



Lighting Council Australia Submission

in response to the

*Lighting: Updated Policy Positions
Supplementary consultation document*

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Contact:
David Crossley
Technical Manager
Lighting Council Australia
Email: dcrossley@lightingcouncil.com.au
Phone: 02 4268 2318

Lighting Council Australia
SUBMISSION IN RESPONSE TO
LIGHTING: UPDATED POLICY POSITIONS
Supplementary consultation document
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EXECUTIVE SUMMARY

This submission follows the Lighting Council Australia submission made in March 2017. Due to further analysis of the Regulatory proposal contained in the *Lighting: Updated policy positions* paper, further consideration of the LED lamp market and consideration of the overwhelming compliance burden contained in the proposal, Lighting Council is unable to continue to support LED lamp MEPS.

The transition to LED products is accelerating. The LED lighting market is growing quickly and the sales of non-LED lamps decreasing. Industry's research and development efforts are focused wholly on LED developments.

The installed base of traditional lamps and luminaires is large and diverse. With good and affordable LED alternatives available, customers are switching to LED.

Lighting Council supports minimum energy performance standards (MEPS) as a vehicle for improving the energy efficiency of lighting equipment placed onto the Australian market, but only where this is the most appropriate and cost-effective means of addressing market failure.

Lighting Council supports the proposed phase-out of incandescent and halogen lamps. This will achieve 70% of the forecast energy savings. However, we doubt the proposed LED lamp MEPS will save the other 30% of forecast energy savings.

Lighting Council calls for a delay on any decision regarding the regulation of integrated LED luminaires until after a review of the Greenhouse and Energy Minimum Standards Act is completed.

Any decision regarding new LED regulations should be based on the facts about major segments of the LED market. Neither the consultation RIS nor the Supplementary Paper include any information regarding the products that occupy the major portion of the market and the performance trajectory of those particular products.

This approach is concerning to the lighting industry and leads us to the view that the Regulator may have pre-conceived ideas regarding the need for regulating the LED market and is focused on implementing new regulation regardless of the lack of information that assesses the state of the major share of the market now and at the point when regulation is proposed to be implemented.

Lighting Council previously supported regulating LED lamps. However, on review of the changing LED market conditions, we do not agree that MEPS on LED lamps can be justified due to the following reasons:

- LED lamps save more than 70% of energy used compared to halogen lamps. The business-as-usual case for lighting has shifted significantly over the previous five years to the point now where a consumer will be financially advantaged after eight months of using an LED lamp compared to a halogen lamp (i.e. considering purchase price and running costs).¹
- Lighting Council Members supply the majority of the LED lamp retail and wholesale markets in Australia with quality, efficient LED lamps.
- The Commonwealth Department of Environment policy team has not demonstrated that there is an issue with the efficacy and performance of a significant portion of the LED lamps market.
- Significant efficacy improvements and cost reductions of LED lamps have been achieved over the previous five years.
- The compliance burden associated with MEPS regulation on LED lamps will be high due to short product development periods (LED lamp products are only on the market now for 6-10 months) and the testing and administrative costs associated with MEPS compliance. A perverse outcome of LED lamp regulation is likely to be reduced rates of product improvements that would cause the market to lag the general trajectory of LED efficacy improvement. Due to this effect we estimate that the net energy savings to Australia will be zero due to LED lamp MEPS.
- Regulation will significantly increase costs (by more than \$80 Million over ten years (NPV)) to the lighting industry and those costs will be passed on to consumers. The cost of high volume products will not decrease at the same rate as without regulation and the cost of low volume products is forecast to increase due to high compliance costs. For lower volume products, consumer choice will be reduced. The price differential between compliant and non-compliant will widen making non-compliant products more attractive to consumers.
- The lack of test laboratory capacity in the Australian market is concerning and is not an area that has been addressed by the regulatory proposal.
- The GEMS Regulator's proposed compliance focus will be on identifying and checking the registration of suppliers and products. Lighting Council highlights that it is relatively easy and reportedly common practice for unscrupulous manufacturers to provide false compliance documentation. As a result, only product testing by suppliers and regulators would identify product compliance issues.
- Lighting Council members report return rates of less than 1% for consumer products and this is consistent with other major markets globally including the highly specified public lighting markets.

¹ Lighting: Updated policy positions, Supplementary consultation document, September 2017, Consumer benefits, p39

- Compliance costs for industry will be significantly higher than currently experienced and are likely to result in a decline in industry employment.
- Lamp sales in general are decreasing globally including in Australia and this trend is expected to continue.
- The Choice consumer survey cited by the Regulator included poorly worded (open to interpretation) and biased (not symmetrical) questions and the results of those questions should not be used to draw any conclusions or be the basis for any future costly regulations.
- If the cost of compliance is high then the level of market compliance, especially amongst smaller market players, is likely to decrease.
- Businesses look at return on investment so low volume lines will likely increase significantly in price or be deleted from product ranges.
- Major markets such as the European Union are unlikely to implement further lighting regulations before Australia leaving us out of step in technical requirements.
- Additional electrical safety regulation of LED lamps is in train and will likely further increase product quality and compliance (i.e. LED lamps will require additional electrical safety certification after 1 July 2018).
- Additional product testing will delay new model launches by more than three months.

The GEMS Regulator's perspective is that if the Australia Government phases out halogen lamps then LED MEPS regulation aims to ensure that only compliant, high quality LED lamp products remain on the market. The Government is concerned regarding backlash from consumers who purchase poor quality LED products. The government will be at risk and would like to implement pre-market LED requirements (parameters, product testing and registration).

Industry would like to assist government define and determine the risks due to halogen phase-out. We do not currently see significant issues with the LED lamp market. Certainly nothing that would require the imposition of such a large regulatory burden, as proposed.

The Regulator has incorrectly assumed that the majority of the compliance information that would be required under proposed LED lamp MEPS is readily available to Australian suppliers and so the proposal should not be a significant added burden. This is simply not the case and the added testing burden will significantly increase industry compliance costs.

If LED lamp MEPS regulation is implemented without industry support, Lighting Council requests:

- Sufficient time to implement (12 - 18 months from the point of regulatory determination);
- Test parameters should be limited to those that relate to efficacy and functional performance;
- Lower registration and amendment fees that consider the high rate of product re-development;
- Further development and re-working of the LED lamp family definition to:
 - Align with international standards;
 - Include multiple brands of the same products;
 - Improve clarity regarding the allowances/restrictions.
- Lighting Council continues to support the existing MEPS on other lighting products such as fluorescent lamps and ballasts and power supplies. These products are not being re-developed and are already starting to fade from the market.
- Further consideration of major market LED regulations before any regulation in Australia commences - we are not a major market and we should follow EU and USA in terms of timing, product requirements and compliance costs.
- Consumer education should occur so consumers can make informed choices when they purchase LEDs

RESPONSE TO LIGHTING: UPDATED POLICY POSITIONS

Broad questions seeking stakeholder comment

Are there any implementation barriers or possible unintended consequences of any of the policy positions or proposals under consideration?

Lighting Council believes the policy positions and proposals under consideration have significant implementation barriers and would—if implemented without reasonable consideration of the many detailed comments provided in this submission—have unintended, negative consequences not only for the lighting industry, but also for consumers and the environment.

The LED lamp MEPS proposal is based on several incorrect assumptions, is ambiguous and lacks proper terms and definitions. It references incorrect metrics and measurement methods. It proposes to impose stringency levels that would not be possible to meet in a commercially viable fashion. Detailed examples of this are given further in this submission and should be seen as an illustration of the flaws of the proposal, and not as an endorsement of the overall framework presented in the regulatory proposal.

The consequence of the proposed measure would be that state-of-the-art LED products cannot meet the proposed requirements. Prices of LED products would increase significantly for consumers and the strictest forms of surveillance and corrective action would be required to enforce the new regulation, otherwise it would stimulate unfair competition, trade barriers, and a rogue channel of uncompliant products.

Further, proposed lifetime testing requirements are incompatible with the ever decreasing product development time lines implemented by innovative companies driving increased energy efficiency. The proposed measures would continuously deprive Australian consumers of the latest innovations in lighting products, including more energy efficient products.

Is the analysis of the policy proposals considered reasonable, including data and assumptions used?

Lighting Council considers that the regulatory analysis is not reasonable particularly in regard to the assumptions around:

- The availability of test report information;
- Industry compliance costs;
- The market share of poorer quality LED lamp products; and
- The effectiveness of any regulatory monitoring, verification and enforcement efforts.

Will the proposals have any adverse effects that have not been considered?

Lighting Council suggests the proposal will lead to:

- Over-specified products that are too costly for end-users.
- Reduced consumer choice and product variety for Australian consumers (the majority of LED products will become high cost).
- Delays in bringing the latest energy saving products to the Australian market.
- Costly and time-consuming qualification efforts required by industry.
- Unintended trade barriers.
- Unfair competition due to ambiguous and erroneous content.
- Unaffordable and unachievable monitoring, verification and enforcement.

Minimum energy performance standards (MEPS)

Since the 1990s Lighting Council Australia and its predecessor organisation have supported MEPS regulations on a range of incandescent, fluorescent and halogen technologies. Lighting Council has supported MEPS on incandescent lamps, fluorescent lamps and ballasts, compact fluorescent lamps and lighting transformers.

However, Lighting Council's ongoing support for MEPS regulation is contingent upon:

- (1) a reasonable compliance cost imposition on the industry, coupled with an expectation that monitoring, verification and enforcement will provide confidence that the great majority of non-conforming products will be removed from the market; and
- (2) the end justifying the means – that is, the improvement in energy efficiency and the regulation of suitable alternative product justifies the financial cost and diversion of industry resources when a technology is phased-out by way of a MEPS regime.

Phasing-out incandescent and halogen products

Lighting Council agrees there are significant energy savings to be made by phasing-out incandescent and halogen technology. Consumers will well understand the energy savings in replacing a 35W MR16 halogen 'downlight' lamp with a 7W LED lamp.

In addition – and this is an important point – there now exists a large range of suitable LED replacement products in the Australian marketplace. This availability is a result of huge investments by the world's lighting manufacturers and the rapid and continuing development of solid state lighting technology.

MEPS for LED products

Following extensive consultation with our members, careful consideration of information provided in the *Lighting: Updated Policy Positions* paper and subsequent lengthy discussions with the Department of the Environment and Energy, Lighting Council Australia has reached the conclusion that it cannot support MEPS for LED products for the following reasons.

Prohibitive compliance costs

The number of LED products and LED suppliers is large when compared to the number of traditional lamp suppliers and lamp models.

New LED chip modules are now re-developed on a six-monthly cycle with incremental increases in lumen output and/or decreases in power used. LED models now have a supplier market life of six to ten months.

MEPS applied to LED lamps would require additional testing of each new family of products, additional administration costs due to the need to purchase additional standards, additional education of and communication with overseas manufacturers and suppliers, education of local compliance staff and either prohibitive registration costs (due to high numbers of product families requiring registration) or significant risk that large numbers of compliant products would be removed from the market if one non-conforming product is found in the market.

It is not possible for the very limited number of local test laboratories to keep up with additional demand if LED lamp MEPS is introduced.

Costs

The regulatory proposal does not acknowledge that significant numbers of Australian products are sourced for the Australian market only and are not supplied to the EU.

The Regulatory supplementary paper estimates that the costs to industry will be \$14 Million.² This figure is based on the following questionable assumptions:

- The additional testing costs are estimated at \$332 compared with the BAU case. Lighting Council estimates that in the majority of cases none of the proposed test report information (except LM-80) would be readily available or up to the standard required by suppliers to register products or provide them with risk management assurance.

Consequently, the cost of product testing would be \$5200 for an LED lamp tested overseas (not including LM-80), \$5,500 for an LED smart lamp tested overseas (not including LM-80) and over \$10,000 if tested in Australia.

- The number of suppliers is estimated to be an additional 142 or 200 in total³. This total number is reduced from 419 total LED lamp importers to filter out consumer self-imports and further reduced by an un-stated factor "on the assumption that some suppliers will choose to no longer import following the introduction of regulation".

Lighting Council questions the regulatory assumption that suppliers will exit the LED market when regulation commences due to the fact that we

² Lighting Updated Policy Positions, September 2017, Attachment E Cost Benefit Analysis, Table 5, p35

³ Lighting Updated Policy Positions, September 2017, Attachment E Cost Benefit Analysis, LED lamp costs, p42

are approached on a weekly basis by micro businesses about to import or already importing LEDs and the compliance summary we provide to them does not seem to dissuade these businesses.

These businesses are grateful for the summary and reply they have started to seek compliance information from their overseas manufacturers. Illegitimate compliance information is relatively easy to obtain and compliance monitoring that focuses mainly on business identification and product registration will not detect illegitimate documentation.

We suggest that the number of product suppliers is likely to be greater than the forecast number of 200.

- The Supplementary Paper incorrectly assumes that there will be no cost due to the purchase of standards because standards will be referenced in the GEMS Determination. This assumption does not recognise the fact that in-house product engineers will need to purchase many of the additional standards in order to understand the standard and product requirements regardless of whether products are tested in-house or not.

We estimate that the majority of suppliers will need to purchase the majority of the standards that are proposed to be referenced in a Determination. i.e. IES LM-79-08, CIE S-025, AS/NZS 60598.1, IEC 62612, IEC 61000-4-7, IES 62471 and either IEEE 1789 or CIE TN 006 to gain a better understanding of the requirements or to test products in-house.

The cost to purchase these standards is over \$2,500.

- Reduced endurance test from 6,000hrs (required for CFLs) to 1,000hrs proposed for LED. However, this does not recognise that there will be significantly greater numbers of LED product suppliers (i.e. 200) compared to CFL suppliers (i.e. currently 42 CFL suppliers are listed on the www.energyrating.com.au database). The cost of an LED endurance test is estimated at \$1,450 in the Supplementary Paper.

Administrative compliance costs (per year⁴) associated with the proposed regulations will be:

- Review/understand legislative requirements - \$5,500 per supplier (including the cost of standards proposed to be referenced in a Determination = \$2500 – see above)
- Time spent registering a product family (not including the registration fee). We estimate this will be considerably greater than estimated due to: time required to organise testing; consolidation of product parameters into a submission form and the cumbersome nature of the product registration portal. (Members state this portal is not user friendly, not intuitive or logically organised, includes multiple pages that should not be included, requires all fields to be completed even if not relevant and now

⁴ Lighting: Updated policy positions paper, p42

requires more than 26 columns of information to be submitted on all products. Instead of the current arrangement, the portal should be as simple to use as the ERAC EESS and ACMA National Database). The cost will be at least \$584.

- Internal compliance assurance = \$350⁵
- Data collection for reporting = \$3,250⁶
- Record keeping = \$2,550⁷
- Testing costs will be considerably larger than estimated by the Supplementary Paper. Lighting Council members report that in general the proposed MEPS test reports are not obtained and generally not available to them. In the majority of cases, Australian suppliers obtain only the mandatory electrical safety and electro-magnetic compatibility (EMC) test reports and other test reports are not available to them and would be an additional cost for them to obtain.

Australian suppliers report that the majority of manufacturers verify their products through:

- Component specification and selection;
- Product design software that includes estimates of new product characteristics;
- Benchmark testing of new products against historical testing and design estimates;
- Basic manufacturer in-house testing (not full testing to the proposed standards); and
- Quality assurance processes (e.g. ISO 9001 manufacturer certification).

Products are accompanied by supplier warranties usually between two to five years and Lighting Council members report that they achieve product return rates of less than 1% of the products they sell. If product return rates were higher than this then reputations and margins would be significantly impacted.

The majority of Lighting Council members report that they would need to undertake the full suite of proposed testing as current manufacturer processes will not be sufficient to register products or provide suppliers with the level of assurance that would be required under mandatory regulations that include the risks of fines and removal of products from the market.

A quotation estimate for the full suite of testing requirements (less LM-80 testing which is available in 90% of cases) has been provided by an overseas laboratory and is \$5,200 for an LED lamp and \$5,500 for a smart LED lamp.

⁵ Lighting: Updated policy positions paper, p42

⁶ Lighting: Updated policy positions paper, p42

⁷ Lighting: Updated policy positions paper, p42

We estimate that full testing in Australia would cost over \$10,000 per product (less LM-80 testing) and only around 10% of required product testing would occur in Australia.

We estimate that at least 75% of all LED product families supplied will need to undertake the full suite of proposed LED lamp testing.

Using the regulatory estimate of 1,200 LED lamp families registered per year, 900 complete LED tests would be required (810 overseas and 90 in Australia) per year. The cost of testing per year is estimated to be \$5.1Million per year.

- Downstream suppliers (i.e. retailers and specialist stores): \$1,400 per retailer and 70 retailers⁸.

A summary table of estimated annual administrative costs (per year per LED supplier) of LED lamp regulations is below:

Function	Cost
Legislative requirements	\$5,500
Registration	\$584
Compliance assurance	\$350
Data collection	\$3,250
Record keeping	\$2,550
Sub-Total	\$12,234
Sub-total for 200 suppliers	\$2,446,800

- The total cost to 70 downstream suppliers will be \$98,000 per year.⁹
- The cost of registrations is estimated at around \$720,000 per year (NPV) - 1200 registrations¹⁰ average per year and registration fee of \$600 per registration allowing for a starting registration fee of \$540¹¹ (2018/2019), expected increases in fees due to planned cost recovery revisions that may take fees up to over \$700 per registration and registration amendments (at a lower, as yet unannounced fee).
- Annual testing costs are estimated to be (\$5.1Million – see above detail)

The total regulatory costs for LED MEPS on lamps are estimated to be \$83.7 Million over ten years.

The additional regulatory costs for LED MEPS on lamps compared to BAU are estimated at around \$81.4 Million over ten years, with an average cost of \$40,000 per supplier per year.

The increase in compliance costs is an order of magnitude greater per supplier compared to the business as usual case.

⁸ Lighting: Updated policy positions paper, p42

⁹ Lighting: Updated policy positions paper, p42

¹⁰ Lighting: Updated policy positions paper, p42

¹¹ Lighting: Updated policy positions paper, p44

Insufficient evidence

Neither the Consultation Regulatory Impact Statement nor the Supplementary Paper provide compelling evidence of issues with the efficacy and performance of a significant portion of the LED lamps market.

No data is included in the survey showing market share of products.

The data does not indicate the age of the products when checked or tested – old products with lower efficacy may be included in the data.

The majority of the LED lamp data referenced is three years old and up to eight years old and is unlikely to represent the current state of the rapidly changing LED product landscape. The LED lamp data that is recent shows improvements in LED efficacy and colour rendering index performance. Perhaps more significant is that the recent results show marked reductions in the difference between claimed and actual performance and in many cases suppliers are now under-claiming performance specifications.

Lighting Council questions the inclusion of lamps with luminous flux less than 250 lumen as these product would likely be specialty products that will require an exemption to be able to remain on the market.

Of concern in the supplementary paper report on ASEAN LED lamp test results is the main focus on outlying values. This may indicate a reporting bias that attempts to sensationalise those results. Regardless of any bias in reporting, the results include data from mostly developing countries such as Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand and Vietnam where consumers are not likely to be able to pay for products that are equivalent to Australian products.

No confidence that monitoring, verification and enforcement will remove most non-conforming product

The adverse effects of overly complex, overly ambitious and widely scoped regulations will likely be extremely high compliance costs for those who chose to comply, high rates of non-compliance and a widening price gap between compliant products and non-compliant products (including those supplied from overseas).

Time and time again, such regulations prove to be impossible to adequately enforce and this point is becoming widely recognised, not only by government and industry representatives, but also by several Non-Government Organisations (NGOs) that share our environmental goals.

LED products are being sold in an expanding range of wholesale and retail outlets including hardware stores, supermarkets, general lighting retail, specialist lighting stores, electrical wholesale warehouses, directly from lighting supplier warehouses, discount variety stores, markets, online only retailers and many of the traditional lighting outlets now have online stores.

The GEMS Regulator has conducted a limited amount of market surveillance and check test auditing of regulated traditional lighting products. However, our experience in dealing with these regulatory audits suggests that both the regulator and industry face another significant dilemma with any LED lamps regulations. Either it would take vastly more compliance resources to adequately monitor, verify and enforce the LED lamps market (to the point where such resourcing would be impractical to fund and maintain. i.e. widespread audit testing of the entire market every 8 months would be required instead of simple registration checking) or the regulations will be flouted and therefore ineffective.

Furthermore, the extended time frames currently required to maintain an enforceable process would allow LED suppliers to sell through any non-conforming stock and move on to their next product ranges.

The regulatory compliance approach outlined in attachment D of the supplementary paper does not provide Lighting Council with any confidence that enforcement efforts will improve over previous lacklustre efforts or be sufficient to maintain a fair and widely compliant LED lamp market. As outlined in attachment D, the compliance focus will be on supplier identification and product registration.

As relayed by Lighting Council members and demonstrated by other government LED efficiency schemes (i.e. the Victorian Energy Efficiency Target scheme), illegitimate compliance information from unscrupulous overseas manufacturers is readily available so the only way to maintain a fair market would be via audit check testing of every LED lamp importer's products on a regular basis (i.e. every 8 months).

The regulator acknowledges that "a more streamlined process is required to identify and respond to models suspected of being unable to meet MEPS. As such check testing processes and MEPS requirements are being reviewed to ensure a balance between the integrity of the check test and LED product shelf life".

We doubt it will be possible for the regulator to sufficiently audit test the (approximately) ten thousand LED lamp models that will enter the Australian market each year to maintain a fair and compliant market.

Rapid development of solid state lighting has resulted in ready availability of suitable LED products in the Australian marketplace

The LED product market continues to develop rapidly with LED products now available to fill the majority of applications (all except specialised applications). Rapid developments have recently filled the majority of existing applications and any remaining applications will likely be filled soon.

Lighting Council members state that the efficacy and quality of LED products have improved rapidly over recent years. Lighting Council Australia's Solid State Lighting (SSL) Scheme was introduced in early 2010 to give consumers confidence in the quality of the LED products they purchase. Since its inception only a limited number of products have been registered due to the large number of LED products on the market, the high churn rate in LED products, the

strength of the Lighting Council Australia brand and the ability of our members to use our logo alongside their own brands.

We note the general improvement in the efficacy and quality of LED products marketed in Australia over recent years and this is supported by evidence in the Consultation RIS showing improved LED product efficacy and supplier claims that are closer to and in many cases over-performing when compared to actual test results. Accordingly, Lighting Council Australia decided to cease the operation of our SSL scheme on 30 June 2017.

Incomplete cost benefit analysis

The cost benefit analysis in Appendix E of the Supplementary Paper contains flawed assumptions and does not include the complete costs that would accrue due to industry compliance (estimated to be \$81.4 Million compared to the \$14 Million estimated in the regulatory paper).

The Department has not provided market share detail that would allow a detailed analysis or a critique of the reasonableness of the cost benefit analysis approach.

This lack of detail is compounded by the conflation of two separate policy initiatives; the first being the phase-out of halogen lighting equipment, and the second being the LED lamp MEPS proposal. The lighting industry has two different views on the two initiatives.

The Lighting Industry is not opposed to the phase-out of halogen lamps as per the government's current stated policy objective - we note that the vast majority of benefits are attributable to the phase out of halogen lighting. However, this submission outlines a range of questions that the industry has with the LED lamp MEPS proposal.

In addition to these two threshold issues—the lack of detail, and the conflation of the two policy initiatives where one initiative has a far stronger cost benefit case—we make the following observations that lead us to question the approach taken by the Department in this cost-benefit analysis:

- Regardless of the current reduction in per unit cost of LED technology, it does not follow that there are no flow through costs to consumers. Where an industry is *uniformly* affected by a change that affects the marginal production cost, those costs flow to consumers, and the overall consumption of that good falls depending on the elasticity of the demand for that good. Assuming a relatively inelastic demand for lighting products (particularly for LED lights where most other substitutes are prohibited), it is probably the case that the majority of the cost will be passed on to consumers.

This issue deserves more analysis than a one line assertion.

- The expression 'uniformly' is emphasised in the above paragraph because it is highly unlikely that the industry will be affected uniformly. The industry has advocated for many years for greater compliance and

enforcements efforts from state, territory and federal governments. As has been argued earlier in this response, and elsewhere in submissions from Lighting Council and other peak bodies, the industry continues to suffer from a failure of governments to enforce existing regulations against manufacturers, suppliers, retailers and installers of non-compliant equipment.

We note that the likely outcome of the LED lamp MEPS initiative will be to further increase costs for legitimate lighting industry participants and make non-compliant products yet more attractive in comparison to compliant products. This undermines the stated policy objectives of the initiative and will result in poor outcomes for compliant businesses and poor environmental outcomes.

- Lighting Council does not agree there will likely be a benefit to suppliers due to forecast simplifications to the regulatory framework. Adding more regulation does not simplify regulation and we are not confident that state governments will remove any of their separate incentive scheme requirements due to the fact that for nine years those governments have been unable to align their LED product requirements/registration processes after repeated requests and suggestions from industry.

Also, the state government schemes are now mainly orientated towards upgrades using integrated LED luminaires so LED lamp MEPS are mostly irrelevant.

- The cost benefit analysis states that 3,437 GWh of energy will be saved through LED lamp regulation. This figure is likely to be over claimed due to the lack of inclusion of market share information including product performance figures. Such information is needed to accurately estimate the energy to be saved and given the significant costs forecast to be imposed on industry, we suggest that detailed analysis should be undertaken.
- We query the rationale for a 7% discount rate.

Review of proposed LED lamp parameters

The proposal seems to be largely based on the International Energy Agency (IEA) 4E Solid State Lighting Annex - a document that contains numerous flaws that are detailed below. Further, the IEA 4E SSL Lighting Annex was established without the incorporation of industry insights into the processes of commercially viable, sustainable, and innovative product design.

Setting the framework for effective regulation is not an academic exercise on "nominal CCTs consistent with the 7-step chromaticity quadrangles and Duv tolerances".

Such an enhanced framework should include the following attributes that are standardized in the international ISO, IEC and CIE standards:

- energy efficiency and functional performance requirements; and

- product information requirements; and
- means of confirming compliance with these requirements.

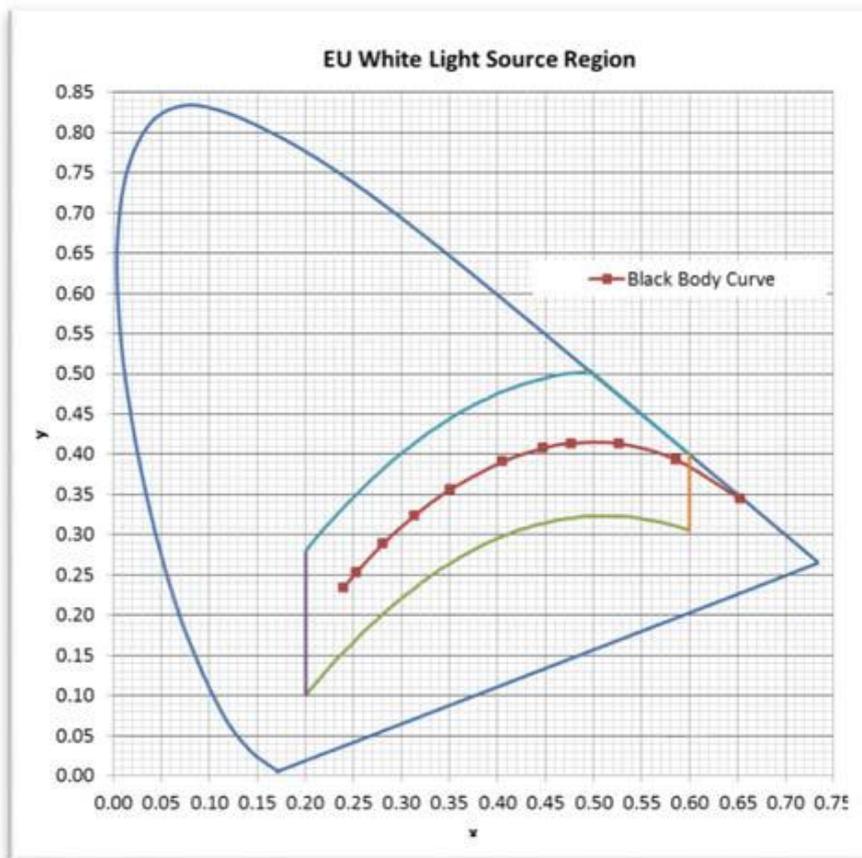
Scope

- The scope should be clarified to specifically exempt LED packages, LED modules, and drivers.
- Unambiguous definitions should be provided for all terms including LED lamp, directional lamp, etc.
- We recommended a subject matter statement be added to the MEPS document (Attachment J) as follows:

This attachment deals with:

- energy efficiency and functional performance requirements;
- product information requirements; and
- The means of confirming compliance with these requirements.

This attachment does not deal with requirements regarding safety, electromagnetic compatibility (EMC), lifetime and warranty. Those aspects are covered under other regulatory regimes.



- Referring to the above chromaticity coordinates, the proposed regulatory specification seems to be too wide including lamps that do not have a general lighting function – infrared (e.g. red or gold), UV (blue), grow light, (purple), collagen (pink) and including some coloured lamps.

We recommend that these lamps be explicitly exempted from this regulation.

Further, we propose that any regulation defined by chromaticity coordinates be defined by the following narrower specification:

- $0,270 < x < 0,530$ and
- $- 2,3172 x^2 + 2,3653 x - 0,2199 < y < - 2,3172 x^2 + 2,3653 x - 0,1595$

- **Tuneable products**

The proposed testing of tuneable lamps is a complex and timely test procedure which requires test houses to seek for the lowest and highest CCT and max light output.

Recommendation: Limit the testing of tuneable lamps to one setting. (e.g. the initial, out-of-the-box, setting).

- **Low volume LED lamps:** We are concerned that a 200 piece sales volume exemptions may create a loophole to be exploited.

Recommendation: Re-consider whether the sales volume exemption should apply and discuss with Lighting Council an appropriate limit.

- **Special purpose lamps**

Special purpose lamps that have specific technical design for specific purposes should be identified and exempt from any lighting MEPS requirements that remove general purpose halogen lamps from the market. Such light sources should be exempt if they have a specific technical design for an intended use and are not designed for general lighting.

Such lamps should indicate their intended purpose and that they are not designed for general lighting on their packaging/accompanying product information when they are placed on the market.

Special purpose lamps are used in the following application areas:

- Body care
- Medical
- Pet care/ plant growth/ insect control/ DNA destruction
- Transport
- Industrial
- Heating
- Display
- Appliances
- Photo optics
- Other special spectrum applications

Product families for registration

The GEMS Act (2012) requires all regulated 'models' to be registered. 'Families' of models can be accommodated as a single registration. However, a major downside to family registrations is that if the GEMS regulator determines that one model in a family registration is non-conforming, the registration is cancelled, thereby effectively removing all models in that family from the market. This situation creates a dilemma for LED lamp suppliers as they would either be subjected to excessive compliance costs or a risk of financial loss from removal of their product from the market.

We recommend the GEMS Act be reviewed to accommodate LED and other product sectors that have large numbers of models before any further consideration of any LED regulation.

The proposed family definition deviates from the one used in current IEC standards. Consequently, the lighting industry will face new 'families of models' to be tested before registration. This will lead to additional testing and costs.

The family allowances should additionally include different brands of the same product, electrical safety approval evidence and examples of how the family restrictions would affect ranges of products.

Recommendation: Refer to internationally accepted IEC performance standards for family model definition and also allow different brands of the same products.

Efficacy

- Forecasting and prescribing minimum standards on a fast-moving area of technology is a difficult task especially when trying to forecast five years in advance. Re-regulation of efficacy in three steps starting in 2019 will cause previous family registrations to become void and require new products and registrations. This will be costly.

We recommend, if regulation must occur, one or two stages of regulation separated by three to four years so that return on investments (testing, administration, registrations) is able to be achieved particularly for low volume lines.

- The proposed efficacy for all LED lamps are too strict, especially for low lumen lamps.

We recommend the implementation of an efficacy curve or reduction for low lumen lamps.

- The reduction of 10% for beam-angle < 30° is too low

We recommend the reduction be increased to 15%

- Reductions for the following products should be developed and added:
 - Tuneable white lamps
 - Connected (IoT) lamps

- Tuneable RGB lamps
 - Anti-glare lamps
 - Dimmable lamps
- IEC 62612 allows variation in Wattage by up to 10% and variation in luminous flux by up to 10% and efficacy must not be less than 80% of the rated LED lamp efficacy.

MEPS are an absolute minimum standard and no product on the market is allowed to perform below the MEPS limit. The LED lamp MEPS proposal should acknowledge that all LED lamp products have such a tolerances (as allowed under international performance standards) and allow for such variation.

Much of the data used to form the regulatory proposal is based on declared rated efficacy values so any MEPS limits should make allowance for such tolerances.

Further, light measurement variation and laboratory testing uncertainty has been shown to be significantly different amongst state-of-the-art testing laboratories. Any MEPS levels or audit testing processes should consider and allow for such variation. Measurements of a simple omni-directional lamp obtained from a large number of state-of-the-art laboratories demonstrate that large variation in results are possible (see graph below) although the majority of test results fall within a relative difference range of $\pm 4\%$ (i.e. 8% total variation).

The graph below¹² demonstrates the variation in luminous flux results and tolerance achieved by a large number of test laboratories when testing a simple omni-directional lamp.

¹² NEMA document: LSD 63-2012 "Measurement Methods and Performance Variation for Verification Testing of General Purpose Lamps and Systems"

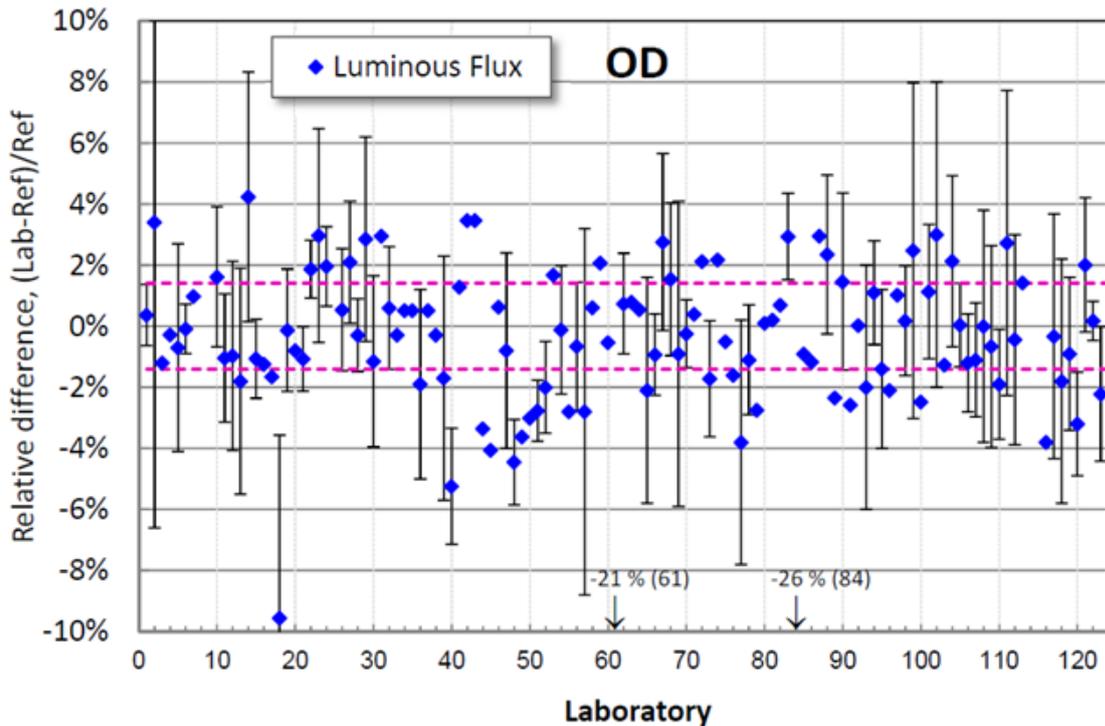


Figure 9-2. Relative differences of total luminous flux for omnidirectional LED lamp (OD)

Our understanding is that the GEMS Act and Determinations may not be able to accommodate a check testing tolerance? If this is the case then the variation in test laboratory results should be accommodated in reduced MEPS limits.

We recommend an MEPS levels should take account of the full efficacy tolerance allowed under international standards (i.e. 20%) and the significant test laboratory variation reported above (i.e. 8%).

- The efficacy of decorative (i.e. fancy round, candle) products should be considered separately. Exemptions may be needed for LED products like crown silvered LED lamps.

Tuneable white light / Human Centric Lighting

Light quality of light must be protected under any LED lamp MEPS regulation of by not removing LED lamps that are fundamental to the future of human centric lighting.

Tuneable white light sources can be separately controlled to allow the emission of light within a large variation of colours outside the range in scope of this regulation. Controlling and mixing of colours make these products less energy efficient when compared with white LED light sources.

Products that are fundamentally focused on the human health and wellbeing lighting market should be exempt from this LED lamp MEPS proposal. Allowance should be made in any LED MEPS for tuneable white light products.

Light distribution

These are not requirements but definitions.

We recommend this section is deleted and suitable definitions are developed instead.

Centre beam luminous intensity

There are no other equivalency requirements.

We recommend this section be modified as an optional voluntary information requirement.

Maximum high angle luminance

This is a technical design specifications that does not belong within a regulation.

We recommend this requirement be deleted.

Colour appearance

Correlated Colour Temperature is an information requirement and should not be accompanied with limits.

We recommend this requirement be modified into an information requirement and the levels/tolerance etc. table be deleted.

Lifetime parameters aspects

There is no justification for the inclusion of lifetime parameter aspects (lumen maintenance, endurance testing, 15,000hr rated life) within a minimum energy performance standard when we consider that LED lamp will be in front of a comparable halogen in total lifetime costs after around 8 months¹³ of operation and the ACCC consumer guarantee will certainly apply in these time frames.

Overseas manufacturers will not provide a 15,000hr lifetime guarantee so Australian suppliers will be left with a potential liability for 10 or more years beyond their normal warranty periods.

Endurance

Endurance tests are related to lifetime and warranty. This does not belong in the scope of an energy efficiency and functional performance regulation.

We recommend this requirement be deleted.

¹³ Lighting: Updated policy positions, Attachment E, cost benefit analysis, consumer benefits, p39

Lumen maintenance

Lumen maintenance tests are related to lifetime and warranty. This does not belong in the scope of a regulation on energy efficiency and functional performance.

We recommend this requirement be deleted.

Fundamental power factor (displacement factor)

The leading power factor of LED products will assist electricity distributors to obtain a unity supply so we question the need to regulate this aspect?

For LED lamps rated >50V, the defined term 'displacement factor' is outlined in IEC 62612.

For LED lamps rated <50V, performance requirements are under development (IEC 63063) and there is no international performance standard currently available that specifies how to measure the Power Factor.

For LED tubes there is no performance standard available that specifies how to measure the Power Factor. In the case of retrofitting an LED tube into an existing luminaire, the Power Factor will be affected and should be measured at the luminaire level including both the LED tube and control gear.

Harmonics

Mains harmonic current requirements are related to EMC regulations and do not belong in the scope of a regulation on energy efficiency and functional performance. Any emissions are likely to be negligible for products rated less than 25W.

We recommend this proposed requirement be deleted.

Photo-biological safety

Photo-biological safety requirements are related to product safety and should not be included in the scope of energy efficiency and functional performance regulations.

We recommend this proposed requirement be deleted so as to not duplicate electrical safety regulations.

Flicker

Flicker should not be included as it is not related to energy savings

- Standards are not yet finalized
- Test measuring equipment has not been clearly identified globally
- Performance is application dependant (eg: home vs industry)

Lighting Council suggests that all references to flicker and flicker requirements should be removed.

Standby mode

Standby losses are not affected by lamp wattage so a ratio requirement of standby power to power (on) will make it difficult to create low wattage lamps with standby functionality. This could hamper further energy saving. The proposed requirements are not feasible. Further, there is no definition of standby power.

We recommend a simple requirement at $\leq 0.5W$ only and include a definition for standby power.

Smart Lighting: on-demand power consumption feature (smart lamps only)

Such a proposal may be acceptable in a mature market. However, this market area is new, still developing and such a prescriptive requirement should have no place in such markets.

Also, 'smart' LED products are a very small part of the market and should not be regulated in a prescriptive manner.

We recommend this proposed requirement be deleted.

Rated life declaration

There is no justification for the inclusion of a rated life marking within a minimum energy performance standard especially when we consider that an LED lamp will be in front of a comparable halogen in total lifetime costs after around 8 months¹⁴ of operation and the ACCC consumer guarantee will certainly apply in these time frames.

Overseas manufacturers will not provide a 15,000hr lifetime guarantee so Australian suppliers will be left with a potential liability for 10 or more years beyond their normal warranty periods.

Further, there are no other consumer products with this kind of (15+ years) warranty requirements or regulatory requirements. The business case does not stack up.

8,000hr LED products are on the market in the EU now but would not be allowed onto the Australian market under this requirement.

We recommend this proposed requirement be deleted.

ELV converter compatibility (For ELV Lamps only)

This proposed requirement should refer to IEC TR 61547-1

Dimmer compatibility (Phase cut dimmers only)

¹⁴ Lighting: Updated policy positions, Attachment E, cost benefit analysis, consumer benefits, p39

This proposed requirement should refer to IEC TR 61547-1

Replacement Lamp Equivalence

We recommend applying the lumen levels of the relevant incandescent and halogen IEC performance Standards.

LED lamp and packaging marking requirements

Suppliers would like to be able to mark their products and inform consumers with packaging style and information that does not restrict market competition.

The proposed marking requirements including aspects such as the font ratio between different marking attributes and other aspects that are not commonly marked such as efficacy, standby power and disposal information are draconian.

Disposal information is not relevant to product energy efficiency.

We recommend minimum requirements on packaging including lumens; Watts or lm/W (but not mandatory to list both); and correlated colour temperature (CCT).

We recommend no mandatory requirements on products and no mandatory requirements for data sheets.

Maintenance of current MEPS levels on some lighting products

Lighting Council is not aware of any further product development being conducted on traditional lighting equipment (i.e. incandescent and halogen lamps, double capped and compact fluorescent lamps). Our members have been withdrawing from various areas of lamp manufacturing over recent years; this is indicative of the rapid decline of these products in the developed world.

Any increase in MEPS for incandescent and halogen lamps will force these products off the market. MEPS regulations on double capped and fluorescent lamps and ballasts should not be altered to enable these products to remain on the market. These products are already efficient, will likely continue to decline in market share over coming years and will likely become less available globally as manufacturers continue to withdraw from markets. These products should be left on the market to smooth any transition for consumers and businesses wishing to purchase fluorescent lamps.

Standards development process

We understand that if LED lamp MEPS is implemented, Department staff will draft a ministerial determination instead of the usual process of developing an Australian Standard within Standards Australia's processes.

We, along with other peak industry bodies, have requested but not received any assurance that the transparency and consensus pillars inherent in the Standards Australia process will be included in the proposed regulatory standards development process.

We recommend a standards development process that includes the pillars of transparency (i.e. a comment period that is allowed to include an expanded range of stakeholders) and consensus (i.e. a voting process that aligns with the Standards Australia definition of consensus).

Outcome sought

Lighting Council agrees with the proposed phase out of incandescent and halogen lamps and agree this will achieve the majority of forecast energy and bill savings.

Lighting Council questions whether there would be any benefit gained by imposing costly regulation on LED lamps and we do not support this part of the regulatory proposal.

ABOUT LIGHTING COUNCIL AUSTRALIA

Lighting Council Australia is the peak body for Australia's lighting industry. Its members include manufacturers and suppliers of luminaires, lighting control devices, lamps, solid state lighting and associated technologies. Lighting Council's goal is to encourage the use of environmentally appropriate, energy efficient, quality lighting systems.

In response to the Supplementary Paper Lighting Council conducted extensive consultations with our members.