To whom it may concern

To: The Department of the Environment and Energy, Australia

Re: Consultation Regulation Impact Statement – Lighting

Date: 12.10.2017

Dear Sir/Madam,

Once again we are happy to provide comments on the *Consultation RIS Updated Policy Positions*. The MEPS for CFL was a disaster. We were one of the clear victims who suffered badly because it. For example, we brought a case to the attention of MEPS authorities regarding a supermarket chain that had misused our product registration, but nothing was done. Even now many leading supermarkets are selling non-MEPS-compliant CFLs and still nothing is being done. This shows that the implementation outlined in the regulation was incomplete. This situation arose because the MEPS imposes a significant burden on the genuine manufacturer (a burden that others can take advantage of). To make just one point: it is strange (even ridiculous) that a $1–5 bulb must be covered by a 2–3 year warranty, and undergo several tests, when a $700 iPhone can be sold with just a one-year warranty. In other words, why is a much more expensive product subjected to less regulation than a less expensive one?

Let's look at some of the technical requirements for LEDs under the proposed MEPS.

The main issue is that requirements are merely copied from other standards. Important parameters are overlooked and some requirements fly in the face of common sense. Using the Arrhenius equation to calculate lumen depreciation and lifetime prediction looks more like a mere University exercise than a real-life necessity. It ignores the real parameters we consider when designing a luminaire or lighting system

$$\alpha = A\ exp\left(\frac{-E_a}{k_B T_s}\right)$$

Where α = in-situ decay rate constant

A = pre-exponential factor

E_a = activation energy (in eV)

k_B = Boltzmann's constant (8.6173×10^{-5} eV/K)

T_s = in-situ temperature (K)

Further, an LM 80 test is for the LED chip, but we have no guidance as to what type of heatsink to use during such a test. Chips are driven by DC power during an LM80 test; but in real conditions, different types of heatsink are used and different types of AC/DC LED drivers. So how can we reasonably combine Luminaire ISTMT measurements and LM 80 data in order to predict LED system lifetime? All commercial LED manufacturers have ISTMT, TM21 … etc. and are registered for both VEET and IPART, but lamps are still failing in the field.

It is arbitrarily restrictive, and not good practice, to make a single specification cover such a wide range of lighting applications. If MEPS authorities were to specify all the requirements for lighting applications, there would be no need for lighting designers. A customer will have their own requirements, and manufacturers should be able to design solutions that meet these requirements, not those arbitrarily imposed by a one-size-fits-all specification. What is of primary importance are safety and EMC requirements, followed by a meaningful warranty. Just submitting test reports and registering a product does not ensure that a manufacturer's warranty is any guarantee of quality.

The requirements governing fundamental power factor and harmonics are mixed up once again. Giving three options will not differentiate high power factor lamps from low power factor lamps. Harmonics is an important element if energy saving is to be considered from a utilities perspective.

Endurance tests are necessary for CFLs (mainly because of the effects of filament wear and thermal stress). But why are they necessary for LEDs. So many other technical parameters can be discussed here, such as ripple voltage and starting DC voltage. These parameters contribute to LED lifetime more than those tested during an endurance test. A person with good knowledge in designing LED systems will understand the relevance of these parameters.

The market is already flooded with LED bulbs, tubes and so on. It is almost too late to implement an LED MEPS. Registration fees, testing fees and other accreditation costs are going to force genuine manufacturers to abandon some products. With VEET, IPART and now MEPS all requiring money for registration, it has to be asked how a genuine lighting manufacturer can survive in the competitive market we have. Perhaps only those who play the system will survive.

I suggest that you implement MEPS first strictly for leading supermarkets, as most indoor lighting products are purchased from supermarkets. But if you are setting a specification that will contribute to energy saving—which should be an important consideration these days—then at least specify parameters that are directly relevant to energy saving . Consider, for example, the lumen requirement specified on page 88 of the RIS document, namely:

> "Non-directional LED lamps:
> The rated luminous flux should preferably be one of the following values: 100 lm, 150 lm, 250 lm, 350 lm, 500 lm, 800 lm, 1000 lm, 1500 lm, 2000 lm, 3000 lm. The initial luminous flux of each individual LED lamp in the measured sample shall not be … more than the rated luminous flux by more than 10% unless, if the rated value is one of the preferred values listed above, then 20%. The average initial luminous flux of the LED lamps in the measured sample shall not be less than the rated luminous flux by more than 7.5 %."

To my mind this is a meaningless requirement. The figure of 7.5% is arbitrary. There is so much unavoidable uncertainty in any such measurements, especially given that the measuring equipment itself carries varying degrees of reliability and accuracy. Anyway, as a manufacturer, our aim is to achieve high lumen with low input power. That is real energy saving. Setting a value for a lower limit is fine, but why should we set a value for an upper limit? Samples can be made to pass any specification and can be registered successfully. There are also issues related to mass production, which a specification should address as well.

We hope the Department will not only implement LED MEPS, but also regulate it properly (which is necessary given what happened with the CFL MEPS).

Thanks and best regards,

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