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The Consumer Voice in Europe

CONSUMER ORGANISATIONS COMMENTS ON ECODESIGN AND ENERGY LABELLING FOR LIGHTING

European Commission's draft legislative proposal of November 2017

Contact: Aline Maigret – sustainability@beuc.eu – anec@anec.eu

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ANEC, THE EUROPEAN ASSOCIATION FOR THE CO-ORDINATION OF CONSUMER REPRESENTATION IN STANDARDISATION
Av. de Tervueren 32, box 27 – 1040 Brussels - +32 (0)2 743 24 70 - www.anec.eu
EC register for interest representatives: identification number 507800799-30

BUREAU EUROPÉEN DES UNIONS DE CONSOMMATEURS AISBL | DER EUROPÄISCHE VERBRAUCHERVERBAND
Rue d'Arlon 80, B-1040 Brussels • Tel. +32 (0)2 743 15 90 • www.twitter.com/beuc • consumers@beuc.eu • www.beuc.eu
EC register for interest representatives: identification number 9505781573-45

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Why it matters to consumers

Thanks to EU rules, light bulbs have evolved from halogen lamps to less energy-guzzling LEDs. It saves consumers between €130 and €159 on their lighting yearly. LEDs also must last for a minimum lifetime. To match with fast-evolving technological progress, the EU Ecodesign requirements for lighting need an update. This will ensure appliances become more resource-efficient and consumers save more on energy.

Summary

The European Commission put forward draft regulations/measures on 'lighting products' (Lot 8/9/19) aiming to revise the existing Ecodesign and Energy Labelling requirements. Among other, the proposal aims to unifying all Ecodesign regulatory measures into one.

We welcome the intention of the European Commission to provide a more coherent regulatory environment for lighting products. However, the level of ambition of future measures shall not be compromised for the sake of simplicity. This paper outlines the main consumer relevant issues related to the proposed measures and recommends improvement options.

Specifically, we welcome that the Ecodesign scope is extended to lamps emitting light in different colours including white. We agree with the level of ambition of the energy efficiency requirements, but underline that smart lighting products should not get any energy allowance.

With regard to the resource efficiency requirements, we strongly recommend re-including lifetime requirements for LEDs and OLEDs, and we insist that LEDs in luminaires should be replaceable.

Regarding functional requirements, we welcome the requirements on flicker for LEDs and OLEDs and propose to extend them further. Also, we give recommendations on how to improve the scale for colour rendering of LEDs, and we advise in favour of more ambitious requirements for colour consistency and for the displacement factor.

We recommend that luminaires stay within the scope of Energy labelling. We also comment on the comprehensibility of the label and provide general recommendations on the consumer survey.

Lastly, we also advocate for better enforcement of both Ecodesign and energy labelling requirements.

1. GENERAL COMMENTS

1.1. A simpler, yet not less ambitious scope

The European Commission is proposing to simplify the current Ecodesign regulations for lighting products by integrating the three existing regulations into one. We welcome the intention from the European Commission to unify the way in which requirements are set, at the strict condition that it does not reduce the ambition of the requirements.

1.2. Transparent and stakeholder-comprehensive consultations

In July 2017, VHK launched an informal consultation to gather feedback from certain stakeholders ahead of the consultation forum meeting. We would like to question the legitimacy of undertaking such an informal consultation over the summer period and without involving all stakeholders. We note that such consultation does not strictly respect the defined Ecodesign process and is also very much questionable in terms of transparency. We call on the Commission (and consultants) to include all stakeholders if such informal consultation would take place again in the future. Such informal consultation should however not become common practices.

1.3. Consistency with other EU policies and objectives

We welcome that the proposal includes a provision clarifying the use of tolerances, hence aligning with the Commission Regulation 2016/2282[1]. Since 2007, ANEC and BEUC and other stakeholders, have repeatedly requested action[2] on the evidence that some manufacturers are using tolerances to achieve higher energy labelling classes or to meet the Ecodesign requirements. Due to this, legal energy efficiency requirements have systematically been surpassed, thereby creating unnecessary costs for consumers and the environment. We therefore fully agree to reiterate that tolerances are for use by Member States only in the context of market surveillance. Such provisions can avoid that consumers are misled and lose significant amounts of money where tolerances are being exploited.

Furthermore, we welcome the effort to stay consistent with other policies through the reference to the RoHS Directive dealing with the mercury content in light sources. The phase-out of light sources that contain mercury, where alternatives are sufficiently available, supports the general reduction of mercury emissions and thus also of respective impacts on health and the environment. Lighting Europe data indicates that in 2013 an estimated total of 2868 Kg mercury were placed on the market, 947 Kg through CFLs and 190 Kg and 751 Kg through LFL (T5 and T8 respectively) alone[3]. As many lamps are not collected separately[4], there are concerns on the fate of such lamps and the potential for Hg emissions, both from improper disposal and from lamp breakage in consumer premises.

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R2282

[2] ANEC study "A review of the range of Member State activity related to compliance with the EU Energy Label regulations", May 2007.

[3] See Gensch, C.-O.; Baron, Y.; Blepp, M.; Moch, K.; Moritz, S. in collaboration with Deubzer, O.; Gibbs, A. (2016) Assistance to the Commission on technological, socio-economic and cost-benefit assessment related to exemptions from the substance restrictions in electrical and electronic equipment (RoHS Directive) – Pack 9, Eunomia Research & Consulting Ltd. in cooperation with Oeko-Institut e.V. & Fraunhofer Institute for Reliability and Microintegration (IZM), Commissioned by: EU Commission, DG Environment, pg. 14-16, Brussels, https://www.oeko.de/uploads/oeko/download/produkteref_engl.pdf

[4] Data from various Member States shows that separate collection of lamp waste is still below 50 % in most EU countries (43 % in Denmark in 2010; below 50% in Belgium in 2014).

2. ECODESIGN PROPOSAL

2.1. DEFINITIONS AND SCOPE

2.1.1. Strengthen the definition of LED and OLED's "lifetime"

In the current proposal, the lifetime for LED and OLED light sources is defined as follows:

> *"the time in hours between the start of their use and the moment **when 50%** of a population of light sources have either abruptly failed (no light output anymore) or their light output has gradually degraded to a value below 70% of the initial luminous flux. (…)"*

The definition is in our view not appropriate.

➔ **Definition of lifetime: the failure rate should be reduced to 20% with minimum 70% of initial luminous flux.**

2.1.2. Light sources emitting in different colours including white must be covered

The scope of the regulation now includes lamps intended to emit different colours, but also able to emit white light. We reiterate[5] that such products must be covered by the regulations as a loophole could arise allowing on the market lightbulbs that emit light in different colours but are inefficient in their primary function of emitting white light.

➔ **The Commission should maintain its proposal to include light sources intended to emit non-white colours in the scope.**

2.2. ENERGY EFFICIENCY REQUIREMENTS

2.2.1. No more halogen light sources and CFLi to enter the market by 2020

The proposed Ecodesign requirements will apply from September 2020. For the sake of simplifying the regulations for lighting products, energy efficiency requirements are now formulated for all light source types in a uniform manner[6]. Regarding household light sources, a single efficiency requirement applies to all types. Concretely, halogen light sources (HL) and compact fluorescent light sources (CFLi) will not be able to meet the requirement, and thus would no longer be able to enter the market after 2020. According to the Commission, as high-efficiency LED products are already available to replace these HL and CFLi (or will be by 2020) replacement by LED is cost-effective for consumers.

➔ **We support the proposed level of ambition for the energy efficiency requirements under Ecodesign.**

[5] In 2015, we already expressed this demand. See: http://www.beuc.eu/publications/beuc-x-2016-041_mal_anec_beuc_comments_on_lighting.pdf

[6] This is, by using a formula defining the maximum allowed power for a light source in function of the quantity of light emitted.

2.2.2. Smart lighting products should not get an energy allowance

In the current proposal, 'light sources connected in a network' get a bonus factor for energy consumption. We believe that, on the contrary, smart features of appliances should be limited in terms of energy consumption[7], rather than be allowed to consume more. We remind the Commission that energy efficiency and savings are one of the main goals of the Ecodesign Directive and demand-side flexibility should not occur at the expense of energy efficiency. From a consumer perspective, the additional energy consumption should be kept low. If there will be a higher overall energy consumption because of smart lighting products, consumers need to be made aware that this convenience comes at a certain price. Consumers in the future should also always have the choice to install lighting products which are not connected in case they do not see an added value in such new technologies.

In general, we believe that installations which are used to enable demand-side energy management also need to benefit consumers financially. As it is currently unclear if the additional energy consumption associated with the connectivity will be outweighed by the higher system efficiency, we do not support any allowances that would have the effect to promote such products on the market.

➔ **We ask the Commission not to allow connected lighting sources to consume more energy.**

2.3. RESOURCE EFFICIENCY REQUIREMENTS

2.3.1. Lifetime requirement for LEDs must remain

We do not agree with the Commission's proposal to remove the requirements on lifetime for LEDs. In 2012, the Commission published a regulation on directional lamps and LED lamps[8], setting Ecodesign and functionality requirements including service life-time, number of switching cycles of the lamps before failure, and maximum starting time. ANEC and BEUC welcomed those requirements and disagree with the proposed deterioration of these crucial requirements. Although the new draft introduces an accelerated endurance test for LED products, the duration of the test is set to 1000hrs [9], which is significantly shorter than the current 6000hrs test. Though we understand this change to target a more practical and shorter testing procedure, it neither suffices to ensure that products allowed on the market have a minimum quality, nor that their declared performance is in line with their actual performance beyond the 1000 hrs period or beyond the EU 2-year guarantee period.

[7] Requirements for maximum energy consumption would make sense as smart appliances tend to consume more energy than non-smart ones. For example, recent evidence highlights that smart wireless LED lamps can have substantial standby power use, which can sometimes exceed the energy consumption when the light is switched on. Source: http://ssl.iea-4e.org/product-performance/new-product-features/standby-of-smart-lamps-first-report

[8] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012R1194

[9] The rationale is that this change will facilitate compliance verification by market surveillance authorities

Although we acknowledge that the change proposed can facilitate an increase in compliance verification by market surveillance authorities, it could mean a big step backward for consumers. According to the current proposal, consumers would not be able to contest models failing after 1500 hours (which is a very short life time for LED). As guarantee rights are not aligned with the expected lifetime of products and because Ecodesign does not make a link to legal guarantee rights, it is very unlikely that consumers will be compensated in case of early failure.

Furthermore, the proposed accelerated endurance test of 1000 hrs permits a failure rate of 10% and a decrease to 70% of the initial luminous flux. In comparison, the same failure rate is permitted in the current regulation only after 6000 hrs (lifetime requirement), after which remaining lamps have to exhibit a luminous flux above 80% of the initial one. In the current regulation, after 1000 hrs of operation the luminous flux is required to be at least 90% of the initial luminous flux, i.e the new proposal would tolerate a decrease in the performance of light sources.

More ambitious requirements also exist in California (the United-States). According to Title 20 of the California Code of Regulations, *"State regulated LED lamps with lumen output of 150 lumens or greater for candelabra bases, or 200 lumens or greater for other bases, and manufactured on or after January 1, 2018 shall have: […] (5) A rated life of 10,000 hours or greater as determined by the lumen maintenance and time to failure test procedure".* [10]

As LEDs' manufacture is more energy intensive than most conventional technologies, the advantage of LED lighting products over conventional ones in terms of energy consumption is lifetime related i.e. depends on products having a longer lifetime. See annex 1 for further detail

Furthermore, such a proposal contradicts the declared goals of the Circular Economy action plan which sees Ecodesign as a crucial instrument to improve the durability of products.

➔ **The Commission must retain the previous requirements pertaining to the durability of the lamps, i.e. service life-time of 6000hrs, number of switching cycles of the lamps before failure, and maximum starting time.**

2.3.2. LEDs in luminaires should be replaceable – and not only removable

The Commission proposes to introduce a new article (Article 4) on the 'removal of light sources and separate control gears': *'Manufacturers and importers shall ensure that light sources and separate control gears (…)* ***can be readily removed without permanent mechanical damage by the end-user*** *from any product containing them that is placed on the market. (…)'*

[10] CALIFORNIA CODE OF REGULATIONS, Title 20. Public Utilities and Energy Division 2. State Energy Resources Conservation and Development Commission [Current as of April 2017], Pg 326, http://www.energy.ca.gov/2017publications/CEC-140-2017-002/CEC-140-2017-002.pdf

We welcome the introduction of this article, as we understand it as the Commission's intention to ensure the replacement and/or upgrade of a failing lamp within luminaires. However, we note that removability is not equal to reparability. For a luminaire to be repairable, the failing light source should be easily replaceable by a new one (i.e. the containing product must remain intact and a light source suitable as a replacement must be available). We reiterate that the market share of non-replaceable LEDs is constantly increasing and that this must be better addressed. The German consumers center VZ Rheinland-Pfalz found that a large share of luminaires placed on the market nowadays cannot be repaired because the LED-light-source is fixed into it or even into furniture. In a market study they performed in April 2016, almost 30% of the tested luminaires were equipped with fixed LEDs that were not exchangeable. In an update of the study performed in October 2016, this share had risen to 40%[11].

- ➔ **Luminaires with fixed LEDs and lamps should not be allowed on the market. If relevant, exemptions could be provided in special cases such as luminaires for underwater use where scientific data supports the need for an exemption. Such exemptions should be avoided in the case of light sources installed in furniture/containing products with a typical long product lifetime to prevent possible obsolescence in cases where the light source malfunctions prematurely and cannot be replaced.**
- ➔ **The Commission must reformulate article 4 to ensure that the reparability of containing products is ensured.**

2.4. FUNCTIONAL REQUIREMENTS

2.4.1. Flicker requirement for LED and OLEDs must remain

We welcome that the European Commission introduces a requirement on flicker. Flicker is a very important topic for users, as it is potentially related to health and discomfort issues. Recent research shows that the human nervous system can be affected[12]. Industry's statement that flicker should not be covered under this regulation as it is not related to energy savings or Ecodesign, is not a valid argument in our view. Ecodesign and Energy labelling have already tackled health-related issues in the past[13]. It was also addressed in the preparatory study of 2015 for Lot 8/9/19 and functional requirements are obviously key for consumer confidence in these technologies[14].

Furthermore, in case in which users perceive flicker (perceivable flicker), this may cause them to replace and dispose of the light source prior to its end-of-life. It is thus also understood to be an issue related to resources. However, we note that consumers should be protected from both visible and non-visible effects. Regarding the measurement standards, for which work is under way, we agree with the Commission proposal to have a transitional method in the meantime[15].

[11] More information can be provided upon request. Details about the results have already been shared with the European Commission.
[12] http://www.eup-network.de/fileadmin/user_upload/Lichtquellen_Flimmern_Erwin_2017_10_EN.pdf
[13] See examples here: http://www.beuc.eu/publications/beuc-x-2016-108-benefits_of_ecodesign_for_eu_households.pdf
[14] http://ecodesign-lightsources.eu/sites/ecodesign-lightsources.eu/files/attachments/1st%20Stakeholder%20comments%20from%20ANEC_BEUC.pdf
[15] there should be a method available as of 2020.

➔ **We call on the Commission to keep the requirement related to flicker for LEDs and OLEDs, and to ensure that also non-perceivable flicker is covered.**

2.4.2. A more suitable scale for colour rendering of LEDs must be elaborated

According to the draft proposal, colour rendering is to be measured with the colour rendering index (CRI)'. However, CRI is not a suitable scale to indicate how accurate LEDs are at rendering colours, since LEDs can be designed to have a high CRI despite rendering colours poorly.

For example, CRI does not account for the R9 value, which is one of the 14 pigment colours scientists have established to measure colour rendition. R9 value produces strong reds which are prevalent in our everyday life, e.g. they are present in skin tones, food items and clothes[16]. There are already some consumer LED light sources available that not only have a good CRI score but also score well at the R9 value. Although a very good R9 scores comes at the cost of a loss of efficiency, a minimum value must be required for domestic light bulbs.

➔ **We ask the Commission to:**

- **improve the requirement on colour rendering by including as a minimum the R9 test;**
- **support and follow closely international efforts for the development of an appropriate colour rendering scale for LEDs.**

2.4.3. Better colour consistency requirements needed

The Commission proposes a colour consistency requirement through a six-step McAdam ellipse. We do not agree with this methodology as it is too weak, and it might lead to consumer frustration. Consumers often use multiple LED bulbs in e.g. a rail above a table or kitchen counter. Six-steps means that almost everyone would see differences in light colour between the separate light source of the same brand and model above the table.

➔ **The Commission must put forward a stringent requirement on colour consistency. The requirement must be within a 3-step McAdam ellipse (instead of a six-step).**

Furthermore, and as we expressed earlier, the functional requirements should take into consideration the development of relevant technical standards in CENELEC regarding dimming. Dimming devices can be crucial for the comfort of consumers (e.g. for visually impaired).

2.4.4. Displacement factor must be enhanced

The Commission proposes a requirement which is related to the disturbance of electricity grid. However, the value proposed (i.e. 0,4 DF for powers between 2 and 5 watts, and 0,7DF for powers between 5 and 25 watts) is in our view very weak. According to our membership, good and cheap consumer LED products already achieve 0,8-0,9 regularly.

[16] http://leapfroglighting.com/why-the-led-r9-value-isnt-important/

➔ **The Commission must increase the value of the displacement factor.**

2.5. INFORMATION REQUIREMENTS

2.5.1. Trustworthy information needed

We welcome that there are information requirements for light bulb packaging. However, there is no requirement at all for verifying that the actual product performance is in the order of the declared values on the product/package. For example, on colour temperature, if the package states warm white 2700 Kelvin, and the lamp emits cold white light of 4000 Kelvin instead, the product is still compliant. This kind of situation is misleading for consumers.

➔ **The Commission should ensure that values disclosed on the product/packaging are those actually reached by the light source concerned.**

3. ENERGY LABELLING PROPOSAL

3.1. SCOPE

3.1.1. No loss of information should arise from the deletion of luminaires from the scope

The proposal eliminates the requirement of energy labelling for luminaires set out in Regulation (EU) 874/2012[17]. The Commission proposes to limit the information for consumers to the packaging of the containing product with a text declaring the energy efficiency class of the contained light source[18]. It is in our view insufficient.

Although we agree that certain information requirements of the current energy label are confusing (such as the scale) in the case of luminaires, not providing information at first sight to consumers is in our view not the best way forward.

There must be prominent information that in certain cases LEDs and lamps in luminaires cannot be replaced. According to the proposal, this information does not need to be provided to consumers, neither on the luminaire packaging, nor on the lights sources or in online shops. This represents a significant step backwards for consumer information, especially if the sale of luminaires with fixed LED is not regulated.

➔ **Luminaires with fixed LEDs and lamps should not be allowed on the market in the first place.**

➔ **At least information about the fact that LEDs and lamps in luminaires cannot be replaced must be indicated in a prominent manner.** It has to be clearly indicated on the packaging's main sides with a minimum size equivalent to Verdana 18. It should be placed close to the luminaires in the shops.

[17] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0874
[18] "This product contains a light source of energy efficiency class X..."

3.2. PROPOSED LABEL AND PICTOGRAMS

3.2.1. Comprehensibility of the current label must be tested among consumers

In general, we welcome that the energy label keeps its straightforwardness, and that no incomprehensible and untested pictograms have been added in the label (as it is the case for other product groups). However, we note that the Commission should in the first place verify that the current label for lighting, though simple, is clear for consumers and does contain key information they are interested in. Only then can one assume that the proposed label, largely based on the current one, will be understood and useful for consumers.

➔ **The Commission should test the comprehensibility of the current label if it intends to keep similar design and content for the new one.**

Most changes, compared to the current label, relate to the alignment to the new Energy labelling framework, i.e. rescaling from A to G (deletion of the plusses), addition of a QR code, etc. ANEC and BEUC comment on the following:

3.2.2. Key information must retain a prominent place on the label

We welcome that key information such as the scale and the annual energy consumption stand out in the proposed label.

➔ **We insist that sufficient room must remain dedicated for both the scale as well as for the energy consumption.**

3.2.3. Energy header must be tested upfront among consumers

As already highlighted in the past, the current header ENERGY with neutral language is not popular among consumers[19]. Although we welcome that the Commission proposes to change the design of the header, we doubt that the proposed new header ENERG (thunder) will improve consumer comprehensibility.

➔ **We call on the Commission to test the comprehensibility of the proposed new Energy header among consumers. Other header designs should also be tested.**

We also wonder whether the new border (now green instead of blue), will be understood by consumers as being representative of the switch to the new Energy label. It should also be further investigated and ensured that the green colour is not perceived as a sign of a product having the highest energy class.

[19] In a consumer survey from Verbraucherzentrale Rheinland-Pfalz, 56% of the persons interviewed consider it very important or quite important to simplify the header of the Energy Label by writing the term "energy" in the national language in each case and omitting the endings in different languages. Source: https://www.verbraucherzentrale-rlp.de/sites/default/files/migration_files/media231718A.pdf

3.2.4. Full label must be displayed in any kind of selling

In the case of distance selling (on the internet or not), and in visual advertisements and in promotional material, the Commission proposes that an arrow with the energy efficiency class of the light sources is displayed. This means that the full label, with the clear and well-understood A-G scale does not need to be mandatorily disclosed in these cases.

➔ **In the case of distance selling (on the internet or not), and in visual advertisements and in promotional material, we ask the Commission to:**

- **test the arrow proposed in the context of the consumer survey, and if the comprehensibility is found to be too low;**
- **impose that the full label is displayed.**

The label/pictogram must be directly visible and close to the essential product information (no additional clicks needed)

3.3. CONSUMER SURVEY

We welcome that the European Commission has now launched the consumer survey on the comprehensibility of the proposed label for lighting. However, after commenting on the consumer survey for the Energy label for displays, we reiterate the following general comments that can also be applied for this product group:

- Consumer survey results must be made available on time, i.e. they must serve as a starting point for discussion, and therefore be available before the discussion in the Consultation Forum starts;
- Aim for geographical representativeness over time;
- Icons tested must reflect what consumers want to know;
- Questions should be unambiguous;
- A differentiated presentation of results per user group is needed;
- Survey should also be undertaken offline;
- The annual energy consumption must stand out in all alternatives to be tested;
- More space for key information, and no room for unclear and low-interest pictograms.

➔ **We ask the Commission to take into account our general comments regarding the design and methodology of consumer surveys for the developments of upcoming new Energy labels.**

Annex 1: Summary of LCA comparison of lighting technologies

In 2012, a life cycle analysis of various lighting technologies was prepared for the US Department of energy as part of their research into solid state lighting. The following figure shows the results of the life cycle comparison of the various lighting technologies made in this study. As the comparison of energy consumption is in relation to a functional unit of lumen hours, the results are shown in relation to the number of lamps that would be needed to provide this unit. The comparison clearly shows that LEDs have a high preference over other technologies in this respect.

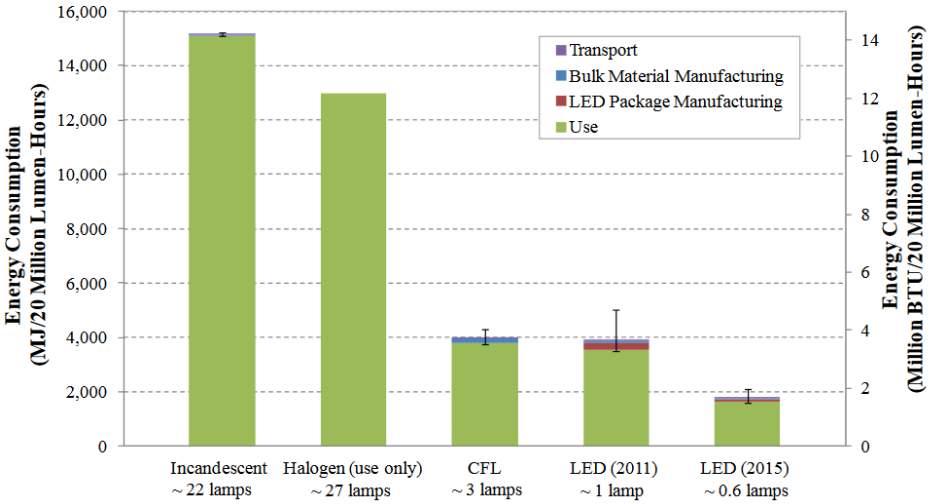

Figure ES. 1 Life-Cycle Energy of Incandescent Lamps, CFLs, and LED Lamps

However, this preference needs to be observed in context. The comparison was performed for lamps of different technologies with typical lifetimes. Table 4.1 on page 28 of the report clarifies the characteristics of the compared technologies including also the compared lifetimes (see below). For the 2011 LED, a relatively high lifetime of 25,000 hrs is assumed and for the 2015 LED it is even higher (40,000 hrs). Were the comparison made with lamps of similar construction in terms of the materials used, however with a lesser quality, resulting in the actual lifetime being much shorter, the results of the study would not be as favourable for LEDs.

Table 4.1 Performance of Conventional and LED Lighting Technologies

Lamp Type	Watts	Lumens	Operating Lifetime (hrs)
Incandescent	60	900	1,000
CFL	15	900	8,500
LED (2011)	12.5	800	25,000
LED - future (2015)	5.8	800	40,000

Hypothetically, assuming a linear proportionality of the results, if the LED would only have a 2000 hrs lifetime (in line with the current EU regulation proposal), 12.5 of the 2011 LEDs would be required, meaning that the energy consumption associated with manufacture is also multiplied, resulting in an at least double consumption. Were this the lifetime of the 2015 LED and not 40,000 hrs, 20 lamps would be required to fulfil the functional unit, also resulting in a total increase of the life-cycle energy consumption considering the additional manufacture and transport related to the additional lamps. Comparing this with the other technologies, clarifies that without a minimum lifetime requirement, the phase-out of some of the conventional technologies may not be justified, at least not in cases where the declared lifetime is significantly higher than the actual service life.

Source: Navigant Consulting, Inc. (2012), Life-Cycle Assessment of Energy and Environmental Impacts of LED Lighting Products Part I: Review of the Life-Cycle Energy Consumption of Incandescent, Compact Fluorescent, and LED Lamp, Prepared for: Solid-State Lighting Program Building Technologies Program Office of Energy Efficiency and Renewable Energy U.S. Department of Energy, available under https://www1.eere.energy.gov/buildings/publications/pdfs/ssl/2012_LED_Lifecycle_Report.pdf