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

OFFICE OF
AIR AND RADIATION

January 26, 2017

Dear ENERGY STAR® Lighting Stakeholders:

This letter announces the Environmental Protection Agency's (EPA) release of a draft of the ENERGY STAR Lamps specification version 2.1, which would replace the Lamps specification version 2.0 (the "existing specification"). The updates, when final, will be applicable only to new product certifications moving forward and would not impact any current certifications. We expect to finalize this update in the spring of 2017.

The ENERGY STAR program seeks to achieve the greatest overall reduction in energy use by helping consumers identify affordable light bulbs that use less energy and meet performance expectations. Since the development and release of Lamps V2.0, LED lamp performance and availability have continued to improve, while prices have continued to decline. The market now reflects an opportunity for additional adjustments to allow for expanded selection and more flexibility in production, while encouraging continued high standards for performance of LED lamps.

Overview of Key Changes from Existing Specification
The changes proposed include establishing one minimum lifetime requirement for all LED lamp types, allowing reduced testing for LED package changes on the same lamp model, updating test methods to fully and clearly incorporate the latest DOE test methods, and introducing a new test method for reporting light source flicker metrics, including a new metric for perceptibility of visible flicker.

The proposed changes for version 2.1 will not require products certified to V2.0 to be retested or recertified. The following summarizes changed proposed; more information on EPA's rationale for these changes is detailed in note boxes located throughout the specification.

1. **15,000-hour minimum lifetime proposed for all LED lamp types.**
   LED bulbs have had tremendous success in the market; the latest report from the National Manufacturer's Association shows continued growth in LED A lamps shipments, while other technologies decline in shipments. As the technology continues to improve it has become clear that long lifetime is not the only benefit to LED technology. LED lamps can be designed to hit ideal replacement lamp performance targets like light output, light intensity and distribution along with accurate light color at unprecedented efficiency levels.

   Since the release of the V2.0 specification, a greater variety of directional LED lamps are entering the market. Many directional lamps are now cost competitive with incumbent technologies such as halogen which make them more attractive to consumers than ever before. However, directional lamps with rated lifetimes that are less than 25,000 hours are not currently being certified against rigorous ENERGY STAR requirements such as light output equivalency, elevated light output ratio, and long-term elevated temperature lifetime testing, among other important requirements for consumer satisfaction. Stakeholders have expressed to EPA the opportunity and importance of broadening ENERGY STAR coverage of directional lamp types,

such that they can demonstrate high quality performance at lower lifetimes and lower price points.

As was the case with omnidirectional lamps in 2015, developments in the market for directional LED lamps highlight an opportunity for the ENERGY STAR label to be associated with a broader range of high-quality products at lower price points and with increased energy savings. Making room for more low-cost products that have the potential to fully meet consumer expectations means more of the lamps people are likely to buy will be certified against the full suite of ENERGY STAR requirements, which will ultimately prove pivotal to consumer acceptance of LED lamps over the long term.

EPA is proposing a rated life requirement of 15,000 hours for all LED lamps, which aligns the minimum lifetime of directional lamps with the current requirement for omnidirectional and decorative LED lamps. (Based on the FTC reporting requirements, this equates to 13.7 years based on 3-hour/day operation.) Note, with this change, manufacturers may still offer longer lifetime ENERGY STAR certified lamps for both residential and commercial applications.

2. **Addition of LED package as an allowable variation proposed for family groupings.**
   Due to the nature of the LED supply market and lengthy testing times required for ENERGY STAR certification, EPA has proposed limited testing requirements for certain LED package variations, detailed in Table 2. Any LED package variations would need to prove with component and lamp level testing as good or better performance than the representative fully tested version. This proposal is for sharing of long term lumen maintenance data with confirmation of lamp level and component level performance due to a variation in LED package. This guidance is intended to benefit partners, consumers, and the environment by allowing ENERGY STAR products to keep pace with the rapidly advancing LED technology, and package supply challenges. EPA requests feedback on this proposal including detailed technical justification of proposed changes.

3. **New test method proposed for reporting three key light source flicker metrics.**
   In order to better predict whether consumers will perceive flicker when operating ENERGY STAR certified dimmable lamps, EPA has proposed that the ASSIST Metric for Assessing the Direct Perception of Light Source Flicker be reported for all lamps marketed as dimmable. Along with this draft EPA has released a new test method which has adapted the ENERGY STAR Recommended Practice - Light Source Flicker to establish a consistent method for determining Percent Flicker, Flicker Index, and the ASSIST Flicker Metric. It is EPA's intention that, once final, this method of measurement will be conducted by a lab that is accredited to this method of measurement by an EPA-recognized Accreditation Body. The Lighting Research Center will be offering a one-time, hands-on training for laboratory technicians. EPA highly encourages any laboratory seeking accreditation to this method to send appropriate representatives to this training. Training information will be announced at a future date.

Other minor updates and clarifications:

4. References to DOE test procedures have been updated for clarity.
5. IESNA LM-80-15 has been included as an acceptable test method for reporting LED component level lumen maintenance data, in addition to LM-80-08.
6. Addendum B to TM-21-11 and Addendum A to LM-80-08 are referenced.
7. The requirement for noise for dimmable lamps was clarified that the measurement must be taken within one meter of the lamp.
8. Definitions not referenced in the specification were removed.
9. A definition for filament style LED lamp was added to support its reference in the specification.

10. Clarification for confirming dimensions of variations that impact lamp dimensions (i.e. lamp base, lamp envelope shape and lamp neck) has been added due to ongoing confusion in product certification listings.

Summary and Next Steps:
Partners and stakeholders are encouraged to submit comments on the draft to lighting@energystar.gov by **Thursday February 23, 2017.** Please indicate "ENERGY STAR Lamps 2.1 Draft 1 Comments" in the email subject line.

Please note that comments received will be posted to the ENERGY STAR website unless otherwise requested.

On **Friday February 3, 2017**, EPA will host a webinar and in-person meeting providing an overview of the Lamps V2.1 Draft specification, and provide a more detailed discussion of the proposed changes from the existing specification. Stakeholders will have the opportunity to ask questions via phone, web or in person. To register for this webinar please click here. If you wish to attend in person, please RSVP for the meeting to lighting@energystar.gov with the subject line "RSVP Lamps V2.1 Draft 1 Meeting".

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 or lighting@energystar.gov. For questions pertaining to the U.S. Department of Energy test procedures, contact Lucy Debutts, DOE, at lucy.debutts@ee.doe.gov or (202) 287-1604. As always, thank you for your support of ENERGY STAR.

Sincerely,

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