Proposed Lighting Regulations – Post Public Consultation Process Update

Updates have been made to the two lighting determinations in response to feedback received in the public consultation process. Changes have been made to specifically reduce the administrative burden on suppliers (detailed below) in the proposed LED determination, however, the proposed scope and MEPS parameters remain the same.

Key Issues Raised in Submissions

Regulatory Burden

The proposed LED determination was amended to reflect the objective of minimising regulatory burden through lowering costs of registration, including through revisions to the family definition:

- Increasing the maximum number of models allowed in a family registration from 50 to 100,
- Removing the requirement that glass bulb shapes be the same (for single capped),
- Allowing models (that would otherwise qualify to be in the same family) to be included in the same family if their rated performance characteristics for the parameters of colour rendering index (CRI) and L70B50 lifetime fall within one of three specified ranges.
    - For CRI the ranges are: ≥ 70 and < 80; ≥ 80 and < 90; ≥ 90.
    - For single capped lamps the L70B50 ranges are: ≤ 15,000 hrs; > 15,000 and ≤ 30,000 hrs; > 30,000 hrs.
    - For double-capped G13 and G5 LED lamps the L70B50 ranges are: ≤ 30,000 hrs; > 30,000 and ≤ 60,000 hrs, > 60,000 hrs.
- Removing tube length requirements (for double-capped lamps) when registering models together in a family.
- In addition, the option remains for each supplier to declare a special purpose family of up to ten models within a particular product class.
- The family definition also allows bulbs of different brands, wattages, efficacy, and shape to be registered in the same family provided they meet the general conditions. Compliance check testing tolerances for labelling requirements are included in the determination.

The full revised product family definition is at Attachment A.

The Department of Climate Change, Energy, the Environment and water (the department) understands that there continues to be concern on the level of regulatory burden the determinations may mean for suppliers. The department considers that the changes to the family of models section in the updated determination will significantly decrease the number of registrations required from suppliers.

The proposed alignment of the MEPS requirements with European Union (EU) regulations also means that no additional testing is required for registration in Australia. The proposed determination allows additional more flexible/modern approaches to demonstrating compliance for some parameters including useful luminous flux and colour consistency (NOTE: EU method still accepted).

Health Concerns

Some submissions raised concerns about health impacts of artificial lighting and in particular LED lighting. The proposed LED determination includes health related minimum performance requirements for:

- Blue Light Hazard – the potential for some lighting to impact upon retina from short term acute exposure. Studies have found that normal LED domestic and office lighting regulated under the determination are not a significant risk. A blue light hazard requirement exists for mains voltage LED lamps under state electrical safety regulation. The proposed LED Determination will extend this requirement (RG0 or RG1 unlimited) to low voltage LED lamps within scope. Ultra-violet and Violet Radiation - Almost all consumer LED lamps on the market today do not emit UV light. The proposed LED MEPS specified that all lamps within scope must be RG0 – the lowest level of UV radiation risk.
- Temporal Light Modulation (visible and non-visible flicker) – the proposed LED Determination sets limits for flicker – maximum levels for visible ($P_{st}^{LM} \leq 1$) and non-visible (SVM≤ 0.9 SVM). This aligns with current EU regulations (EU will revise SVM to ≤ 0.4 on 1 September 2024).

No changes to these sections in the proposed determination have been made. Blue Light Hazard is an ongoing field of research which will be monitored, and further updates could be made if required if the determinations are finalised.

Circadian Effects

Some submissions noted LED lamps have a detrimental effect on circadian rhythms. The department notes the advice from the ICNIRP (International Commission on Non-Ionizing Radiation Protection) that these issues relate to lighting in general terms. Lighting can influence circadian rhythms, and our understanding of how lighting can influence circadian rhythms, and the pathways in the body through which this occurs has advanced significantly over the last 20 years. The department notes the flexibility of LED lighting in delivering light at varying wavelengths, intensity and colour temperature offers the potential for tailored lighting solutions, varying throughout the 24-hour cycle. Education of lighting suppliers, designers and the public will be an important aspect in ensuring new discoveries result in improved quality of life.

The department notes that specific advice and lighting design may be required for groups such as shift workers and the elderly. No changes to the proposed LED determination have been made.

Efficiency Labelling on Lighting Product Packaging

Some submissions called for comparative efficiency labelling on product packaging to help consumers make informed choices, pointing out that not all LED lamps are equally efficient. Given the small size of many lamp packages and the global nature of lighting products, it is challenging for energy labels to be included on packages. The proposed LED lamp determination requires the product efficiency expressed in lumens per Watt to be marked on the package.

No changes to the determination have been made. The department notes that if the determinations are agreed, educational resources will be provided to assist consumers in using this information to compare the efficiency of products and make informed choices.

Further Phase-out

Some submissions called for the phase-out of fluorescent and all incandescent lamps. The scope of the phase-out in the revised incandescent determination has been designed to allow the continued sale of some niche products where alternatives are not yet practical. Low voltage halogen products will continue to be available, but subject to MEPS as the cost of household dimmer conversion may be a barrier.

While no changes to the proposed update to the incandescent determination have been made, if the determination is agreed, the scope of the phase-out will continue to be monitored and considered in future reviews.

The department notes that consideration of next steps for compact and linear fluorescent lighting is being considered in the context of Australia's obligations under the Minamata Convention on Mercury.

Potential Loophole in Incandescent Determination

A submission noted that it may be possible for lamps to be sold in Australia outside the scope identified for extra low voltage lamps by claiming to be 12 V dc. The determination has been amended to refer to both ac and dc to close that loophole.

Need for LED MEPS

Some submissions questioned the need for regulation of LED lamps under the GEMS Act given their efficiency and market penetration. While the uptake of LED lighting has increased significantly over the past few years, some use of incandescent lamps remains. The department notes that the average efficiency of LED lamps has not increased in line with expectations in the 2018 RIS.

The exposure draft LED determination proposed information be available on packaging to help consumers transition to or replace older less efficient LED lamps. The department notes that the proposed LED MEPS performance requirements and monitoring and compliance could help remove poorer quality products from the market, increasing consumer confidence as the transition occurs.

Some other submissions noted that with the increasing number of other countries putting LED MEPS in place (79% of the world population have MEPS in place or under development), without regulation, there is an increased risk for Australia to become a dumping ground for poor quality products.

No changes to the proposed determination have been made in response to these issues.

Rebound Effect

A submission noted the potential for energy and emissions gains achieved through the move to LED lighting to be lost again due to a proliferation of lighting. The scope of the proposed incandescent and LED determinations is likely to influence the nature of lighting most significantly in indoor residential, commercial and public spaces. In these spaces the amount and distribution of lighting devices in use will generally be limited by the amount of lighting services required at any one time, as well as the requirements of the National Construction Code. There may be a greater potential for proliferation in outdoor lighting. A significant portion of new outdoor lighting has already transitioned to integrated LED luminaires which are outside the scope of the proposed MEPS for LED lamps. The Department has developed National Light Pollution Guidelines for Wildlife that provides guidance on minimisation of the impact of artificial light upon the behaviour, survivorship or reproduction of wildlife. Outdoor lighting impacts are also being addressed at the state and local government level.

End of Life Management

A submission also raised this issue. The department notes a Lifecycle assessment of residential lighting in Australia that shows that most of the potential impacts of lighting are generated by the use phase, confirming that high efficacy lamps should be favoured in order to reduce energy consumption. End of life management for electronic devices is an increasingly important issue. The Australian Government is developing mandatory product stewardship schemes to reduce waste from small electrical products and solar photovoltaic systems. The proposed further phase-out of incandescent lamps will accelerate and result in a more complete transition to LED lighting, however it is a transition already underway. The proposed minimum performance parameters include requirements for endurance testing (to minimise early failure) and lumen maintenance testing (related to lifetime performance). Lamps that meet these requirements should increase the length of service life for LED lighting and reduce the annual volume of lighting waste.

Next Steps

This information has been incorporated into the process to finalise the determinations ahead of any consideration by Energy Ministers.

There will also be further collaboration with stakeholders during the development and testing of the online registration forms.

Attachment A – Revised LED Family of Models Definition

Families of Models

(1) For the purposes of section 28 of the Act, for a particular product class covered by this instrument, 2 or more models are in the same family of models if:

(a) they are members of a family that has been declared to the GEMS Regulator; and

(b) the requirements of this section are satisfied in relation to the models and the family.

(2) For the purposes of paragraph (1)(b):

(a) the models must be in the same product class; and

(b) subject to subsection (3)—evidence of a test report documenting the results of the testing required in accordance with section 22 must have been provided for at least one model in the family at the time an application was made for registration for the models under section 41 of the Act; and

(c) the models must have the same rated voltage or voltage range; and

(d) the models must all have a rated CRI of either:

(i) no less than 70 but less than 80; or

(ii) no less than 80 but less than 90; or

(iii) no less than 90; and

(e) for single-capped lamps—the models must all have a rated $L_{70}B_{50}$ lifetime of either:

(i) no greater than 15,000 hours; or

(ii) greater than 15,000 hours but no greater than 30,000 hours; or

(iii) greater than 30,000 hours; and

(f) for double-capped G13 and G5 LED lamps—the models must all have a rated L70B50 lifetime of either:

(i) no greater than 30,000 hours; or

(ii) greater than 30,000 hours but no greater than 60,000 hours; or

(iii) greater than 60,000 hours; and

(g) for double-capped G13 and G5 LED lamps—the models must have the same cap size; and

(h) the models must have the same reference control settings (if applicable); and

(i) in relation to the following design features:

(i) for dimmability—the models must be either all dimmable or all non-dimmable;

(ii) for light direction—the models must be either all directional or all non-directional;

(iii) for utilisation of LED filaments—the models must either all be designed with LED filaments or without LED filaments.

(iv) for CRI—models with CRI less than 80 must meet the requirements under item 1 of the table in section 19.

Note: Test reports and other evidence of performance of models can be provided at the time of registration on a voluntary basis.

(3) For paragraph (2)(b):

(a) the model used for UV hazard testing (where required) must be the model with the highest UV radiant power in the relevant family; and

(b) the model used for Blue Light hazard testing (where required) must be the model with the highest CCT in the relevant family; and

(c) the model used for all other testing must be the model with the lowest luminous efficacy (lm/W) in the relevant family, when measured in the reference control settings.

Note: Subsection 20(1) contains UV and Blue Light hazard requirements. Subsections 20(4) and (5) set out circumstances in which UV and Blue Light hazard testing is not required.

(4) Despite subsections (2) and (3), an applicant under section 41 of the Act may, in their application, declare a family for the purposes of this subsection (a ***special purpose family***) consisting of up to 10 models within a particular product class, provided that:

(a) no more than 1 special purpose family is declared in any product class; and

(b) a test report, documenting the results of the testing required in accordance with section 22, was provided for every model in the family, subject to the qualifications in subsections 20(4) and 20(5), at the time an application was made for registration for the models under section 41 of the Act.

Note: This provision caters for products which are low volume specialist lamps, which are unlikely to be otherwise able to be grouped together in a family and for which individual registration might otherwise be cost prohibitive.

(5) For paragraph (1)(b), a family must not contain more than 100 models.

Acknowledgement of Country

We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands we live and work on, their culture, and their Elders past and present.

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