ESSENTIAL SERVICES COMMISSION

Victorian Energy Upgrades

Lighting Product Application Guide

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Contents

Introduction

This guide provides product applicants with guidance on how to apply for lighting products to be listed on our Register of Products, so that they are eligible to be installed and create Victorian energy efficiency certificates (VEECs) under the Victorian Energy Upgrades (VEU) program.

About this guide

This guide provides product applicants with instructions and our documentation requirements for applying for a lighting product to be listed on our Register of Products.

The product categories covered by this guide are:

- Public lighting upgrade products (product category 27)
- Building based lighting upgrade products (product category 34)
- Non-building based lighting activity products (product category 35)

This guide is divided into two sections:

- Section 1 provides general information and instructions on submitting lighting product applications
- Section 2 provides further detail of the documentary evidence required for the various lighting product categories

You should also read our Application Guide for Product Applicants, which provides additional information on:

- our Register of Products
- our product application and assessment process, including things to bear in mind throughout the process
- some product application functionality.

Who should use this guide

You should use this guide if you are

- applying for lighting products to be listed on our Register of Products under the Victorian Energy Upgrades program

- interested in understanding the product application requirements for lighting products under the VEU program.

You must hold a VEU account to apply for a product listing. Find out more about creating a VEU account at www.esc.vic.gov.au/become-veu-accredited

Seeking assistance

If you encounter difficulties with your application that cannot be answered using this guide, contact us on (03) 9032 1310 or veu@esc.vic.gov.au

We appreciate the time and effort that businesses put into their applications and our product officers will endeavour to work with you during the assessment process.

If you have submitted a product application, please use the designated 'notes' field in the online product assessment tool to communicate directly with the product officer responsible for assessing your application.

Legal context for this guide

We have prepared this guide as a general summary of relevant parts of:

- Victorian Energy Efficiency Target Act 2007 (the VEET Act)
- Victorian Energy Efficiency Target Regulations 2018 (the VEET Regulations)
- Victorian Energy Upgrades Specifications 2018 (the VEU specifications)
- Victorian Energy Efficiency Target Guidelines (the VEET guidelines)

View these documents at www.esc.vic.gov.au/veu-legislation

This guide should not be relied upon as substitute for legal advice and should be read in conjunction with the above source documents. In the event of inconsistency between this guide and the source documents, the content in the source documents apply.

1. Lighting product applications

1.1. Product criteria and documentation

Products must meet the specified requirements to be listed on the Register of Products and create VEECs. We do not accept deviations from the listed standards.

You must review and familiarise yourself with the product performance and documentation requirements for each type of product before testing products and submitting product applications.

If you are unable to provide sufficient and clear evidence that a product can meet the minimum criteria, the product will not be approved.

For most of the product categories listed on the following pages, you must submit an independent third-party verification of the product performance against established safety and performance standards, such as a test report from an accredited laboratory.

Consult the relevant sections of the VEET Regulations and VEU specifications when preparing documentary evidence for your application.

1.2. Lighting upgrade product types

Public lighting upgrade (product category 27)

Public lighting upgrade products can be installed in public open spaces (roads and public outdoor spaces) owned by relevant bodies.

Traffic signal light replacement and sports field lighting upgrades are not eligible.

There are two main product categories under this activity:

- ‘AEMO approved’
- ‘ESC approved’.

You may submit products approved by AEMO to us to be included on our Register of Products in the ‘AEMO approved’ category. Alternatively, you can provide the documentation listed in Section 2 to show that a product meets our product requirements under Part 27 to be included in the ‘ESC approved’ category.

Building based lighting upgrade (product category 34)

Building based lighting upgrade products can only be installed in non-residential/business premises. Both lamps and lighting control devices are listed on our Register of Products.

Non building-based lighting upgrade (product category 35)

Non-building based lighting upgrade products are those installed in environments that are not included in public lighting upgrade (activity 27) or building based lighting upgrade (activity 34).

Eligible installation environments include outdoor spaces such as sports fields and parks.

1.3. Project-based activities lighting applications

When installing lighting products as part of project-based activities, accredited persons (APs) must select from lighting products listed on our Register of Products. If the product is not listed on our Register of Products, accredited persons (APs), or other applicants, may apply for approval under one of the lighting product categories (21, 27, 34 or 35). Please contact VEU support if the lighting product or installation environment for your project-based activities project does not fit within the requirements of these lighting product categories.

1.4. How to lodge a request to modify the Register of Products

As noted in Section 3.2 of the Application Guide for Product Applicants, stakeholders can request modifications to, or removal of, approved products on the Register of Products by emailing the required information to us at veu@esc.vic.gov.au. For example, where we have estimated the NLP of a lighting product, we will update the estimate in the Register of Products upon request upon provision of a product specification sheet.

We may decide to modify the Register of Products in response to a request if we are satisfied that the modification is consistent with program requirements.

1.5. Representing multiple products with a single test report

In some circumstances, you may submit one test report to represent several similar products. Unless explicitly stated, separate tests and approvals are required for each individual product, and each test report must identify the brand and model of the product to which it applies.

All supporting documentation must specify the product brand and model number. If supporting documents contain different brands and/or model numbers, you must submit a safety certificate and a manufacturer's declaration clearly reconciling the different product brands and/or model numbers used across supporting documentation.

Note: Brand/model reconciliation documents are not accepted for safety certificates or ISTMT reports; these must be issued in the exact brand and model as the product applied for.

When can I submit a representative test report for ISTMT tests?

We will accept a representative test report for an in-situ temperature measurement test (ISTMT) if the differences between the tested product and the products represented by the report are unlikely to affect the final ISTMT result.

For example, we **will accept** one ISTMT test report to represent a series of products with the same wattage, LED chip and the electrical circuit, but with the following minor differences:

- lens material (glass vs plastic), lens design (frost vs. clear), type of cap (B22 vs E27), beam angle, light distribution (narrow, wide or oval optics), or superficial differences such as the luminaire colour or differences between installation brackets
- LED chip differences such as CCT, CRI, chromaticity coordinates, voltage bin, or flux bin.

The laboratory report must list all the differences between the lamps and provide photographic evidence of all lamps represented by the test report. The tests must be conducted on the product with the highest drive current. If the drive currents are identical across the products, test must be conducted on the product with the lowest correlated colour temperature (CCT), if the product has multiple colour temperatures.

If the lamp has switchable colour temperatures, a representative result can only be accepted if:

- the lowest CCT has been tested
- two settings have the same circuit arrangement (number of chips number of parallel strings) and therefore the drive current per chip is the same
- all chips are of the same model and only differing in CCT
- the intermediate setting is the result of higher and lower circuits being run at the same time in parallel (meaning the drive current per chip will be half that of the tested setting)
- the constant current driver is providing the same fixed current for all settings
- the above can be confirmed by the laboratory in the ISTMT report and that therefore the tested setting is the worst case in terms of temperature.

Alternatively, all settings must be tested and reported.

If LCDs are optional or the report is representative of other model(s) with LCD variations, the tested product model must be one with a lighting control device (if LCD has been selected as a feature in the portal), as it is the worst-case scenario.

We **will not accept** a representative test report in the following circumstances:

- products with different LED chips

- products with additional electrical circuits (motion sensors, Wi-Fi components, different drivers, different wattages, etc.)
- products with different thermal masses
- dimmable or non-dimmable versions of the same luminaire
- products with varying values of LCPs.

We may decide to request additional ISTMT reports if we believe that an ISTMT report is not representative of the performance of a luminaire.

All products must be tested at a supply voltage of 230V and 50Hz

For which product types should I enter the driver name and model in the portal?

In addition to the lamp model, you must enter the brand and the model of the driver under the model section of the portal for lamps with independent drivers. This includes all lamps with drivers not directly integrated into the circuit of the lamp.

You must also enter the driver name and model in cases where the driver could be identified with a separate brand and model.

Please follow the naming convention shown below when entering driver details in the portal.

If lamp and driver is the same brand - Lamp model (Driver: Diver Model)

If lamp and driver are different brands- Lamp model (Driver: Driver Brand Driver Model)

The product categories that require the driver model to be included as a part of the model are:

- LED panel with non-integrated driver
- LED panel with integrated driver
- LED ELV downlight with 240V remote driver
- LED lamp with non-integrated driver
- LED lamp with integrated drivers excluding drivers integrated into the lamp
- LED highbays excluding drivers integrated into the circuit of the lamp
- LED floodlights excluding drivers integrated into the circuit of the lamp

When can I submit a representative test report for ingress protection tests?

You must submit a test report to confirm ingress protection (IP) rating of lamps designed for outdoor environments, including reflector lamps and nonbuilding-based lighting products.

You may submit one test report to represent several products if all the following criteria are met:

- all proposed lamps have the same external construction (housing) when compared to the tested model (the test laboratory must confirm this with relevant photographic evidence)
- statement from the laboratory that the results of the IP report apply to all models listed on the product application
- the safety certificate must contain the model and corresponding IP rating for all lamps represented by the IP test report.

When can I submit a representative test report for CISPR tests?

CISPR[1] reports must be issued in the exact brand and model as the product applied for, except as follows: We will accept one CISPR test report to represent a series of products with the same wattage where those products share the same chip and circuitry.

Products with differing wattages, LED chips or circuitry will need a separate CISPR report. Brand/model reconciliation documents are not accepted for CISPR reports.

1.6. Lodging product applications for lamps with switchable wattage settings under building-based lighting upgrade

Lighting products with switchable wattages (lamps which allow for power settings of the product to be changed) must meet the following requirements:

- only one product model with the rated power (highest wattage) setting can be proposed for the VEU program
- the product specification sheet must describe all variable power and LCD settings
- the laboratory conducting the LCP and the ISTMT tests must confirm that they have tested the product at the rated power (highest wattage) setting
    - the laboratory conducting the ISTMT test must provide a clear photo of the switch, the location of the switch and its settings.
- All tests must be conducted at the rated wattage of the lamp.

Products can be used in the program set to any wattage setting, however VEEC claims will only be awarded for the product based on its rated power (i.e. highest wattage setting).

[1] CISPR is the Comité International Spécial des Perturbations Radioélectriques. In English: International Special Committee on Radio Interference.

1.7. Voltage Reduction units (VRU)

The purpose of the VRU is to reduce the AC supply voltage to a level close to the designed AC voltage. The reduction in voltage results in energy efficiency. For example, 230V mains voltage with a tolerance of +10% to -10% means that supply AC voltage can theoretically be anywhere between 253V and 207V, depending on local conditions. If the supply voltage is greater than the designed voltage, a VRU could reduce it. VRUs are not suitable for installation with electronic drivers or electronic ballasts. VRUs must only be used on Fluoro or HID lamp types and are NOT suitable for devices that require electronic power regulation, such as all types of LED lighting.

1.8. Can products approved for building based lighting also be submitted for public lighting upgrade and/or non-building based lighting upgrade?

Products listed as building based lighting upgrade products (product category 34) may also be approved as public lighting upgrade products (product category 27) and/or non-building based lighting upgrade products (product category 35).

If a product is already approved under product category 34 for Building-based lighting upgrade and you wish to apply for listing in a second product category, you will still need to reapply with the relevant and additional supporting documents (specific to the new product category), using the online product application tool.

1.9. Process of proposing lighting product for building based lighting upgrade if the product is first approved for public lighting upgrade or non-building based lighting upgrade

To apply for product approval under building based lighting, you need to lodge a new product application using the online product application tool. However, if the product is already approved under public lighting upgrade (product category 27) or non-building based lighting upgrade (product category 35), you only need to provide the product application number for the previously approved product.

1.10. Performance and check testing of approved lighting products

We undertake independent performance testing to ensure that products listed on our Register of Products meet the minimum criteria in the VEET Regulations and/or the minimum energy efficiency requirements in the VEU specifications.

In addition to the annual performance testing, we will also undertake in-house check testing to verify the performance of approved lighting products.

It is a condition of listing on the Register of Products that applicants submit products to us for testing upon request. Please note that up to six samples per product must be supplied at the applicant's expense should testing be required. We may modify the register at any time based on new information received, including the results from independent testing**.**

Failure to submit an approved product for testing may result in the product being removed from our Register of Products.

2. Product performance and documentation requirements

2.1. Product categories 27, 34 and 35: General requirements - lighting upgrade

Approval documentation summary

Table 1: Summary of documentary evidence required for each light source type under product categories 27, 34 and 35 of the VEET Regulations

	Documentation requirements									
Product type	Specifications	MEPS	NLP	LCP	Lifetime	Safety	EMC	Power factor (≥ 0.90)	Compatibility range	Voltage
T5, T8 or T12 fluorescent lamp only	Lamp /LCDs	Lamp[1]			Lamp					
T5, T8 or T12 lamp with ballast (luminaire)	Lamp / LCDs	Lamp			Lamp	Luminaire				
Flood light with integrated driver (LED lamp type only) LED downlight with integral driver (240V) LED ELV downlight with 240V remote driver LED highbay	Lamp / control gear / luminaire / LCDs		Lamp & control gear	Lamp & control gear	Lamp	Lamp / control gear / luminaire	Lamp / control gear / luminaire			

LED lamp with integrated driver LED lamp with non-integrated driver LED panel light with integrated driver LED panel light with non-integrated driver LED tube with integrated driver LED tube (lamp only) LED tube (luminaire)										
LED ELV downlight (lamp only)	Lamp		Lamp	Lamp & transformer	Lamp		Lamp	Lamp & transformer	Lamp[2]	
Voltage reduction unit					Unit	Unit			Unit	Unit
LCD	Unit					Unit	Unit		Unit	

[1] MEPS registration is not required for T5, T8 or T12 fluorescent lamps with an NLP of 14W or 15W; however, in such cases evidence of the NLP must be provided.

[2] The installer must ensure compatibility of the lamp with the existing transformer

2.2. Product category 27: Public lighting upgrade products

There are two main approval pathways for public lighting upgrade products and to obtain listing on our Register of Products:

- AEMO-approved: When proposing an AEMO approved luminaire, please submit the brand, model, nominal lamp power, and a screenshot of the product listing in AEMO's NEM Load Table2. If there is a discrepancy between the AEMO product description and the proposed brand and model, you need to submit a manufacturer's declaration and include relevant evidence to confirm that the AEMO listed product is the same as the product proposed for VEU approval.
  - AEMO approved products to be installed under public lighting upgrade (activity 27) are not required by the VEET Regulations to be listed on our Register of Products at the time of installation. However, from an IT systems perspective, all products need to be recorded in our Register of Products to create VEECs in our registry system. Accordingly, for AEMO approved products, you will need to apply to us (with minimal supporting documentation) to have a product listed on our register prior to creating VEECs for these activities.
- ESC - approved: When proposing non-AEMO-approved products, you need to submit the evidence detailed in table below to demonstrate that the product meets the program's legislative requirements.

Requirements	Product criteria	Documentary evidence
Safety & EMC	• Luminaire complies with AS/NZS 60598.1 and AS/NZS 60598.2.3 • Control gear complies with AS/NZS 61347.2.13	Safety certificates with Regulatory Compliance Mark (RCM) issued by a state government safety body or JAS-ANZ accredited approval provider. Safety Certificate for the control gear is not required if the product applied for has an integrated driver. Note: Safety certificates must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for safety.

[2] At the time of publication, the AEMO NEM Load Table was available at https://www.aemo.com.au/-/media/Files/Electricity/NEM/Retail_and_Metering/Metering-Procedures/NEM-Load-Tables-For-Unmetered-Connection-Points.pdf

Requirements	Product criteria	Documentary evidence
Ingress protection (IP)	• Optical chamber is rated IP65 • Control gear chamber is rated IP65 (unless the control gear is rated IP65, then the control gear chamber can be rated IP24).	• Test report: – using either: ○ the standard AS 60529-2004 in conjunction with the standard AS/NZS 60598.1 from a laboratory accredited by NATA or equivalent body ○ equivalent standard IEC 60529 Ed.2.1 2001, or ○ IEC 60529 (1989) with Amendment 1(1999)]. – to be conducted on one sample – must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for. • Documentation showing the laboratory is accredited to perform testing according to AS 60529-2004 and AS/NZS 60598.1 • You may submit a representative test report (see Section 1.5) for several products if all the following criteria are met: – All proposed lamps must have the same external construction (housing) when compared to the tested model. The test laboratory must confirm this with relevant photographic evidence – Statement from the laboratory must confirm that the results of the IP report apply to all models listed in the report – The safety certificate must list the model and corresponding IP rating for all proposed lamps.
Lamp circuit power (LCP)	N/A	• LM-79 Test report: – using IES LM-79-08 from a laboratory accredited by NATA or equivalent body – the test report must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for and the exact brand and model of the remote-control gear supplied with the product – Minimum test sample size: 1 unit – Must be tested at 230V, 50 Hz • Corresponding IES photometric files • Documentation showing the laboratory is accredited to perform IES LM-79-08.
Power factor	Combined power factor of the lamp and control gear must be ≥ 0.90.	
Lighting efficacy	100 lumens/watt.	
Correlated colour temperature (CCT)	2700K to 5700K for streetlights	
Colour rendering index (CRI)	≥ 70.	

Requirements	Product criteria	Documentary evidence
Nominal Lamp Power (NLP)	NLP is checked against the LCP to ensure NLP is not too low compared to the LCP	• Documentation showing the NLP value of the products applied for, including any of the following: – Product specification sheet – Manufacturer's declaration – Product/packaging label – LCP test report
Lifetime [3]	N/A	• ANSI/IES LM-80-15[4] test report – Produced from a laboratory accredited by NATA or equivalent body to perform ANSI/IES LM-80-15. – Minimum test sample size: 10 units (20 units are recommended) – must be conducted under minimum of two temperatures. One of the test conditions must be either 55°C or 85°C. – The test report containing TM21 projection information is preferred. If TM21 projection is not covered by the LM-80 report and if lifetime interpolation between LM80 temperatures is required, a separate TM21 report must be provided for the projection of lifetime. • IES TM 21-19[4] test report (required unless the TM21 data is reported in the LM80 report): – produced by a laboratory accredited by NATA or equivalent body to perform ANSI/IES LM-80-15 – based on the corresponding ANSI/IES LM-80-15 test report – Minimum test sample size: 10 unit (20 units are recommended) • ISTMT (In-situ temperature measurement test) report – must be issued in the **exact brand and model** of each product (Brand/model reconciliation documents are not accepted for ISTMT reports) applied for:

[3] The new reporting requirement based on the IES LM80-15 and IES TM21-19 standards comes into effect on 31 Oct. 2021. Applicants can continue to submit reports based on IES LM-80 -08 and IES TM-21-11 till then.

Requirements	Product criteria	Documentary evidence

		– include statement confirming that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory **is not** required to be accredited to IES LM-84-14)
		– using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test
		– The ISTMT should be conducted at 230V, 50 Hz with the control gear supplied with the lamp.
		– must be conducted at ambient temperature of 25°C.
		– must explain how the LED chip forward current was determined. The laboratory may explain forward current using the construction of the LEDs within the luminaire such as the parallel LED arrays (strings), number of LED chips in an array, average drive current of a LED array, and/or total drive current of the Chip on Board (COB)
		– the test sample size (minimum 1 unit)
		– the brand and model and forward current of the LED chip(s)
		– must include clear photos:
		  – showing the original product label listing the exact brand and model of the product applied for and the original product label listing the exact brand and model of the remote-control gear supplied with the product*
		  – showing the exact position of the thermocouple.
		
		Notes:
		• We will accept a representative ISTMT test report (see Section1.5) in the instances where differences between the models are not likely to influence the ISTMT result.
		  – Some examples are lamp colour temperature (CCT), CRI, lens material, holder/end cap or beam angle. However, the laboratory must declare all the differences between the lamps and provide photographic evidence of all lamps represented by the test report.

Requirements	Product criteria	Documentary evidence
		– The tests must be conducted on the product with the highest drive current. If the drive currents are identical, the test must be conducted on the product with the lowest CCT. We require individual ISTMT tests for all other proposed products. • The ISTMT temperature and LED chip forward current of the tested product must be equal to or lower than the highest temperature and/or forward current tested in the IES LM-80-15 report or the lifetime of the product cannot be established. • Manufacturer's declaration stating: – the brand and model of the LED chip supplied with each brand and model of lamp applied for, and – the forward current of the LED chip(s) used in each lamp when operating under normal Australian conditions. • **Scope of accreditation** document for each testing laboratory.
Specifications	N/A	Product specification sheet showing the specifications of the product, including (where relevant), nominal lamp power, the LCDs contained in the luminaire and information on whether the driver is integrated.

The table below outlines the documentary evidence required for standalone LCD devices eligible for installation in public spaces.

Requirements	Product criteria	Documentary evidence
Safety & EMC	Electrical safety certificate with RCM compliance	Safety certificates with Regulatory Compliance Mark (RCM) issued by a state government safety body or JAS-ANZ accredited approval provider. Note: Safety certificates must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for safety.
Ingress protection (IP)	Rated IP65	• Test report: – using either: o the standard AS 60529-2004 in conjunction with the standard AS/NZS 60598.1 from a laboratory accredited by NATA or equivalent body o equivalent standard IEC 60529 Ed.2.1 2001, or o IEC 60529 (1989) with Amendment 1(1999)].

Requirements	Product criteria	Documentary evidence
		– to be conducted on one sample – must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for. • Documentation showing the laboratory is accredited to perform AS 60529-2004 or equivalent standard IEC 60529 Ed.2.1 2001 or IEC 60529 (1989) with Amendment 1(1999) • You may submit a representative test report (see Section 1.5) for several products if all the following criteria are met: – All proposed LCDs must have the same external construction (housing) when compared to the tested model. The test laboratory must confirm this with relevant photographic evidence – Statement from the laboratory must confirm that the results of the IP report apply to all models listed in the report – The safety certificate must list the model and corresponding IP rating for all proposed LCDs.
Specifications	N/A	Product specification sheet showing the specifications of the product, showing functionality of the product

2.3. Product category 34: Building based lighting upgrade products

Requirements	Product type	Documentary evidence
Specifications	All	• Product specification sheet showing the specifications of the product, including (where relevant), type and specifications of LCDs built into to lamps • All lamp specifications must show an NLP value for each proposed luminaire. • Information on whether the products have integrated driver or external driver
MEPS	• T5, T8, or T12 fluorescent lamp	Screen shot of MEPS registration details from www.energyrating.gov.au.

Requirements	Product type	Documentary evidence
LCP	• Flood light with integrated driver (LED lamp types only) • LED downlight with integral driver (240V) • LED ELV downlight with 240V remote driver • LED highbay • LED lamp with integrated driver • LED lamp with non-integrated driver • LED panel light with integrated driver • LED panel light with non-integrated driver • LED tube with integrated driver • LED tube (lamp only) • LED tube (luminaire)	• Test report – produced from laboratory accredited by NATA or equivalent body showing the combined lamp circuit power (LCP) of the lamp and control gear (in watts) – must be tested at 230V, 50 Hz – must be conducted with the lamp and control gear the product will be supplied and installed with – the LCP may be reported as a part of the ISTMT test report • If the safety certificate provided is for the control gear only, the LCP report must either: – state the exact brand and model number of the control gear tested with the lamp. – provide screenshot of product on IPART public list of accepted emerging lighting technology showing the exact brand and model of the product applied for and the LCP. We may request further supporting documentation if required.
	• LED ELV downlight (lamp only)	• Test report – produced from laboratory accredited by NATA or equivalent body showing the lamp circuit power (LCP) of the lamp and a transformer (in watts) – should be tested with a driver supplied with 230V, 50Hz – may be reported as a part of the ISTMT test report

Requirements	Product type	Documentary evidence
		– the lamp must be tested with a representative magnetic or electronic transformer designed for halogen lamps – the lamp will only be approved for installation with the same type of transformer (magnetic or electronic) that it was tested with. – must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for.
NLP	• T5, T8, or T12 fluorescent lamp	• Screenshot of MEPS registration details from www.energyrating.gov.au, • Manufacturer's product specification sheet or declaration
	• Flood light with integrated driver (LED lamp types only) • LED downlight with integral driver (240V) • LED ELV downlight with 240V remote driver • LED highbay • LED lamp with integrated driver • LED lamp with non-integrated driver • LED panel light with integrated driver • LED panel light with non-	• Manufacturer's product specification sheet or declaration • Product/packaging label • Specification sheet or declaration must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for.

Requirements	Product type	Documentary evidence
	integrated driver • LED tube with integrated driver • LED tube (lamp only) • LED tube (luminaire) • CFL downlight (non-integral ballast)	
Lifetime	Non-LEDs	• Manufacturer's product specification sheet or declaration • The specification sheet must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for and, where relevant, the exact brand and model of the remote-control gear supplied with the product.
	LEDs	• ANSI/IES LM-80-15[5] test report – produced from a laboratory accredited by NATA or equivalent body to perform ANSI/IES LM-80-15. – Minimum test sample size:10 units (20 units are recommended) – must be conducted under minimum of two temperatures. One of the test conditions must be either 55°C or 85°C. – The test report containing TM21 projection information is preferred. If TM21 projection is not covered by the LM-80 report and if lifetime interpolation between LM80 temperatures is required, a separate TM21 report must be provided for the projection of lifetime. • IES TM-21-19[5] test report (required unless the TM21 information is reported in the LM 80 report):

[5] The new reporting requirement based on the IES LM80-15 and IES TM21-19 standards comes into effect on 31 Oct. 2021.Applicants can continue to submit reports based on IES LM-80-08 and IES TM-21-11 till then.

Requirements	Product type	Documentary evidence
		– produced by a laboratory accredited by NATA or equivalent body to perform ANSI/IES LM-80-15 – based on the corresponding ANSI/IES LM-80-15 test report – Minimum test sample size: 10 units (20 units are recommended) • ISTMT report – must be issued in the **exact brand and model** of each product applied for (Brand/model reconciliation documents are not accepted for ISTMT reports) – include a statement confirming that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory **is not** required to be accredited to IES LM-84-14) – using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test – the ISTMT should be conducted at 230V, 50 Hz with the control gear supplied with the lamp. – the ISTMT must be conducted at ambient temperature of 25°C. – the test sample size (minimum 1 unit) – must explain how the LED chip forward current was determined. The laboratory may explain forward current using the construction of the LEDs within the luminaire such as the parallel LED arrays (strings), number of LED chips in an array, average drive current of a LED array, and/or total drive current of the Chip on Board (COB) – the brand and model and forward current of the LED chip(s) – must include clear photos: – showing the original product label listing the exact brand and model of the product applied for and the original product label listing the exact brand and model of the remote-control gear supplied with the product* – showing the exact position of the thermocouple. Notes:

Requirements	Product type	Documentary evidence
		• We will accept a representative ISTMT test report (see Section 1.5) in the instances where differences between the models are not likely to influence the ISTMT result. Some examples are lamp colour temperature (CCT), CRI, lens material, holder/end cap or beam angle. However, the laboratory must declare all the differences between the lamps and provide photographic evidence of all lamps represented by the test report. • The tests must be conducted on the product with the highest drive current. If the drive currents are identical, test must be conducted on the product with the lowest CCT. We require individual ISTMT tests for all other proposed products. • The ISTMT temperature and LED chip forward current of the tested product must be equal to or lower than the highest temperature and/or forward current tested in the ANSI/IES LM-80-15 report or the lifetime of the product cannot be established. • Manufacturer's declaration stating: – the brand and model of the LED chip supplied with each brand and model of lamp applied for – the forward current of the LED chip(s) used in each lamp when operating under normal Australian conditions. • **Scope of accreditation** document for each testing laboratory.
Safety	All relevant	Safety or Regulatory Compliance Mark (RCM) issued by a state government safety body or JAS-ANZ accredited approval provider. Note: The original safety certificate and any addendums/modifications must be submitted. The safety certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for safety. Alternatively, Screenshot of product on the IPART public list of accepted emerging lighting technology showing the exact brand and model of the product applied for (not accepted for VRUs). We may request further supporting documentation as required.
EMC	All relevant	• Completed Australian Communications and Media Authority (ACMA) Supplier's Declaration of Conformity (listing product

Requirements	Product type	Documentary evidence
		brand and models applied for and the supplier's code number); or • Screen shot of product registration details on the national equipment registration system database https://equipment.erac.gov.au/Registration/; or • Regulatory Compliance Mark (RCM) certificate of approval; or • Screenshot of product on the IPART public list of accepted emerging lighting technology showing the exact brand and model of the product applied for (**not accepted** for LED ELV downlights – lamp only). We may request further supporting documentation as required.
Power factor (≥ 0.90)	LED ELV downlight (lamp only)	• Test report from laboratory accredited by NATA or equivalent body showing the combined power factor of the lamp and a transformer • The power factor must be tested at 230V,50 Hz • When applicable the lamp must be tested with a representative magnetic or electronic transformer designed for halogen lamps • The lamp will only be approved for installation with the same type of transformer (magnetic or electronic) that it was tested with • The test report must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for.
Compatibility range	LED ELV downlight (lamp only)	Manufacturer's product specification sheet or declaration listing all electronic and/or magnetic transformers (including dimmable transformers) that the lamp is compatible with.
Voltage Reduction unit (AC)	VRU	• Test report from a laboratory accredited by NATA or equivalent body showing the output voltage of the VRU • The test report must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for
LCD type	LCD	• Product specification sheet showing type and functionality of the LCD

2.4. Product category 35: Non-building based lighting upgrade products

The table in this section outlines the documentary evidence required for LED lamps and lighting control devices eligible for installation in non-building based environments. For instructions on how to apply for an existing approved Part 34 product to be approved as a Part 35 product, please see Section 0.

Requirements	Product criteria	Documentary evidence
Safety & EMC	• Luminaire complies with AS/NZS 60598.1 and AS/NZS 60598.2.5 • Control gear complies with AS/NZS 61347.2.13.	Safety certificates with Regulatory Compliance Mark (RCM) issued by a state government safety body or JAS-ANZ accredited approval provider. Safety certificates for the control gear are not required if the product applied for has integrated driver. Note: Safety certificates must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for safety.
Ingress protection (IP)	• Optical chamber is rated IP65 • Control gear chamber is rated IP65 (unless the control gear is rated IP65, then the control gear chamber can be rated IP24).	• Test report: – using either: ○ the standard AS 60529-2004 in conjunction with the standard AS/NZS 60598.1 from a laboratory accredited by NATA or equivalent body ○ equivalent standard IEC 60529 Ed.2.1 2001, or IEC 60529 (1989) with Amendment 1(1999)]. – to be conducted on one sample – must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for. • Documentation showing the laboratory is accredited to AS 60529 and AS/NZS 60598.1
Suitability for outdoor environments	• Luminaire complies with specific clauses of AS/NZS 60598.2.5 relevant to luminaires for use outdoors	• Safety test report – showing compliance to all aspects of Clause 5.6.5 of AS/NZS 60598.2.5 – Minimum test sample size: 1 unit – must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for and the

Requirements	Product criteria	Documentary evidence
	above ground level.	exact brand and model of the remote-control gear supplied with the product • Documentation showing the laboratory is accredited to perform AS/NZS 60598.2.5 • You may submit a representative test report for several products from the same family, if the following criteria are met: – A safety test report with test standard AS/NZS 60598.2.5 can be submitted for a product with the highest wattage (worst case) – Statement from the laboratory confirming that safety report applies to all other models – Safety certificate must list all proposed lamps on the same certificate.
Lamp circuit power (LCP)	N/A	• Test report – using IES LM-79-08 from a laboratory accredited by NATA or equivalent body – Minimum test sample size: 1 unit – Must be tested at 230V, 50 Hz – must include a photograph that clearly shows the product with the original product label listing the exact brand and model of the product applied for and the exact brand and model of the remote-control gear supplied with the product • Corresponding IES photometric files • Documentation showing the laboratory is accredited to perform IES LM-79-08.
Power factor	Combined power factor of the lamp and control gear must be ≥ 0.90	
Lighting efficacy	100 lumens/watt	
Colour rendering index (CRI)	≥ 70	
Nominal Lamp Power (NLP)	NLP is checked against the LCP to ensure NLP is not too low compared to the LCP	• Documentation showing the NLP value of the products applied for, including any of the following: – Product specification sheet – Manufacturer's declaration – Product/packaging label

Requirements	Product criteria	Documentary evidence
Lifetime	Reported lifetime (L_{70}) should be provided	• ANSI/IES LM-80-15[6] test report – produced from a laboratory accredited by NATA or equivalent body to perform ANSI/IES LM-80-15. – Minimum test sample size: 10 units (20 units are recommended) – must be conducted under minimum of two temperatures. One of the test conditions must be either 55°C or 85°C. – The test report containing TM21 projection information is preferred. If TM21 projection is not covered by the LM-80 report and if lifetime interpolation between LM80 temperatures is required, a separate TM21 report must be provided for the projection of lifetime • IES TM-21-19[7] test report (required unless the TM21 information is reported in the LM80 report): – produced by a laboratory accredited by NATA or equivalent body to perform ANSI/IES LM-80-15 – based on the corresponding ANSI/IES LM-80-15 test report – ANSI/IES LM-80-15 reports that contain a TM-21-19 calculation are acceptable. – Minimum test sample size: 10 units (20 units are recommended) • The ISTMT report

[6] On 31 October 2021, a new TM-21 calculator was released based on the updated standard IES TM-21-19 Twelve month transition period was introduced to allow applicants to submit applications based on the new TM-21-11 calculator. We will only accept the TM 21 calculations performed with the new TM 21 calculator from 1st November 2022.

[7] On 31 October 2021, a new TM-21 calculator was released based on the updated standard IES TM-21-19 Twelve month transition period was introduced to allow applicants to submit applications based on the new TM-21-11 calculator. We will only accept the TM 21 calculations performed with the new TM 21 calculator from 1st November 2022.

Requirements	Product criteria	Documentary evidence
		– must be issued in the **exact brand and model** of each product (Brand/model reconciliation documents are not accepted for ISTMT reports) applied for – include a statement confirming that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory **is not** required to be accredited to IES LM-84-14), – using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test – the ISTMT must be conducted at 230V, 50 Hz with the control gear supplied with the lamp. – the ISTMT must be conducted at ambient temperature of 25°C. – the test sample size (minimum 1 unit) – the brand and model and forward current of the LED chip(s) – must explain how the LED chip forward current was determined. The laboratory may explain forward current using the construction of the LEDs within the luminaire such as the parallel LED arrays (strings), number of LED chips in an array, average drive current of a LED array, and/or total drive current of the Chip on Board (COB). • The ISTMT report – must include clear photos: – showing the original product label listing the exact brand and model of the product applied for and the original product label listing the exact brand and model of the remote-control gear supplied with the product – showing the exact position of the thermocouple. Notes: • We will accept a representative ISTMT test report (see Section 1.5) in the instances where differences between the models are not likely to influence the ISTMT result. Some examples are lamp colour temperature (CCT), CRI,

Requirements	Product criteria	Documentary evidence
		lens material, holder/end cap or beam angle. However, the laboratory must declare all the differences between the lamps and provide photographic evidence of all lamps represented by the test report. The tests must be conducted on the product with the highest drive current. If the drive currents are identical, test must be conducted on the product with the lowest CCT. We require individual ISTMT tests for all other proposed products. • The ISTMT temperature and LED chip forward current of the tested product must be equal to or lower than the highest temperature and/or forward current tested in the or ANSI/IES LM-80-15 report or the lifetime of the product cannot be established. • Manufacturer's declaration stating: – the brand and model of the LED chip supplied with each brand and model of lamp applied for – the forward current of the LED chip(s) used in each lamp when operating under normal Australian conditions. • **Scope of accreditation** document for each testing laboratory.
Specifications	N/A	Product specification sheet showing the specifications of the product, including NLP, type of the driver (integrated or external) and types of LCDs (if any)

Glossary

General definitions

Term	Definition
Accredited body	In relation to a product, this means a body accredited under the Joint Accreditation System of Australia and New Zealand to give product certification or component certification of a product.
AEMO	Australian Energy Market Operator
AP	An accredited person is a business that has been accredited by the commission to operate within the VEU Program. An AP is entitled to create VEECs through the undertaking of energy efficient activities which are prescribed under the VEET Regulations.
Approved laboratory	Means a laboratory that is accredited by the National Association of Testing Authorities under a mutual recognition agreement.
Business/non-residential premises	Under the VEU program, business/non-residential premises are defined as: (i) the premises that is not registered as a residential premises (see definition below), and (ii) the premises not registered as a 'scheduled activity premises' unless it has been 'opted in' to the VEU Program pursuant to Regulation 10AA of the VEET Regulations.
DNSP	Distribution network service provider
EMC	Electromagnetic compatibility
Equivalent body	A testing body recognised by NATA under a mutual recognition agreement.
ERAC	Electrical Regulatory Authorities Council
ESV	Energy Safe Victoria
IPART	Independent Pricing and Regulatory Tribunal of New South Wales, the administrator of the New South Wales' Energy Savings Scheme.
NATA	National Association of Testing Authorities
RCM	Regulatory Compliance Mark
Residential premises	A building classified under part A3 of the Building Code of Australia as a class 1, 2, 3, or 4 building.
VEEC	Victorian energy efficiency certificate. Each VEEC represents one tonne of carbon dioxide equivalent (CO_2-e) abated by the prescribed activity.

Lighting-specific terms

Term	Definition
CCT	Correlated colour temperature
COB	Chip on board
CRI	Colour rendering Index
ELV	Extra low voltage
Forward current	The current that flows under the application of a forward voltage.
IP	Ingress protection
ISTMT	In-situ temperature measurement test
LCD	Lighting control devices are used to control the lighting output of a light fitting, for example occupancy sensors, daylight-linked controls, programmable dimmers, manual dimmers, and voltage reduction units (VRU). • ***daylight-linked control*** means a product that, using a photoelectric cell, isable to automatically vary the light output of a luminaire to compensate for the availability of daylight • ***manual dimmer*** means a lighting control device that allows a user to manually control a luminaire's output using a readily accessible knob, slider or other mechanism • ***occupancy sensor*** means a lighting control device that uses a motion sensor to detect the presence of people in a space and adjusts the output of a luminaire in that space accordingly • ***programmable dimmer*** means a lighting control device that can automatically select a luminaire's light output according to the time of day • ***VRU*** – please refer to section 1.7 of this guide for the definition.
LCP	Lamp circuit power, in relation to the lamp, means the power drawn by the lamp and the power drawn by any associated ballast or transformer, which is divided equally between the lamp and any other lamps associated with the ballast or transformer.
LED	Light emitting diode
Light output	The quantity and distribution of the visible light produced by a light source.
Lighting Source Efficacy	The initial luminous flux of a lamp or the total radiant flux in the visible spectrum weighted by the spectral response of the eye, divided by the electric power that will be consumed by the lamp but excluding ballast and control gear power losses.
Exact efficacy	Refers to the average value of efficacy based on test results of ten samples

Term	Definition
NLP	Nominal lamp power is the manufacturer's rated value for power drawn by a single lamp.
VRU	A voltage reduction unit is a product used to reduce mains AC supply voltage to a light fitting. The purpose of the VRU is to reduce the supply voltage to a level close to the designed AC Voltage. VRUs are NOT suitable for devices that require electronic power regulation, such as all types of LED lighting.
Extra low voltage lighting converter	As per AS/NZS 4879.1; a magnetic transformer or an electronic step-down converter used with ELV lamps, which, • receives an input from mains supply • has single ELV (extra low voltage) output (either ac or dc) • is sold with, or intended to be used with, ELV lamps(s) that constitute the primary load
CFL	Compact florescent lamp
Control gear	A device for the control of one or more light sources but does not include a lighting control device. Example: Ballasts, transformers, and step-down converters such as drivers
Downlight	A luminaire mounted flush with a surface, with a light source aperture whose largest dimension is less than 20 centimeters
LED integrated luminaire	A product that contains a LED device and the equipment required to distribute, filter, or transform the light being transmitted and includes: • all parts necessary for supporting, fixing, and protecting the product and for connecting the product to the electricity supply • any lighting control device for the product
LED lamp with integrated driver	A self-ballasted LED module, incorporating control gear and any additional elements necessary for stable operation, that is designed for direct connection to an electricity supply
Luminaire	A non-integrated luminaire or a LED integrated luminaire;
NBB lighting	Non-building based lighting is lighting undertaken under the part 35 of the VEET Regulations
Non-integrated LED lamp	A LED module where the control gear is separate from the LED module for operation under constant voltage, constant current, or constant power
Non-integrated luminaire	A device that distributes, filters, or transforms the light transmitted from one or more lamps that are separate from the device and includes all parts necessary for fixing and protecting the lamps and for connecting the lamps to the electricity supply;
Reported lifetime (L70)	Refers to L_{70} which is the projected operating time to 70% of lumen maintenance reported in LM80 report or TM21 report.

Document version control

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Version	Amendments made	Date published
1.0	First release	10 December 2018
1.1	• Updated photograph requirements for test reports to mandatory regardless of issue date • Updated requirement on determination of drive current of LED chip in ISTMT reports to mandatory regardless of issue date • Updated requirement for statement of compliance against omni-directionality criteria • Updated sample size requirement for LM80 and TM21 reports • Updated NLP requirements • Added evidence for the new NLP requirement • Added requirement for providing information on driver type in specification sheet for product categories 27, 34 and 35. • Added requirement for product category 21 to require ERAC registration • Added definitions for “Exact efficacy” and “Reported lifetime(L70)” • Removed requirement for safety certificate for the driver where the product has integrated driver • Consolidated all the requirements for product categories 21A, 21B, 21C, 21D, 21E and 21F.	1 October 2019
1.2	• Updated the requirements for a TM21 test report to require a separate TM 21 report if TM21 results are missing from the LM80 report • Introduced ISTMT test requirements for lamps with switchable colour temperatures (CCTs) • Clarified the test requirements related to the LM 80 test – more guidance provided on test temperatures • Minor edits to NLP requirement for Product Category 27,34 and 35	20 February 2020

1.3	• Introduced simplified process for approval under product category 34 for products already approved under product categories 27 or 35. • Updated the version of the TM 21 standard to TM 21-19 • Removed the old test standard LM80 – 08. • Clarified requirement that products to be tested at 230V.	31 July 2020
1.4	• Introduced six new LED types that replace the LED type 'LED other (240v)' • Extended the transition period for accepting new LM80-15 and TM21 standards	24 September 2020
1.5	Introduced product acceptance criteria for lamps with switchable power settings	12 October 2020
1.6	• Clarified requirement to enter the driver name and model as a part of the lamp model (if the driver could be identified with a separate brand and model) • Explained product application requirements related to switchable products – we will only accept products tested to rated power. • Clarified the requirement for testing a product model with the lighting control if LCD has been selected as an option for assessment	1 April 2020
1.7	Updated activity 21 product requirements to reflect VEU Specifications (version 9.0)	1 August 2021
1.8	Clarified the definition and requirements of voltage reduction units (VRUs) for product category 34.	11 October 2021
1.9	• Clarified the IP testing standards for lighting products. • Included information about the new TM-21 calculator and the transition periods related to it.	16 December 2021
2.0	Updated to reflect VEU Specifications 14.0 release	31 January 2023