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

OFFICE OF
AIR AND RADIATION

May 10, 2010

Dear ENERGY STAR Lighting Partner, Stakeholder or Other Interested Party:

This letter announces the Environmental Protection Agency's (EPA) release of the first draft of the ENERGY STAR Luminaires specification, intended to replace the Residential Light Fixtures (RLF, V4.2) and Solid State Lighting (SSL, V1.1) specifications (the "existing specifications"). The specification development process, including subsequent specification drafts and stakeholder comment periods, is anticipated to conclude in the fall 2010. Until the Luminaires specification is finalized with an announced effective date, and until sunset dates are announced for the existing specifications, those specifications remain in force and available for partner use.

Background

On September 30, 2009, EPA and the U.S. Department of Energy (DOE) ("the agencies") signed a new agreement designed to enhance the ENERGY STAR Program and facilitate better coordination between the two agencies. Enhancements to the products labeling program include expanded coverage, more timely specification updates, enhanced efforts on product testing, and a new effort to recognize super efficient products. The new agreement also lays out clear roles and responsibilities for the agencies, and creates a Governing Council, headed by the EPA Assistant Administrator for Air and Radiation and the DOE Assistant Secretary for Energy Efficiency and Renewable Energy. The Council will guide, coordinate, and oversee annual budget requests, annual program plans, and future changes to key program elements. Further information is available on the ENERGY STAR website.

Under the new agreement, EPA is responsible for the development and revision of ENERGY STAR specifications, including those for lighting product categories. On December 4, 2009, the agencies released ENERGY STAR Qualified Lighting: An Integration Proposal for stakeholder review and comment, which detailed the creation of an ENERGY STAR Luminaires specification to consolidate the existing specifications' requirements for labeling of energy efficient lighting fixtures. Consistent with the Proposal, the Luminaires specification, to the greatest extent possible, is intended to be technology-neutral in terms of key criteria such as luminous efficacy and color performance. This approach allows manufacturers across various technologies to compete on a level playing field and ensures that consumers are provided clear and consistent information on energy efficient products generally. Because consumers shop for light fixtures, rather than lighting technologies, it is important for the ENERGY STAR label to mean the same thing in terms of energy savings, regardless of technology.

Overview of Luminaires Specification First Draft

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. Put another way, the risk of using ENERGY STAR to drive manufacturers towards greater luminaire efficacy (as opposed to source efficacy) is that it will force designs that don't compete well aesthetically, leading to reduced market impact and lower overall savings. On the other hand, applications which are directional in nature (e.g. under cabinet, recessed downlights, track lights), are designed and chosen with less emphasis on aesthetics, and can and should be evaluated on the basis of luminaire photometry, measuring light delivered from the luminaire.

Consistent with the above principles, EPA believes the greatest near-term opportunity for efficiency gains and technological advances in the market is to propose that directional fixtures be subject to luminaire photometry, and non-directional fixtures be evaluated at the light source level. 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.

Consultation with Industry

Earlier this year, EPA engaged the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute to organize a round table discussion with a broad group of stakeholders representing various segments of the lighting industry and the efficiency community. Hosted in conjunction with the National Electrical Manufacturers Association (NEMA) and the American Lighting Association (ALA), attendees included:

- manufacturers of solid state and incumbent lighting technologies,
- luminaire manufacturers producing for the residential and commercial market segments,
- energy efficiency program representatives including the Consortium for Energy Efficiency and the American Council for an Energy-Efficient Economy,
- testing laboratory representatives,
- luminaire designers,
- lighting retailers,
- and representatives of NEMA, ALA, and the National Institute of Standards and Technology (NIST).

The goal of the meeting was for participants to engage in a constructive dialog about testing requirements for the ENERGY STAR Luminaires specification, with careful consideration of the differences between decorative and functional fixtures. A 2009 white paper[1] developed jointly by NEMA and ALA outlining definitions for decorative and functional applications was used as a starting point for discussions, with four LRC-developed straw proposals presented as alternatives. A lively day-long discussion resulted in broad support for a fifth proposal, which provided for source photometry for some luminaire types, and luminaire photometry for others, including 'inseparable' luminaires which feature solid state lighting componentry which cannot be replaced (i.e. the whole luminaire is intended to be disposable). The usefulness of 'decorative' and 'functional' terminology was also discussed, with some participants supporting a redirect to 'directional' and 'non-directional', terms which rely less on the actual application of a given luminaire but instead describe design attributes of the luminaire itself. Notes from this round table discussion are available for partner and stakeholder review. EPA has adopted the favored approach for purposes of the first draft ENERGY STAR Luminaires specification, and seeks further comment.

Overview of Key Changes From Existing Specifications

The proposed ENERGY STAR Luminaires specification retains many components of the existing specifications, while applying the principle of technology neutrality to key performance criteria and raising the bar for several performance requirements. The following summarizes the key changes; more information on EPA's rationale for these changes is detailed in note boxes located throughout the specification.

- **Efficacy** is evaluated either by luminaire photometry or source photometry, depending on the luminaire type. Performance requirements for non-directional luminaires (source photometry) have been increased to 70 lumens per watt, a 40% increase over the nominal efficacy values detailed in the RLF specification. Requirements for directional luminaires (luminaire photometry) have been increased for some luminaire types, and in some instances have been left unchanged from the values in the SSL specification.
- **Correlated color temperature** values allowed for qualification of indoor luminaires have been limited to 4100 Kelvin and below, due to historically low interest in qualification of high CCT luminaires with the existing specifications. This change is proposed to apply to all indoor luminaire types, and all technologies.
- **Color rendering** requirements have been expanded to include evaluation of special index R_9 performance, as also required in the ENERGY STAR Integral LED Lamps specification. EPA anticipates that most fluorescent lamps currently used to meet the RLF specification ($R_a \geq 80$) have positive R_9 values. In addition, EPA proposes to require a minimum R_a value ("CRI") of 80 for indoor luminaires. These changes are proposed to apply to all luminaire types, and all technologies.
- **Minimum light output** requirements are proposed in the interest of ensuring that luminaires with lumen packages that cannot be easily changed by the end user meet consumer expectations. These changes are proposed to apply to all nearly luminaire types and technologies. Minimum light output requirements for directional luminaires are values carried over from the SSL specification.

[1] NEMA Lighting Systems Division & American Lighting Association Joint Document: LSD 51-2009: *Solid State Lighting—Definitions for Functional and Decorative Applications.*

- **Zonal lumen density requirements** are maintained for directional luminaires, most of which carry over from the SSL specification. Requirements for outdoor post- or arm-mounted decorative luminaires have been adjusted to restrict uplight emissions.
- **Lumen maintenance projections** for solid state luminaires will be based on industry recommendations to be made in a forthcoming technical memorandum (IES TM-21) from the Illuminating Engineering Society. EPA understands that the effort to develop this document is expected to conclude in time for the effective date of the Luminaires specification. However, EPA favors transitioning to lumen maintenance testing requirements which test the entire luminaire, inclusive of degradation of driver and optical componentry; a proposal is included in the draft.
- **Color angular uniformity** testing is proposed specifically for directional solid state luminaires, to address color striations which may be projected onto work surfaces.
- **Color maintenance** evaluation is proposed for all indoor solid state luminaires, to determine if the amount of chromaticity shifting during the first 6,000 hours of operation indicates a likelihood of exceeding the allowed limit over the rated lumen maintenance life.
- A **source run-up time** requirement is proposed for qualified luminaires, similar to the requirement outlined in the ENERGY STAR Compact Fluorescent Lamps specification.
- **Motion sensor overrides** for outdoor incandescent luminaires are explicitly barred from inclusion in qualified luminaires.
- **Sample size and passing test** values have been adjusted to reflect the ENERGY STAR program's ongoing interest in ensuring that qualified luminaires consistently meet performance requirements.
- **Warranty** requirements have been expanded to three years for most luminaires, with some exceptions noted in the specification draft.
- **Reference standards and test procedures** may be easily accessed through embedded hyperlinks.
- **Accreditation and verification** testing requirements have been removed; going forward the ENERGY STAR program will maintain separate documents outlining these program requirements. Further details are provided in the specification draft.
- **Commercial luminaire labeling** is limited to those luminaire types that already have qualified products (i.e. downlights, under cabinet and task lights). EPA is reviewing the ENERGY STAR program's approach to commercial luminaires, and will continue to evaluate the potential for expansion of these efforts. Commercial outdoor lighting will be addressed in a separate forthcoming specification.
- **Toxics reduction** requirements based on the European Union's Restriction of the Use of Certain Hazardous Substances (RoHS) directive are proposed for all qualified luminaires. Mercury content limits for lamps will be separately detailed by EPA.

Summary

EPA seeks comment on a wide variety of issues; partners and stakeholders are encouraged to submit comments on the first draft to luminaires@energystar.gov by Monday June 21, 2010. Please indicate "ENERGY STAR Luminaires 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 Tuesday, June 8, 2010, EPA will host a webinar providing an overview of the Luminaires draft specification, and the rationale supporting the proposed changes from the existing specifications. Following the presentation, a question and answer session will allow participants to pose specific questions. Further details about this webinar will be forthcoming shortly.

Items to be addressed in subsequent drafts include dimming requirements, measurement tolerance values, RoHS documentation requirements, and guidance on how partners should handle successor LED packages/modules/arrays. EPA anticipates this specification development process will require additional drafts and stakeholder comment periods. The following is a proposed timeline for this process:

- Draft 1 release: May 7, 2010
- Webinar: June 8, 2010
- Draft 1 comment period close: June 21, 2010
- Draft 2 release: July 2010
- Draft 3 release: August 2010
- Final specification: September 2010
- Specification effective date: June 2011

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) 343-9272, or baker.alex@epa.gov.

More than ever, thank you for your support of the ENERGY STAR program.

Sincerely,

Alex Baker
Lighting Program Manager, ENERGY STAR
US EPA