

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460



OFFICE
OF
AIR AND RADIATION

December 17, 2014

Dear ENERGY STAR® Lighting Stakeholders:

This letter announces the Environmental Protection Agency's (EPA) release of the first draft of the ENERGY STAR Luminaires specification version 2.0, intended to replace the Luminaires specification version 1.2 (the "existing specification"). The specification development process, including subsequent specification drafts and stakeholder comment periods, is anticipated to conclude in the spring of 2015. Until the Luminaires specification is finalized with an announced effective date, version 1.2 specification remains in place for partner use.

The ENERGY STAR program's successful labeling efforts over the years can be attributed in part to the Program's commitment to giving consumers energy saving options while honoring their preferences for product features and functionality. Expecting consumers to sacrifice in the interest of greater efficiency, experience has demonstrated, results in sales reductions and reduced overall benefit. With respect to light fixtures, consumers have made clear through their purchasing habits that for some applications, the aesthetics of a given fixture are as or more important than its ability to efficiently produce light. One need only review a home improvement magazine or visit a lighting showroom to observe that many fixture types intended for residential installation are designed first and foremost for their appearance, both lighted and unlighted.

In this context, EPA believes the ENERGY STAR program can achieve the greatest overall reduction in energy use by helping consumers identify fixtures that meet their aesthetic preferences and also use less energy. As a precursor to the first draft, on October 15 2014, EPA released a [discussion document](#) to raise the key goals and questions to inform the first draft. Consistent with the above principles, and as outlined in the discussion document, EPA believes even greater efficiency gains can be realized by increasing efficacy levels for directional fixtures and expanding the flexibility for non-directional light source options. Due to technological advances in the market we now have the opportunity to increase options for non-directional fixtures to ship with high quality abundant ENERGY STAR certified light bulbs that are properly rated for the light fixture. EPA believes this approach, coupled with increased efficacy requirements for all luminaire types, shows the greatest promise to deliver maximum energy savings across a spectrum of technologies and an extremely diverse set of products.

Overview of Key Changes from Existing Specification

The proposed ENERGY STAR Luminaires specification retains most components of the existing specification, while applying the goals outlined in the discussion document, the feedback received from stakeholders, the principle of technology neutrality to key performance criteria and raising the bar for several performance requirements. The following summarizes proposed

changes; more information on EPA's rationale for these changes is detailed in note boxes located throughout the specification. Comments received on the discussion document along with the agency response are available at www.energystar.gov/luminaires.

The primary goals for Luminaires V2.0 fall into three key categories:

- A. Streamlining and simplifying the specification requirements, testing and the certification process
- B. Increasing efficacy levels to keep pace with the technology and capture greater energy savings
- C. Adjusting scope and increasing flexibility to broaden the selection, customization and availability of a wide variety of ENERGY STAR certified luminaires

Simplifying and streamlining

- The format of the specification has been slightly reorganized (similar to the lamps specification) with helpful section headings, subsection numbers. References now appear in the table of contents with jump links to any section or sub section.
- With the option to ship with ENERGY STAR certified light bulbs, there would no longer be different testing requirements for integrated GU24 based lamps between the luminaires and lamps specifications. An integrated lamp shipped with a fixture would have one simple pathway for testing through the lamp specification.
- Allowable variations (aka product family grouping) guidance is now displayed in a simple table clearly outlining which additional tests are applicable for each variation, the same way it was done for the lamps specification and was extended to product wattage for directional luminaires.
- Color angular uniformity requirements were revised per the discussion document consistent with ENERGY STAR certified lamps.
- Lamp current crest factor has been removed as proposed in the discussion document.

After further review EPA identified several other areas for streamlining and simplifying the specification. Draft one includes the following additional proposed changes:

- Sample sizes have been reduced for 11 requirements, reducing testing for those requirements by approximately 66%
- The following additional requirements have been removed: minimum temperature and noise for non-dimmable luminaires.
- References to HID light sources have been removed as none have been certified to date.
- Thermal requirements for recessed downlights have been clarified, and the labeling related requirements (e.g. IC, airtight) have been moved to the packaging section.
- Requirements for step dimming have been removed.

Increasing Efficacy

- Efficacy requirements for non-directional luminaires (source photometry) have remained constant for the most part. The exception is the addition of higher efficacy levels for light sources without secondary optics - those that rely on the fixture for light diffusion and are therefore inherently more efficacious at the source.
- Increases in efficacy requirements for directional luminaires (luminaire photometry) have been proposed ranging from 22 to 107% for all luminaire types, with the exception of inseparable luminaires which remains at 70 lumens per watt. In all instances products currently certified are performing at and above the proposed levels, even with 90+ CRI.

- Different efficacy levels have been proposed for recessed down light luminaires and recessed down light retrofits.
- Future efficacy tiers have been inserted as TBD.

Adjustments to Specification Scope

- As introduced at the Oct 30th working session for Luminaires, references and levels specifically relating to commercial light fixtures have been removed, and the specification scope has been further clarified.
- As introduced in the discussion document
 - The exceptions for luminaires to ship without light sources have been removed and therefore references halogen lamps have been removed. References to linear fluorescent lamps have also been removed due to the impracticality of shipping these lamps with fixtures.
 - The option to ship non-directional luminaires with ENERGY STAR certified lamps is now articulated throughout the specification.
 - The option to provide light sources, or light engines that may differ from the old definition of LED light engine have been included to allow for example, LED light engines without secondary optics. This change is reflected in a new definition for LED light engine.
 - Additional criteria for connected luminaires has been added in the new controls section and in an appendix A to address these products consistent with other ENERGY STAR product specifications.
 - Testing guidance for measuring color tunable luminaires has been added.
 - Additional retrofit kit products for wall sconces and ceiling mounted luminaires have been added to the non-directional luminaires.
- Due to ongoing confusion over where outdoor luminaires fit into the specification scope, outdoor luminaires not mounted to a ceiling, such as security lights have been moved from non-directional to the directional category.

Other changes

Mainly address the ENERGY STAR objective of providing consumers with energy efficient products without sacrifice in performance.

- **Color rendering** requirements have been expanded to include evaluation of special index R9 performance, as also required in the ENERGY STAR Lamps specification. All ENERGY STAR certified LED lamps have an $R9 > 0$ as well as more than 40% of certified CFLs. ($Ra \geq 80$) have positive R9 values. The value is important for ensuring accurate rendering of skin, produce and wood tones. These changes are proposed to apply to all indoor luminaire types, and all technologies.
- **Source run up time** requirements have been revised to 120 seconds or less for all fluorescent products consistent with ENERGY STAR Lamps to provide end users with light in a reasonable timeframe that is also technological feasible. Since consumers are accustomed to instant light with other lighting technologies.
- **Dimming** reduced dimming range for all luminaires to dim down to 20% (down from 35%) consistent with ENERGY STAR certified dimmable lamps.
- **Lifetime changes** include 15,000 hours for ENERGY STAR certified LED lamps and 50,000 hours for inseparable luminaires.

New test methods

- References to the ENERGY STAR Lamps specification have been included throughout the draft as the lamps specification would fulfill all testing requirements of certified lamps shipped with luminaires.
- References to the ENERGY STAR Start time and Run up time test methods from the Lamps specification have been added as no methods were previously referenced.
- IES LM-84-14 and TM-28-14 have been proposed to replace option 2 for lumen and color maintenance testing.

Summary

EPA seeks comment on a wide variety of issues; partners and stakeholders are encouraged to submit comments on the first draft to lighting@energystar.gov by **Friday January 30, 2015**. Please indicate “ENERGY STAR Luminaires 2.0 First Draft Comments” in the email subject line. **Please note that comments received will be posted to the ENERGY STAR website unless otherwise requested.**

On **Wednesday, January 21, 2015**, EPA will host a webinar and in person meeting providing an overview of the Luminaires draft specification, and more detail discussion of the proposed changes from the existing specification. Stakeholders will have the opportunity to ask questions via phone, web or in person. Further details about this meeting will be forthcoming shortly.

Items to be addressed in subsequent drafts include dimming testing requirements, worst case testing requirements for retrofit products, alternative zonal lumen density requirements for directional luminaires based on any proposal received, future efficacy tiers, and possible additional aspects of connected criteria. EPA anticipates this specification development process will require additional drafts and stakeholder comment periods, but hopes to conclude the specification revision in the spring of 2015.

The strength of the ENERGY STAR program is derived in large part from the active interest and participation of our partners. EPA appreciates your contribution to the development of this specification and welcomes individual inquiries; please contact me with questions, comments or concerns any time at (202) 343-9042 or jantz-sell.taylor@epa.gov. As always, thank you for your support of ENERGY STAR.

Sincerely,



Taylor Jantz-Sell
ENERGY STAR Lighting Program Manager
U.S. Environmental Protection Agency