

Energy Star Luminaires Second Draft Comments

Following are my comments/concerns regarding the Eligibility Criteria for the next version Energy Star qualification of luminaires.

- In the "Photometric Performance Requirements" chart for "Non-directional Luminaires" (pgs. 10-11,) I remain concerned with the minimum light output levels in the "lumen per head" section. In the adjoining notes, logic is stated explaining that on the numerous existing units reviewed, only 6% offer an output of less than 800 lumens total. While I appreciate the deeper investigation, the logic is flawed. It measures the future against the past and as solid state technology changes; the design of the luminaire will also change. We are VERY likely to see more "heads" with smaller amounts of light emanating from each. That means luminaires that stretch existing aesthetic boundaries will likely be ineligible for Energy Star qualification. I urge you to find a way to include new ideas, rather than punish them.
- In the "Luminous Efficacy" Requirements for Directional Residential Luminaires (page 12,) you are asking for an initial lumen output of 200 per foot for coves. Can this benchmark be correct? Most residential cove or tray-ceiling lighting is supplemental or decorative. 200 lumens per foot would be substantially higher than what would be considered aesthetically pleasing. While it may be important in commercial applications, it is difficult to visualize where this high lumen demand would be applicable in a residence. You may want to consider adding a "Decorative Linear" or "Architectural Detail" lighting category that uses a similar efficacy with smaller or no minimum light output. This type of decorative light is growing in popularity. Consumers will use energy to accent these spaces. It may as well be done efficiently.
- In the "Luminous Efficacy" Requirements for Directional Residential Luminaires (page 12,) zonal requirements for Accent Lights ask for 80% of the lumens to be delivered within the 0-40° range. If we use current MR lamps as a benchmark, 35° is the most typical beam spread with 60° following closely behind in popularity. Each serves a specific functional purpose. Switching this number to 0-60° would allow for the inclusion of the most popular lighting effects used by designers.
- In the "Luminous Efficacy Requirements" chart for "Directional Luminaires" (page 13) Under Cabinet lighting Zonal Lumen Density has been switched to 12.5% aimed toward the backsplash. This is a good change that places the bulk of the lighting on the work surface, where it is needed and used. Thank you.

- (Page 16) I am happy to see that a manufacturer can now promise more than 25,000/35,000 hours of life if supporting LM-80 data is provided. Tied now to the 6000 hour *in situ* test, a long lived product may warrant the added cost. I remain concerned that these added costs might preclude manufacturers from seeking Energy Star qualification for solid state lighting. The 6000 hour test will now add 250 days (8.3 months) to the new product development process. By the time a product is ready for introduction, the next generation of LED will have arrived. This means that a luminaire manufacturer will need to endure continuous testing of solid state products. Regardless of sales, each luminaire will have the cost burden of \$10,875.00. (Based on an independent lab quote, each 8.3 month test will cost \$3625. Three tests are required.) Once completed, the next generation LED will need to be tested, so the per year cost to keep a solid state luminaire in the manufacturer's line will be \$15,722.89. If the manufacturer agrees to pay this amount, it is doubtful that the consumer will agree to bear even more of the cost and simply elect to purchase fluorescent or non-efficient lighting. If the added development time for a new luminaire does not stop a manufacturer from pursuing Energy Star status, then the cost may. This time and money will be difficult, if not impossible to justify.
- The argument stated for adding 5000K Correlated Color Temperature (CCT) (page 20) has raised a related concern. In the first draft, I was concerned about the inclusion of 4100K, but did not state an objection. 4100K may have some value in exterior locations or in desk/reading applications, but it is perceived as unacceptable light for general residential interiors. I urge you to revisit this list, if not now, then in a year to determine if manufactures are sacrificing color in the name of added lumen output. Good solid state lighting should have both.
- (Page 21) I urge the EPA to follow the evolution of the Color Quality Standards (CQS) movement as a replacement for Color Rendering Index (CRI). The bias against solid state lighting with the current system will be more difficult for the manufacture to explain as the end consumer learns more about the new generation in lighting. The industry needs a new/better way to define color quality and these standards should adopt them as soon as they are finalized.
- Again, I must object to the "Driver Replaceability Requirement" (page 33.) Making the driver removable will add yet another level of assembly complexity and a cost increase. In addition, the cost borne by the consumer to pay an electrician to disassemble a complex luminaire, rewire and reassemble will likely be higher than the initial cost of the product, to

say nothing of the cost for the replacement part. In a simple incandescent chandelier or wall scone built today, the consumer does not assume a socket can be replaced without a fair amount of complexity and cost. Why is new technology to be treated in a different way? I urge you to remove this requirement or add the option for the manufacturer to warrant the driver to a certain level in order to accomplish the same goals.

- In the “Dimming Requirements” (page 27) for solid state lighting and the conjoined “Product Labeling & Packaging Requirements,” the luminaire is required to provide “smooth dimming from 100% to 35% of total light output.” Labeling must reiterate this performance. By which dimmer/dimmer type will this be measured? We have a series of twelve dimmers in our test facility and each one performs differently on the same luminaire. This requirement is not fully fleshed out and more information must be added to confirm that a manufacturer is fulfilling the demand.
- Finally, the introduction of Certified Bodies (CB’s) to qualify products adds a new layer of cost to the manufacturing and production of energy efficient lighting. While we have always required some supporting documentation from independent test facilities, we will now be faced with the financial burden of their processing the paperwork that we have heretofore done internally. Lighting is a decorative product, much more than functional. This means that the typical lighting manufacturer creates MANY designs that live for a short period of time because of their fashion-based nature. Contrast this with other appliance manufactures that develop a small amount of designs that last for a longer period of time and do not age because of their design characteristics. Consequently, we have a shorter period of time in which to amortize the costs, thereby additionally increasing the cost to consumer. With this layer of cost added to the previously mentioned *in situ* test and the LM-80 testing, Energy Star solid state lighting could quickly rise beyond a digestible cost for the typical American homeowner. At this juncture, I, as a manufacturer will need to carefully assess the viability of a product before committing this large amount of dollars to qualification. We will simply be unable to finance full product line testing, regardless of their ability to pass. With these changes, the cost has now risen to prohibitive levels.

Please consider these comments when working to rectify the Energy Star for Luminaires program requirements.

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