

# TERRALUX

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## **Subject: Proposed Revisions to ENERGY STAR Program Requirements, Product Specification for Luminaires – Version 2.0, Draft 1**

Terralux very much appreciated participating in the stakeholder review meeting in Washington DC, and the opportunity to provide final comments for this draft version.

In keeping with our discussions during the meeting, Terralux would like to propose the following revisions to the Draft 1 specification at this time. We have detailed each affected section below:

### **4- DEFINITIONS: SSL Downlight Retrofits**

**Proposal** - Add the following text to existing definition – “SSL Downlight Retrofit kits should employ optical controls to isolate the output from the existing luminaire. If the SSL retrofit kit relies on the existing luminaire optic, the SSL Retrofit kit must be tested and list specific luminaire types and model numbers. SSL Downlight Retrofit kits that employ isolation optics do not need to prove compatibility with specific model numbers.

SSL Downlight Retrofit kits that rely on existing luminaire power supplies or ballasts, must be tested with each power supply or ballast to prove performance criteria is met; wattage, efficacy and light output”.

**Rationale** - There is an abundance of CFL and incandescent downlight fixtures, using optics having varying geometries and finishes. Unless the SSL Downlight Retrofit kit provides provision for optical control, there is no guarantee that the ENERGY STAR performance requirements can be met.

Terralux has tested and found LED products that rely on existing power supplies and ballast, do not meet performance criteria on many existing ballasts or power supplies.

### **7 – Methods of Measurement and Reference Documents**

**Proposal** - Include ANSI/UL 1598C: Standard for Safety Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits.

**Rationale** - Although the ANSI/UL standard 1598C is referenced in several locations throughout the Version 2.0, Draft 1 specification, it was not included in the listing of reference documents.

#### **9.1 – Luminous Efficacy and Output: NON-DIRECTIONAL Luminaires**

**Proposal** - Terralux proposes that instead of detailing tiered efficacy levels for Solid State: Surface-mounted retrofit for diffused wall sconces, and Solid State: Surface mounted retrofits for diffused ceiling mounted

lights, that a single minimum efficacy level be used instead. An efficacy level of  $\geq 80$  Lm/W is reasonable for a May 2015 effective date.

The target of 100 lm/W should be effective January 1, 2016.

**Rationale** – The color space for surface-mounted wall sconces and ceiling fixtures is heavily biased toward warm white. As such, higher source efficacy levels are more difficult to obtain. The use of more LED's in the retrofit would improve efficacy, but at a higher cost. With the current efficacy tiers, there exists a loophole where a manufacturer could simply provide a transparent "secondary optic" to meet the lower efficacy tier, when the source efficacy does not meet the 100 Lm/W requirement. The  $\geq 80$  Lm/W level also represents an increase over the required  $\geq 65$  Lm/W requirement had the LED retrofit been submitted for CSD listing as a Solid State LED light engine.

In most multi-family and hotel installations, lighting is supplied by either 120 Vac or 277V Vac. While it is possible to be efficient at one voltage or the other, it is much more difficult to be efficient at both. Setting the standard at 80 lm/w initially would allow more products that also work at both voltages to comply. If the standard starts at 100 lm/W, only single voltage products would comply, significantly limiting the amount of new product qualification and penetration of the new category.

While the higher efficacy requirements initially presented are achievable, we feel that the proposed level will make it easier for more manufacturers to comply, resulting in greater adoption and market penetration of efficient of LED retrofit products.

## 9.2 Luminous Efficacy, Output and Zonal Lumen Density: DIRECTIONAL Luminaires

**Proposal** – For "SSL Downlight Retrofit", clarify criteria for efficacy and light output per definition of what an SSL downlight retrofit kit is. The overall performance should not be affected by the specific optic of the existing fixture or its ballast. The retrofit kit needs to deliver the required performance independently. If the system relies on an optic or a ballast, the exact type of optic and/or ballast should be tested by 3<sup>rd</sup> party and clearly detailed in the literature and other supporting material in order to avoid confusion. This is consistent with our proposed addition to the definition of SSL Downlight Retrofit kits.

**Rationale** – There is an abundance of CFL and incandescent downlight fixtures, using optics having varying geometries and finishes. Unless the SSL Downlight Retrofit kit provides provision for optical control, there is no guarantee that the ENERGY STAR performance requirements can be met.

Terralux has tested and found LED Retrofit products that rely on existing power supplies and ballasts, do not meet performance criteria on many existing ballasts or power supplies.

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