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eceee and ECOS joint response on possible measures targeting the energy efficiency of lighting in the tertiary sector

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eceee (the European Council for an Energy Efficiency Economy) and ECOS (the European Environmental Citizens' Organisation for Standardisation) welcome the fact that the working document on tertiary lighting issued on 5 July targets the only area in tertiary lighting not yet covered by any other existing or proposed eco-design regulation for lighting, namely luminaires. Already adopted ecodesign measures on lighting products cover non-directional household lamps¹ and fluorescent lamps without integrated ballast, high intensity discharge lamps, and ballasts and luminaires able to operate such lamps.² Requirements for reflector lamps are currently being prepared. The remaining main area to be covered concerns optical requirements for luminaires.

eceee and ECOS are aware of the fact that LED luminaires still may require specific regulation. Some components for luminaires and lighting may still not be covered by any existing or planned regulation and this will have to be addressed in due course. However, the main challenge in terms of luminaires is how to address their optical efficiency.

The challenge of rating luminaires

Developing ecodesign or labelling requirements for optical properties of luminaires is a complex exercise. The issue of rating a luminaire for efficiency is a very old problem, and most have given up on it.

Regulation on the optical properties of luminaires was once proposed in late 2007 when the office lighting requirements were presented to the Ecodesign Consultation Forum (which were later merged with street lighting into the current "tertiary" lighting regulation). We understand that disagreement among manufacturers within CELMA was one important reason why the proposed legislation was put on hold in December 2007.

At that time, the Commission promised to get back with a new proposal.

There are some basic difficulties in giving an energy efficiency index to a luminaire based on its efficiency. One of the problems is the fact that a luminaire is in itself a system made up of components – mainly lamps and ballasts, which are both already regulated and labelled. So a share of the tertiary sector savings will already have been

¹ Commission Regulation (EC) No 244/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps, OJ L 76 of 24.3.2009 p.3, as amended by Commission Regulation (EC) No 859/2009 of 18 September 2009 amending Regulation (EC) No 244/2009 as regards the ecodesign requirements on ultraviolet radiation of non-directional household lamps, OJ L 247 of 19.9.2009, p.3

² Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council, OJ L 76 of 24.3.2009, p.17., as amended by Commission Regulation (EU) No 347/2010 of 21 April 2010 amending Commission Regulation (EC) No 245/2009 as regards the ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, OJ L 104 of 24.4.2010, p.20

gained at this component level. The potential that remains to be harvested is the optical properties of the luminaire and according to the Commission this is substantial: The estimated yearly saving potential of improving the optical efficiency by 15-20% in compared to Business as Usual would generate savings of 30 to 45 TWh in the long run (beyond 2030).

The optical efficiency of the luminaire is established through its light output ratio (LOR) which simply describes how much of the light that leaves the luminaire in relation to the light that is emitted by the lamp. To make it possible to determine the amount of light going upward and downward, the LOR has to be refined by establishing the downward and upward light output ratio, respectively (DLOR and ULOR). Here, the problem is that each luminaire can be used in many applications: whereas LOR can be established for all luminaires it would be difficult to establish a minimum allowed level in a way that *fairly* removes that worst performing luminaires from the market.

For labelling, the problem is similar. In particular, there is a risk that an efficient luminaire will be rated very highly (for instance A), but that this will be achieved while other quality requirements considered important by some users or mandated through law (such as glare protection) will not be taken into account. A luminaire with a slightly less efficient label class may still be the one that is required to achieve the most energy-efficient lighting installation while satisfying specific visual requirements.

The Commission's two options

The Commission outlines two options.

Option A: labelling and ecodesign requirements

In short, the Commission describes a system where luminaires are rated according to their LOR. A complex system of classes will ensure that each type of luminaire is rated and classified fairly according to its type and intended application. The industry's proposal for classification is very complex, and the Commission notes that ecodesign requirements based on this proposal would basically allow all current luminaires to exist on the market (based on optical properties; luminaires may still be phased out based on lamp or ballast requirements). The Commission therefore also considers a system where ecodesign requirements are proposed based on fewer classes. This would mean that classes of luminaires would be phased out from the market, with potential additional replacement costs in some instances since there would be no direct luminaire replacements.

Based on any of the classifications above, a categorical energy label for luminaires may also be established (in addition or as an alternative to ecodesign requirements).

Option B: "Beyond ecodesign", system level requirements

The Commission describes Option B as the development of a lighting design standard with energy requirements. But this standard would not be dealt with on a product basis, regarding market surveillance and requirements on individual products. **Further, Option B would not exclude Option A.**

eceee's and ECOS' comments

Comments on Option A and its relation to Option B

eceee and ECOS acknowledge the problems in setting ecodesign requirements based on the light output ratio and the associated difficulties in establishing energy label classes without creating an overly complex system. **However, eceee and ECOS do not share the view that lighting design standards on the system level can fully replace product requirements.** Lighting design standards with energy requirements are very welcome, but these standards require that comparable and meaningful information requirements are set at the product level and they will be substantially facilitated by ecodesign measures.

For option A, eceee and ECOS therefore propose the following:

- **Ecodesign requirements to ban the worst performing luminaires should be set, as outlined in the preparatory study.** The energy benefits appear large enough to justify higher replacement costs. The introduction of the ecodesign requirements could be given some years to allow the market to adapt.
- A categorical A-G energy label may prove too difficult to establish now, and its merits in the area of luminaires are questionable. It is also important that controversies on this label do not hinder all discussions on other aspects. The priority in our view would be to establish other information requirements as described below.
- **Display of information on the luminaire downward and upward light output ratio (DLOR and ULOR) should be mandatory.** Exemptions could be made for luminaires produced in very small series, for instance custom-built luminaires not listed in a catalogue. In those instances, the testing costs will be prohibitive and may even be a hinder to innovation. The mandatory information on DLOR and ULOR will effectively serve as a sort of energy efficiency rating that can be understood by professional designers and informed buyers. The information on the DLOR and ULOR, established according to standardised measurement methods, will be useful for lighting designers comparing luminaires.

Specific Comments on Option B

A lighting design regulation on the system level with energy requirements is an approach worth investigating, but eceee and ECOS still do not see how this realistically could be enforced and adequately replace eco-design requirements. There are already lighting energy requirements established in some Member States and it is unclear whether an EU standard will take legal effect over national standards and building codes. The EU lighting design approach may, however, have an important role as a benchmark standard that could be adopted by individual Member States. **The work to develop such an approach, if it is supported by luminaire manufacturers and lighting designers, should be initiated by the Commission as soon as possible.**

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