EXPLANATORY NOTE

to the

Working Document on a draft Commission Delegated Regulation implementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of general lighting lamps

and to the

Working Document on a draft Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment

LEGAL ELEMENTS OF THE ENERGY LABELLING DELEGATED ACT

Summary of the proposed action

The measure sets out new and revised mandatory energy labelling requirements for suppliers placing general lighting lamps on the market, and for dealers offering these appliances at the point of sale or by distant selling such as via catalogues or the internet. The existing lamp energy label is extended to directional lamps and professional lamps, and new classes are introduced above A to allow a better distinction among the higher-end technologies, in particular singling out efficient LEDs as better performers than compact fluorescent lamps that have been on top of the scale until now. The scope of the measure is aligned with the scope and content of existing and possible new Ecodesign implementing measures setting minimum energy efficiency, functionality and information requirements on general lighting lamps.

Detailed explanation related to certain provisions

Chapter 2 (definitions): the notion of "final owner" has to be introduced in addition to "end user". Indeed, in the case of professional lamps, it is not the end users (e.g. office workers, pedestrians etc.) who are making purchasing decisions and have to be influenced by label classes, but the person who will own the lamp at the end of the value chain, the owner of the lighting installation. In household lighting, the final owner is also at the same time the end user.

Chapter 9: A special transitional provision is needed because the scope of the new labelling regulation is larger than the scope of Commission Directive 98/11/EC. The lamps newly within scope will not be equipped with energy labels before one year after entry into force. Additional time should be given for retailers to change their stocks afterwards.

Chapter 10: The Regulation could possibly enter into force during the second quarter of 2012. The "lighting season" for the lighting industry starts in September, when new products and packagings are usually introduced to the consumer market (distinct from the professional market). In order to reduce administrative burden for industry, the date of application of lamp requirements should be adjusted to the lighting season (as was the case with Regulation 244/2009). Typically, labelling regulations leave one year transitional period after entry into force. The first September following that is September 2013.

Annex V: Measurement methods and the verification procedure for market

surveillance purposes are fully aligned in this delegated Regulation with those used for the same parameters in any existing or possible new Ecodesign implementing measure. Specific provisions are needed for the cases when the LED lamps or modules are not replaceable in the luminaire by the end-user.

Annex VI: The following table shows which lamp technologies belong to the classes the limits of which are set out in Table 1, including an indication if the technology is phased out or is planned to be phased out in the parallel ecodesign regulations.

Energy efficiency class	**Non-directional lamps**	**Directional lamps**
A++ (most efficient)	Class currently empty apart from some low pressure sodium lamps used in street lighting. Soon to be populated by best LEDs.	Class currently empty, soon to be populated by best LEDs.
A+	Best LED lamps in 2012, best linear fluorescent, compact fluorescent and high intensity discharge (HID) light sources.	Best LED lamps 2012.
A	Average LEDs 2012, average compact fluorescent lamps and poor linear fluorescents and poor HIDs (for the latter two, phase-out between 2010 and 2017)	Average LEDs 2012, average to good compact fluorescents and HIDs (proposed to be phased out in stage 3, 2016)
B	Poor compact fluorescent lamps and LEDs (phased out in 2009 with a few exceptions), best (infrared coated) halogen bulbs.	Poor compact fluorescent lamps and LEDs (proposed to be phases out in stage 1 2013), best low voltage halogen reflector lamps (infrared coated or xenon filled).
C	Xenon-filled mains voltage halogen lamps (to be phased out in 2016, except G9 and R7s lamps).	Quality conventional low voltage halogens, proposed to be phased out in stage 1 and 2 (2013 and 2014)
D	Conventional halogens and best incandescents (full phase-out by 2012)	Poor conventional low voltage halogens (proposed to be phased out in stage 1 2013), quality mains voltage halogens (proposed to be phased out in stage 3 2016).
E (least efficient)	Typical incandescent range, full phase-out by 2012)	Incandescent reflector lamps and poor mains voltage halogens, proposed to be phased out in stage 1 and 2 (2013 and 2014).

Annex VII

The provision that the rated power of the lamps has to be measured at their nominal input voltage is needed so as to make clear that compliance is requested at full power, not when the lamps are dimmed.

Table 2: For fluorescent lamps, the use of a complex control gear correction factor gives exactly the same overall result in A class as the dedicated formula used in 98/11/EC. This method allows applying the same ballast correction factor to formulae that define the newly added top classes A+ and A++ in which fluorescent lamps may be present, thus avoiding the need to have a separate column for the EEI of fluorescent lamps in Annex VI.

Calculating the reference power (P_{ref}) for lamps <1300 lm (corresponds to classic

household lighting with bulbs-shaped lamps): the merit of using the old 98/11/EC formula is that in the still important halogen category, in the case of higher wattage lamps which are more efficient by nature but more energy consuming too, people will not be pushed to use them as they cannot get so easily into efficient classes as they would in a linear scale. At the same time, people will be pushed to install smaller wattage LEDs, because it is easier for them to appear more efficient than higher wattage ones, which have to have higher efficacy to obtain the same class (even though they are not more efficient by nature).

Calculating the reference power (P_{ref}) for lamps >1300 lm (corresponding to professional lighting): the merit of using the new linear formula is that it creates a level playing field for technologies where filament lamps are not dominant, so efficacy is little related to light output.

Table 3: The useful light of directional lamps is normally under a 90° beam angle, which fits with their aim to provide accent lighting. It seems though that a compact fluorescent product range has been developed as retrofits to halogen lamps incorrectly used in downlighting installations (providing illumination of a full area). In their case (and only then), light in a larger angle is useful, but still users should be warned against installing such CFLs in accent lighting.

LEGAL ELEMENTS OF THE DRAFT ECODESIGN REGULATION

- **Summary of the proposed action**

This ecodesign regulation introduces:

– minimum energy efficiency requirements for directional lamps, phasing out the least efficient filament lamps while keeping suitable alternatives on the market for all kinds of lighting installations;

– functionality requirements for directional lamps and non-directional LED lamps, which will ensure that consumers switching to the more efficient alternatives will not be disappointed in their quality;

– requirements for energy saving lamps and lighting equipment (controls and luminaires) to be as much as possible compatible with each other;

– product information requirements for all technologies within scope that will ensure that users are appropriately informed of the performance and compatibility of the lighting equipment they purchase.

It is supported by a delegated act on lamp energy labelling that extends the scope of the existing labelling to directional lamps.

- **Detailed explanation related to certain provisions**

Chapter 2 (3), Annex I.1, Annex IV.4 Special purpose products

The new definition of special purpose products is part of the general effort to make this product category more concrete, to decrease the risk of the public buying special purpose lamps for general lighting, and to ease the work of market surveillance, without putting excessive burden on industry. Annex IV.4 on verification specifies that those technical characteristics that can make a lamp special purpose according to this definition shall be listed

in harmonised standards, or awaiting such standards, in publications in the OJ. The list is meant to be updated regularly to take account of technical progress.

In earlier drafts, lamps with very low light outputs and with a high UV component were allowed to be special purpose with no information on the packaging. However, unlike coloured lamps, such lamps cannot be easily distinguished by the public from normal lamps, so a warning on the packaging is deemed necessary (they are covered together with the other special purpose products).

Chapter 2 (19) LED lamp definition

The rather basic definition of an LED lamp ensures that it can mean a single LED module (end-user replaceable or not), a self-ballasted retrofit lamp, or an entire integral luminaire. Such a broad definition is needed also to remain consistent with the LED definition in Regulation 244/2009. The non-directional lamps regulation's efficacy requirements should apply to LED lamps that are integral luminaires.

Chapter 7 Revision

Three years is very short between entry into force and revision (2015), but it is advisable to examine the rapid progress of LED technology, and also to do the review more or less in parallel to the review of Regulation 244/2009 in 2014, to improve the complementarity of the two Regulations.

Annex III.1.1 Energy efficiency requirements for directional lamps

The same method is used in this Regulation and in the energy labelling regulation to establish the energy efficiency index of a lamp: comparing the power of the lamp corrected for control gear losses and other parameters to a reference power. The reference power is obtained from the useful luminous flux of the lamp, which is the flux in a 90° or 120° cone. For more details, see the explanatory note to the energy labelling delegated act.

The guiding principle in table 2 setting maximum EEIs is that the highest efficiency is aimed at for lamps other than filament lamps, however there are existing installations which are only compatible with certain categories of filament lamps. Therefore the efficiency levels for filament lamps are less stringent so that the existing stock can be fully serviced with slightly enhanced lamps, with no empty shelves syndrome (hence the introduction in two stages of the requirements affecting the most numerous categories).

Application date	Maximum Energy Efficiency Index (EEI)		
	Mains voltage filament lamps	**Other filament lamps**	**Lamps other than filament lamps**
Stage 1 (2013)	If Φ_{use} > 450 lm : 1.75 Phases out E-class incandescent reflector lamps (R50 R63 R80) and poor mains voltage halogens with high lumen outputs, but leaves the more efficient bulb-shaped halogen reflector lamps on the market.	If $\Phi_{use} \leq$ 450 lm : 1.2 Poor conventional low voltage halogen lamps (D class) are phased out even at low lumen outputs already in Stage 1. If Φ_{use} > 450 lm : 0.95 Phases out quality conventional low voltage halogens starting with high lumen outputs (12V 50W MR16 lamp). Leaves only B-class enhanced lamps (infrared coated or xenon filled)	0.5 Phases out the least efficient (B-class) CFLs and LEDs.
Stage 2 (2014)	1.75 Completes the phase-out started in Stage 1, now applying to low lumen output lamps.	0.95 Completes the phase-out started in Stage 1, now applying to low lumen output lamps.	0.5
Stage 3 (2016)	0.95 Raises the requirement to a level that only LEDs, CFLi or halogens with integrated transformer can achieve today. *	0.95	0.2 Raises the requirement to a level (A+) that only the best LED lamps achieve today.

* The applicability of this requirement on mains voltage filament lamps is subject to strong criteria set out under the table and to be checked at the revision of the measure in 2015.

Annex III.1.2 Energy efficiency requirements for lamp control gear

The requirement on no-load power applies from stage 2 only, as luminaire manufacturers need time to make necessary adjustments to the luminaires using the lamp control gear. The lamp control gear which is cut off from power when the light is switched off does not have to comply with a no-load requirement meaningless in its case.

Annex III.2.1, 2.2, 2.3 and Annex IV.3. Compatibility requirements

The requirement to be as much as possible compatible with A-class lamps applies the same way to dimmers and other control devices, control gear and luminaires. It applies also to energy saving lamps (CFLs and LEDs) in that they should be as much as possible compatible with lighting installations operating filament lamps. Compatibility will be defined in harmonised standards, while recognising that full compatibility is very difficult to achieve.

Annex III.2.2. Functionality requirements for non-directional and directional LED lamps

The reason for covering non-directional LED functionality requirements in this regulation (rather than remaining focussed on directional lamps) is that in the non-directional lamps regulation (244/2009), we could not set LED functionality requirements yet, because the market was not developed enough in 2008. Only the efficiency and product information requirements applied to non-directional LEDs in that regulation, which also explains why such requirements are only set for directional LEDs in this Regulation.

Measuring lumen maintenance and lamp survival until the end of the very long rated life of LEDs would have put extreme burden on market surveillance and would have reduced the speed of introduction of new technologies. To remain practicable, no test should take longer than a year.

Annex III.1.2.(o) Narrow beam LED multiplication factors to luminous flux requirement for equivalence claims involving power

Spill light has some use in medium to wide beams (contributes to uniformity on the floor and to total room illumination), but is useless in narrow beams whose only purpose is accent lighting. At such beam angles, technologies emitting no spill light (such as LED) should be allowed to have less total light output.

Annex III.3.3. Product information requirements for equipment designed for installation between the mains and the lamps

The requirement to attach the A-class non-compatibility warning fiche in a non-permanent way where the end-user is likely to remove it at putting into service excludes e.g. stickers in non-prominent locations and permanently integrated text. The requirement is needed because if the warning stayed on the equipment after putting into service, it would give a confusing message to the user on the occasion of future lamp replacements, by which time lamps in classes A++ to A that are compatible with the equipment might become available on the market. The required minimum size of the fiche is the same as that of the lamp energy label.

Annex IV.1. Verification procedure for lamps other than LED lamps and LED lamps that are meant to be replaced in the luminaire by the end-user

The method of extrapolation for calculating lumen maintenance at the end of life and rated lifetime is set out in documents the reference numbers of which shall be published for that purpose in the OJEU, e.g. US standards IES LM 80 and TM 21.