

Appendix A: Lighting Council Australia submission in response to the E3 public consultation paper, *Investigating future regulatory options for lighting products December 2022*

Executive summary

Lighting Council Australia understands the context for this investigation by the Australian Government - Further energy and emissions reductions are sought by Government and consumers. Lighting Council Australia highlights that the global and Australian lighting industry, led by LED technology innovations, continues to voluntarily lead the way towards a net zero carbon future and in this regard the majority of the market transformation has already occurred.

Lighting Council Australia recognises that in 2018, COAG energy ministers agreed to phase out inefficient halogen lamps and introduce minimum energy performance standards for LED lamps aligning with EU regulations and standards.

We agree the phase out of traditional lighting technologies, such as halogen lamps, will save energy and reduce emissions – Albeit not nearly to the extent outlined in the *Decision RIS: Lighting 2018* due to the significant voluntary market transformation that has occurred since 2018.

Lighting Council Australia is not opposed to complying with Australian LED MEPS regulation - Our members report that 95 – 100% of their residential lamp sales are now LED, 85% - 100% of their LED lamp models are already compliant with the proposed LED minimum energy performance standard (MEPS) and the majority of the remaining LED lamps are planned to be updated (to compliant with proposed LED regulation) within the next 12 months.

However, we would urge caution regarding the compliance costs associated with LED lamp regulation, due to the negative unintended consequences that are likely to occur if compliance costs increase. Lighting Council Australia members highlight:

- Proposed regulation will add around \$2 – 3 million (per large supplier) in annual compliance costs due to additional testing, administration and registration costs. Small businesses estimate they will be subjected to an additional \$250,000 compliance costs per annum.
- The Decision RIS: Lighting 2018 contains data errors that significantly overstated the benefits due to proposed regulation.

- The lighting market has significantly transformed since 2018.
- LED market innovation will not occur at the same rate if compliance costs increase.
- Consumer prices will increase and choice will decrease if compliance costs increase.
- Price sensitive consumers will purchase more LEDs from online traders that do not need to comply with Australian electrical safety, radiocommunications, consumer and energy efficiency laws.
- Regulatory enforcement will likely be ineffective due to regulatory resource limitations, slow enforcement processes, regular product updates and the very high number of LED models on the market.

Lighting Council Australia would urge Government to take the following approach:

- Update the regulatory cost benefit case to reflect the current market.
- Phase out halogen lamps as planned.
- Develop very low compliance cost LED MEPS regulation that follows the European Commission approach. i.e. no registration costs or supplier based registration instead of model registration. Urgent amendment to the GEMS Act would seem to be required.
- As per European Commission regulation, the allowance to use engineering analysis and extrapolation instead of full product testing should be allowed.
- The addition of check testing tolerances that mirror the European Commission regulation should be included.



Lighting Council Australia response to the E3 public consultation paper – Investigating future regulatory options for lighting products, December 2022.

Lighting Council Australia welcomes the opportunity to respond to the E3 public consultation paper, *Investigating future regulatory options for lighting products, December 2022*. The following submission has been informed by Lighting Council Australia members supplying the majority of the lamp markets in Australia.

Lighting Council Australia understands the context for this investigation by the Australian Government is the need for Government and consumers to find further energy and emissions reductions. Lighting Council Australia highlights that the global and Australian lighting industry, led by LED technology innovations, continues to voluntarily lead the way towards a net zero carbon future and in this regard the majority of the market transformation has already occurred.

COAG Energy Ministers Decision 2018

In early 2018 energy ministers agreed to phase out inefficient halogen lamps and introduced Minimum Energy Performance Standards (MEPS) for LED lamps aligning with EU regulations.

Lighting Council Australia continues to support the phase out of the majority of halogen and incandescent lamps – We have agreed this since 2015.

However, the case for LED lamp MEPS is not compelling and, in the form currently proposed, will have unintended negative consequences on LED lamp efficacy and innovation. In contrast to the proposed Australian Greenhouse and Energy Minimum Standards (GEMS) LED Determination, the European Commission (EC) regulation and standard does not impose registration fees, allows compliance using engineering analysis/interpolation (instead of testing every model) and includes check testing tolerances not yet proposed in Australian regulation.

The E3 Decision RIS (2018) contains erroneous data, selectively uses data to favour the case for regulation while remaining silent on other data that detracts from the regulatory case, and includes out of date material that is not relevant to the transformed lighting market.

COAG energy ministers were likely ill-informed when they agreed to regulate LEDs in 2018. Certainly, the LED information in the 2022 public consultation paper is out of date or incomplete, rendering it irrelevant to decision making.



Lighting Council Australia's efficiency and sustainability credentials

Lighting Council Australia (LCA) is the peak body for the lighting industry in Australia, representing 100 of Australia's leading lighting manufacturers and suppliers. The lighting industry represents approximately 5,000 manufacturing jobs across Australia, and many thousands more in related product development and research, engineering, distribution, sales and installation.

Lighting Council's goal is to encourage the use of quality, environmentally appropriate, energy efficient lighting systems. Lighting Council Australia is supportive of regulation that is determined by robust data, is well reasoned and will positively impact markets.

Lighting Council Australia works with Government in all Australian States and Territories to ensure the proper disposal of lamps, nickel cadmium batteries, and other waste materials of concern. Lighting Council Australia is responsible for management of the Fluorocycle and Exitcycle recycling schemes. These programs aim to increase the rate of mercury recycling and emergency lighting battery recycling. Lighting Council Australia is also working with members and Government to develop a commercially viable recycling scheme for all waste lighting equipment.

Lighting Council Australia members agree to abide by all relevant regulations and standards. We also work with electrical safety, energy efficiency, consumer law and telecommunications regulators to remove unsafe and non-compliant products from the market.

Lighting Council Australia also participates in Standards Australia and International Electrotechnical Commission (IEC) standards committees to determine International and Australian standards regarding lighting safety, performance, environmental/sustainability and radiocommunications aspects.

Lighting Council Australia supports the Minamata Convention regarding the phase out of mercury containing lamps.

Lighting Council Australia has cooperated with the Australian Government to assist in the development of lighting energy efficiency regulation regarding incandescent lamps, halogen lamps, fluorescent ballasts, transformers and fluorescent lamps.

Importantly, Lighting Council Australia agrees the phase out of halogen lamps will provide a market benefit due to the replacement of these products with efficient LEDs.

However, Lighting Council Australia highlights that LED regulation, in the form currently proposed, will have unintended consequences and negatively impact LED efficiency due to the additional compliance costs that regulation will bring.

The regulatory case contains errors and outdated information

The Decision RIS: Lighting 2018 and E3 Public Consultation Paper 2022 both contain incorrect, incomplete and outdated information that renders them unsuitable for decision making. Energy ministers should be provided with an accurate and complete picture of the current lighting market before any decisions regarding LED regulation are made.

The following statements, information and the calculation of energy savings should be corrected to enable accurate decision making:

- “Around 80 million lamps are sold in Australia per year”¹. However, ABS data shows only 57 million lamps were imported in 2018. 80 million lamps have not been imported since 2012. This inaccuracy will cause the benefit of regulatory intervention to be significantly overstated.
- “Halogen lamps are now the most commonly purchased lamp in Australia”² – Import figures show this statement was incorrect in 2018 and would now be very wide of the mark. This statement would have likely caused concern amongst energy ministers in 2018 and should be corrected to reflect the current state of the market.

Further, the current sales volumes of LED and other technology lighting products should be used to determine if any benefit will be provided by LED regulation. Lighting Council Australia members have provided sales percentages for the various technologies they supply – see below.

- “lighting accounts for around 10 per cent of a household’s electricity use”³. This figure is said to have originated in a 2015 report⁴. However, we are unable to find this or an equivalent statement in the referenced report. Instead, the referenced report states

¹ E3 Decision Regulatory Impact Statement: Lighting, page 9, 2018.

² E3 Decision Regulatory Impact Statement: Lighting, page 9, 2018.

³ E3 Decision Regulatory Impact Statement: Lighting, page 8, 2018 referencing E3, Residential Baseline Study for Australia: 2000-2030, prepared by Energy Consult, 2015; EECA End Use Database, 2014.

⁴ Residential Energy Baseline Study: Australia, August 2015, Figure 12, page 24.

that residential lighting energy use has been in decline since 2005⁵, was estimated to be 7% in 2014 and is forecast to fall to 2% by 2030⁶ due to LEDs⁷.

Lighting Council Australia estimates residential lighting energy use is likely to be around 3% in 2023 due to widespread consumer uptake of LEDs and the dramatically reduced energy use of LEDs compared to traditional sources.

This additional information is critical to decision making yet has been omitted from the Decision RIS (2018) and public consultation documents (2022).

- *“For the commercial sector, lighting systems account for between 20–40 per cent of electricity end-use in Australia”⁸* – This statement is based on a report that is now more than a decade old – Such an old report is out of date in the quickly changing lighting market and sidelines the entire LED market transformation as well as the state government energy upgrade schemes that have focused more than 90% of their energy savings on lighting upgrades over the past decade.
- *“The availability of poor-quality LED products on the market risks a rejection or slower, less complete uptake by consumers of this technology as an effective, efficient alternative to halogen lamps”⁹:*
 - Import data from 2020 shows that consumers have widely embraced LEDs demonstrating the fear expressed in the Decision RIS did not materialise. There is no basis to support such statements and so such statements should not be placed in front of energy ministers.
 - Information provided by DCCEEW in the Public consultation paper 2022 that shows a minority percentage of the market performing below the proposed LED MEPS level has not been qualified in terms of whether that product is available on the Australian market or the manufacturing date of the product.

Products purchased at retail level can be years old (since manufacture) and may not reflect the current state of LED lamps that are being imported or planned to be imported before regulation commences.

⁵ Residential Energy Baseline Study: Australia, August 2015, Figure 37, page 54.

⁶ Residential Energy Baseline Study: Australia, August 2015, Graph titled “Share of Total Energy by End Use – Australia – 2030, page ES-6

⁷ Residential Energy Baseline Study: Australia, August 2015, page ES-10.

⁸ E3 Decision Regulatory Impact Statement: Lighting, page 8, 2018 referencing Pitt and Sherry, Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia – Part 1 – Report. Department of Climate Change and Energy Efficiency, 2012.

⁹ E3 Decision Regulatory Impact Statement: Lighting, page 9, 2018.

The LED lamp market is in a continuous state of flux with improved products being released into the market every 12 months on average.

Manufacturing date information is available on all products (via batch codes), yet has been omitted from this data. The data should be updated to include mainstream Australian products that are likely to occupy significant market share (i.e. those available in major supermarkets and hardware outlets) and product manufacturing dates.

- Australia implemented additional electrical safety regulations (i.e. accredited testing and third party certification) in 2018 that improved LED lamp quality in Australia. Europe does not have the same level of electrical safety requirements for LEDs so European data will not closely reflect the Australian market.
- The Australian Consumer Law already requires LED lamps to be safe, 'fit-for-purpose' and live up to claims (e.g. lifetime). Regulatory duplication is unnecessary.
- Lighting Council Australia members report that 95% to 100% of their residential lamp sales are now LED with the remaining market occupied by halogen and fluorescent lamps.
- In terms of the total lamp market (residential, commercial, industrial, public) Lighting Council Australia members report that between 65% and 100% of their lamp sales are now LED with a major proportion of the remaining market being occupied by lamps that are relatively efficient and not yet proposed to be phased out (i.e. linear fluorescent lamps, High-intensity discharge).

Further inaccuracies that exist in the DCCEEW proposal:

- The Decision RIS: Lighting of April 2018 included a calculation that the total benefit of further LED regulation to Australian households would be \$34 million over 10 years. Given there are approximately 10 million households in Australia, that equated to roughly 34 cents per household in annual savings. Bearing in mind the considerable improvement in LED efficiency since 2018, the regulatory cost/benefit statement should be updated so that it reflects the current state of the market.

Further, this calculation should also be adjusted to take into account the decreased savings that will result when LEDs are only updated every 3-5 years instead of every 12 months (as current) due to the additional compliance costs that will come with LED regulation.

- A deficiency in the GEMS Act will retrospectively impose additional compliance costs on compliant LED products that are no longer imported yet remain at retail level after regulatory implementation. The Decision RIS failed to recognise and include these compliance costs. Lighting Council Australia estimates the additional costs due to this retrospective application will be two to three times the estimated initial costs of regulation due to the very high numbers of compliant models already within the Australian market.

The market continues to voluntarily evolve at pace

The information provided by Lighting Council Australia to the DCCEEW has proven to be correct time and time again over the previous eight years of this regulatory development. The information cited by DCCEEW has consistently been out-dated due to the rapid transformation that has and continues to occur within the lighting market.

- Consumers have voluntarily moved to LED bulbs. The benefits are clear. LEDs have dominated market sales since 2017 and the transition to 100% dominance by LEDs continues at pace.
- A 2023 Lighting Council Australia member survey found that 4845 LED lamps were being supplied by five of the largest LED lamp suppliers in the market. This survey response does not include all large LED lamp suppliers nor medium or small sized suppliers.

Based on this survey, Lighting Council Australia conservatively estimate there are more than 10,000 different LED lamp models being imported into Australia in any calendar year and likely more than 20,000 different LED lamp models remaining within the Australian retail market at any point in time.

Lighting Council Australia members further report they currently voluntarily update more than 70% of their LED lamp models in any 12 month period in an ongoing continuous updating process.

- LED lamp efficiency has consistently, continuously and voluntarily improved over the past decade. For example, LED products are now available that save more than 93% of the energy used by traditional lighting.

Lighting Council Australia members report the trajectory of LED lamp efficiency improvement at between 8% - 20% per annum depending on component/model availability, commercial viability, sales volumes, testing/administration/certification and other compliance costs.

- LED lamp prices have continued to fall. Prices are now comparable to traditional lamps. The LED return-on investment period is now instantaneous.

Lighting Council Australia members report the trajectory of LED lamp pricing at -5% to 0% per annum indicating that consumer pricing will continue to fall or remain stable in a business-as-usual scenario.

Lighting Council Australia members also report the lighting market as being characterised by low margins. Meaning that any increase in costs (e.g. increased compliance costs) will either need to be passed on to consumers or minimised by maintaining the same products on the market for a longer period than current practice.

- Based on import and sales data, inefficient (e.g. halogen) lamps proposed to be phased-out are likely being maintained (i.e. replaced like-for-like) in around 1 – 2% of residential lighting points. This figure is based on less than 5% of residential sales being attributed to halogen and compact fluorescent lamps in 2022 and the markedly lower lifetime of halogen lamps compared to LED.

Regarding the commercial lighting market, sales data aggregated by the New Zealand Government indicates that linear fluorescent lamp sales in New Zealand have fallen by 85 per cent over the past decade. This is reflective of the market demand for more efficient and longer life LED products within the commercial lamp market. Similar figures are not available for the Australian market. However, Lighting Council Australia members report a comparable sales trajectory in Australia (i.e. a dramatic and continuous decline in linear fluorescent lamp sales).

- Highly efficient, high quality LED lamp products are widely available in the market.
- Major supermarkets no longer stock inefficient halogen bulbs.
- Electrical safety regulation introduced in 2018, removed 'backyard' importers and further improved LED quality.
- Dwindling lamp sales are seeing smaller manufacturers exit the market. Market consolidation is occurring.
- The efficiency of products being imported now, planned to be imported and market trajectory are the critical points for decision makers to note.

Lighting Council Australia members variously report that 85 – 100% of their products already comply with the proposed LED MEPS and the majority of the products that would be non-compliant (under proposed regulation) are proposed to be updated over the coming 12 months. A small percentage of products are not proposed to be updated to comply with the proposed LED MEPS due to the lack of commercial viability to update

those products. That is, those products are low in sales volume and the cost of complying with proposed regulation does not stack up.

Unintended consequences of high-cost LED MEPS regulation

Unlike the Australian LED regulatory proposal, European regulation does not impose registration fees. The LED market includes a high number of models and a quick rate of product updates. Compliance costs (i.e. testing, administration and registration) in Australia will be significant and cause global suppliers to approach the Australian market in a different way to the European market.

Lighting Council Australia members have additionally report:

- They supply between 130 and 3000 LED lamp models and update more than 70% of these products annually.
- The current family definition would require them to register between 15 and 210 product families annually.
- The registration cost range provided by Government has been given as \$440 - \$880 per family registration.
- The cost to test an LED lamp family (if engineering calculation or extrapolation equivalent to the EU approach is not acceptable in Australia) would range from \$5000 - \$15,000 depending on overseas or Australian laboratory testing.
- The administration of additional testing and regulatory registration for larger companies would likely require the addition of a full-time employee - or part time employee for smaller suppliers.
- Larger suppliers would likely be subjected to an additional \$2-3 million in testing, registration and administration costs per annum with small suppliers subjected to around \$250,000 additional compliance costs per annum.

LED lamp suppliers highlight additional regulatory compliance costs will cause them to amend their approach to the Australian market in the following ways:

- Additional compliance costs (product testing, administration and registration) under Australian regulation will deter suppliers from their current practice of voluntarily updating their products to more efficient models every 12 months. The unintended consequences of LED regulation will be lost energy/bill savings for households.
- Reduced consumer choice – Lower volume models will become unviable due to additional compliance costs.
- Increased consumer prices – Businesses will increase their prices to recoup their compliance costs.

- Productivity decline - Additional regulatory red tape will require lighting businesses to add compliance resources and lead to the flow on effect of reduced employment in other business areas.
- Increased Australian prices and reduced choice will drive some consumers to shop online using overseas based suppliers. These consumers will be exposed to products that do not need to comply with Australia's strict electrical safety, radiocommunications and consumer laws.
- Market competition will be negatively impacted – Small suppliers may not be aware of new regulation or could attempt to avoid additional compliance costs.
- Product registration will create a dilemma for businesses. They will be exposed to high costs if they register individual models or higher risk if they register families of products and one model is found to be non-compliant – Leading to cancellation of the entire family registration. Industry is unsure if compliant models will be able to be re-registered after a registration is cancelled?

Regulatory enforcement will likely be ineffective

Any regulation would only effective when combined with sufficient enforcement capacity.

Following eight years of policy development the GEMS regulator has not be able to detail how they will overcome: (a) regulatory resource limitations; (b) slow enforcement processes; (c) regular product updates; and (d) the high number of LED models on the market, in order to effectively implement LED regulations. The only response we have received is that the regulator would welcome market intelligence from industry.

The compact fluorescent and halogen lamp markets rarely changed and contain relatively few models. The GEMS Regulator has been able to undertake some enforcement within those markets. Regardless, the regulator has only been able to focus on the volume segment of those markets and, as far as we are aware, tested only around 50 – 100 lamp models over a ten year period.

Based on previous regulatory compliance and enforcement approaches and the characteristics of the LED lamp market (i.e. thousands of models on the market, regular product updates), Lighting Council Australia estimates the regulator will not be able to effectively enforce LED regulations.

High-cost LED regulation does not make sense

Government is proposing to add cost to the most efficient lighting market segment despite LEDs voluntarily transforming the lighting and building markets over the past decade. No other building product sector has come close to achieving the same level of efficiency gains.

The 'new build' lighting market has essentially been 100% LED since 2017. The consumer market is close to achieving the same result due to the high cost of energy and consumer acceptance of LEDs. A phase out of traditional lighting technologies will complete the market transformation.

The Minamata Convention will phase out compact fluorescent lamps (CFLs) in 2025 causing further contraction within the non-LED lamp market.

The LED lamp market is operating as expected with no market failures visible to any significant degree. High-cost regulation is completely unnecessary in the circumstances.

The GEMS Act 2012 does not seem to have been developed with the LED market in mind. LEDs were in their infancy in 2012 and the currently LED lamp market did not exist in its current form.

Lighting Council Australia would recommend the urgent amendment of the GEMS Act 2012 to cater for the regulation of markets such as LED lamps.

Government should further note that the LED luminaire market is estimated to be ten times the scale of the LED lamps market.

Human health and LEDs

During the 2023 consultation period Lighting Council Australia has heard from Government that some stakeholders have raised concerns about potential negative affects of LEDs on human health.

Lighting Council Australia would urge caution regarding the claims of some stakeholders (particularly individuals) and request that medical evidence should accompany any concerning claims. Such claims may be erroneous, spurious or vexatious.

Lighting Council Australia notes the broad opinion of the SCHEER report¹⁰ that concluded in 2018, "there is no evidence of direct adverse health effects from LEDs emission in normal use (lamps and displays) by the general healthy population."

We also note that stroboscopic visibility measure and flicker are now regarded as lighting quality aspects and not health and safety aspects - they quantify the visibility of temporal light

¹⁰ SCHEER (Scientific Committee on Health, Environmental and Emerging Risks), Opinion on Potential risks to human health of Light Emitting Diodes (LEDs), 6 June 2018.

modulation, not health/safety aspects. Many commentators active in the discussion around SVM and Pst incorrectly assume that visibility of a temporal light artifact will lead to a health hazard.

Note: This is clearly not true for photosensitive seizures, where the recommended limits from the Epilepsy Foundation of America are clearly visible (and highly annoying).

Recent studies show that moderate amounts of temporal light artifacts(TLA) do not cause problems (eyestrain, headaches) for office workers in a long term study.¹¹

Lighting Council Australia recommendations

1. Government should phase out halogen lamps as planned.
2. If Government pursues LED lamp MEPS regulation, then low-cost regulation that mirrors the lower cost European Commission regulatory approach should be adopted.
 - a. During the 2019 GEMS Act review, Government proposed to develop a low-cost supplier-based registration approach. Lighting Council Australian envisions such an approach could include an initial audit check and endorsement/registration of suppliers. Following this initial audit, suppliers would be free to update their products to more efficient models without requiring any significant individual model testing and registration. Uploading of spreadsheets containing the brief specifications of new models would be acceptable to the lighting industry.
 - b. European Commission regulation allows engineering analysis and extrapolation instead of the testing of every model. Australian regulation should follow this approach.
 - c. We further note that European Commission regulation includes check testing tolerances that do not appear to be included within the Australian regulatory standard approach. Some LED products may pass regulatory check testing in Europe yet fail in Australia due to this lack of equivalence.

The Australian regulatory approach to check testing tolerances should mirror that taken in Europe so that the Australian LED 'standard' aligns with the EU LED 'standard'.

- d. Additional marking requirements should not be imposed.

¹¹ Effects of long-term exposure to stroboscopic effect from moderate-level modulated light - D Sekulovski, S Poort, M Perz, L Waumans, 2020 (sagepub.com).



Any additional marking requirements would impose additional costs on the market, are unnecessary and unjustified.

Critical information to address/correct prior to evaluation by energy ministers

- The latest lamp import data (to end of 2022) is critical to decision making yet has not been disclosed by DCCEEW. Lighting Council Australia members report the trends of the previous decade continue. That is: (a) total lamp volume continues to decrease, (b) LED sales continue to rise, (c) old technologies continue to decline.