

Comments on Energy Star Program Requirements; Product Specification for Lamps; Eligibility Criteria; Version 1.0, DRAFT 1.



Specification Scope & Lamp Classification

I understand Energy Star's goals to create one set of program requirements for all lamp technologies (incandescent, compact fluorescent, and LED). However, one set of requirements will not result in acceptable performance for CFL or LED lamps.

Energy Star text box on page 2

I am concerned that the Energy Star discussion about "non-standard" lamp types may result in manufacturers classifying lamps as "non-standard" as an off ramp to the program requirements.

Another important issue is that the Title 24 Building Energy Efficiency Standards classify luminaires based upon the socket rating of the manufactured luminaire, not based upon lamps installed in the luminaire. It is critical to the integrity of Title 24 that this distinction not be lost.

Definitions

The definition of Decorative Lamps should be restricted to exclude all lamps with medium screw-based sockets.

Test Criteria

California has developed test requirements for high efficacy LED luminaires. The proposed language for the 2013 update to Title 24, Joint Appendix JA-8, includes the following requirements: "Each integral LED luminaire or LED light engine tested shall produce the same quantity and quality of light. An integral LED luminaire or LED light engine under test producing different Correlated Color Temperature (CCT), Color Rendering Index (CRI), total flux (per linear foot for linear systems) or other quantitative and qualitative differences in light shall be separately tested and separately certified to the Energy Commission."

Although the above language applies to LED luminaires in accordance with Title 24, the concepts should also be applied to LED lamps.

Photometric Performance Requirements

Research from a number of sources has indicated that consumer acceptance of energy efficient lamps depends as much on product quality as reflected in color (etc) as it does on efficacy. Given the wide degree of variation of LED quality, DOE should focus on color, dimming, and longevity, and not efficacy.

Light Output Requirements

Light output requirements for globe lamps should be equivalent to other omnidirectional lamps.

Correlated Color Temperature, Energy Star text box

The Energy Star text on page 11 states the following:

Note: For years, color quality of CFLs has been a top concern of consumers unwilling to adopt energy efficient lighting, or to expand its use in their homes. The existing specifications for color consistency are based on 7-step MacAdam ellipses, and their corresponding 7-step quadrangles for solid state. This scheme permits qualified lamps with obvious magenta or green tints to share the same CCT designation despite these differences in appearance. EPA believes this allowance works against the efficiency community's goal of wider adoption of efficient lighting.

Historically, fluorescent ANSI standards were developed to control such variations to within a 4-step MacAdam ellipse. The 2008 ANSI standard for solid state lighting standardized 7 steps for this technology, but anticipated a return to 4-step quadrangles. To ensure consumer satisfaction and a consistent experience across the makes, models and technologies of qualified lamps, EPA has proposed that all qualified lamps fall within a 4-step ellipse or quadrangle. The Agency seeks feedback on this proposal to further strengthen the quality of qualified lamps.

Lamps should be positioned on the black body locus. Consumer rejection of CFLs provides clear evidence that a 7-step MacAdam ellipse is not acceptable. Because it is not clear that a 4 step MacAdam ellipse results in a low enough number, additional evidence is should be developed to determine the proper deviation.

Color quality is a function of three components: Naturalness (positioned on the black body locus, within the specific ANSI CCT bins); Consistency between lamps (defined by specific coordinates and maximum allowable deviation the maximum deviation needs to be developed and tested); and Color rendering. A color quality specification should include all three components.

The Energy Commission understands that an 85 CRI may be appropriate for the first year. However, for California, we have already determined that a minimum 90 CRI is needed. We recommend starting with an 85 the first year then ratcheting it up to 90 the following year.

Lumen Maintenance Requirements: Solid State

Maximum life claim should not be below 20,000 hours.

Energy Star text box on page 16

Lamp life for LEDs should not be aligned across the different lamp technologies. LED lamps should be certified to last a minimum of 20,000 hours. LEDs are being touted as long life, and it is technically feasible for LEDs to actually have long lives. Both linear fluorescent and HID lighting sources are already rated for longer than 20,000 hours. Consumers have been extremely disappointed with the quality, including expected life, of CFLs. It is critical that consumers are not disappointed again with false claims about LED lamps.

Dimming Requirements

There are three basic types of dimmers use with incandescent luminaires: Line voltage, low-voltage for use with magnetic transformers, and low voltage for use with an electronic transformer. All LED lamps should be dimmable when used with any type of dimmer that may be encountered. LED lamps should be capable of continuous dimming from 10-100% (NEMA SSL 6-2010 Solid State Lighting for Incandescent Replacement)

Regards,

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