

August 29, 2012

Taylor Jantz-Sell
US Environmental Protection Agency
Ariel Rios Building 6202J
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Ms. Jantz-Sell:

The Consortium for Energy Efficiency (CEE) respectfully submits the following comments in response to the *ENERGY STAR® Lamp Draft 2 Specification*, released by the US Environmental Protection Agency (EPA) on July 7, 2012.

CEE is the binational organization of energy efficiency program administrators and a staunch supporter of the ENERGY STAR® Program. CEE members are responsible for ratepayer-funded efficiency programs in 45 US states and eight Canadian provinces. In 2011, CEE members directed over \$7.8 billion of energy efficiency program budgets in the two countries. CEE's Members work to strengthen ENERGY STAR as a platform for energy efficiency across North America.

CEE highly values the role ENERGY STAR plays in differentiating energy efficient products and services that the CEE membership supports locally throughout the US and Canada. We appreciate the opportunity to provide these comments.

Scope

Support for inclusion of MR-16 Lamps

CEE thanks EPA for responding to our last comment letter from December 16, 2011 and supports the addition of MR-16s to the scope of the lamp specification. We believe allowing energy efficient MR-16s to qualify for ENERGY STAR will provide a common definition of efficiency for the majority of replacement lamps available in the residential and commercial markets and enable programs to promote all products types to capture greater energy savings. CEE is supportive of consistent performance quality across the product categories.

We encourage EPA to wait to include line voltage GU-10 based MR-16s in the specification until dimensional standards have been established, in order to prevent this product category from becoming a loophole that may allow for significant variation in product quality. Accordingly, we support EPA and American National Standards Institute (ANSI)'s efforts to resolve the dimensional standards and look forward to seeing the GU-10's included in the specification after such standards have been finalized.

Support for Inclusion of More Stringent Commercial Product Requirements on Qualifying Products List

CEE supports EPA's approach that would require products to meet more stringent rated life and power factor in order to receive a "commercial grade product classification" on the qualifying products list. This classification will enable administrators of commercial lighting efficiency programs to identify lamps with longer lifetimes and support those products in their markets, as appropriate given local considerations. Having ENERGY STAR verify the performance of these products and publish this information on the qualified product list enables programs to claim the appropriate savings and offer robust rebates for lamps that have significantly longer lifetimes.

Consult Broad Set of Stakeholders on Details of "Connected" Functionality

Based on EPA's stated plans to consider inclusion of "connected" functionality (including an allowance for demand response capability) during a future lamp specification revision, CEE would like to highlight its current efforts related to "connected" ENERGY STAR products. CEE has been actively engaged in the development of "connected" requirements in other ENERGY STAR product categories and encourages EPA's lighting managers to review CEE's most recent comments on the draft ENERGY STAR refrigerator and room air conditioner specifications as well as the ENERGY STAR pool pump framework.

If EPA intends to incorporate connected requirements across a range of ENERGY STAR products, we continue to recommend that all stakeholders to the ENERGY STAR Program be consulted as this would seem to represent a fundamental shift in the Program with potentially significant implications.

If EPA decides to address "connected" functionality in a future draft of the lamp specification, CEE requests that EPA examine any standby power consumption associated with this functionality. If "connected" lamps draw power when off, CEE recommends that EPA investigate the relevance and suitability for applying a uniform standby power requirement for lamps, such as 1 watt target being considered by the International Energy Agency.

Quality and Readiness Concerns for Semidirectional Lamps

CEE understands that EPA's rationale for including semidirectional lamps within the specification is to allow for innovation and the development of non-standard LED lamps. While CEE appreciates this desired outcome, at least several efficiency programs will not be promoting semidirectional lamps due to concerns about consumer satisfaction. These concerns stem from efficiency program experience with consumers who are disappointed when they purchase a lamp with the same shape as an existing product that exhibits a substantially different light distribution. We support EPA's efforts to educate consumers about these light distribution differences through the lamp packaging requirements for non-standard lamps; however, we do not have a basis to know whether this approach will be sufficient to inform customers about these differences or alleviate consumer dissatisfaction. Therefore we recommend that EPA wait to include this category until there is a basis to inform the customer experience and satisfaction with these products.

Recommend Higher Efficacy Levels for Directional Lamps

CEE would like to reiterate our previous Draft 1 comments recommending higher requirements for directional lamps. CEE supports a technology neutral approach for this specification. We do have concerns that the analysis provided by EPA during the November 30, 2011 webinar is outdated and therefore recommend that EPA reexamine the performance levels of the directional lamps category in light of the most current data available.

Based on a CEE review of the ENERGY STAR qualified product list for lamps as of August 2, 2012, the average efficacy of a qualified directional lamp is 51.3 lumens per watt, and there are qualified directional CFLs with efficacies as high as 61.2 lumens per watt and LED lamps with efficacies as high as 87.5 lumens per watt. The proposed efficacy requirements (40 lumens per watt for <10 watt lamps and 45 lumens per watt for ≥ 10 watt lamps) limit the ability of efficiency programs to capture additional energy savings that are technically achievable with these products. In addition, programs are only able to claim energy savings based on the ENERGY STAR efficacy requirements for the lamp, and not individual product performance even if that product is substantially more efficacious.

We recommend that EPA increase the efficacy requirements to enable programs to support the products best suited to the directional category. Based on our analysis, we would support increasing the directional lamp efficacy requirements to be consistent with those proposed for decorative lamps (45 lumens per watt for <10 watt lamps and 50 lumens per watt for ≥ 10 watt lamps). These requirements would be more stringent, while still allowing a significant portion of currently ENERGY STAR qualified fluorescent lamps (43%) and LED lamps (71%) to qualify.

Support Increases in Rated Lifetime Requirements

CEE thanks EPA for responding to our concerns regarding the proposed 10,000 hour rated life requirements for all lamps. CEE supports the proposed increases in the rated lifetime requirements for LED lamps from 10,000 hours to 15,000 for decorative lamps, 25,000 hours for all other residential lamps and 35,000 hours for commercial lamps. We request that as data becomes available related to the price of 10,000 hour LED lamps compared to longer life products, EPA make that available to CEE and other lighting stakeholders for consideration in future specification revisions.

CEE requests that EPA provide clarification as to why LED lamps are tested for 6,000 hours as compared to compact fluorescent lamps (CFLs), which are tested for the full rated life (10,000 hours). We are concerned that LED lamps, which are expected to last twice as long, are only being tested for 60% of the time of CFLs. Given industry's efforts to develop an accurate extrapolation of LED performance with respect to lumen maintenance, CEE's primary concern is related to the lifetime of the LED drivers.

Support Reliability and Run up Time Requirements

Given consumer dissatisfaction related to premature failure of CFLs, we applaud the requirements of the rapid cycle stress test and elevated temperature test for all replacement lamps. In addition, we support EPA's decision to maintain the run up time requirements originally proposed in draft 1. We recommend that all these requirements be included in the final version of the specification.

Support for Increased Stringency of Color Requirements

As indicated in our last comment letter, CEE supports the increased stringency of the color requirements, including correlated color temperature (CCT), color rendering index (CRI), color maintenance, and color uniformity, as long as the cost implications related to testing don't disadvantage or prohibit promotion in programs. We understand EPA's decision to revert back to requiring that the color temperature measurements fall within the 7-step MacAdam ellipses / ANSI quadrangles given the current state of manufacturing and cost implications, but would support EPA moving towards the 4-step MacAdam ellipses / ANSI quadrangles in future specifications to tighten the color consistency requirements. CEE also supports EPA's decision to maintain the R9 requirements for all lamps, as we believe this will address some of the customer satisfaction concerns about accurate color rendering.

In addition, CEE understands EPA's rationale to add 6500 K lamps, but requests that EPA limit those products with a CCT of 5000 K or higher to the commercial grade product section. Energy efficiency programs believe that residential consumers are looking for a product that replaces or matches their existing incandescent and halogen lamps, which have warm color temperatures of

2700 K and 3000 K. Lighting Research Center studies have shown that residential consumers don't understand terms such as "daylight" and the primary reason for dissatisfaction with CFLs is that the color of the lamp is "too cool" or "too blue." It is also easier for LED lamps with higher or cooler color temperatures to meet the ENERGY STAR efficacy requirements. Because of this, CEE is concerned that the market will be flooded with cool colored LED lamps and that consumers will have a negative experience with their ENERGY STAR lamp purchase.

Lastly, CEE would like to see the color maintenance requirements become more stringent in future specifications. As a point of reference, there are currently lamps in the market that far outperform the ENERGY STAR requirements with a color shift less than $0.001 \Delta u', v'$ after 6,000 hours. CEE believes the color maintenance requirements are particularly important component of the lamp specification given the human eye's capability to detect color variation.

Support Inclusion of Dimming Requirements

Dimming continues to be a high priority for efficiency programs. We are encouraged by EPA efforts with industry stakeholders and the Lighting Research Center to develop a definition, method of measurement, and compatibility metric for dimmable lamps. CEE requests updates as this work progresses including insight into any unresolved issues and timing. Once this work is finalized, CEE recommends that EPA host a discussion on whether dimming requirements should be applied to all ENERGY STAR lamps versus just those that claim to be dimmable. We would also like to communicate our strong desire to see these requirements included within the first version of the lamp specification.

In response to EPA's request for input on acceptable dimming range, CEE supports requiring that ENERGY STAR "dimmable lamps" are capable of achieving at least 10% of (measured) maximum light output. We believe that 20% (measured) maximum light output is too high a threshold and will negatively impact customer satisfaction. As noted by EPA, incandescent lamps are capable of dimming to 0%, which is what consumers have come to expect. According to the Illuminating Engineering Society of North America (IESNA) Lighting Handbook, 9th Edition, the formula for perceived brightness (%) is 100 times the square root of measured /original illuminance (%) divided by 100. This means that at measured illuminance of 20% of the original illuminance, the perceived brightness is 45% of the original light level and at measured illuminance of 10% of the original illuminance, the perceived brightness is 32% of the original light level. CEE recommends that EPA conduct market research on what dimming levels consumers find acceptable as well as preference for continuous versus step dimming and share these results with all stakeholders to inform this process moving forward.

Thank you for your consideration of these comments. Please contact CEE Program Manager Eileen Eaton at (617) 337-9263 with any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Ed Wisniewski". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Ed Wisniewski

Executive Director