

### Lighting Units

#### Summary of proposed Triple E eligibility criteria changes.

To facilitate a refinement of the eligibility criteria for lighting units it is proposed to accept two new routes for demonstrating compliance with the Triple E and eligibility criteria to be created.

1. Manufacturers not testing to ENEC +
2. Manufacturers with a certified accreditation to testing in compliance with the requirements of ENEC +

SEAI does not intend to split lighting units into applications, other than for interior use and exterior use.

The table below, shows the intended minimum efficacy criteria for lighting units under proposal.

Luminaire Type	Minimum Efficacy
Interior Luminaires	90 luminaire lumens per Watt at 25 degrees ambient with power factor 0.9
Exterior Luminaires	120 luminaire lumens per Watt at 25 degrees ambient with power factor 0.9

The **Single Light Regulation (SLR)** came into force from the 1st of September 2021. The introduction of this new definition will require further changes to the Triple E eligibility criteria and application process. SEAI will incorporate the introduction of the SLR as part of its ongoing Triple E eligibility criteria review process.

The proposed eligibility criteria document is contained on the following pages.

Please follow this [link](#) to view the currently published eligibility criteria.

## Triple E Eligibility Criteria

**Category: Lighting**

**Technology: Lighting Units**

*Lighting units are products that are specifically designed to provide high efficiency, sustainable interior, or exterior illumination.*

Lighting units are considered to include:

### Interior Luminaires

- Luminaires that are designed for internal use.
- Maintained emergency versions can be included on the register.
- Non-maintained emergency luminaires are not eligible for inclusion.

### Exterior Luminaires

- Luminaires that are designed for external applications.
- Only luminaires utilising LED sources will be eligible for inclusion on both registers.
- No lamps are eligible for inclusion on the register.
- Retro fit kits are not eligible for inclusion on the register.

### Lighting Units Eligibility Criteria:

In order to be included on the Triple E Register, lighting units must meet all the relevant conditions set out below.

The applicant should carefully study the information provided in the *Required Supporting Documentation* and ensure that the appropriate documents and reports are provided to enable SEAI's efficient appraisal of the product.

**Note:** Supporting documentation that clearly demonstrates Triple E compliance according to the conditions below will be required as part of the Triple E checking process. Detailed information on the types of documents accepted can be found in the separate Supporting Documentation guidelines.

No.	Condition
1.	All equipment and/or components must be CE marked as required by the specific EU Directives.
2.	All luminaires must meet the energy efficacies shown in <i>Table 2</i> .  Interior luminaires must have a colour rendering index not less than Ra80.

	<p>Exterior luminaires must have a colour rendering index not less than Ra60.</p> <p>All luminaires must have a correlated colour temperature within 2,000K and 5,000K.</p> <p>The photometric data of the luminaire must have been measured in accordance with either <i>EN 13032-1&amp;2</i>, or <i>LM79-19</i>.</p> <p>The binning of chips for interior products must not exceed three <i>Macadam</i> steps.</p> <p>The binning of chips for exterior products must not exceed five <i>Macadam</i> steps.</p>
<b>3.</b>	<p>Lumen output must not be less than 90% of initial output after 6,000 hours of continual operation.</p> <p>The extrapolated lumen output must not be less than 75% of initial output after 50,000 hours for interior luminaires.</p> <p>The extrapolated lumen output must not be less than 90% of initial output after 100,000 hours for exterior luminaires.</p>
<b>4.</b>	<p>Must have a minimum power factor of 0.9 at full output and not less than 0.8 when dimmed to the product's full permissible extent.</p>
<b>5.</b>	<p>(From 1<sup>st</sup> September 2021). All products must be registered and have a product code from the <i>EPREL</i> website.</p>

<b>Luminaire Type</b>	<b>Minimum Efficacy</b>
Interior Luminaires	90 luminaire lumens per Watt at 25 degree ambient with power factor $\leq 0.9$
Exterior Luminaires	120 luminaire lumens per Watt at 25 degree ambient with power factor $\leq 0.9$

For all luminaires, the efficacy calculation is based on total light produced by the luminaire divided by the total connected electrical load.

$$\frac{\text{Total lumen output} \times \text{Light output ratio}}{\text{Circuit power drawn}}$$

Where:

- Total lumen output = the total light of all the light sources within the luminaire.
- Light output ratio = the percentile of light emitted from the luminaire.
- Circuit power drawn = the electrical power drawn by the entire luminaire from main connection point to the light source, including losses in the driver.

----- End of Triple E eligibility criteria -----  
Please see next section for technical detail submission and supporting documentation guidance

***The following information is not part of the official criteria document published within the relevant statutory Instrument; it has been added here for guidance purposes only in order to provide assistance with the submission of product details and the provision of the required supporting documentation.***

### **Technical information required in product submission**

The following are the specific technical values required as part of the product submission for this technology:

<b>Lighting unit type</b>	Select which type of lighting product your luminaire is. Only one type can be chosen per product.
<b>Fitting light output ratio</b>	For luminaires tested to <i>LM79-19</i> , enter the LOR as 100. It must be entered as a whole number. There should also be no spaces or full stops after the number has been entered.
<b>Light unit power rating</b>	Enter the total circuit power consumptions in Watts for the entire luminaire, including drivers. It must be entered as a number only, do not include units. There should also be no spaces or full stops after the number has been entered.
<b>Total lumen output</b>	Enter the total lumen output for the entire luminaire, after 100 hours of continuous operation. It must be entered as a number only, do not include units. There should also be no spaces or full stops after the number has been entered.
<b>Lighting unit efficacy</b>	The efficacy is automatically calculated, and if the minimum requirement is satisfied, the luminaire will advance to the next phase of checking.

## Supporting documentation required

Described below is the list of documents that are accepted as demonstrating compliance with the specific lighting conditions.

**This documented information will only be requested AFTER you submit your product's basic details online.**

- You should familiarise yourself with the requirements prior to submitting your products and you should have the required documents available when requested.
- All documents submitted will be treated as strictly confidential by SEAI.
- Vendors of products that are not *ENEC Plus* certified must follow the supporting documentation requirements in *Table 4* through *Table 7* on the following pages.
- Vendors of products that are *ENEC Plus* certified should follow the supporting documentation requirements in *Table 8* through *Table 10* on the following pages.
- Where the same document is being used to satisfy more than one condition, it need only be submitted once, for the first condition where it is required.
- All product test reports must be based on 230V AC at 50Hz.

### **Important Notes to Product Providers**

**You must read this entire document prior to submitting products to the SEAI system, including the "Important Notes to Product Providers" section at the end of this document prior to submitting documentation.**

All documentation supporting the product submission must clearly reference the correct product name and/or product code being submitted. The correct page number(s) must be detailed with each document supporting the submission.

No.	Condition	Supporting Documentation Requirement	Item Count
1	All equipment and/or components must be CE marked as required by the specific EU Directives.	<p>CE Certificate of Compliance from an accredited test facility.</p> <p><b>Or:</b> CE Certificate of Compliance from a Notified Body.</p> <p><b>Or:</b> A copy of an official, signed, declaration on headed paper that confirms CE marking compliance. The signatory's name and position should be clearly legible. The declaration must be in accordance with Annex iv Directive 2014/35/EU, or later.</p> <p><b>And:</b> A product brochure for the specific luminaire.</p> <p><b>Please note:</b> Certificates of Conformity and official declarations should explicitly state the products for which CE marking is being confirmed. Therefore, full model nomenclature should be detailed. There should be no disclaimers of any type in the document.</p> <p>Certificates of Compliance and official declarations must list the standards and directives for which compliance is certified or declared. (22) Directive 2014/35/EU, or later.</p> <p>EU based economic operators must be aware of their liability to ensure that products imported from non-EU sources meet all requirements stipulated in the various appropriate legislation and directives.</p> <p><b>This is required for luminaires that are not certified to <i>ENEC Plus</i></b></p>	2

No.	Condition	Supporting Documentation Requirement	Item Count
2	<p>Must have a minimum power factor of 0.9 at full output, and not less than 0.8 when dimmed to the product's full permissible extent.</p> <p>For colour change sources, the worst-case power factor must be stated.</p>	<p>Official and published manufacturer's technical data sheet or brochure that demonstrate compliance with the requirements of the condition.</p> <p><b>Or:</b> A complete LM79-19 test report which includes a tested value for power factor.</p> <p><b>This is required for luminaires that are not certified to <i>ENEC Plus</i></b></p>	1



No.	Condition	Supporting Documentation Requirement	Item Count
3	<p>The photometric data of the luminaire must be measured and tested in accordance with EN 13032-1&amp;2 'Light and lighting – Measurement and presentation of photometric data of lamps and luminaires.'</p> <p><b>Or:</b> The photometric data of the luminaire must have been measured and tested in accordance with IES LM79-08 'Electrical and photometric measurements of solid-state lighting products.'</p> <p><b>In addition:</b> Luminaires must meet the minimum efficacy criteria required in <i>Table 2</i> and have a minimum output of 250 lumens for the entire luminaire.</p> <p>Luminaires must have a correlated colour temperature between 2,000K and 5,000K.</p>	<p>The complete LM79-19 report is required. The test can be completed by the manufacturer, or by an independent testing laboratory.</p> <p><b>Or:</b> Evidence of official testing based on the principles of EN 13032. The test can be completed by the manufacturer, or by an independent testing laboratory.</p> <p><b>And:</b> The lighting data file in PDF format and in original format (*.ldt, or *.ies format).</p> <p><b>And:</b> A binning certificate, or signed declaration on headed paper, stating that the selection of the chips, For exterior luminaires: must not exceed five Macadam steps. For interior luminaires: must not exceed three Macadam steps.</p> <p><b>Please note:</b> All test reports and photometric data supplied must be for the complete luminaire.</p> <p>To demonstrate luminaire efficacy requirements, the LM79-19 report must contain a lumen output per circuit Watt calculation. The circuit Wattage must be the initial value at the start of the luminaire's life.</p> <p>If the LM79 report does not include CCT and spectral distribution results, then a separate report obtained by testing by an integrating sphere must also be provided.</p>	<p><b>4, 5 if integrating sphere report is necessary.</b></p>

	<p>Luminaires must have a colour rendering index of not less than: Interior luminaires - Ra80 Exterior luminaires - Ra65.</p>	<p><b>This is required for luminaires that are not certified to <i>ENEC Plus</i></b></p>	
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No.	Condition	Supporting Documentation Requirement	Item Count
<p><b>4</b></p>	<p>Must have a light output (in lumens) not less than 90% of initial light output after 6,000 hours of continuous operation.</p> <p><b>And:</b> The extrapolated light output must not fall below 85% of initial light output after 100,000 hours for exterior luminaires.</p> <p>The extrapolated light output must not fall below 75% of initial light output after 50,000 hours for interior luminaires.</p> <p>Chip mortality must not exceed 5% at the end of the luminaire useful life.</p>	<p>A complete LM80 report is required for the LED chip set used in the luminaire.</p> <p><b>And:</b> A complete In Situ Temperature Measurement Test (ISTMT) report for the entire luminaire, including for remote driver if separate from luminaire body.</p> <p><b>And:</b> A TM21 lifetime prediction calculation report.</p> <p><b>Please Note:</b> The ISTMT report for the most onerous model can be used to cover all other versions of the same product range, provided the luminaire body size is common throughout.</p> <p><b>This is required for luminaires that are not certified to <i>ENEC Plus</i></b></p>	<p><b>3</b></p>

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No.	Condition	Supporting Documentation Requirement	Item Count
1	All equipment and/or components must be CE marked as required by the specific EU directives.	<p>CE Certificate of Compliance from an accredited test facility.</p> <p><b>Or:</b> CE Certificate of Compliance from a notified body.</p> <p><b>Or:</b> A copy of an official, signed, declaration on headed paper that confirms CE marking compliance. The signatory's name and position should be clearly legible. The declaration must be in accordance with Annex iv Directive 2014/35/EU, or later.</p> <p><b>Please note:</b> Certificates of Conformity and official declarations should explicitly state the products for which CE marking is being confirmed. Therefore, full model nomenclature should be detailed. There must be no disclaimers of any type in the document.</p> <p>Certificates of Compliance and official declarations must list the standards and directives for which compliance is certified or declared. (22) Directive 2014/35/EU, or later.</p> <p>EU based economic operators must be aware of their liability to ensure that products imported from non-EU sources meet all requirements stipulated in the various appropriate legislation and directives.</p> <p><b>This is required for luminaires that are certified to <i>ENEC Plus</i></b></p>	1

<b>No.</b>	<b>Condition</b>	<b>Supporting Documentation Requirement</b>	<b>Item Count</b>
2	<p>Must have a minimum power factor of 0.9 at full output, and not less than 0.8 when dimmed to the product's full permissible extent.</p> <p>For colour change sources, the worst-case power factor must be stated.</p>	<p>Official and published manufacturer's technical data sheet or brochure that demonstrate compliance with the requirements of the condition.</p> <p><b>And:</b> Certification of laboratory undertaking <i>ENEC Plus</i> Testing.</p> <p><b>This is required for luminaires that are certified to <i>ENEC Plus</i></b></p>	2

No.	Condition	Supporting Documentation Requirement	Item Count
3	<p>The photometric data of the luminaire must have been measured and tested in accordance with EN 13032-1&amp;2 'Light and lighting – Measurement and presentation of photometric data of lamps and luminaires.'</p> <p><b>Or:</b> The photometric data of the luminaire must have been measured and tested in accordance with IES LM79-08 'Electrical and photometric measurements of solid-state lighting products.'</p> <p><b>In addition:</b> Luminaires must meet the minimum efficacy criteria required in <i>Table 2</i> and have a minimum output of 250 lumens for the entire luminaire.</p> <p>Luminaires shall have a correlated colour temperature between 2,000K and 5,000K.</p> <p>Luminaires shall have a colour rendering index of not less than: Interior luminaires - Ra80 Exterior luminaires - Ra65.</p>	<p>Official and published manufacturer's technical data sheet or brochure that demonstrate compliance with the requirements of the condition.</p> <p><b>And:</b> The lighting data file in PDF format and in original format (*.ldt, or *.ies format).</p> <p><b>This is required for luminaires that are certified to <i>ENEC Plus</i></b></p>	3

No.	Condition	Supporting Documentation Requirement	Item Count
4	<p>Must have a light output (in lumens) not less than 90% of initial light output after 6,000 hours of continuous operation.</p> <p><b>And:</b> The extrapolated light output must not fall below 85% of initial light output after 100,000 hours for exterior luminaires.</p> <p>The extrapolated light output must not fall below 75% of initial light output after 50,000 hours for interior luminaires.</p> <p>Chip mortality must not exceed 5% at the end of the luminaire useful life.</p>	<p>Official and published manufacturer's technical data sheet or brochure that demonstrate compliance with the requirements of the condition.</p> <p><b>This is required for luminaires that are certified to <i>ENEC Plus</i></b></p>	1

## **Important Notes to Product Providers**

### **General**

There should be a clear link between all supporting documentation supplied and the product being submitted. This will typically take the form of a product code or product name that can be cross referenced between the submitted product and relevant supporting documentation. If the product codes and/or names have been changed since publication of the supporting documentation, then official evidence of this must be provided with the supporting documentation supplied.

Any deviation from these requirements will result in the supporting documentation not being considered adequate for the purposes of demonstrating compliance with the criteria conditions. This will in turn delay the submission and may result in the product not being considered eligible.

Where the Triple E criteria, or help documentation, reference compliance to appropriate rather than specific standards, the onus is on the product provider to ensure that supporting documentation supplied references recognised standards that apply to the submitted product, i.e., the product must be covered under the scope of the recognised standard.

If any product submitted is later found not to meet the performance of specification criteria, then this product will cease to be considered eligible for Triple E.

**Note:** When supplying the supporting documentation through the online process you must ensure that the correct page number of the document is referenced when compliance with the relevant condition is being demonstrated. An explanatory note should also be given where more than one-page number is referenced.

### **Test Reports**

All documents should be on headed paper and the document should be officially signed off by an authorised representative of the applicant.

Performance testing is to be done in an accredited test facility, or to the requirements detailed in *Table 4* through *Table 11*.

Performance testing is to be carried out in accordance with *LM79-19*, or *EN 13032*.

Documentary evidence of accreditation is to be provided.

The following should be borne in mind regarding the test reports:

- Test certificates must clearly relate to the actual product in question.

- Installation instructions in the test certificate on which the performance depends must be adhered to.
- Test certificates must be in English or be accompanied by a certified English translation. The translation can be from the accredited test house or from a professional translator listed by the *Irish Translators and Interpreters Association* or international equivalent.
- The relevant test performance standard must be stated on the test certificate.

All test reports submitted are to be clearly identifiable as being for the submitted product. If the product reference on the test report differs from the product reference for the submitted product a signed declaration on company headed paper is required stating that the products are the same.

Submitted values for the Lighting Unit Power Rating, Total Lumens Output and Light Output Ratio must correspond to the values in the test reports. For LED products, due to the rapidly developing technology and the improvements in efficacy, slight variations will be accepted, at *SEAI's* discretion, provided the overall efficacy calculated in accordance with the tested values is higher than the efficacy calculated using the submitted values.

Where certificates from an independent test lab are submitted, *SEAI* reserves the right to contact the test lab to verify the authenticity of the test reports.

### **Certification**

Where certificates are provided, all tests must be carried out by an organisation that is accredited.

**All documentation must be in English** or include adequate translation.

### **Scientific Equivalence**

Some Triple E criteria conditions allow for scientific equivalent tests and/or standards to be used. If a product has not been designed, manufactured, or tested to the specific standard named, then documentation relating to an equivalent internationally recognised standard may be used (where the phrase 'Or scientific equivalent' is included in the Triple E condition or help documentation). In such applications, the onus will be on the product submitter to demonstrate satisfactory equivalence of the standards. However, submissions which reference such supporting documentation may take longer to process, and if the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for Triple E.

**All documentation must be in English** or include adequate translation.



**Note:** Where specific standards are cited in a condition or in the Triple E help documentation, then documentation demonstrating that the relevant products have been designed, manufactured, or tested to these specific standards is preferred. Scientific equivalence is considered the exception rather than the norm.

### **Representative Testing**

Where test information is required for a range of technically similar products (e.g., configurations of one base product) then in exceptional instances a form of representative testing may be utilised once agreed in advance with *SEAI*. Such testing is where only representative products are tested from a technically similar group or range of products. Provided a clear correlation can be demonstrated between the tested product and the technically similar non-tested product, and that such a correlation clearly demonstrates the compliance of the non-tested product, representative testing may form an acceptable basis for supporting documentation.

**All documentation must be in English** or include adequate translation.

**Note:** Where representative testing is used for a group or range of products, if the tested or representative product is removed from the list of eligible products then all related products are also removed.