April 29, 2011

Thank you for the opportunity to provide comments to the ENERGY STAR Lamps V1.0 specification development process. Please accept OSRAM SYLVANIA's specific comments and responses to the questions posed in the ENERGY STAR Lamps Product Specification Framework document issued on March 22, 2011.

If you have further questions, please contact me directly. Thank you,

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II Scope

II. c) Eligible product types

1. The LED lamp specification currently requires replacement lamps to fit the ANSI C79.1-2002 shapes, while the CFL specification does not. Are there CFL types that should be subjected to the same dimensional limits? What are the technical challenges and costs associated with meeting this requirement? Please share supporting data.

> No, CFL type lamps should not be subjected to the same dimensional limits. The Energy Star program has been in effect for CFL types for many years without this limitation and many products already qualify which would not meet the proposed limits, such as certain reflector type lamps.

II. c) Eligible product types

2. What products, if any, are missing from the scope under consideration that EPA should consider?

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The present scope only addresses lamps with medium Edison (E26) or candelabra (E12) bases. We recommend the addition of GU-10, GU 5.3, and intermediate (E17) based lamps.

II. c) Eligible product types

3. What product development trends in the lamp industry should be considered that may have an impact on the proper categorization of lamps?

There are systems being introduced which may require new characterizations. One example is a lamp which not only makes its electrical connection through the base, but also makes a thermal connection for heat sinking purposes. Modular concepts are also being considered. Zhaga, a new Standards Development Organization (SDO), is active in these, as well as other, areas.

III Energy Efficiency, Performance, and Quality Features

III, a) ii. Power Factor

Note: In Section III, a), ii. Power Factor, EPA comments, "EPA intends to examine current power factor requirements and explore the feasibility and cost effectiveness of applying the same power factor requirements to all technologies. Efficiency and power factor requirements for lamps will remain an important component of the lamps specification. EPA will work with stakeholders to evaluate the cost versus efficiency benefit of more stringent power factor requirements". Although there is no question derived for this comment, we would like to respond.

We recommend the consideration of a power factor value of .9 (leading or lagging).

III. a) iii. Energy Efficiency

4. EPA is interested in reviewing data on luminous efficacy levels for new omnidirectional and directional lamps.

Depending upon wattage and CRI ranges , we offer efficacy levels (in LPW) for the following application categories:

	80-89 CRI	90+ CRI
Omnidirectional:	55 – 60	50 – 55
Directional:	50 – 55	45 – 50
Decorative	40	
Nonstandard	55 – 60	50 – 55

III. b) iii. Performance

5. Would the consumer experience be enhanced by strengthening the existing intensity distribution requirements so as to more closely match current incandescent reflector products? What are the cost and performance tradeoffs in designing these products?

The difficulties in providing suitable, specific intensity parameters which the consumer could easily understand suggest that the effort required to achieve this goal may be better spent elsewhere for the value received.

III. b) iii. Performance

6. Should EPA consider end-of-life cutoff features for LED products rather than allowing the products to continue to degrade in light output? What are the costs and performance trade-offs? Please share supporting data.

Adding some form of control to extinguish the lamp at a certain maintenance level could add significantly to the final cost of the product to the customer. The variability of such controls could have a marked impact upon actual life of the product. Such a product would have to be shielded from external sources of light in order to provide proper response to the lamps own performance. Liability issues could arise from products completely extinguishing in “vision–critical” areas such as stairways and fire exits. We recommend not adding such a feature.

III. c) v. Quality

7. Would increasing stringency of existing color requirements impact the cost of products? Please share supporting data.

The question is confusing. Tightening controls on Correlated Color Temperature could require redesign of current production equipment, reducing overall yield and increasing individual product cost. Requiring an increased CRI could result in reduced efficacy

III. c) v. Quality

8. Is the current CRI metric appropriate for EPA to use in future program requirements?

Since it is an existing metric and has been established in the marketplace for many years, yes, we believe the current CRI metric appropriate for continued use by EPA

III. c) v. Quality

9. To what extent should CRI be augmented by other measures of color rendering?

Metrics such as the R9 value or the CQS system can provide advanced information to the very informed user and we suggest making R9 information available on product bulletins and internet web pages. This would help in the product selection process without confusing the general public.

III. c) v. Quality

10. What color measurement metric would be most easily understood by consumers?

At this time our experience is that the CRI scale is the most easily understood metric by the general public because it is expressed as a single value.

III. c) v. Quality

11. What would be the costs and benefits of shortening the “start time” requirement (currently one second)? Please share supporting data.

Many current products already achieve a faster "start time" than 1 second. However, lamps with shorter start times can experience higher inrush current and reduced efficiency. There are certain specialty types, such as 3 way and dimmable CFLs, for which we would suggest an exemption from any shorter" start time" requirement since they would need different circuitry and would require substantial redesign.

III. c) v. Quality

12. What are the options and tradeoffs associated with improving "run up time"? Please share supporting data.

Redesign of mainstream products, in order to achieve faster "run up time", is a very expensive and uncertain proposition. Current "run up time" measurements can be difficult to reproduce and are very dependent upon preexisting conditions of the lamps under test. Such products could also suffer from reduced efficacy and shorter lamp life. We recommend using the present "two tiered" method, but expanding the "pure mercury" or "mercury pill" category (maximum run up time of one minute) to include products containing no mercury at all, while products containing amalgams of various types keep their current maximum run up time of 3 minutes.

III. c) v. Quality

13. Should EPA adopt a new definition of "life" that more clearly indicates to consumers the expected performance? What are the tradeoffs in terms of cost versus product life? Please share supporting data.

We realize there can be customer confusion with the terms "average rated life" or "mean rated life" but our experience shows that this is the best description of the overall performance of the products with respect to life. The warranties (residential or commercial) currently required to qualify for the Energy Star label already address this in the most suitable fashion.

Specifically to LED products, many ways to reduce the overall cost result in the product running hotter. This would likely reduce both life and efficacy.

IV General Topics and Other Questions

i.Product labeling/packaging
EPA comments, “The existing specifications contain separate sets of packaging requirements, both affected by the new Federal Trade Commission labeling requirements taking effect later in 2011. Product packaging requirements will be revisited. EPA aims to provide consumers with relevant product information regarding features, proper use, benefits, and energy consumption. During this process EPA will evaluate various means to effectively provide proper use and energy consumption information to consumers, leveraging the FTC label where applicable, and similar guidance for lamps without Edison bases.” Although there is no question derived for this comment, we would like to respond.

The industry has already been required to incur substantial costs in the major redesign of all packaging under the new FDA requirements. We strongly contest yet another change. The cost of the products involved have already increased due to the prior change and this would only add to that. With all the current information requirements there is very little space left already on many point of sale packages.

ii. Harmonization
Where appropriate with developments in international product efficiency standards, EPA comments, “EPA will examine international test procedures for energy efficiency and other key criteria to determine if harmonization would bring benefits in the development of “global” products.” Although there is no question derived for this comment, we would like to respond.

Global power systems vary substantially by supply voltages and frequencies, as well as lamp and base design. Simply designing a product to accept the different voltages and frequencies would not make a lamp “global” in this case, due to the different basing systems. We do not see how this could provide the American consumer any advantage.

iii. Other environmental benefits
EPA comments, “EPA will investigate adding restrictions on hazardous substances, as was included in the recently released the ENERGY STAR

Luminaires specification." Although there is no question derived for this comment, we would like to respond.

> We support the use of the current RoHS requirements for products covered under the scope of this proposal. However, we do wish to comment that there is no single agreed upon test standard for the measurement of mercury in such products and that any form of mercury testing upon a completed product is expensive. Many products covered under the scope of this proposal receive their mercury dose in the form of a pellet containing a mercury amalgam or other chemical compound. Other vehicles for mercury dosing can be used as a metal strip or capsule. The mercury content of these various vehicles is known very precisely already. We recommend accepting that data where possible if such a requirement is considered.

IV. iv. Questions for Discussion

14. How should the performance of dimming products be characterized or measured?

> The criteria required of incandescent products designed for such applications were: Does it start? Does the light output decrease when the control is activated? Is there increased noise for the system when it is dimmed? Does it flicker? These appear to be the critical issues. It is known that efficacy drops as a product is dimmed, as does power consumption. Requiring a specific efficacy level under dimmed conditions is not recommended.

IV. iv. Questions for Discussion

15. Could non-dimmable lamps be designed to be "dimming tolerant", so that if operated on a dimming circuit, their performance would meet consumer expectations? If so, what are the challenges and cost tradeoffs?

> No, not in our experience. For a lamp to dim on currently existing systems, it has to be designed specifically for that purpose. This substantially increases the cost of the dimmable product and can affect the efficacy and life of the product. It is difficult

enough to design dimmable lamps to be compatible with the wide variety of dimming systems currently available on the market.

IV. iv. Questions for Discussion

16. What requirements should EPA include regarding dimmer compatibility? Are there tests that can be applied? If not, where might they be developed?

We believe the current requirements for package labeling and listings of compatible systems to be sufficient. If EPA wishes to introduce requirements on dimmer compatibility it should only apply them to product (both dimmer and lamp) developed after that introduction. The industry is already developing standards to help assure the compatibility of dimming lamps and controls. An example is NEMA SSL 6 - 2010, “Solid State Lighting for Incandescent Replacement — Dimming”.

IV. iv. Questions for Discussion

17. Under what circumstances would minor product variations necessitate complete unique testing? Please indentify specific product variations and the tests in which unique product testing would or would not be necessary, and why. Please provide supporting data.

When a product is introduced which is the same as an existing product except with a higher Correlated Color Temperature, it should not require unique testing. When a lower CCT is qualified, all higher CCT’s should qualify. Note that in this case, however, if a higher CCT product is disqualified a later date, that disqualification should only apply to the specific CCT. If a qualified product is improved with respect to one or more characteristics, requalification at the improved levels should only be required in the specific characteristics which were improved. A directional product family where the products only differ in beam angle should all qualify when one of them qualifies.

We also wish to note that the 1.1°C tolerance called for in “in situ” tests of similar products is much too

tight. ASTM E320 allows 1.1°C variation between thermocouples, alone. Having the specified tolerance set at 1.1°C suggests that the only source of variation is the thermocouple. There actually are multiple sources of variation. There is variation in the product (lamp to lamp), variation in the thermocouples, variation in the meters, and even variation in ambient temperatures