

COMMENTS ON DRAFT 12/20/06 FOR
ENERGY STAR PROGRAM REQUIREMENTS FOR SOLID STATE LIGHTING LUMINAIRES
From
AMERICAN FLUORESCENT CORPORATION

January 19, 2007

We understand the difficulty the Department of Energy faces in establishing an Energy Star eligibility criteria for such a new and constantly evolving technology such as LEDs. In order for this program to be successful however, manufacturers need to have a simple submission procedure in place (similar to the current Energy Star Version 4.0) to encourage easy and wide spread development of energy efficient, Energy Star qualified fixtures.

Excessive complexity and difficult testing requirements will serve only to stifle widespread development and availability of Energy Star qualified LED products for the residence. The following points are our main concerns in the preliminary draft details:

1-POWER FACTOR;

The Power Factor requirement of .9 is unrealistic. A typical residence does not need a fixture with a high power factor. A high power factor requirement will hurt manufacturers due to the higher costs of these power supplies, and the increased size that this power supply would require. First the price of the basic LED's are already a stumbling block to wide spread usage of LED's currently, adding more cost is the wrong direction to go and will stall the introduction of LED fixtures into the mass market. Second the essence of LED's is the small size. By making manufacturers design around a larger sized power supply, you loose the most fundamental feature that LED's have to offer; small size!

Additionally we don't feel it is fair that this specification (of .9 power factor) should be inserted in these specs when currently only a very few power supply manufacturers have components that meet this spec. A few suppliers should not direct or control the market and prevent all the new component suppliers who are interested in providing power supplies for the emerging industry.

We feel that the power factor requirement (of .5 power factor/ minimum) in Energy Star 4.0 should be used here as the minimum also.

2- USING LUMINARE EFFICACY TO ESTABLISH PERFORMANCE;

The concept here that the ONLY way to judge efficacy is to measure FIXTURE efficacy does not take into account the reality and details of this requirement. By putting the submission responsibilities of laboratory testing for each and every sku on the manufacturer, it is going to drastically limit the amount and variety of Energy Star LED submissions, and will effectively curtail much of the growth of these qualified decorative products that Energy Star is hoping to achieve.

An additional problem with this criteria is that it makes an assumption about how efficient a fixture needs to be and the lumen requirement for each specific fixture type and application. The assumptions required for this direction would need to be vast since there are so many fixture types and applications. There would also be disagreement on required (or minimum) fixture lumens for

each of these applications. The very nature of decorative fixtures suggests that they are subjective in appearance and they are rarely purchased because of lumen requirements specified by residential consumers. The efficiency of the lamp source should be judged not the efficiency of the application.

Energy Star, in our view, has concerned itself with promoting two aspects of lighting fixtures *Efficiency* and *Durability*: Efficiency should be how efficiently the lamp source uses the input power (as Energy Star currently does in Version 4.0) A matrix can establish a minimum efficacy of the components inside the fixture or a manufacturer can opt for actual efficacy testing and color testing of each fixture.

Durability should be how reliable the fixture is to operate in as far as expected hours of lamp life. 70% at 35K hours is only an approximation of lamp life. Unfortunately this cannot be reliably tested at this time, whether measured in or out of a fixture. The LED life standard should be expressed as a minimum requirement to exceed the hours of a currently approved efficient lamp source (such as fluorescent lamps) used in a similar fixture type. The LED life specifications should not be set by the maximum life hours theorized by a LED manufacturer.

3- SUGGESTIONS

A-Power Factor:

We feel that the power factor requirement should be .5 power factor/ minimum.

B- Efficacy Testing:

It is our hope that there can be at least two options manufacturers can take when qualifying their LED fixtures. Either:

1- Matrix Option (this option would require higher efficacy standards)

This option would include an Energy Star maintained matrix to indicate approved components that manufacturers can use when developing LED lighting fixtures. It would detail component level driver and LED specifications, such that when components that meet these specs are used in a luminaire, the fixture by default will meet the energy star power supply and color photometry requirements. This would make it easier and less costly for multiple sku's to be energy star qualified by the luminaire manufacturer.

The costs and responsibilities of testing these components and supplies have to be shared equally between all partners directly involved with producing each component in this process. For example; Power Factor testing would be the responsibility of the power supply manufacturer. The LED useful life, Color Rendering Index, and Correlated Color Temperature testing would be required of the LED supplier. The manufacturer would have to submit evidence of all other required compliance, as it is currently required in Energy Star 4.0

2- Fixture Testing Option (this would have a lower efficacy standard then the matrix requirement)

The manufacturer would have this option to test custom fixtures that do not have components listed on the matrix). This would include actual testing (as suggested in the 12/20/06 draft). This testing would include luminaire efficacy, power factor, LED life, color, and total fixture lumen testing.

C- Application Lumen Testing:

We suggest removing the lumen test requirements by application. They are subjective and add unreasonable complexity to the Energy Star specification.

D- LED Life Testing:

Until a more reliable life testing procedure is established. We suggest either eliminating this requirement or establishing MINIMUM general life requirements (for LED's tested out of fixtures) based on current efficient lamp life standards (i.e. Fluorescent lamps) used in similar applications. This should not be a manufacturer responsibility to test this since the testing procedure has not been established.

In general if Energy Star testing becomes too difficult or too much of a burden, the end result will be lack of interest in the Energy Star LED fixture program by the manufacturer and a low number of qualified fixtures. We recommend offering manufacturers more options, and to make LED Energy Star qualification testing easier and more convenient for all manufacturers.

Thank you for your consideration of our comments.

Submitted:

Stephen Blackman

Director of Design and Innovation
American Fluorescent Corp.
2345 N. Ernie Krueger Circle
Waukegan, IL 60087

847-249-5970 x-3050