time, and
- the cost of registering the ESCs.[12]

More information on applying to register the creation of ESCs can be found on the ESS website.[13]

2.2 Acceptance of lighting equipment

Lighting equipment that is listed in Table A9.3 of Schedule A to the ESS Rule must be accepted by the Scheme Administrator's current Emerging Lighting Technology (**ELT**) process.[14] Requirements for acceptance under this process is summarised in Table A9.4 of Schedule A to the ESS Rule, but ACPs should review the complete guidance materials provided on the ESS website.[15]

The equipment listed in Table A9.3 includes:

- LED based equipment
- induction luminaires, and
- other emerging lighting technologies that do not fall into one of the listed categories.

ACPs must submit an application for acceptance of lighting equipment via the ELT Portal.[16] Refer to the Product Search page of the ESS website for a list of accepted lighting equipment.[17]

The Scheme Administrator may also cease to accept a product that was previously accepted. In this case, the Scheme Administrator will notify all ACPs accredited to use the Commercial Lighting method. The notification includes the reason for ceasing acceptance and the date the product will cease to be accepted. The notification also details the impact on any implementations that have been completed using that product.

2.2.1 Modified Luminaires – LED Linear Lamps

Under the Commercial Lighting method, 'Modified Luminaire – LED Linear Lamps' are included in Table A9.3 of Schedule A to the ESS Rule.

12 The ESC registration fee must be paid in a single payment for all ESCs registered in a single bundle. Payment for a single bundle cannot be split into two payments. Refer to: www.ess.nsw.gov.au/Registry/Registering_certificates.
13 Available at: www.ess.nsw.gov.au/Registry/Creating_certificates.
14 More information on how to apply for an ELT to be accepted for use under the ESS is available at: www.ess.nsw.gov.au/Projects_and_equipment/Lighting_Technologies.
15 Refer to: www.ess.nsw.gov.au/Projects_and_equipment/Lighting_Technologies/Commercial_Lighting_Requirements.
16 Available at: www.elt.ess.nsw.gov.au/Login.
17 Available at: www.ess.nsw.gov.au/ELT/Product_Search.

A 'Modified Luminaire – LED Linear Lamp' is defined in the ESS Rule as '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'.[18] As such, the **ESS Rule treats the entire modified luminaire as a single product, rather than several related items of equipment**. This means that modified luminaires that use different original luminaires, LED lamps or construction methods are treated as different products under the ESS Rule.

ACPs wishing to use a 'Modified Luminaire – LED Linear Lamp' should be aware that acceptance only applies to the modified luminaire specified in the acceptance. ACPs need to ensure that their completed modified luminaire matches the accepted luminaire. At a minimum this requires:

- the original luminaire to be the same model as listed in the acceptance
- the LED linear lamp or modification kit used to be the same model as listed in the acceptance, and
- the modification (including wiring changes and accessories used) to be conducted in accordance with the manufacturer's instructions.

In addition, the modification must be undertaken or supervised by a licensed electrician.

2.3 Energy savings involving Maintained Emergency Lighting[19]

If the lighting upgrade is of maintained emergency lighting, the existing or new lighting end-user equipment (as applicable) must be, or continue to be, maintained emergency lighting.

The evidence required for such upgrades is explained in section 4.2.2 of this manual.

3 Completing the Evidence Pack

The Evidence Pack consists of six sections:

- Section 1 – Implementation details
- Section 2 – Upgraded areas details (for each area of the implementation)
- Section 3 – Declaration of compliance with AS/NZS 1680 and Building Code of Australia (**BCA**)[20] – Building lighting
- Section 4 – Evidence of energy savings – Building lighting
- Section 5 – Declaration of compliance with AS/NZS 1158 – Lighting for roads and public spaces
- Section 6 – Evidence of energy savings – Lighting for roads and public spaces

18 *ESS Rule*, Table A9.3 of Schedule A to the ESS Rule (definition of 'Modified Luminaire – LED Linear Lamp').
19 *ESS Rule*, cl 10.1 (definition of 'Maintained Emergency Lighting').
20 The Building Code of Australia forms Volume 1 and Volume 2 of the National Construction Code.

Each of these sections has unique requirements and may require sign-off by different people at different stages of the implementation, depending on the ACP's business models. Some of the sections specify supporting evidence that ACPs must attach to the Evidence Pack.

ACPs need to complete different sections of the Evidence Pack depending on the nature of the implementations covered, as outlined below:

- For implementations with only building lighting components, ACPs need to complete sections 1, 2, 3 and 4.
- For implementations with only lighting for roads and public spaces components, ACPs need to complete sections 1, 2, 5 and 6.
- For implementations with both building lighting and lighting for roads and public spaces components, ACPs need to complete sections 1-6.

If the ACP is nominated as the energy saver, the ACP also needs to attach a Nomination Form[21] completed and signed by the original energy saver **on or before** the implementation date (ie, the date that the lighting upgrade was completed).

An overview of each section of the Evidence Pack is provided below.

3.1 Section 1 – Implementation details

Section 1 of the Evidence Pack can be used to record information about the implementation and related energy savings. It comprises four sub-sections, all of which must be completed either during the implementation or after it has been completed. An overview of each sub-section is provided below.

3.1.1 Section 1.1 – Purchaser details

Section 1.1 of the Evidence Pack records information about the purchaser/ original energy saver (**OES**).[22] Table 3.1 describes the information required for each field of this section.

Table 3.1 Information required in section 1.1

Field name	Description
Name of purchaser (OES)	The full legal name of the purchaser (OES)
Business name (OES)	The business (trading) name of the purchaser
ABN (if any)	The Australian Business Number of the Purchaser (if applicable)
Business classification	The business classification of the entity utilising the end-use services (as per Table A18 of Schedule A to the ESS Rule)
End-use services type	The end-use services provided by the lighting equipment (as per Table A17 of Schedule A to the ESS Rule)

21 Available at: www.ess.nsw.gov.au/Accredited_Certificate_Providers/Templates.
22 Refer to Section 3 of the Method Guide for definitions of the purchaser and original energy saver.

3.1.2 Section 1.2 – Lighting upgrade summary

Section 1.2 of the Evidence Pack records information about the implementation. Table 3.2 describes the information required for each field.

Table 3.2 Information required in section 1.2

Field name	Description
Address, suburb & postcode	The address of the site in NSW, at which the implementation has taken place, including the suburb and postcode. If the lighting upgrade is of a road or a public space, ACPs must provide the name and location of the road(s) or public space(s) or the geographic location(s) (geographical coordinates in a GIS[23]).
Phone number	The phone number of the purchaser (OES).
Implementation ID (Site identifier)	The unique ID that ACPs create and assign to each implementation. ACPs should use an identifier that suits their processes. The same identifier will identify the implementation in the *Implementation Data Sheet* for uploading to the ESS Portal.[24]
Implementation date	The date the lighting upgrade was completed as per clause 9.4.2 of the ESS Rule.
Baseline determination[25]	For building lighting components of the upgrade, please select the appropriate box next to either Option 1 or Options 1 & 2. If selecting 'Yes' in Option 1 and 'No' in Option 2, the implementation must comply with the requirements of BCA Part J6, and ACPs will need to provide: ▼ the area of the space that is subject to the lighting upgrade, and ▼ the space type (in accordance with BCA Part J6). If the implementation is for roads and public spaces or it has a component of lighting for roads and public spaces, ACPs must select 'Yes' in Option 3 and complete sections 5 and 6 of the Evidence Pack.
Activity summary	A brief summary of the main equipment and work involved in the lighting upgrade.

3.1.3 Section 1.3 – Calculated energy savings

In section 1.3 of the Evidence Pack, ACPs need to specify the total energy savings from each space (as identified in section 2 of the Evidence Pack) of the implementation, and the resulting number of ESCs that may be created. Table 3.3 describes the information required for each field.

Table 3.3 Information required in section 1.3

Field name	Description
Energy savings (in mega-watt hours, MWh)	This figure is the calculated energy savings from the implementation.
Regional network factor	Indicates the regional network factor as per Table A24 of Schedule A to the ESS Rule.
Indicative Energy Savings Certificates (ESCs)	The indicative ESCs that can be created from the implementation (by multiplying the energy savings by the electricity certificate conversion factor of 1.06).

23 Geographical Information System.

24 Refer to: www.ess.nsw.gov.au/Registry/Registering_certificates.

25 When entering baseline determination information, if the answer is 'Yes' in Option 1 and 'No' to Option 2, ACPs must use equation 8 of the ESS Rule in their energy savings calculations. In this case, please contact the Scheme Administrator for further guidance.

Field name	Description
Minimum purchaser (OES) co-payment (excluding GST)	The minimum **net** amount (in dollars), excluding GST, necessary to satisfy clause 9.4.1(e) of the ESS Rule ($5 per MWh of energy savings). The purchaser, prior to ESC creation, must have paid a net amount not less than this amount for the goods or services making up the implementation.
Actual purchaser (OES) co-payment (excluding GST)	The **net** amount (in dollars), excluding GST, that the purchaser paid towards the cost of the implementation. This must include any rebate, reimbursement or other payment that has been made or will be made to the purchaser.

3.1.4 Section 1.4 – Personnel involved

All lighting upgrades must be performed by appropriately trained persons, and undertaken by, or supervised by, a licensed electrician.[26]

Section 1.4 records the details of the installer of the lighting equipment, and the details of the licensed electrician (if not the installer) who supervised the implementation.

3.2 Section 2 – Upgraded areas details

In section 2 of the Evidence Pack, ACPs need to detail the existing and new lighting equipment, as well as the BCA classification (for building lighting) and space type of all areas of the implementation. Table 3.4 specifies the information required for each field. The Evidence Pack allows ACPs to add as many areas as necessary.

Table 3.4 Information required in section 2

Field name	Description
Lighting upgrade address	The address of the site in NSW, at which the implementation has taken place, including the suburb and postcode. If the lighting is of a road or a public space, ACPs must provide the name and location or the geographic location.
Area description	A description of the area (eg, the administration building, the marketing floor) where the lighting upgrade occurred.
Space type of the upgrade area	The space type as per the BCA and as defined in Table A10.2 of Schedule A to the ESS Rule. For lighting for roads and public spaces, please select the 'Other spaces not defined above' option. ACPs that select 'Maintained Emergency Lighting' in this field should be aware that the existing or new lighting end-user equipment (as applicable) must be, or continue to be, Maintained Emergency Lighting.[27]
Building classification	The building classification under the BCA as specified in Table A10.3 of Schedule A to the ESS Rule. For upgrades of lighting for roads and public spaces use 'Roads and Public Spaces'.
Annual operating hours	The annual operating hours as specified in either Table A10.2 or A10.3 of Schedule A to the ESS Rule.
Available air conditioning	Indicate if air conditioning is available for the upgraded area. This determines which Air Conditioning Multiplier is applied in the calculations, as set out in Table A10.5 of Schedule A to the ESS Rule.

26 *ESS Rule*, cl 9.4.1(d).
27 *ESS Rule*, cl 9.4.1(i).

Field name	Description
Existing end-user equipment (EUE)	The existing lighting equipment in place before the implementation took place, including: ▼ equipment class (as per Tables A9.1 and A9.3 of Schedule A to the ESS Rule) ▼ quantity ▼ control gear (as per Table A9.5 of Schedule A to the ESS Rule) ▼ Nominal Lamp Power (NLP) / Lamp Circuit Power (LCP) (as applicable), noting the maximum NLP specified in Table A9.2 of Schedule A to the ESS Rule for some equipment classes, and ▼ control system(s) (as per Table A10.4 or A10.4A of Schedule A to the ESS Rule).
New end-user equipment[a] (EUE)	The newly installed lighting equipment comprising the implementation, including: ▼ equipment class (as per Tables A9.1 and A9.3 of Schedule A to the ESS Rule) ▼ quantity ▼ control gear (as per Table A9.5 of Schedule A to the ESS Rule) ▼ NLP / LCP (as applicable), and ▼ control system(s) (as per Table A10.4 or A10.4 A of Schedule A to the ESS Rule).
Project Manager / installer/electrician declaration	Section 2.2 must be signed-off by the person responsible for undertaking or supervising the lighting upgrade. This person may be the ACP, project manager, the installer, or the licensed electrician who supervised the lighting upgrade (if the licensed electrician is not the installer). In all cases, the installation of the equipment has to be undertaken or supervised by a licensed electrician, and a signed Certificate of Compliance of Electrical Work (CCEW) must be produced.

a The new EUE included in Table A9.4 of Schedule A to the ESS Rule must meet the equipment requirements, as published by the Scheme Administrator. Refer to: www.ess.nsw.gov.au/Projects_and_equipment/Lighting_Technologies

For further information please refer to sections 4.2.2 (for building lighting) and 5.2.3 (for lighting for roads and public spaces) of this manual.

3.3 Section 3 – Declaration of compliance with AS/NZS 1680 and BCA requirements – Building lighting

Section 3 of the Evidence Pack requires ACPs to declare that the building lighting components of the implementation meet or exceed the relevant performance requirements, as discussed in section 3.7 of the Method Guide and required by clauses 9.4.1(b) and 9.4.1(c) of the ESS Rule. The declaration must be completed and signed by the person responsible for ensuring compliance with these requirements.

Section 3 also includes four parts (Parts A to D) which require ACPs to indicate whether certain performance requirements were considered, assessed and verified. ACPs must complete Part A, **either** Part B **or** C, **and** Part D. Completion of Part B or C depends on whether a lighting design software was used to design the upgrade. This also determines which method ACPs must use to verify compliance with AS/NZS 1680:

- Method A – the Design and Verification Approach (use Part B of Evidence Pack), or
- Method B – the Illumination Measurements Approach (use Part C of Evidence Pack).

The methods and the supporting evidence ACPs must collect are discussed in section 4 of this manual.

Where the building lighting components of the implementation are outside the scope of AS/NZS 1680, ACPs must apply to have another benchmark approved by the Scheme

Administrator.[28] The Scheme Administrator must approve this benchmark before an ACP can apply to register ESCs. Refer to section 3.7 of the Method Guide for more information.

3.4 Section 4 – Evidence of energy savings – Building lighting

Section 4 of the Evidence Pack is a checklist to confirm that ACPs have sufficient evidence to support their ESC calculations for the building lighting components of the implementation. It asks ACPs to confirm they have the supporting evidence collected to meet:

- general requirements
- calculation parameters evidence requirements, and
- other specific evidence requirements (such as BCA and AS/NZS 1680 compliance requirements).

Each requirement has multiple parameters and the checklist identifies the minimum evidence required for each parameter.[29] Some requirements include 'drop down' lists, where ACPs can choose from a range of different evidence options.

A detailed description of each piece of required evidence is provided in section 4 of this manual. A 'quick reference' table summarising the required evidence is provided in Appendix A of this manual.

Once the checklist has been completed and the required evidence compiled, this evidence must be attached to, or kept with, the Evidence Pack to support ESC creation.

3.5 Section 5 – Declaration of compliance with AS/NZ 1158 – Lighting for roads and public spaces

Section 5 of the Evidence Pack requires ACPs to declare that the lighting for roads and public spaces components of the implementation meet or exceed the relevant performance requirements, as required by clauses 9.4.1(b) and 9.4.1(g) of the ESS Rule. This section must be completed and signed by the person responsible for ensuring compliance with these requirements, and this person must meet the minimum training requirements for this role, as specified in section 3.8 of the Method Guide.

ACPs are also required to indicate whether the lighting for roads and public spaces components involve 'Vehicular traffic (Category V) lighting' or 'Pedestrian area (Category P) lighting'.

The supporting evidence ACPs need to collect for this section is discussed in section 5 of this manual.

28 Apply by email to ESS_Compliance@ipart.nsw.gov.au.
29 ACPs may need to collect additional evidence for more complex implementations.

3.6 Section 6 – Evidence of energy savings – Lighting for roads and public spaces

Section 6 of the Evidence Pack is a checklist confirming that ACPs have sufficient evidence to support ESC calculations for the lighting for roads and public spaces components of the implementation. It asks ACPs to confirm they have the supporting evidence collected to meet:

- general requirements
- calculation parameters evidence requirements, and
- other specific evidence requirements (such as AS/NZS 1158 compliance requirements).

Each requirement has multiple parameters, and the checklist identifies the minimum evidence required for each parameter.[30] Some requirements include 'drop down' lists, where ACPs can choose from a range of different evidence options.

A detailed description of each piece of required evidence is provided in section 5 of this manual. A 'quick reference' table summarising the required evidence is provided in Appendix B of this manual.

Once ACPs have compiled the checklist and collected all the required evidence, they must attach this evidence to the Evidence Pack to support ESC creation.

4 Minimum required records – Building lighting

As described in section 3.4, section 4 of the Evidence Pack is a checklist to be used to ensure ACPs have sufficient records to support the ESC calculations for all building lighting implementations.

This section provides more detail on the minimum documents ACPs must collect and attach to the Evidence Pack for each requirement. A 'quick reference' table summarising the evidence requirements is provided in Appendix A of this manual.

4.1 General requirements

ACPs must ensure they have the required records for each lighting upgrade prior to applying to register ESCs for an implementation**.** This will be checked during audit.

4.1.1 Nomination of energy saver

If the ACP is not the purchaser, the ACP must have a completed, signed nomination form from the purchaser nominating them as the energy saver, as outlined in section 3.1 of the Method Guide. ACPs can create a nomination form using the nomination form template[31] on the ESS website. ACPs are able to adjust the format of their nomination form to suit their own

30 ACPs may need to collect additional documentation for more complex implementations.
31 Available at: www.ess.nsw.gov.au/Accredited_Certificate_Providers/Templates.

business processes, however the wording must not be changed without approval from IPART.[32]

4.1.2 Implementation date

The implementation date is the date the lighting upgrade is completed. Table 4.1 lists the minimum records required to evidence the implementation date. ACPs only need one of these documents.

Table 4.1 Implementation date – minimum required records

Provide one of the following	
Document type	**Requirements**
Certificate of Compliance – Electrical Work (CCEW)	A signed and dated CCEW completed by the licensed electrician who undertook, or supervised the implementation. The CCEW must clearly show the date on which the implementation was completed and the implementation address.
Tax invoice	A valid tax invoice for the implementation. The tax invoice must: ▼ show the completion date and address ▼ identify the recipient ▼ identify the supplier (including their ABN), and ▼ provide a brief description of the equipment or service provided (itemised if possible).
Completion / Commissioning report	The report must: ▼ be produced by the party responsible for the commissioning of the upgraded lighting system ▼ clearly identify the location where the lighting upgrade occurred ▼ clearly identify the implementation date, and ▼ be signed by the person responsible for the commissioning of the upgraded lighting system.

4.1.3 Original energy saver (purchaser) and minimum co-payment

As outlined in section 3.2 of the Method Guide, the original energy saver is the purchaser.

The purchaser is the person who purchases or leases the goods or services that enable the relevant energy savings to be made. The purchaser cannot be:

- an ACP that is not the owner, occupier or operator of the relevant site, or
- a person who purchases or leases the goods or services for the purpose of reselling the end-user equipment, unless the resale will be an inclusion in a contract for the sale of land or a strata scheme lot.[33]

The Purchaser **must have paid** a net minimum of $5 per mega-watt hour (**MWh**) of (calculated) electricity savings (excluding GST) (**minimum co-payment**) for the goods and services making up the implementation. This minimum co-payment **must be made in full** before ACPs can apply to register ESCs. The purchaser must not be reimbursed for the required minimum co-payment by any party.[34]

32 *ESS Rule*, cl 5.2(b)(i) - Nomination must be made in a form and manner approved by the Scheme Administrator.
33 *ESS Rule*, cl 10.1 (definition of 'Purchaser').
34 *ESS Rule*, cl 9.4.1(e).

Future payment plans, partial payment and subsequent reimbursement are not permitted if they result in either:

- the minimum co-payment not being made in full before registration, or
- a reduction of the net amount paid below the required co-payment at any time after registration.

Table 4.2 below lists the minimum records required to evidence both the identity of the original energy saver and the minimum co-payment. IPART may require additional evidence, or conduct further compliance checks, including checking whether subsequent reimbursements have occurred that have reduced the net amount paid below the minimum co-payment amount.

Table 4.2 Original energy saver and minimum co-payment – minimum required records

Document type	Requirement
1. Nomination as energy saver (where the ACP is not the OES)	
Nomination form	The signed nomination form (as explained in section 4.1.1 above).
2. Co-payment requirement – provide both of the following	
Tax invoice **AND**	A tax invoice for the sale or lease clearly showing what the OES paid for the lighting upgrade. This will be used by the auditor to identify the OES and, in conjunction with other verification measures, show that the purchaser has paid a net minimum of $5 per MWh of electricity saved as a result of the lighting upgrade before the registration of any ESCs.
Sales ledger	A copy of, or extract from, a sales ledger clearly showing what the OES paid for the lighting upgrade. This will be used by the auditor, in conjunction with additional verification measures, to verify that the purchaser has paid a net minimum of $5 per MWh saved as a result of the lighting upgrade. The sales ledger, or extract, must be certified as true and correct by the purchaser and the ACP.

Notes:

- ACPs should note that auditors are expected to make direct contact with the OES to verify that the minimum net payment was made, and check whether a reimbursement was made, or offered, which reduced, or would reduce the net payment below the required amount.
- In kind payments are not an acceptable form of payment for the co-payment.

4.1.4 Energy savings calculations

ACPs can calculate energy savings using the *Commercial Lighting Calculation Tool*[35] (**CLCT**), or with their own calculation tool. If ACPs use their own tool, they should compare its outputs against those from the CLCT to check its accuracy. In either case, ACPs must keep a copy of the calculations and have them available for audit purposes.

ACPs can only use the CLCT if the baseline consumption is to be calculated using equation 7 of the ESS Rule. If the baseline consumption must be calculated using equation 8 of the ESS Rule, ACPs cannot use the CLCT.

35 Available at: www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lightingwww.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lighting.

Table 4.3 shows the documents ACPs must keep as evidence supporting their calculations. Further detail on the baseline determination is provided in section 4.2 below.

Table 4.3 Energy savings calculation – minimum required records

Provide one of the following	
Document type	**Requirement**
IPART issued CLCT	ACPs must keep a copy of the report showing the inputs and outputs with each Evidence Pack. The electronic copy must be available at audit.
ACP's own calculation tool (if applicable)	ACPs must keep a copy of the tool/report showing the inputs and outputs of the calculation with each Evidence Pack.

4.1.5 Disposal of removed or replaced equipment

ACPs are responsible for ensuring that lighting equipment removed or replaced during the lighting upgrade is disposed of appropriately.

The ACP must not refurbish, re-use or resell end-user equipment. Furthermore, if the implementation:

- is in a metropolitan levy area (ie, an area with a postcode listed in Table A25 of Schedule A to the ESS Rule), and
- has an implementation date on or after 15 May 2016,

any lighting equipment containing mercury must be recycled in accordance with the recycling requirements of a recycling program such as 'Fluorocycle' or equivalent.[36]

ACPs must collect evidence, such as a recycling receipt or certificate, to demonstrate they have complied with this requirement.

4.2 Calculation parameter evidence requirements

The energy savings from an implementation are calculated using the details of the pre-implementation and post-implementation lighting systems. ACPs must keep evidence supporting each of the calculation parameters, as discussed below.

ACPs wishing to propose alternative evidence should contact the Scheme Administrator by emailing ESS_Compliance@ipart.nsw.gov.au. The Scheme Administrator will consider the proposal and if accepted, it will be included in the next regular update of this manual.

4.2.1 Baseline determination

To determine the baseline energy consumption, ACPs must use either equation 7 or equation 8 of the ESS Rule, depending on which of the following scenarios apply.

36 Further information about Fluorocycle is available at: www.fluorocycle.org.au/.

Scenario 1

If the lighting upgrade is part of a refurbishment that would not otherwise need to comply with Part J6 of the BCA, had the lighting upgrade component of the refurbishment not occurred, ACPs must use equation 7 of the ESS Rule.

Scenarios 2 and 3

If the lighting upgrade is part of a refurbishment that would otherwise need to comply with Part J6 of the BCA, there are two possible scenarios:

- Scenario 2 – if the Illumination Power Density (**IPD**) of the existing lighting is less than or equal to the maximum IPD allowed under Part J6 of the BCA, had the lighting upgrade component of the refurbishment not occurred, ACPs must use equation 7 of the ESS Rule.
- Scenario 3 – if the IPD of the existing lighting is greater than the maximum IPD allowed under Part J6 of the BCA, had the lighting upgrade component of the refurbishment not occurred, ACPs must use equation 8 of the ESS Rule.

The BCA provides a lighting calculation tool[37] which ACPs can use to calculate the IPD of the existing lighting, in accordance with Part J6 of the BCA.

ACPs are also required to collect the evidence outlined in Table 4.4 below to support the baseline determination.

Table 4.4 Baseline determination – minimum required records

Provide each of the following that is relevant to applicable scenarios	
Document type	**Requirement**
BCA declaration (scenarios 1, 2 and 3)	The BCA declaration included in section 3 of the Evidence Pack.
Lighting diagram or floor plan (scenarios 1, 2 and 3)	A professionally drawn lighting diagram[38] or floor plan of the area. The diagram must be accurately dimensioned to allow for calculation of the room area.
Copy of the development consent/certificate (scenarios 2 and 3)	The development consent/certificate showing the date it was issued.
IPD calculations (for scenarios 2 and 3)	IPD calculations as part J6 of the BCA performed by the lighting upgrades solution provider, showing whether the existing lighting meets the maximum IPD requirements of the BCA Part J6 or not.

4.2.2 Lamp type and Nominal Lamp Power

ACPs need to provide evidence of the lamp type(s) and Nominal Lamp Power (**NLP**) of both the pre-existing lighting system (ie, **pre-implementation**) and the upgraded lighting system (ie, **post-implementation**). ACPs need to provide additional evidence if the upgrade involves modifying fluorescent luminaires to accommodate LED tubes.

37 Refer to: www.abcb.gov.au and search for 'lighting calculator'.

38 A **Professionally drawn or drafted diagram –** diagram or plan drafted using accepted industry conventions, symbols, perspectives, units of measurements and notations systems which are usually generated by a professional draftsperson or with the aid of a Computer Aided Design (CAD) system.

Pre-implementation lamp type and NLP

ACPs need to provide one or more document types listed in Table 4.5 that clearly identify the pre-implementation lamp type and NLP.

If the pre-implementation lighting equipment is an ELT,[39] ACPs must use a Lamp Circuit Power (**LCP**) value accepted by the Scheme Administrator in calculating the energy savings. In this situation there are two possible scenarios:

- the pre-implementation lighting equipment is on the public list of accepted ELTs, and ACPs may use the LCP value on the public list,[40] or
- the pre-implementation lighting equipment is **not** on the public list of accepted ELTs. In this case, ACPs need to apply for acceptance of the ELT but do not need to follow the complete ELT approval process.[41]

Table 4.5 Pre-implementation lamp type and NLP – minimum required records

Provide one or a combination of the of the document types below	
Document type	**Requirement**
Geo-tagged[42] photos	Photographs of the existing lamps. The photos must: ▼ be clear and in focus ▼ include any relevant markings ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates. This should be stored in the metadata and generated automatically by the device used to take the photos. *If the photograph is to be used as evidence of NLP, the photograph must show the removed lamps with any markings showing the NLP.*
Asset register	Extracts from an asset register showing the existing lighting at the site and signed by the original energy saver. The extract(s) must be certified as true and correct by the purchaser.
Lighting diagram	A professionally drawn lighting diagram showing the location and type of each luminaire or lamp. The type of lamp can be shown on the diagram or through the use of a legend. *If the lighting diagram is to be used as evidence of the NLP, it must clearly show the NLP of each lamp type.*
Disposal receipt	A receipt issued by a recycler or collector responsible for the disposal of the original lamps. The receipt must show: ▼ an itemised breakdown of the disposed equipment (showing the lamp type), and ▼ the date they were received.
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by a licensed electrician. It must clearly show the type of lamp that was removed and its NLP.

Post-implementation lamp type and NLP

ACPs need to provide one or more of the document types listed in Table 4.6 that clearly identify the post-implementation lamp type and NLP. If the post-implementation lighting

39 As listed in Table A9.3 of Schedule A to the ESS Rule.

40 ACPs can access this list and register to use a product on that list and its associated LCP through the ELT Portal, available at: www.ess.nsw.gov.au/Projects_and_equipment/Lighting_Technologies/Using_Lighting_Technologies_for_Commercial_Lighting.

41 For more information email ESS_lighting@ipart.nsw.gov.au.

42 Geo-tagging is the process of adding geographical identification metadata to a photograph. This is done by assigning at least latitude and longitude to the image.

equipment is an ELT,[43] ACPs can only use products that have been accepted by the Scheme Administrator (as outlined above).

Table 4.6 Post-implementation lamp type and NLP – minimum required records

Provide one or a combination of the document types below	
Document type	**Requirement**
Geo-tagged photos	Photographs of the existing lamps. Photos must: ▼ be clear and in focus ▼ include any relevant markings ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos). *If the photograph is to be used as evidence of the NLP, it must clearly show the NLP marked on the lamp.*
Manufacturer's datasheet	An official specification or data sheet from the manufacturer showing the lamp type. *If the Datasheet is to be used as evidence of the NLP, it must clearly show the specific NLP for each lamp type.*
Lighting diagram	A professionally drawn lighting diagram showing the location and the type of each luminaire or lamp. Note: The type of lamp can be shown on the diagram or through the use of a legend. *If the lighting diagram is to be used as evidence of the NLP, it must clearly show the NLP for each lamp type.*
Tax invoice	A valid tax invoice for the work carried out. It must: ▼ contain an itemised list of the lamps provided and/or installed ▼ identify the recipient, and ▼ identify the supplier (including their ABN).
'As Built' lighting model / drawing	The 'As Built' Lighting Model/Drawing must: ▼ be provided by the party completing the lighting upgrade, and ▼ clearly show the type of lamp. *If the As Built Lighting Model/Drawing is to be used as evidence of the NLP, it must clearly show the NLP for each lamp type.*
Laboratory test report	A test report issued by a NATA[44] (or equivalent) laboratory clearly showing the NLP.
Registered information	Data from an independent organisation such as MEPS[45] or Lighting Council of Australia showing the NLP.
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by the licensed electrician who undertook the work. It must clearly show the type of lamp that was installed.

Modification to fluorescent luminaires to accommodate LED linear lamps

To create ESCs from implementations that involve newly modified luminaires with LED linear lamps (LED tubes), ACPs must have the modified luminaire including the LED linear lamp accepted as meeting the equipment requirements for 'Modified Luminaire – LED Linear Lamp'.[46] Effectively, the Scheme Administrator treats the modified luminaire as if it is a new product. ACPs need to provide testing, certification, compliance and supporting documentation for this luminaire to IPART for assessment.

43 As listed in Table A9.3 of Schedule A to the ESS Rule.
44 National Association of Testing Authorities.
45 Minimum Energy Performance Standards.
46 *ESS Rule*, Table A9.3 of Schedule A to the ESS Rule

Please refer to the ESS website for guidance documents with additional information related to the use and acceptance of Modified Luminaires.[47]

Maintained Emergency Lighting

To create ESCs from implementations that involved maintained emergency lighting, ACPs are required to provide a professionally drafted electric lighting design diagram, compliant with AS/NZS 2293.1. To clarify, the diagram (for both pre and post implementation) must show how the maintained emergency lighting operates.

Maximum NLP value

The following equipment classes specified in Table A9.1 of Schedule A to the ESS Rule have a maximum NLP value that can be used when calculating the LCP value used in the energy savings calculation:

- Tungsten halogen lamps (ELV[48]) or Infrared coated (IRC) halogen lamps (ELV),
- Metal halide lamps (when installed indoors), and
- Mercury vapour lamps (when installed indoors).

4.2.3 Control gear (ballasts/transformers)

If the lighting upgrade involves independent control gear, ACPs must collect evidence of the pre-implementation and post-implementation control gear. This evidence must clearly identify:

- the type of driver, transformer or ballast used (eg, electronic/magnetic), and
- the Energy Efficiency Index (**EEI**) classification for fluorescent ballasts, where available.

For the pre-implementation gear, ACPs need to provide two of the document types shown in Table 4.7. For the post-implementation gear, ACPs need to provide two of the document types shown in Table 4.8.

Table 4.7 Pre-implementation control gear – minimum required records

Provide two of the following	
Document type	**Requirement**
Geo-tagged photos	Photographs of the control gear. The photos must: ▼ be clear and in focus ▼ include any relevant markings such as the EEI ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos).
Asset register	Extracts from an asset register showing the pre-upgrade control gear at the site and signed by the original energy saver. The extract(s) must be certified as true and correct by the original energy saver.

47 Available at: www.ess.nsw.gov.au/Projects_and_equipment/Lighting_Technologies/Commercial_Lighting_Requirements.

48 *ESS Rule*, cl 10.1 (Definition of 'ELV')

Provide two of the following	
Document type	**Requirement**
Lighting diagram	A professionally drawn lighting diagram showing the location and type of the control gear. Note: The type of control gear can be shown on the diagram or through the use of a legend.
Disposal receipt	A receipt issued by a recycler or collector responsible for the disposal of the original control gear. The receipt must show: ▼ an itemised breakdown of the disposed equipment (showing the control gear type), and ▼ the date it was received.
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by the licensed electrician who undertook the work. It must clearly show the type of control gear that was removed.

Table 4.8 Post-implementation control gear – minimum required records

Provide two of the following	
Document type	**Requirement**
Geo-tagged photos	Photographs of the control gear. The photos must: ▼ be clear and in focus ▼ include any relevant markings such as the EEI ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos).
Manufacturer's datasheet	A specification or data sheet from the manufacturer identifying the type of control gear.
Lighting diagram	A professionally drawn lighting diagram showing the location and type of the control gear. Note: The type of control gear can be shown on the diagram or through the use of a legend.
Tax invoice	A valid tax invoice for the work carried out. It must: ▼ contain an itemised list of the control gear provided or installed ▼ identify the recipient, and ▼ identify the supplier (including their ABN).
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by a licensed electrician. It must clearly show the type of control gear that was installed.

4.2.4 Lamp quantities

ACPs must collect evidence of the number of lamps installed **in each space type** of the pre-implementation lighting system and post-implementation lighting system.

Pre-implementation lighting quantities

ACPs must provide a lighting diagram, and at least one of the supporting documents shown in Table 4.9 that clearly identifies the pre-implementation lamp quantities.

Table 4.9 Pre-implementation lamp quantities – minimum required records

Provide one mandatory document, and at least one of the supporting documents	
Document type	**Requirement**
Mandatory document	
Lighting diagram	A professionally drawn lighting diagram showing the location and type of each luminaire or lamp that is being replaced. Note: The type of lamp can be shown on the diagram or through the use of a legend.
Supporting documents	
Asset register	Extracts from an asset register or schedule showing the number of pre-upgrade lamps installed at the site and signed by the purchaser (OES).
Geo-tagged photos	The photos must be the original (pre-upgrade) lamps lined up to allow for counting. The photos must: ▼ be clear and in focus ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos).
Disposal receipt	A dated disposal receipt listing the number of lamps disposed of. This receipt must be signed by the equipment removing contractor.
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by a licensed electrician. It must clearly show the type and number of lamps that were removed.

Post-implementation lighting quantities

ACPs must provide a lighting diagram, and at least one of the supporting documents shown in Table 4.10 that clearly identifies the post-implementation lamp quantities.

Table 4.10 Post-implementation lamp quantities – minimum required records

Provide the one mandatory document, and at least one of the supporting documents	
Document type	**Requirement**
Mandatory document	
Lighting diagram	A professionally drawn lighting diagram showing the location and the type of each luminaire or lamp. Note: The type of lamp can be shown on the diagram or through the use of a legend.
Supporting documents	
Geo-tagged photos	The photos of the lamps must: ▼ be clear and in focus ▼ show the upgraded lamps in the space ▼ show the number of lamps that have been installed ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos).
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by a licensed electrician. It must clearly show the type and number of lamps that were installed.
Tax invoice	A signed and dated tax invoice showing the type and number of lamps purchased.

4.2.5 Lighting control systems

If the lighting upgrade involves a lighting control system for which there is a control multiplier in Table A10.4 or A10.4A of Schedule A to the ESS Rule, ACPs must collect evidence showing:

- all lighting control devices that are part of the lighting control system
- the type of lighting control system, and
- the lamps/luminaires controlled by the lighting control system.

If the lighting control system is changed as part of the lighting upgrade, then ACPs must collect evidence of the control system both pre-implementation and post-implementation.

ACPs must provide a lighting diagram, and at least one of the supporting documents shown in Table 4.11 for the pre-implementation lighting control systems and for the post-implementation lighting control system (if changed).

Table 4.11 Lighting control systems – minimum required records

Provide the one mandatory document and at least one of the supporting documents	
Document type	**Requirement**
Mandatory document	
Lighting diagram	A professionally drawn lighting diagram showing the location and type of the control system. Note: The type of control system can be shown on the diagram or through the use of a legend. The diagram must clearly show the lighting switch groups controlled by the control system.
Supporting documents	
Geo-tagged photos	The photographs must show the type of lighting control system installed. The photos must: ▼ be clear and in focus ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos).
Certificate of Compliance – Electrical Work (CCEW)	A CCEW signed and dated by the licensed electrician who undertook the work, listing the type of control system installed or removed.
Manufacturer datasheet	A datasheet or specification from the manufacturer identifying the type of control system.

Low power mode LCP (multi-mode lighting)

Control Multiplier B in Table A10.4A of Schedule A to the ESS Rule may be used to calculate energy savings from lighting systems that operate in a low power mode when the space is unoccupied.

$LCP_{low\ power}$ is the low power mode LCP which occurs when the space is unoccupied. This is determined at the time of the implementation and must not be adjusted after implementation. $LCP_{low\ power}$ does not need to be approved by the Scheme Administrator, but it must be supported by evidence and verified during audit.

4.2.6 Air conditioning

If the upgraded lighting space has air conditioning available, ACPs must collect evidence showing the air conditioning arrangements for that space where the lighting upgrade has taken place, including vents or outlet locations (refer to Table 4.12 below). This will support the use of the air conditioning multiplier in the energy savings calculations.

Table 4.12 Air conditioning – minimum required records

Provide one of the following	
Document type	**Requirement**
Geo-tagged photos	The photos must clearly show the air conditioner (including vents and outlets) in the space where the lighting upgrade occurred. The photos must: ▼ be clear and in focus ▼ include date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates. This should be stored in the metadata and generated automatically by the device used to take the photos.
Lighting diagram	The lighting diagram must: ▼ clearly show the location of each air conditioning unit/outlet, and ▼ be signed by the ACP and the original energy saver.
HVAC[49] plan	The HVAC plan must: ▼ clearly show the area where the lighting upgrade occurred and the location of each air conditioning unit/outlet, ▼ the type of refrigerant used, and ▼ be signed by the ACP and the original energy saver.

4.2.7 Asset Lifetimes for lighting upgrades

If the lighting upgrade involves the replacement of the luminaire or control gear (not integrated into the lamp) the default asset lifetime is specified in Table A10.6 of Schedule A to the ESS Rule. The asset lifetimes are based on the building/space type category (defined in Tables A10.2 and A10.3 of Schedule A to the ESS Rule) and postcode (the values are higher for regional sites). [50]

If the lighting upgrade involves lamps that can be easily replaced with the original lamp (ie, only the lamp has been replaced) the asset lifetime is determined as per Table A10.1 of Schedule A to the ESS Rule. In this situation, ACPs must provide evidence of the lifetime of the lamp (refer to Table 4.13 below).

If the lighting upgrade **only** involves the installation of a control system, as defined in Table A10.4 of Schedule A to the ESS Rule, the maximum asset lifetime is five years.

49 Heating, ventilation and air conditioning

50 A regional site is one where the regional network factor in Table A24 of Schedule A to the ESS Rule is greater than 1.

Table 4.13 Lifetime of upgraded lamps – minimum required records[a]

Provide one of the following	
Document type	**Requirement**
Manufacturer datasheet	An official specification or data sheet from the manufacturer showing the nominal lamp lifetime in hours.
Laboratory test report	A test report issued by a NATA (or equivalent) laboratory clearly showing the nominal lamp lifetime in hours.
Registered information	Data from an independent organisation such as MEPS showing the nominal lamp lifetime.

a For lamp only replacements under the ESS Rule, 30,000 hours is the maximum lamp lifetime.

4.3 Other specific evidence requirements

Building lighting upgrades must meet performance and other specific requirements. ACPs must collect evidence to verify the building lighting upgrade complies with these requirements.

4.3.1 AS/NZS 1680 compliance

Building lighting upgrades must meet or exceed the relevant requirements of AS/NZS 1680.[51]

Lighting solution compliance

To verify that the lighting upgrade complies with the standard, ACPs must use one of the following methods:

- **Method A – Design and verification approach.** This involves developing an AS/NZS 1680 compliant upgrade model using lighting design software, and then showing that the lighting upgrade was installed as designed.
- **Method B – Illumination measurements approach.** This involves taking measurements showing that the lighting upgrade complies with AS/NZS 1680 and confirming that glare control and illumination uniformity has been assessed.

As evidence of compliance, ACPs must provide a signed declaration of compliance with AS/NZS and BCA requirements (ie, section 3 of the Evidence Pack) and the two supporting documents for the method used, as detailed in Table 4.14 below.

ACPs also need to attach evidence of the relevant qualifications for the person verifying compliance of the lighting upgrade, depending upon the method used.

51 *ESS Rule*, cl 9.4.1(c).

Table 4.14 AS/NZS 1680 compliance – minimum required records

Provide one mandatory document and both supporting documents relevant to the method used	
Document type	**Requirement**
Mandatory document	
Declaration of compliance with AS/NZS 1680 and BCA requirements	A signed declaration from the lighting upgrade solution provider stating that AS/NZS 1680, glare and illuminance uniformity requirements were satisfied in the delivery of the lighting upgrade. This declaration template is provided at section 3 of the Evidence Pack. The person verifying and approving the lighting upgrade must have the relevant qualifications as specified in the Method Guide. This will be checked at audit.
Supporting documents for Method A	
AS/NZS 1680 compliant design (Design approach)	A model generated by the lighting upgrade solution provider (using a specialised computer lighting design software) showing that the lighting upgrade complies with the relevant AS/NZS 1680 requirements. The model must be accurate in accounting for lumen depreciation, control of glare and illuminance uniformity.
Commissioning declaration (Design approach)	A commissioning declaration from the installer, licensed electrician or project manager who performed or supervised the lighting upgrade, stating that the lighting upgrade was commissioned and implemented as designed.
Supporting documents for Method B	
Illumination measurements (Measurement method)	Illumination measurements carried out in accordance with Appendix B of AS/NZS 1680 by the person responsible for the lighting upgrade. Allowance must be made for lumen depreciation, control of glare and illuminance uniformity.
Lighting diagram (Measurement method)	A professionally drawn lighting diagram showing the locations where the lux measurements were taken. Note: The lux values at these measurement points must be shown either on the diagram or through the use of a legend.

If the lighting upgrade is outside the scope of AS/NZS 1680, and the ACP has applied to have another benchmark approved by the Scheme Administrator, the ACP must provide evidence of the approval of this other benchmark at the time of audit. The ACP will also need to collect documentation showing the lighting upgrade meets the other benchmark.

Electrical compliance

A Certificate of Compliance - Electrical Work (**CCEW**) must be kept as evidence that the lighting upgrade is compliant with electrical safety and performance requirements. The certificate must:

- be completed, signed and dated by the electrician who performed or supervised the lighting upgrade, and
- include details of the work performed.

4.3.2 BCA classification and compliance

BCA compliance, IPD and safe movement requirements

Building lighting upgrades must comply with the relevant requirements of the BCA, including:

- IPD requirements in the BCA Part J6,[52] and
- safe movement requirements, as specified in BCA section F4.4 and AS/NZS 1680.[53]

ACPs will need to attach IPD calculations for each space after the lighting upgrade is completed. The Australian Building Codes Board provides a lighting calculation tool[54] to calculate whether the existing lighting system is compliant with Part J6 of the BCA.

As evidence of compliance, ACPs must provide a signed declaration of compliance with AS/NZS 1680 and BCA requirements (ie, section 3 of the Evidence Pack) and their IPD calculations, as detailed in Table 4.15 below.

Table 4.15 BCA compliance, IPD and safe movement – minimum required records

Provide both of the following	
Document type	**Requirement**
Mandatory document	
Declaration of compliance with AS/NZS 1680 and BCA requirements	A signed declaration from the lighting upgrade solution provider stating that the BCA requirements of Part J6 and section F4.4 were satisfied. A template for this declaration is provided in section 3 of the Evidence Pack. It also references AS/NZS 1680.
IPD calculations	The calculations showing the IPD of the space after the lighting upgrade. The resulting IPD for each area must either be equal to, or less than, the maximum allowed under Part J6 of the BCA.

BCA – Space type, building classification, annual operating hours of the site and building/space group category

ACPs need to provide evidence of the space type(s) or building classification for each space where the lighting upgrade took place, to verify that:

- the correct annual operating hours for each space have been used to calculate energy savings, and
- the correct building/space group category has been used to determine the asset lifetime and to calculate energy savings.

ACPs must provide:

- geo-tagged photos for the outside part of the premises and interior photos of the upgraded areas (mandatory evidence), and
- one additional piece of supporting evidence, either:

52 *ESS Rule*, cl 9.4.1(c)(iii).
53 *ESS Rule*, cl 9.4.1(c)(ii).
54 Refer to: www.abcb.gov.au and search for 'lighting calculator'.

- of the building classification – Table 4.16 provides guidance of this evidence, or
- of the space type(s) – Table 4.17 provides guidance on this evidence.

ACPs proposing to use supporting evidence that is not included in these tables, should email the Scheme Administrator for further guidance at ESS_Compliance@ipart.nsw.gov.au. The Scheme Administrator considers such proposals on a case-by-case basis. For example, in some situations, the Scheme Administrator may accept construction certificates issued for building works in the building or part of the building where the lighting upgrade occurred if they include the building classification. Alternatively, the Scheme Administrator may accept a classification of a building or part of a building that an independent and suitably qualified person has determined for ESS purposes or in some cases; the Scheme Administrator may accept webpage printouts to confirm the building classification or the space type according to its use.

When a building or space subject to a lighting upgrade can be classified under different or multiple classifications, the principles laid out in BCA clause A.3.3 and A.3.4 under Part A3 must be applied. These clauses are reproduced in Box 4.1 below.

Box 4.1 BCA clauses that must be applied when a building or space can be classified under different or multiple classifications

"A3.3 Multiple classification

Each part of the building must be classified separately, and -

(a) (i) where parts have different purposes – if not more than 10% of the *floor area*[A] of a *storey*[B], being the minor use, is used for a purpose which is a different classification, the classification applying to the major use may apply to the whole storey; and

(ii) the provisions of (i) do not apply when the minor use is a laboratory of Class 2,3 or 4 part; and

(b) a plant room, machinery room, lift motor room, boiler room or the like must have the same classification as the part of the building in which it is situated; and

(c) if a building has parts of different classification, each part must comply with all the relevant provisions for its classification.

Part A3.4 – Parts with more than one classification

(a) Notwithstanding A3.3, a building or part of a building may have more than one classification applying to the whole building or to the whole of that part of the building.

(b) If a building or part of a building has more than one classification applying to the whole building or part in accordance with (a), that building or part must comply with all the relevant provisions of the BCA for each classification."

A **Floor Area** means: In relation to a building – the total area of all storeys; and
- (a) In relation to a storey – the area of all floors of that storey measured over the enclosing walls, and includes:
  - i. The area of a mezzanine within the storey, measured within the finished surfaces of any external walls; and
  - ii. The area occupied by any internal walls or partitions, any cupboard, or other built-in furniture, fixture or fitting; and
  - iii. If there is no enclosing wall, an area which has a use that:
    1. Contributes to the fire load; or
    2. Impacts on the safety, health or amenity of the occupants in relation to the provisions of the BCA; and
- (b) In relation to a room – the area of the room measured within the finished surfaces of the walls, and includes the area occupied by any cupboard or other built-in furniture, fixture or fitting; and
- (c) In relation to a fire compartment – the total area of all floors within the fire compartment measured within the finished surfaces of the bounding construction, and if there is no bounding construction, includes an area which has a use which contributes to the fire load; and
- (d) In relation to an atrium – the total area of all floors within the atrium measured within the finished surfaces of the bounding construction and if no bounding construction, within the external walls.

B **Storey** means a space within a building which is situated between one floor level and the next floor level above, or if there is no floor above, the ceiling or roof above, but not:
- (a) a space that contains only:
  - i. a lift shaft, stairway or meter room; or
  - ii. a bathroom, shower room, laundry, water closet, or other sanitary compartment; or
  - iii. accommodation intended for more than 3 vehicles; or
  - iv. a combination of the above, or
- (b) a mezzanine.

Table 4.16 BCA building classification – Minimum required records

Building Classification and Building/Space Group Category[55]	AOH (Annual Operating Hours)	Supporting evidence requirement (Provide one of the following)
BCA Class 2 buildings (common areas) Building/Space Group: A (Others)	7,000	▼ Site plan clearly showing the common area. ▼ Professionally drafted Reflected Ceiling Plan[56] (RCP). ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
BCA Class 3 buildings (common areas) Building/Space Group: A (Others)	7,000	▼ Site plan clearly showing the common area. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification. ▼ For accommodation facilities for the aged, children or people with disabilities, funded by the government, the National Approved Provider System ID (NAPS ID), or a copy of the Department of Social Services (DSS) published list of low-level care facilities, in which the facility subject to the upgrade is listed. ▼ For non-government funded care facilities (eg, retirement villages), evidence that the land is registered to be used as a retirement village obtained through the Fair Trading website, or evidence that the village is accredited under the Retirement Village Association (RVA).
BCA Class 3 buildings (other than common areas) Building/Space Group: A (Others)	3,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification. ▼ For accommodation facilities for the aged, children or people with disabilities, funded by the government, the National Approved Provider System ID (NAPS ID), or a copy of the Department of Social Services (DSS) published list of low-level care facilities, in which the facility subject to the upgrade is listed. ▼ For non-government funded care facilities (eg, retirement villages), evidence that the land is registered to be used as a retirement village obtained through the Fair Trading website, or evidence that the village is accredited under the Retirement Village Association (RVA).

55 As per Table A10.3 of Schedule A to the ESS Rule refer to Part A3 of the BCA.
56 Refer to definition of 'Professionally drafted plan' in Table 4.4 of this manual.

Building Classification and Building/Space Group Category[55]	AOH (Annual Operating Hours)	Supporting evidence requirement (Provide one of the following)
BCA Class 5 buildings Building/Space Group: B (Office)	3,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
BCA Class 6 buildings Building/Space Group: D (Retail)	5,000	▼ Regulatory or contractual operating licence which relates to the classification of the building. ▼ Site plan. ▼ Web page showing service provided and the address. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
BCA Class 7a buildings **(open air car parks)**[57] Building/Space Group: C (Industrial)	4,500	▼ Site plan showing the location of the lights. ▼ Regulatory or contractual operating licence which relates to the classification of the building (if applicable).
BCA Class 7a buildings **(undercover car parks)** Building/Space Group: C (Industrial)	7,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Regulatory or contractual operating licence which relates to the classification of the building (if applicable). ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
BCA Class 7b buildings Building/Space Group: A (Others)	5,000	▼ Regulatory or contractual operating licence which relates to the classification of the building (where applicable). ▼ Site plan. ▼ Web page showing service provided and the address. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.

57 'Open air car-park' is classified as lighting for roads and public spaces and the upgrade must comply with the requirements for lighting for roads and public spaces, as the lighting upgrade must provide safe movement of vehicles and pedestrians.

Building Classification and Building/Space Group Category[55]	AOH (Annual Operating Hours)	Supporting evidence requirement (Provide one of the following)
BCA Class 8 buildings **(other than ANZSIC Division C, Manufacturing)** Building/Space Group: A (Others)	3,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
BCA Class 8 buildings **(ANZSIC Division C, Manufacturing)** Building/Space Group: C (Industrial)	5,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Company Annual Report. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
BCA Class 9a and 9c buildings Building/Space Group: A (Others)	6,000	**For Health Care buildings:** ▼ Fire Rating Certificate or fire safety review certificate showing the building classification. **Public Health Care building:** ▼ Copy of the public Health Care Facilities list published by the NSW Health Department in its website showing the facility subject to the upgrade. **Private Health Care building:** ▼ Evidence of the facility being licensed to operate under the *Private Health Facilities Act 2007*[58]. **For Aged-Care buildings:** ▼ Fire Rating Certificate or fire safety review certificate showing the building classification. ▼ For accommodation facilities for the aged, funded by the government, the National Approved Provider System ID (NAPS ID), or a copy of the Department of Social Services (DSS) published list of high-level care[59] facilities, in which the facility subject to the upgrade is listed. ▼ For non-government funded aged- care facilities, evidence that the land is registered to be used as a retirement village obtained through the Fair Trading website, or evidence that the village is accredited under the Retirement Village Association (RVA).

58 Since 1 September 2010, all licensed private health facilities have been required to comply with the *Private Health Facilities Act 2007* and the licensing standards in the *Private Health Facilities Regulation 2010.* The legislation specifies 18 classes of facilities including, for example: Anaesthesia class, Interventional Neuroradiology class, Radiotherapy class, Rapid Opioid Detoxification class and the Gastrointestinal Endoscopy class.

59 High-Level care means that residents need 24-hour nursing in addition to the low-care needs.

Building Classification and Building/Space Group Category[55]	AOH (Annual Operating Hours)	Supporting evidence requirement (Provide one of the following)
BCA Class 9b buildings Building/Space Group: A (Others)	2,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
BCA Class 10b buildings Building/Space Group: A (Others)	1,000	▼ Site plan. ▼ Professionally drafted RCP.
Roads and public spaces Building/Space Group: E(Public)	4,500	▼ Document(s) showing that the design of the lighting upgrade for the road and/or public space has to be within the scope of the AS/NZS 1158 Standard for pedestrian areas (Category P) and/or vehicular traffic (Category V) lighting purposes (eg, a Council or Public Authority contract). ▼ Geo-tagged photos accompanied with an aerial map of the road and/or public space area.
Traffic signals Building/Space Group: E(Public)	8,760	▼ Lighting upgrades for this building classification require a different RESA accreditation. Please contact the Scheme Administrator for additional guidance.

Table 4.17 Space type – minimum required records

Space Type[60] and Building/Space Group Category[61]	Annual operating hours	Supporting evidence requirement (provide one of the following)
Auditorium, church and public hall Building/Space Group: A (Others)	2,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Board room and conference room Building/Space Group: B (Office)	3,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Carpark – general (undercover) and Car Park - entry zone (first 20 m of travel) Building/Space Group: C (Industrial)	7,000	▼ Site plan. ▼ Professionally drafted RCP showing the entry zone. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Carpark – general (open air) Building/Space Group: C (Industrial)	4,500	▼ Site plan showing the location of the lights. ▼ Regulatory or contractual operating licence which relates to the classification of the building (if applicable). ▼ Geo-tagged photos accompanied with an aerial map of the carpark.
Common rooms, spaces and corridors in a Class 2 building Building/Space Group: A (Others)	7,000	▼ Site plan clearly showing the common area. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Control room, switch room, and the like Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA classification of the surrounding space	▼ Refer to BCA classification requirements.

60 Further guidance about space types is available in the BCA Guides available at www.abcb.gov.au.
61 As per Table A10.2 of Schedule A to the ESS Rule.

Space Type[60] and Building/Space Group Category[61]	Annual operating hours	Supporting evidence requirement (provide one of the following)
Corridors Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA classification of the surrounding space	▼ Refer to BCA classification requirements.
Courtroom Building/Space Group: A (Others)	2,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Dormitory of a Class 3 building used for sleeping only or sleeping and study Building/Space Group: A (Others)	3,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Entry lobby from outside the building Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA classification of the surrounding space.	▼ Refer to BCA classification requirements.
Health-care - children's ward, examination room, patient ward, all patient care areas including corridors where cyanosis lamps are used. Building/Space Group: A (Others)	6,000	▼ Fire Rating Certificate or fire safety review certificate showing the building classification. ▼ **Public Health Care building**: Copy of the public Health Care Facilities list published by the NSW Health Department in its website showing the facility subject to the upgrade. ▼ **Private Health Care**: evidence of the facility being licensed to operate under the Private Health Facilities Act 2007 and the Private Health Facilities Regulation 2010.
Kitchen and food preparation area Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA classification surrounding space	▼ Refer to BCA classification requirements.

Space Type[60] and Building/Space Group Category[61]	Annual operating hours	Supporting evidence requirement (provide one of the following)
Laboratory - artificially lit to an ambient level of 400 lx or more Building/Space Group: A (Others)	3,000	▼ Site plan. ▼ Professionally drafted RCP.
Library - stack and shelving area, reading room and general areas Building/Space Group: A (Others)	3,000	▼ Site plan. ▼ Professionally drafted RCP.
Lounge area for communal use in a Class 3 building or Class 9c aged care building Building/Space Group: A (Others)	7,000	**For Class 3 buildings:** ▼ Regulatory or contractual operating licence which relates to the classification of the building. ▼ Site plan clearly showing the common area. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification. **For Class 9c buildings:** ▼ Site plan clearly showing the common area ▼ For accommodation facilities for the aged, funded by the government, the National Approved Provider System ID (NAPS ID), or a copy of the Department of Social Services (DSS) published list of high-level care facilities, in which the facility subject to the upgrade is listed. ▼ For non-government funded aged- care facilities, evidence that the land is registered to be used as a retirement village obtained through the Fair Trading website, or evidence that the village is accredited under the Retirement Village Association (RVA).
Maintained emergency lighting Building/Space Group: A (Others)	8,500	▼ Document showing statutory legal requirements for safety or of the related purpose. ▼ Electric lighting design (compliant with AS/NZS 2293.1.). Refer to section 4.2.2 of this manual for further information.
Museum and gallery - circulation, cleaning and service lighting Building/Space Group: A (Others)	2,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Office Building/Space Group: B (Office)	3,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.

Space Type[60] and Building/Space Group Category[61]	Annual operating hours	Supporting evidence requirement (provide one of the following)
Plant room Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA classification of the surrounding space	▼ Refer to BCA classification requirements.
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks Building/Space Group: D (Retail)	5,000	▼ Regulatory or contractual operating licence which relates to the classification of the building (where applicable). ▼ Site plan. ▼ Web page printouts showing service provided and the address. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Retail space including a museum and gallery whose purpose is the sale of objects Building/Space Group: D (Retail)	5,000	▼ Published opening hours. ▼ Site plan. ▼ Web page printouts showing service provided and the address. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
School - general purpose learning areas and tutorial rooms Building/Space Group: A (Others)	3,000	▼ Site plan. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Sole-occupancy unit of a Class 3 building Building/Space Group: A (Others)	3,000	▼ Site plan. ▼ Professionally drafted RCP.
Sole-occupancy unit of a Class 9c aged care building Building/Space Group: A (Others)	6,000	▼ For accommodation facilities for the aged, funded by the government, the National Approved Provider System ID (NAPS ID), or a copy of the Department of Social Services (DSS) published list of high-level care facilities, in which the facility, subject to the upgrade is listed. ▼ For non-government funded aged- care facilities, evidence that the land is registered to be used as a retirement village obtained through the Fair Trading website, or evidence that the village is accredited under the Retirement Village Association (RVA).

Space Type[60] and Building/Space Group Category[61]	Annual operating hours	Supporting evidence requirement (provide one of the following)
Storage with shelving no higher than 75% of the height of the aisle lighting Building/Space Group: A (Others)	5,000	▼ Regulatory or contractual operating licence which relates to the classification of the building (where applicable). ▼ Site plan. ▼ Web page printouts showing service provided and the address. ▼ Professionally drafted RCP.
Storage with shelving higher than 75% of the height of the aisle lighting Building/Space Group: A (Others)	5,000	▼ Regulatory or contractual operating licence which relates to the classification of the building (where applicable). ▼ Site plan. ▼ Web page printouts showing service provided and the address. ▼ Professionally drafted RCP. ▼ Fire Rating Certificate or fire safety review certificate showing the building classification.
Service area, cleaner's room and the like Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA Classification of the surrounding space	▼ Refer to BCA classification requirements.
Toilet, locker room, staff room, rest room and the like Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA classification of the surrounding space	▼ Refer to BCA classification requirements.
Wholesale storage and display area Building/Space Group: C (Industrial)	5,000	▼ Regulatory or contractual operating licence which relates to the classification of the building (where applicable). ▼ Site plan. ▼ Web page printouts showing service provided and the address. ▼ Professionally drafted RCP.
Other spaces not defined above Building/Space Group: Refer to Table A10.3 of Schedule A to the ESS Rule	Value in Table A10.3 of Schedule A to the ESS Rule for BCA classification of space	▼ Refer to BCA classification requirements.

Emerging Lighting Technologies and Special Lamp Circuit Power

The use of the following equipment in a lighting upgrade must be accepted for use by the Scheme Administrator prior to implementation:

- non-standard lighting equipment such as LEDs, induction lamps and emerging lighting technologies, and
- specific LCPs with a value different to the NLP for a standard lighting product.

Applications for acceptance of non-standard lighting equipment can be submitted via IPART's ELT Portal.[62]

For more information about non-standard lighting equipment, please refer to the ESS website[63] and the Lighting Equipment Requirements Guide[64].

Lighting quality statement

Once the lighting upgrade is implemented, ACPs must provide the purchaser with the *Commercial Lighting Post Implementation Declaration*[65] which includes the Lighting Quality Statement and recommended Maintenance Schedule. The Lighting Quality Statement declares that the relevant lighting requirements have been met for the lighting upgrade. The recommended Maintenance Schedule must be provided by the party responsible for the lighting installation ('lighting upgrade solution provider'), which may be the ACP or a company working with the ACP. The *Commercial Lighting Post Implementation Declaration* also requires the purchaser to confirm they have paid the $5 (excluding GST) per MWh minimum co-payment and are satisfied with the upgrade.

The *Commercial Lighting Post Implementation Declaration* is developed by the Scheme Administrator and is available on the ESS website.

ACPs must keep a copy of the signed lighting quality statement, maintenance schedule and signed customer declaration as evidence supporting their ESC claim. This evidence will be checked at audit and may be checked by the Scheme Administrator.

62 Available at: www.ess.nsw.gov.au/Projects_and_equipment/Lighting_Technologies.
63 Refer to: www.ess.nsw.gov.au/ELT.
64 Available at: www.ess.nsw.gov.au/Projects_and_equipment/Lighting_Technologies.
65 Available at: www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lighting.

5 Minimum required records – Lighting for Roads and Public Spaces

As outlined in section 3.6, section 6 of the Evidence Pack is a checklist confirming that ACPs have sufficient records to support their ESC calculations for all lighting for roads and public spaces components of the implementation.

This section provides more detail on document types ACPs must collect and attach to the Evidence Pack to meet each of these requirements. A 'quick reference' table summarising these evidence requirements is provided in Appendix B of this manual.

5.1 General requirements

ACPs must ensure they have the required records for each lighting upgrade prior to applying to register ESCs for an implementation. This will be checked during audits.

5.1.1 Nomination of energy saver

If the ACP is not the purchaser, the ACP must have a completed, signed nomination form from the purchaser nominating them as the energy saver. ACPs can create a nomination form using the nomination form template[66] on the ESS website. ACPs are able to adjust the format of their nomination form to suit their own business processes, however the wording must not be changed without approval from IPART.[67]

5.1.2 Implementation date

The implementation date is the date the lighting upgrade is completed. Table 5.1 lists the minimum records required to evidence the implementation date. ACPs only need one of these documents.

Table 5.1 Implementation date – minimum required records

Provide one of the following	
Document type	**Requirement**
Certificate of Compliance – Electrical Work (CCEW)	A signed and dated CCEW completed by the licensed electrician who undertook or supervised the implementation. The CCEW must, clearly showing the date on which the implementation was completed and the address (location details) of the implementation.
Tax invoice	A valid tax invoice for the implementation. The tax invoice must: ▼ show the completion date and address (location details) ▼ identify the recipient ▼ identify the supplier (including their ABN), and ▼ provide a brief description of the equipment or service provided (itemised if possible).

66 Available at: www.ess.nsw.gov.au/Accredited_Certificate_Providers/Templates.

67 *ESS Rule*, cl 5.2(b)(ii) Nomination must be made in a form and manner approved by the Scheme Administrator.

Provide one of the following	
Document type	**Requirement**
Completion / Commissioning report	The report must: ▼ be produced by the party responsible for the commissioning of the upgraded lighting system ▼ clearly identify the location where the lighting upgrade occurred, and ▼ clearly identify the implementation date, and ▼ be signed by the person responsible for the commissioning of the upgraded lighting system
Public Lighting inventory registers	An extract of the relevant public lighting inventory published by utility companies showing the post-implementation lighting equipment at the relevant geographic location and its installation date.

5.1.3 Original energy saver (purchaser) and minimum co-payment

As outlined in section 3.2 of the Method Guide, the original energy saver (**OES**) is the purchaser.

The purchaser is the person who purchases or leases the goods or services that enable the relevant energy savings to be made. The purchaser cannot be:

- an ACP that is not the owner, occupier or operator of the relevant site,[68] and
- a person who purchases or leases the goods or services for the purpose of reselling the end-user equipment, unless the resale will be an inclusion in a contract for the sale of land or a strata scheme lot.[69]

The purchaser **must have paid** a net minimum of $5 per mega-watt hour (**MWh**) of (calculated) electricity savings (excluding GST) (**minimum co-payment**) for the goods and services making up the implementation. The minimum co-payment **must be made in full** before ACPs can apply to register ESCs. The purchaser must not be reimbursed for the required payment, by any party.[70]

Future payment plans, partial payment and subsequent reimbursement are not permitted if they result in either:

- the minimum co-payment not being made in full before registration, or
- a reduction of the net amount paid below the required minimum co-payment at any time after registration.

Table 5.2 lists the documents ACPs can use as evidence of both the identity of the OES and the minimum purchase co-payment.

68 ACPs that are the nominated energy saver will typically fall under this category.
69 Wholesalers will typically fall under this category.
70 *ESS Rule*, cl 9.4.1(e).

Table 5.2 Original energy saver and minimum co-payment – minimum required records

Document type	Requirement
1. Nomination as energy saver (where the ACP is not the OES)	
Nomination form	The signed nomination form (as explained in section 5.1.1 above)
2. Co-payment requirement – provide both of the following	
Tax invoice **AND**	A tax invoice for the sale or lease clearly showing what the OES paid for the lighting upgrade. This will be used by the auditor to identify the OES and, in conjunction with other verification measures, show that the purchaser has paid a net minimum of $5 per MWh of electricity saved as a result of the lighting upgrade before the registration of any ESCs.
Sales ledger	A copy of, or extract from, a sales ledger clearly showing what the OES paid for the lighting upgrade. This will be used by the auditor, in conjunction with additional verification measures, to verify that the purchaser has paid a net minimum of $5 per MWh of electricity saved as a result of the lighting upgrade. The sales ledger, or extract, must be certified as true and correct by the purchaser and the ACP.

Note:

i. ACPs should note that auditors are expected to make direct contact with the OES to verify that the minimum net payment was made, and check whether a reimbursement was made, or offered, which reduced the net payment below the required amount.

ii. In kind payments are not an acceptable form of payment for the co-payment.

5.1.4 Energy savings calculations

ACPs can calculate energy savings using either the *Commercial Lighting Calculation Tool* (**CLCT**)[71], or with their own calculation tool. If the ACP uses their own tool, they should compare its outputs against those of the CLCT. In either case, ACPs must keep a copy of the calculations and have them available for audit purposes.

Table 5.3 shows the documents ACPs must keep as evidence supporting their calculation. Further detail on the baseline determination is provided below.

Table 5.3 Energy savings calculation – minimum required records

Provide one of the following	
Document type	**Requirement**
IPART issued CLCT	ACPs must keep a copy of the report showing the inputs and outputs with each Evidence Pack. The electronic copy must be available at audit.
Own calculation tool (if applicable)	ACPs must keep a copy of the tool/report showing the inputs and outputs of the calculation tool with each Evidence Pack. The electronic copy must be available at audit.

5.1.5 Disposal of removed or replaced equipment

ACPs are responsible for ensuring that lighting equipment removed or replaced during the lighting upgrade is disposed of appropriately.

71 Available at: www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lighting Please contact the Scheme Administrator for further assistance in using the tool.

The ACP must not refurbish, re-use or resell end-user equipment. Furthermore, if the implementation:[72]

- is in a metropolitan levy area (ie, an area with a postcode listed in Table A25 of Schedule A to the ESS Rule), and
- has an implementation date on or after 15 May 2016,

any lighting equipment containing mercury must be recycled in accordance with the recycling requirements of a recycling program such as 'Fluorocycle' or equivalent.[73]

ACPs must collect evidence, such as a recycling receipt or certificate, to demonstrate they have complied with this requirement.

5.2 Calculation parameter evidence requirements

The energy savings from an implementation are calculated using the details of the pre-implementation and post-implementation lighting systems. ACPs must keep evidence supporting each of the calculation parameters, as discussed below.

Each quarter, the Scheme Administrator considers proposals to collect evidence not currently included in this manual. ACPs wishing to propose alternative evidence should contact the Scheme Administrator by emailing ESS_Compliance@ipart.nsw.gov.au. If the Scheme Administrator accepts the proposal, it will be included in the next regular update of this manual, and ACPs can use that evidence.

5.2.1 Baseline determination

To determine the baseline energy consumption for lighting for roads and public spaces, ACPs must use equation 7 of the ESS Rule. ACPs must also collect one or more documents, as specified in Table 5.4 below.

Table 5.4 Baseline determination – minimum required records

Provide the following	
Document type	**Requirement**
Document showing the lighting upgrade is within the scope of the AS/NZS 1158 Standard	Document(s) showing that the lighting upgrade for the road and/or public space is within the scope of the AS/NZS 1158 Standard for pedestrian areas (Category P) and/or vehicular traffic (Category V) lighting purposes (eg, a Council or Public Authority contract specifying compliance with AS/NZS 1158).

5.2.2 Equipment class and Lamp Circuit Power

ACPs need to provide evidence of the equipment class of the pre-implementation lighting (as detailed in Table 5.5) and for the post-implementation lighting (detailed in Table 5.6).

72 *ESS Rule*, cl 5.3A(b).
73 Further information about Fluorocycle is available at: www.fluorocycle.org.au/.

This evidence, together with the evidence discussed in sections 5.2.3 and 5.2.4 below, will also provide evidence to show that the ACP has used the correct LCP in their energy savings calculations. ACPs do not need to provide any specific additional evidence on the LCP.

The LCP to be used in lighting for roads and public spaces is specified in Tables A9.2 and A9.4 of the ESS Rule as follows:

1. For equipment class 'Lighting for Roads and Public Spaces or traffic signals (other than LED lighting)' the specific lighting equipment LCP to be used is listed as the 'NSW Load' in the AEMO[74] list of 'NEM Unmetered Loads'.[75] ACPs are required to use as LCP the 'NSW Load' that corresponds to the appropriate 'Nominal Device Type' and 'Nominal Device Rating (w)'.
2. For the equipment class 'LED Luminaire – Streetlight', ACPs must get an ELT acceptance with an approved LCP value or use the approved value published on the ESS website.

Table 5.5 Pre-implementation equipment class— minimum required records

Provide one or a combination of the following	
Document type	**Requirement**
Geo-tagged[76] photos	Photographs of the existing lamps. The photos must: ▼ be clear and in focus ▼ include any relevant markings ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates. This should be stored in the metadata and generated automatically by the device used to take the photos.
Asset register	Extracts from an asset register showing the existing lighting at the site. The extract(s) must be certified as true and correct by the purchaser.
Lighting diagram	A professionally drawn lighting diagram[77] showing the location and type of each luminaire or lamp. The type of lamp can be shown on the diagram or through the use of a legend.
Disposal receipt	A receipt issued by a recycler or collector responsible for the disposal of the original lamps. The receipt must show: ▼ an itemised breakdown of the disposed equipment (showing the lamp type), and ▼ the date they were received.
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by a licensed electrician. It must clearly show the type of lamp that was removed.
Public Lighting inventory registers	An extract of the relevant public lighting inventory published by utility companies showing the existing pre-implementation lighting equipment at the relevant geographic location.

74 Australian Energy Market Operator

75 Refer to: shttp://www.aemo.com.au and search for 'NEM-Unmetered-Load .

76 Geo-tagging is the process of adding geographical identification metadata to a photograph. This is done by assigning at least latitude and longitude to the image.

77 **Professionally drawn or drafted diagram –**A diagram or plan drafted using accepted industry conventions, symbols, perspectives, units of measurements and notations systems and usually generated by a professional draftsperson or with the aid of a Computer Aided Design (CAD) system.

Table 5.6 Post-implementation equipment class—minimum required records

Provide one or a combination of the following	
Document type	**Requirement**
Geo-tagged photos	Photographs of the existing lamps. Photos must: ▼ be clear and in focus ▼ include any relevant markings ▼ include date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos).
Manufacturer's datasheet	An official specification or data sheet from the manufacturer showing the lamp type.
Lighting diagram	A professionally drawn lighting diagram showing the location and type of each luminaire or lamp. Note: The type of lamp can be shown on the diagram or through the use of a legend.
Tax invoice	A valid tax invoice for the work carried out. It must: ▼ contain an itemised list of the lamps provided and/or installed ▼ identify the recipient, and ▼ identify the supplier (including their ABN).
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by the licensed electrician who undertook the work. It must clearly show the type of lamp that was installed.
Public Lighting inventory registers	An extract of the relevant public lighting inventory published by utility companies showing the post-implementation lighting equipment at the relevant geographic location and the installation date.

5.2.3 For the upgraded equipment class 'Lighting for roads and public spaces or traffic signals (other than LED lighting)'

Where the post-implementation equipment class is 'Lighting for Roads and Public Spaces or traffic signals (other than LED lighting)', ACPs must provide additional evidence. This evidence varies, depending on the specific lighting equipment used:

- If the upgraded equipment is one of the standard equipment classes for lighting upgrades listed in Table A9.1 of Schedule A to the ESS Rule, ACPs need to provide the evidence detailed in Table 5.7.
- If the upgraded equipment is one of the other equipment classes listed in Table A9.3 of Schedule A to the ESS Rule, ACPs need to provide the evidence detailed in Table 5.8.

Table 5.7 Standard equipment classes listed in Table A9.1 of Schedule A to the ESS Rule — minimum required records

Provide the following, plus at least 2 documents listed in Table 5.6	
Document type	**Requirement**
For Category P lighting (Pedestrian Area), evidence that the equipment is a permissible luminaire for that space according to tables 2.6 to 2.10 of the *AS/NZS 1158.3.1 – Pedestrian Area (Category P) lighting – Performance and design requirements* Standard. **For Category V lighting (Vehicular Traffic)**, evidence that the equipment meets the requirements of *AS/NZS 60598.2.3 Luminaires – Particular Requirements – Luminaires for road and street lighting* Standard and the SA/SNZ TS 1158.6 – Luminaires - Performance.	Manufacturer's Datasheet or specifications, Manufacturer's/supplier declaration substantiated by reference to appropriate test reports from a laboratory that is accredited by NATA or IANZ[78] or an overseas laboratory that is accredited under a mutual recognised agreement with either of these bodies.

Table 5.8 Other equipment classes listed in Table A9.3 of Schedule A to the ESS Rule — minimum required records

Provide the following, plus at least 2 documents listed in Table 5.6	
Document type	**Requirement**
Evidence that the equipment meets the relevant requirements of the AS/NZS 60598.1.1 – Luminaires – General Requirements and tests Standard, the AS/NZS 60598.2.3 Luminaires – Particular Requirements – Luminaires for road and street lighting (for Category V lighting – Vehicular Traffic) , and the SA/SNZ TS 1158.6 – Luminaires - Performance.	Manufacturer's Datasheet, Manufacturer's/supplier declaration substantiated by reference to appropriate test reports from a laboratory that is accredited by NATA or IANZ or an overseas laboratory that is accredited under a mutual recognised agreement with either of these bodies.

5.2.4 For the upgraded equipment class 'LED Luminaire – Street Lighting – For Street/Public Lighting'

Where the post-implementation equipment class is 'LED Luminaire – Street Lighting – For Street/Public Lighting' ACPs need to provide the additional evidence shown in Table 5.9.

Table 5.9 Upgraded equipment class 'LED Luminaire - Street Lighting' – minimum required records

Provide the following, plus at least 2 documents listed in Table 5.6	
Document type	**Requirement**
Evidence that the equipment meets the relevant requirements of *AS/NZS 60598.1.1 – Luminaires – General Requirements* and tests Standard, the *AS/NZS 60598.2.3 Luminaires – Particular Requirements – Luminaires for road and street lighting* (for Category V lighting – Vehicular Traffic), and the *SA/SNZ TS 1158.6 – Luminaires - Performance.*	Manufacturer's Datasheet, Manufacturer's/supplier declaration substantiated by reference to appropriate test reports from a laboratory that is accredited by NATA or IANZ or an overseas laboratory that is accredited under a mutual recognised agreement with either of these bodies.

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5.2.5 Lamp quantities

ACPs must provide evidence of the number of lamps installed in each space of the pre-implementation lighting system (as shown in Table 5.10) and the post-implementation lighting system (as shown in Table 5.11).

Table 5.10 Pre-implementation lamp quantities – minimum required records

Provide the mandatory document and one of the supporting documents	
Document type	**Requirement**
Mandatory document	
Lighting diagram	A professionally drawn lighting diagram showing the location and type of each luminaire or lamp. Note: The type of lamp can be shown on the diagram or through the use of a legend.
Supporting documents	
Asset register	Extracts from an asset register or schedule showing the number of pre-upgrade lamps installed at the site and signed by the purchaser (OES).
Disposal receipt	A dated disposal receipt listing the number of lamps disposed of. This receipt must be signed by the equipment removing contractor.
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by a licensed electrician. It must clearly show the type and number of lamps that were removed.
Public Lighting inventory registers	An extract of the relevant public lighting inventory published by utility company showing the number of pre-implementation lighting equipment at the relevant geographic location.

Table 5.11 Post-implementation lamp quantities – minimum required records

Provide the mandatory document, and one of the supporting documents	
Document type	**Requirement**
Mandatory document	
Lighting diagram	A professionally drawn lighting diagram showing the location and type of each luminaire or lamp. Note: The type of lamp can be shown on the diagram or through the use of a legend.
Supporting documents	
Certificate of Compliance – Electrical Work (CCEW)	The CCEW must be signed and dated by a licensed electrician. It must clearly show the type and number of lamps that were installed.
Tax invoice	A signed and dated tax invoice showing the type and number of lamps purchased.
Public Lighting inventory registers	An extract of the relevant public lighting inventory published by utility company showing the number of post-implementation lighting equipment at the relevant geographic location and the installation date.

5.2.6 Lighting control systems

If the lighting upgrade involves a lighting control system for which there is a control multiplier in Table A10.4 or A10.4A of Schedule A to the ESS Rule, ACPs must collect evidence showing:

- all lighting control devices that are part of the lighting control system
- the type of lighting control system, and
- the lamps/luminaires controlled by the lighting control system.

If the lighting control system is changed as part of the lighting upgrade, then ACPs must collect evidence of the control system both pre-implementation and post-implementation.

ACPs must provide a lighting diagram, and at least one of the supporting documents shown in Table 5.12 for the pre-implementation lighting control systems, and post-implementation lighting control system (if changed).

Table 5.12 Lighting control systems – minimum required records

Provide the one mandatory document, and at least one of the supporting documents	
Document type	**Requirement**
Mandatory document	
Lighting diagram	A professionally drawn lighting diagram showing the location and the type of control system. Note: The type of control system can be shown on the diagram or through the use of a legend. The diagram must clearly show the lighting switch groups controlled by the control system.
Supporting documents	
Geo-tagged photos	The photographs must show the type of lighting control system installed. The photos must: ▼ be clear and in focus ▼ include a date stamp showing the date they were taken, and ▼ include the GPS derived latitude and longitude coordinates (which should be stored in the metadata and generated automatically by the device used to take the photos).
Certificate of Compliance – Electrical Work (CCEW)	A CCEW signed and dated by the licensed electrician who undertook the work, listing the type of control systems installed or removed.
Manufacturer datasheet	A datasheet or specification from the manufacturer identifying the type of control system.

5.2.7 Lifetime of upgraded lamps

If the lighting upgrade involves the replacement of the luminaire or control gear (not integrated into the lamp) the default asset lifetime is 12 years (as specified in Table A10.6 of Schedule A to the ESS Rule under space group category 'E (Public)'). However, if the lighting upgrade involves lamps that can be easily replaced with the original lamp (ie, only the lamp has been replaced) the asset lifetime is determined using the lamp life of the new lamp in accordance with Table A10.1 of Schedule A to the ESS Rule. In this situation, ACPs must provide evidence of the lifetime of the lamp (refer Table 5.13 below).

Table 5.13 Lifetime of upgraded lamps – minimum required records

Provide one of the following	
Document type	**Requirement**
Manufacturer datasheet*	An official specification or data sheet from the manufacturer showing the nominal lamp lifetime in hours.
Laboratory test report	A test report issued by a NATA (or equivalent) laboratory clearly showing the nominal lamp lifetime in hours.
Registered information*	Data from an independent organisation such as MEPS or Lighting Council of Australia showing the nominal lamp lifetime.

Note*: For lamp only replacements of lighting for roads and public spaces, 30,000 hours is the maximum lamp lifetime and 12 years the maximum asset lifetime, as specified in Tables A10.1 and A10.6 of Schedule A to the ESS Rule

5.3 Other specific evidence requirements

There are specific performance and other requirements for upgrades of lighting for roads and public spaces. ACPs must collect evidence to verify their lighting upgrade complies with these requirements.

5.3.1 AS/NZS 1158 compliance

Roads and public spaces lighting upgrades must meet the relevant requirements of AS/NZS 1158. To verify the lighting upgrade complies with the standard. ACPs must provide one mandatory document and one supporting document that varies depending on whether the implementation involves Vehicular traffic (Category V) or Pedestrian area (Category P) lighting upgrades. Refer to Table 5.14 below for further information.

ACPs also need to attach evidence of the relevant qualifications for the person verifying compliance of the lighting upgrade.

Table 5.14 AS/NZS 1158 compliance – minimum required records

Provide one mandatory document, and one supporting document for either Vehicular Traffic (Category V) upgrades or Pedestrian Area (Category P and PX) upgrades	
Document type	**Requirement**
Mandatory document	
Declaration of compliance with AS/NZS 1158 – Lighting for roads and public spaces	A declaration signed by the lighting upgrade solution provider that the lighting upgrade has been verified as per section 2.11 of AS/NZS 1158.1.1-Vehicular traffic (Category V) lighting-Performance and design requirements, or as per section 2.10 of AS/NZS 1158.3.1-Pedestrian Area (Category P) lighting-Performance and design requirements (whichever is relevant). A template for this declaration is provided at section 5 of the Evidence Pack.[79] The person verifying and approving the lighting upgrade must be in possession of the relevant qualifications as specified in the Method Guide. This will be checked at audit.
Supporting document for Vehicular traffic (Category V) lighting upgrades	
Relevant documentation as specified in Appendix D of AS/NZS 1158.1.1	At a minimum, a statement signed by the lighting upgrade solution provider responsible for providing the lighting solution with qualifications satisfying the client and any regulatory requirements.**
Supporting document for Pedestrian Area (Category P) lighting upgrades including Pedestrian Crossings (Category PX)	
Relevant documentation as specified in Appendix E of AS/NZS 1158.3.1 or Appendix D of AS/NZS 1158.4 (Pedestrian Crossings)	At a minimum, a statement signed by the by the lighting upgrade solution provider responsible for providing the lighting solution with qualifications satisfying the client and any regulatory requirements.**

Note:

****** This statement must either:

a. certify that the lighting upgrade meets both the design and all requirements of the relevant AS/NZS 1158 Standard part and include details of any complying reductions that have been utilised in the design process; or

b. identify and justify any aspects of the lighting upgrade that do not comply with the design brief or the AS/NZS 1158 Standard.

c. Verify that the provided lighting solution meets the requirement of the relevant asset owner (eg, Utilities, Rail Corp, Government, etc.) Standard, developed in accordance with AS/NZS 1158.

5.3.2 Electrical compliance

A Certificate of Compliance - Electrical Work (**CCEW**) must be kept and must:

- be issued, signed and dated by the electrician who performed or supervised the lighting upgrade, and
- include details of the work performed.

Where CCEWs are not produced, ACPs may suggest other suitable evidence that demonstrates that compliance with the relevant electrical installation standards has been achieved for any particular project and that the installation was performed or supervised by

79 The Evidence Pack is available at: www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Commercial_Lighting.

a licensed electrician. The suitability of the alternative evidence will be considered on a case by case basis.

5.3.3 Lighting for roads and public spaces classification and Annual Operating Hours

Lighting for roads and public spaces is one of the 'building classifications' listed in Table A10.3 of Schedule A to the ESS Rule as 'E (Public)' and it has a designated value of 4,500 annual operating hours.

In order to show that the ACP is applying the correct space type (ie, it is within the scope of AS/NZS 1158), the ACP must provide:

- geo-tagged photos and an aerial map of the road and/or public space (mandatory evidence), and
- document(s) showing that the design of the lighting upgrade for the road and/or public space is within the scope of AS/NZS 1158 for Vehicular Traffic (Category V) and/or Pedestrian Areas (Category P and PX) lighting purposes. This documentation could be, for example, a contract with a local council or the local traffic authority.

6 Glossary

Acronym	Description
AOH	Annual Operating Hours
CCEW	Certificate of Compliance - Electrical Work
CLCT	Commercial Lighting Calculation Tool
EEI	Energy Efficiency Index
GPS	Global Positioning System
Glare	Difficulty seeing in the presence of a very bright light and possibly cause discomfort or inability to see
HVAC	Heating, Ventilation and Air Conditioning
Illuminance	The amount of light that falls on a surface per unit area and is commonly referred as 'Lighting Level' (measured in Lux)
Lumen	The unit of luminous flux, which is a measure of the total amount of visible light emitted from a light source
Lux	The unit of illuminance (1 lux equals 1 lumen per square meter) (lm/m^2)
MEPS	Minimum Energy Performance Standards
NATA	National Association of Testing Authorities

Appendices

A Summary of minimum required records in section 4 – Building Lighting of the Evidence Pack

Table A.A.1 below summarises the documents that must be attached to the Evidence Pack to meet the minimum evidence requirements for energy savings from the building lighting components of an implementation. The table shows each parameter of an implementation, the possible acceptable evidence for that parameter, and the section of this manual that provides additional explanatory information.

Table A.1 Summary of evidence requirements for building lighting components

Evidence type	Conditions	Document collection requirement	Document type	Location in the manual
General Requirements				**4.1**
Nominated energy saver	Mandatory	▼ The document shown at right	▼ Signed nomination form	**4.1.1**
Implementation date	Mandatory	▼ One of the documents shown at right	▼ Certificate of Compliance - Electrical Work (CCEW), or ▼ Tax invoice, or ▼ Contractor Completion / Commissioning Report	**4.1.2**
Original energy saver and minimum co-payment	Mandatory	▼ Both documents shown at right	▼ Tax invoice (to verify the minimum $5 co-payment for MWh saved as result of the lighting upgrade has been paid in full before registration of any ESCs), and ▼ Sales ledger (to verify the minimum $5 co-payment for MWh saved as result of the lighting upgrade has been paid in full before registration of any ESCs).	**4.1.3**
Energy savings calculations	Mandatory	▼ One of the documents shown at right	▼ IPART *Commercial Lighting Calculation Tool*, or ▼ ACP's own calculation tool	**4.1.4**
Disposal of removed or replaced equipment	Mandatory	▼ All documents shown at right	▼ Tax invoice showing the address of the implementation, and ▼ Recycling receipt, or ▼ Recycling certificate	**4.1.5**

Evidence type	Conditions	Document collection requirement	Document type	Location in the manual
Calculation Parameter Evidence Requirements				**4.2**
Baseline determination	1. Where the upgrade is not required to comply with Part J6 of the BCA.	▼ Both documents shown at right	▼ Declaration of compliance with AS/NZ 1680 and BCA, and ▼ Lighting diagram	**4.2.1**
	2. Where the upgrade is required to comply with Part J6 of the BCA and the existing lighting meets or is below the maximum IPD requirements of Part J6 of the BCA.	▼ All documents shown at right	▼ Declaration of compliance with AS/NZ 1680 and BCA, and ▼ Lighting diagram, and ▼ Documentation showing BCA approval number and date of issue, and ▼ IPD calculations to support the use of equation 7 of the ESS Rule	
	3. Where the upgrade is required to comply with Part J6 of the BCA and the existing lighting does not meet the IPD requirements of Part J6 of the BCA.	▼ All documents shown at right ▼	▼ Declaration of compliance with AS/NZ 1680 and BCA, and ▼ Lighting diagram, and ▼ Documentation showing BCA approval number and date of issue, and ▼ IPD calculations to support the use of equation 8 of the ESS Rule	

Evidence type	Conditions	Document collection requirement	Document type	Location in the manual
Lamp type and nominal lamp power (NLP)	At least one document for pre- and post-implementation must show the NLP	*Pre-implementation* ▼ At least one of the documents shown to the right *Post-implementation* ▼ At least one of the documents shown to the right AND ▼ One Mandatory document **if** the lighting upgrade involves maintained emergency lighting.	***Pre-implementation*** ▼ Geo-tagged photos ▼ Asset register ▼ Lighting diagram ▼ Disposal receipt ▼ CCEW ***Post-implementation*** ▼ Geo-tagged photos ▼ Manufacturer datasheet ▼ Lighting diagram ▼ Tax invoice ▼ As Built Lighting Model/Drawing ▼ Laboratory test report ▼ Registered information ▼ CCEW **Mandatory document:** ▼ Professionally drafted electric lighting design diagram, compliant with AS/NZS 2293.1.	**4.2.2**
Remote control gear (ballasts/transformers)	Where the lighting upgrade involves external control gear	*Pre-Implementation* ▼ Two of the documents shown at right *Post-Implementation* ▼ Two of the documents shown at right	***Pre-implementation*** ▼ Geo-tagged photos ▼ Asset Register ▼ Lighting Diagram ▼ Disposal Receipt ▼ CCEW ***Post-implementation*** ▼ Geo-tagged photos ▼ Manufacturer datasheet ▼ Lighting diagram ▼ Tax invoice ▼ CCEW	**4.2.3**

Evidence type	Conditions	Document collection requirement	Document type	Location in the manual
Lamp quantities	Mandatory	*Pre-implementation* ▼ One mandatory document, and ▼ One supporting document	***Pre-implementation*** **Mandatory document**: ▼ Lighting diagram **Supporting documents:** ▼ Asset register, or ▼ Geo-tagged photos (only for small upgrades), or ▼ Disposal receipt, or ▼ CCEW	**4.2.4**
		Post-implementation ▼ One mandatory document, and ▼ One supporting document	***Post-implementation*** **Mandatory document:** ▼ Lighting diagram **Supporting documents:** ▼ Geo-tagged photos, or ▼ Tax invoice, or ▼ CCEW	
Lighting control systems	Where the upgrade involves a lighting control system	▼ One mandatory document, and ▼ One supporting document	**Mandatory document:** ▼ Lighting diagram **Supporting documents:** ▼ Geo-tagged photos, or ▼ CCEW, or ▼ Manufacturer datasheet	**4.2.5**
Air conditioning	Where the air conditioning multiplier is used in calculations	▼ At least one of the documents shown at right	▼ Geo-tagged photos, or ▼ Lighting diagram, or ▼ HVAC plan	**4.2.6**
Lifetime of upgraded lamps	Where the upgraded lamps can be easily replaced	▼ At least one of the documents shown at right	▼ Manufacturer datasheet, or ▼ Laboratory test report, or ▼ Registered information	**4.2.7**
Other Specific Evidence Requirements				**4.3**
AS/NZS 1680 compliance	Mandatory:	▼ One mandatory document, and either:	**Mandatory document:** ▼ AS/NZS 1680 Declaration (section 3 of the Evidence Pack)	**4.3.1**

Evidence type	Conditions	Document collection requirement	Document type	Location in the manual
	▼ except where the upgrade is outside the scope of the AS/NZS 1680 standard. In this case ACPs will have to attach the approval of a different benchmark.	▼ Two 'Method A' supporting documents, **or** ▼ Two 'Method B' supporting documents	▼ Certificate of qualifications / training **Method A supporting documents:** ▼ AS/NZS 1680 design documents, and ▼ Commissioning declaration **Method B supporting documents:** ▼ Illumination measurements, and ▼ Lighting diagram	
BCA Compliance requirements of upgrades: ▼ IPD requirements (Part J6), and ▼ Safe movement, section F4.4	Mandatory	▼ Both documents shown at right	▼ Declaration of compliance with AS/NZS 1680 and BCA (section 3 of the Evidence Pack), and ▼ Achieved IPD calculations for the each space showing that it is equal or less than the maximum IPD specified in Part J6 of the BCA	**4.3.2**
Electrical compliance	Mandatory	▼ The document shown at right	▼ Certificate of Compliance – Electrical Work (CCEW)	**4.3**
BCA classification (all upgrades) to support: ▼ Space type ▼ Building classification ▼ Annual operating hours of the site/spaces, and ▼ Building/Space Group category	Mandatory	▼ One mandatory document, and ▼ One supporting document	**Mandatory document:** ▼ GEO located photo(s) **Supporting document:** ▼ Please refer to Table 4.16 or Table 4.17 of this manual to find the acceptable supporting documents for each space type/BCA classification.	**4.3.2**
Lighting quality statement	Mandatory	▼ The document shown at right	▼ Signed Lighting Quality Statement (by the ACP and co-signed by the purchaser), and Maintenance schedule	**4.3**

B Summary of minimum required records in section 6 – Lighting for roads and public spaces of the Evidence Pack

Table B.B.1 below summarises the documents that must be attached to the Evidence Pack to meet the minimum evidence requirements for energy savings from the lighting for roads and public spaces components of an implementation. The table shows each parameter of an implementation, the possible acceptable evidence for that parameter, and the section of this manual that provides additional explanatory information.

Table B.1 Summary of evidence requirements for lighting for roads and public spaces components

Evidence Type	Conditions	Document collection requirement	Document type	Location in the Manual
General Requirements				**5.1**
Nominated energy saver	Mandatory	▼ The document shown at right	▼ Signed nomination form	**5.1.1**
Implementation date	Mandatory	▼ The document shown at right	▼ Certificate of Compliance - Electrical Work (CCEW), or ▼ Tax invoice, or ▼ Contractor Completion / Commissioning Report ▼ Public lighting inventory registers	**5.1.2**
Original energy saver and minimum co-payment	Mandatory: ▼ Co-payment requirement	▼ Both documents shown at right	**Co-payment requirement:** ▼ Tax invoice (to verify the minimum $5 co-payment for MWh saved as result of the lighting upgrade has been paid in full before registration of any ESCs), and ▼ Sales ledger (to verify the minimum $5 co-payment for MWh saved as result of the lighting upgrade has been paid in full before registration of any ESCs).	**5.1.3**
	▼ Beneficiary of the services provided by the EUE requirement	▼ The document shown at right	**Beneficiary of the service provided by the EUE requirement:**	

Evidence Type	Conditions	Document collection requirement	Document type	Location in the Manual
			▼ Signed Nomination Form	
Energy savings calculations	Mandatory	▼ One of the documents shown at right	▼ IPART *Commercial Lighting Calculation Tool* – Lighting for roads and public spaces, or ▼ ACP's own calculation tool	**5.1.4**
Disposal of removed or replaced equipment	Mandatory	▼ All documents shown at right	▼ Tax invoice showing the address of the implementation, and ▼ Recycling receipt, or ▼ Recycling certificate	**5.1.5**
Calculation parameter evidence requirements				**5.1.5**
Baseline determination	Mandatory: ▼ 1. Where the upgrade is required to comply with AS/NZS 1158 Standard	▼ The document shown at right	▼ Document(s) showing that the design of the lighting upgrade for the road and/or public space has to be within the scope of the AS/NZS 1158 Standard for pedestrian areas (Category P) and/or vehicular traffic (Category V) lighting purposes (eg, a Council or Public Authority contract).	**5.2.1**
Equipment class and Lamp Circuit Power (LCP) for standard equipment listed in Table A9.1 of Schedule A to the ESS Rule[80]	Mandatory	*Pre-implementation* ▼ At least one of the documents shown at right *Post-implementation* ▼ 1 mandatory document, and ▼ 1 or more supporting documents to evidence the lamp type	***Pre-implementation*** ▼ Geo-tagged photos ▼ Asset Register ▼ Lighting Diagram ▼ Disposal Receipt ▼ CCEW ▼ Public lighting inventory registers ***Post-implementation*** **Mandatory document:** ▼ **For category P lighting (Pedestrian Area)**, evidence that the equipment is a permissible luminaire according to tables 2.6 to 2.10 of the *AS/NZS 1158.3.1 – Pedestrian Area (Category P)*	**5.2.2 and 5.2.3**

80 The evidence provided to support the pre-implementation and upgraded equipment class for conventional lighting technologies listed in Table A9.1 of the ESS Rule will also support the LCP value listed as the 'NSW load' in the AEMO list of 'NEM Unmetered Loads'

Evidence Type	Conditions	Document collection requirement	Document type	Location in the Manual
			lighting – Performance and design requirements Standard. ▼ **For category V lighting (Vehicular Traffic),** evidence that the equipment meets the requirements of *AS/NZS 60598.2.3 Luminaires – Particular Requirements – Luminaires for road and street lighting* Standard **Supporting documents:** ▼ Geo-tagged photos ▼ Manufacturer Datasheet ▼ Lighting Diagram ▼ Tax invoice ▼ CCEW	
Equipment class and Lamp Circuit Power (LCP) for other equipment listed in Table A9.3 of Schedule A to the ESS Rule	Mandatory	*Pre-implementation* ▼ 1 or more supporting documents to evidence the equipment class *Post-implementation* ▼ 2 mandatory documents, and ▼ 1 or more supporting documents to evidence the lamp type	***Pre-implementation*** ▼ Geo-tagged photos ▼ Asset Register ▼ Lighting Diagram ▼ Disposal Receipt ▼ CCEW ▼ Public lighting inventory registers ***Post-implementation*** **Mandatory documents:** ▼ Information as published on the public list of accepted ELTs. ▼ Evidence that the equipment meets the relevant requirements of the *AS/NZS 60598.1.1 – Luminaires – General Requirements and tests* Standard, the A*S/NZS 60598.2.3 Luminaires – Particular Requirements – Luminaires for road and street lighting* (for Category V lighting – Vehicular Traffic), and the *SA/SNZ TS 1158.6 – Luminaires – Performance*.	**5.2.2 and 5.2.3**

Evidence Type	Conditions	Document collection requirement	Document type	Location in the Manual
			Supporting documents: ▼ Geo-tagged photos ▼ Manufacturer Datasheet ▼ Lighting Diagram ▼ Tax invoice ▼ CCEW	
Equipment Class and Lamp Circuit Power (LCP) for the category **'LED Luminaire-Street Lighting'** listed in table A9.3 of Schedule A to the ESS Rule (ie, a LED luminaire intended for use as streetlight as defined in *AS/NZS 60598.2.3 Particular requirements – Luminaires for road and street lighting*)	Where the upgrade involves products classified as Emerging Lighting Technologies	*Post-implementation* ▼ 2 mandatory documents	***Post-implementation*** **Mandatory documents:** ▼ Information as published on the public list of accepted ELTs), and ▼ Evidence that the equipment meets the relevant requirements of *AS/NZS 60598.1.1 – Luminaires – General Requirements and tests* Standard, the *AS/NZS 60598.2.3 Luminaires – Particular Requirements – Luminaires for road and street lighting* (for Category V lighting – Vehicular Traffic), and the *SA/SNZ TS 1158.6 – Luminaires – Performance.*	**5.2.4**
		▼ 1 or more supporting documents to evidence the lamp type	**Supporting documents:** ▼ Geo-tagged photos ▼ Manufacturer datasheet ▼ Lighting diagram ▼ Tax invoice ▼ CCEW ▼ Public lighting inventory registers	
Lamp quantities	Mandatory	*Pre-implementation* ▼ 1 mandatory document, and ▼ 1 supporting document	***Pre-implementation*** **Mandatory document:** ▼ Lighting diagram **Supporting documents:** ▼ Asset Register, or	**5.2.5**

Evidence Type	Conditions	Document collection requirement	Document type	Location in the Manual
			▼ Disposal receipt, or ▼ CCEW ▼ Public lighting inventory registers	
		Post-implementation ▼ 1 mandatory document, and ▼ 1 supporting document	***Post-implementation*** **Mandatory document:** ▼ Lighting diagram **Supporting documents:** ▼ Tax invoice, or ▼ CCEW ▼ Public lighting inventory registers	
Lighting control systems	Mandatory: ▼ Where the upgrade involves a lighting control system.	▼ 1 mandatory document, and ▼ 1 supporting document	**Mandatory document:** ▼ Lighting diagram **Supporting documents:** ▼ Geo-tagged photos, or ▼ CCEW, or ▼ Manufacturer datasheet	**5.2.6**
Lifetime of upgraded lamps	Mandatory: ▼ Where the upgraded lamps can be easily replaced.	▼ 1 mandatory document	▼ Manufacturer datasheet, or ▼ Laboratory test report, or ▼ Registered information	**5.2.7**
Other Specific Evidence Requirements				**5.3**
AS/NZS 1158 compliance	Mandatory: ▼ Except where the upgrade is outside the scope of the AS/NZS 1158 standard. In this case ACPs will have to attach the approval of a different benchmark.	▼ 2 mandatory documents for all upgrades ▼ 1 mandatory document for: – Vehicular traffic (Category V) lighting upgrades, or – Pedestrian area (Category P) including pedestrian	**Mandatory document for all upgrades:** ▼ Declaration of compliance with AS/NZS 1158 (section 5 of the Evidence Pack) ▼ Certificate of qualifications / training. **Mandatory document for Vehicular traffic upgrades:** ▼ The relevant documentation specified in Appendix D of AS/NZS 1158.1.1 **Mandatory document of pedestrian areas upgrades:**	**5.3.1**

Evidence Type	Conditions	Document collection requirement	Document type	Location in the Manual
		crossings (Category PX)	▼ The relevant documentation specified in Appendix E of AS/NZS 1158.3.1 or Appendix D of AS/NZS 1158.4 (Pedestrian Crossings).	
Electrical compliance	Mandatory	▼ The document shown at right	▼ Certificate of Compliance – Electrical Work (CCEW)	**5.3.2**
Lighting for roads and public spaces Annual Operating Hours	Mandatory	▼ The document shown at right	▼ Documentation evidence that the design of the lighting upgrade is within the scope of the AS/NZS 1158 Standard. This documentation could be, for example, a contract with a council or the local traffic authority.	**5.3.3**