



WORKING DOCUMENT
**on possible measures targeting the energy efficiency of lighting
in the tertiary sector**

**Presented by the Directorate General for Energy
for consultation of the Consultation Forum
running from 6 July to 15 September 2010**

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

The Commission services are assessing the possible introduction of further implementing measure(s) on the ecodesign of lighting products in the domestic and tertiary sectors (as announced in the *Commission Communication on the Establishment of the working plan for 2009-2011 under the Ecodesign Directive*³ and in Article 16(2) of the Ecodesign Directive 2009/125/EC⁴).

The update of *Commission Directive 98/11/EC of 27 January 1998 implementing Council Directive 92/75/EEC with regard to energy labelling of household lamps*⁵ should also be considered in line with the adoption of the recast Labelling Directive 2010/30/EU.⁶

The Commission services are working on proposals for the ecodesign of directional lighting and for the update of the lamp labelling implementing measure 98/11/EC. Working documents

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 104 of 24.4.2010, p.20

³ COM(2008) 660

⁴ OJ L 285 of 31.10.2009, p. 10.

⁵ OJ L 71 of 10.3.1998, p.1.

⁶ OJ L 153 of 18.6.2010, p 1.

outlining proposals for these measures will be submitted in the near future to the Ecodesign Consultation Forum and to the experts on labelling.

Regarding the energy efficiency of lighting in the tertiary sector, the Commission services are now seeking the views of interested parties on possible further ecodesign and/or energy labelling measures, but also on alternatives which are detailed hereafter.

Consultation of stakeholders is open on the CIRCA website: <http://circa.europa.eu/>.

Comments can be sent to ener-ecodesign@ec.europa.eu by 15 September 2010.

The Commission services will publish the received position papers on CIRCA, unless they are accompanied by a request not to publish.

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NOTICE

This document is a working draft which does not prejudice the final form of any future decision to be taken by the Commission.

OPTIONS FOR EU LEGISLATION AFFECTING TERTIARY SECTOR LIGHTING

The number of lighting points in the tertiary sector (1,6 billion in the EU) and the high number of yearly burning hours resulted in a yearly power consumption of 200 TWh in 2005, predicted to rise to 222 TWh by 2020. This means that even slight improvements in tertiary sector lighting could have dramatic effects in terms of savings.

Preparatory work on EU measures for the efficiency of tertiary sector lighting in the context of Ecodesign has been ongoing since 2006 and resulted in Regulation 245/2009, setting requirements mainly for lamps and ballasts. The debate on the optical efficiency of luminaires is still ongoing. In parallel, an alternative or complementary option (beyond Ecodesign) that could also be considered is described below under Option B.

OPTION A: ECODESIGN REQUIREMENTS AND ENERGY LABELLING FOR TERTIARY SECTOR LUMINAIRES

In addition to lamps and ballasts, Regulation 245/2009 also sets some basic requirements for luminaires typically used in the tertiary sector, namely luminaires for fluorescent lamps without integrated ballast and for non-directional high-intensity discharge lamps. The regulation targets their standby energy use and their compatibility with efficient ballasts. It also sets some simple product information requirements.

However, there is considerable saving potential in regulating the optical efficiency of these luminaires. If less light is lost inside the luminaire, a lamp providing less light (and thus consuming less electricity) will be sufficient to provide the same level of illumination.

A first proposal for optical efficiency requirements and energy labelling of fluorescent lamp luminaires was made in the context of the office lighting preparatory study, and discussed in the Ecodesign Consultation Forum in 2007. However, seeing the complexity of the issue and the controversy it raised with industry, the Commission services decided to postpone the discussion to a later stage.

It could be envisaged at this stage to propose again optical efficiency requirements for these products. Energy labelling based on optical efficiency and dedicated to tertiary luminaires could also be introduced, so as to simplify information provision on efficiency and to set out a roadmap for improvements. A bonus could be given to luminaires that are compatible with intelligent lighting control systems.

These measures could increase optical efficiency of tertiary sector luminaires by 15-20%.

However, tertiary sector luminaires are a highly complex product group due to an extreme variety of applications and specific situations in which they need to function. The lighting industry has proposed its own categorisation and minimum requirements. Unfortunately, the categorisation is very complex, and in terms of minimum values, industry simply records the current performance of products in each category, claiming there is no improvement potential in optical efficiency without compromising the particular functions the individual categories need to fulfil. To be noted that the proposal might be withdrawn, as industry members are

currently assessing internally the impact of their own draft proposal on the tertiary luminaire market.

It could be envisaged to introduce another, simpler categorisation and system of requirements, different from the industry proposal, achieving the 15-20% overall improvement indicated above. However, such requirements would probably remove from the market entire categories of low-efficiency luminaires used in particular installations. In the future, the owners of such existing or future installations would be faced with a reduced choice of luminaires in terms of design and/or higher refitting costs (e.g. having to change the entire ceiling to fit in the new luminaires).

Estimated yearly saving potential of saving 15-20% in optical efficiency compared to Business as Usual: 30 to 45 TWh (but only in the longer run, e.g. 2030-2050, due to long luminaire lives)

OPTION B: ADDRESSING LIGHTING AT THE SYSTEM LEVEL (BEYOND ECODESIGN)

Ecodesign addresses individual products at the time of design by the manufacturers. It is not possible to determine how the product is going to be installed in the particular application where it is going to be used. For some product groups, such as lighting in the tertiary sector, the use-phase energy efficiency is to a large extent determined by the design of the entire system in the context of each particular installation. For example, even with very efficient lamps / ballasts / luminaires, if the system design is bad and too many of them are installed in a room with no intelligent controls, the total energy consumption of the system will be still higher than that of less efficient products operated in a properly installed system dimmed according to daylight or presence in the room. Therefore there is potential in improving the energy efficiency of both the individual products and that of the systems in which they are used. According to the lighting industry, in addition to the 15% energy savings that will be achieved by the existing ecodesign measure on lighting products in the tertiary sector, a further 40% savings could be achieved via legislation on lighting systems (a total of 55% of savings). Such legislation would leave it to the lighting designers to address the needs of each particular system, choosing the proper combination of products and controls to achieve the energy efficiency requirement. The efficiency requirements could be of the type to define a cap on the average number of kWh to be used by the lighting system to illuminate a 1 m² area over the period of one year, possibly factoring in also the illumination level provided by the system.

However, implementing this approach would be the responsibility of the lighting designers and of the installers, instead of the manufacturers and importers. It would therefore require a different approach to enforcement, not based anymore on the presumption of conformity for CE marked products placed on the market with spot-checks from market surveillance, but on the verification performed under the supervision of Member State authorities on the work carried out by designers and installers of lighting systems.

EU-level instruments are already in place that could address the efficiency of tertiary sector lighting beyond Ecodesign:

For indoor lighting: The Energy Performance of Buildings Directive (2010/31/EU) encourages Member States to adopt requirements on lighting systems. Lighting systems need to be taken into account in the methodologies developed to measure the overall energy efficiency of a building (see Annex I of the Directive). Article 5 request the Commission to develop through delegated acts a "Comparative methodology to identify cost-optimal levels of energy performance requirements for buildings and building elements" (Annex III), where provisions

to calculate cost-optimal levels for the energy efficiency of lighting systems could also be included, requiring the use of existing CEN standards in the calculation. According to Article 5, Member States have to use this methodology to calculate cost-optimal levels against which their own minimum requirements will have to be checked (if they exist for lighting). If the latter are substantially less efficient than cost-optimal levels, the difference should be motivated in reporting towards the Commission, and the gap reduced to the extent possible. Green public procurement criteria based on cost optimal levels calculated according to the same methodology could also be published by the Commission services, providing motivation for public authorities to increase the efficiency of their indoor lighting systems.

For outdoor lighting: the Energy Services Directive (2006/32/EC) encourages Member States to improve the energy efficiency of public street lighting as part of their national energy efficiency action plans. In support of this, the Commission services could publish green public procurement criteria that determine the method of calculation of street lighting efficiency and provide energy efficiency levels for entire installations that are acceptable for green public procurement.

Estimated yearly saving potential compared to Business as Usual, in case of full implementation by Member States:

- ***80 to 90 TWh for the whole tertiary sector***
- ***14 TWh for street lighting alone***

(in both cases only in the longer run, e.g. 2030-2050, due to long system lives, unless early retrofitting of installed systems is part of the requirements)