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Vice President, Government Relations

February 23, 2016

VIA EMAIL TO: [lamps@energystar.gov](mailto:lamps@energystar.gov)

Ms. Taylor Jantz-Sell  
Environmental Protection Agency  
ENERGY STAR Lighting Program Manager  
1200 Penn. Ave NW 6202J  
Washington, DC 20460

**NEMA Comments on Draft ENERGY STAR® Program Lamp Specification v2.1 and Flicker Test Method**

Dear Ms. Jantz-Sell,

As the leading trade association representing the manufacturers of electrical and medical imaging equipment, the National Electrical Manufacturers Association (NEMA) provides the attached comments on the Environmental Protection Agency's Draft ENERGY STAR® Program Lamp Specification v2.1. These comments are submitted on behalf of NEMA Lighting Systems Division Member companies.

NEMA, founded in 1926 and headquartered in Arlington, Virginia, represents nearly 350 electrical and medical imaging manufacturers. Our combined industries account for more than 400,000 American jobs and more than 7,000 facilities across the United States. Domestic production exceeds \$114 billion per year. Please find our detailed comments attached.

Our Member companies count on your careful consideration and we look forward to an outcome that meets their expectations. If you have any questions on these comments, please contact Alex Boesenberg of NEMA at 703-841-3268 or [alex.boesenberg@nema.org](mailto:alex.boesenberg@nema.org).

Sincerely,

A handwritten signature in black ink that reads "Kyle Pitsor". The signature is written in a cursive, flowing style.

Kyle Pitsor  
Vice President, Government Relations

## NEMA Comments on Draft ENERGY STAR® Program Lamp Specification v2.1

### General Comments:

1. NEMA agrees with the move to a uniform 15,000 hour requirement for all lamps qualified to the specification. While existing 25,000 hour products would continue to be qualified under the proposal in the current draft, some manufacturers may not have developed dedicated 15,000 hour products owing to the current ENERGY STAR Lamps Specification. Therefore, we ask that EPA set a 12-month implementation period for this change so that companies have time to design/develop unique 15,000 hour products.
  
2. With respect to the 15,000 hour lumen maintenance requirement in Section 10.1, according to the referenced DOE test procedures,<sup>1</sup> for a 15,000 hour rated life, the calculated test duration is 4,400 hours, instead of 6,000 hours as would be required by the EPA. There is no evidence that the DOE test procedure’s requirement of 4,400 hours testing for the 15,000 hour lumen maintenance specification will result in different overall predictive results or result in less reliability compared to testing at 6,000 hours. To minimize test burden and costs, and *facilitate full entry of new products in to this highly competitive market*, NEMA proposes the EPA allow testing times of a minimum of 4,400 hours for 15,000 rated products. We appreciate the existing 3,000 hour early interim testing path, but the duration of the testing of a sample of products for certification has a very tangible cost, and a reduction of almost 30% test time is not trivial.

Proposed change to text in Section 10.1 the “ENERGY STAR Requirements” column for SSL products (shown for ~~removed~~ and added text): “Lamp shall maintain minimum percentage of 0-hour light output after completion of the ~~6000-hr~~ test duration.” Test duration is calculated according to the DOE test methods. Minimum lumen maintenance is calculated according to TM-28. (See the table below).”

<u>Rated life</u>	<u>Test duration (hrs)</u>	<u>Minimum Lumen maintenance at end</u>
<u>15,000</u>	<u>4431</u>	<u>.90</u>
<u>20,000</u>	<u>4866</u>	<u>.917</u>
<u>25,000</u>	<u>5255</u>	<u>.928</u>
....		

<sup>1</sup> LM-84 stipulates three criteria for maintenance test duration. The second is “*the intent of the test including evidence of compliance to the regulations requested and planned analysis of the data*”. For DOE compliance, the intent is to use the data to determine lumen maintenance to failure (70% initial output) per TM-28. TM-21 has no bearing on the DOE regulation as DOE explicitly rejects the use of the combined method of TM-28 and only allows the direct extrapolation method or actual test duration termination as time to failure (lumen maintenance (lifetime)). DOE does deviate from TM-28 guidance allowing extrapolation of test data in the 3,000 and 6,000 hour test duration range with modified multiplier and the proposal of 4,400 hours is derived from the DOE regulation not indirectly from TM-21 or from the actual text of LM-84 or TM-28.

A complimenting change is needed in the “Supplemental Testing Guidance” column: “Testing for early interim and final certification shall be conducted on the same samples, which shall also satisfy the ~~6,000-hour~~ testing for the rated life requirements (next section). Note: per the LM-80 calculation, a minimum of 4,400 hours is required for lumen maintenance testing of the shortest rated lifetime products of 15,000 hours.”

It follows that the table in Appendix B should also be changed to align it with the changes made per the above proposal, using the above table as a guide.

3. NEMA agrees with and appreciates the proposed changes regarding package variation in section 7.1
4. We note that the DOE LED Lamps Test Procedure for Life Testing requires at least 10 samples, with the reported lifetime expressed as the average of the middle two units. In practice, this method allows up to 4 failures if 10 lamps are tested. NEMA proposes that a 9/10 failure rate, which is allowable given the DOE test procedure, be reinstated as was practiced in past ENERGY STAR Lamps Specifications. This allows for one failure in a 10 lamp sample. We are not aware of any LED lamp failure rate evidence that would indicate this change might somehow undermine consumer confidence or the ENERGY STAR brand. We note that ENERGY STAR originally increased the requirement from 9 of 10 passing to 10 of 10 to align with an interim DOE rulemaking. In a subsequent rulemaking, DOE changed their requirement to be less restrictive and allows up to 4 failures.

Given this change in the DOE requirements, we recommend ENERGY STAR return to its original 9/10 requirement. This change would not require retesting and could be incorporated as part of the v2.1 revision. While we appreciate that several units of 10 samples might undergo certification testing at the manufacturers request, it is our expectation that verification testing would likely only use 10 samples and the mismatch between EPA and DOE practices in this situation concerns us.

Proposed change to text of Section 10.1, ENERGY STAR Requirements column: “The reported value shall be the average lumen maintenance of ~~40~~ ≥ 9 surviving units and shall meet...”

Proposed change to text of Section 10.2, ENERGY STAR Requirements column: “All 9/10 tested units shall be operational at all ...”

#### **Flicker Comments:**

NEMA appreciates the EPA’s desire to include flicker requirements in this specification, and that the EPA has proposed only reporting the values at this time. However, this appears to conflict with the EPA’s support of NEMA’s efforts to develop both a standard for lamp-dimmer compatibility and a qualification/marketing program to label these products. The NEMA flicker standard in question is in the final approval process within NEMA and after that will be made publicly available. Advance copies will be made available to the EPA and its consultants at the earliest opportunity.

At the same time, the NEMA SSL-7A marketing program and trademark are also on track, and are effectively only awaiting publication of the NEMA flicker standard. All administrative preparations and the trademark application have been completed.

As background, the NEMA Flicker standard relies on the standardized synthetic dimmer of NEMA SSL-7A. This approach effectively eliminates variation and potential conflict with 5 randomly selected dimmers, which is how the ENERGY STAR test requirement for dimming compatibility is structured today. Rather than have lamps tested to a variety of potentially random products, and then evaluated alongside one another, we believe the use of a standardized test circuit fairly and objectively evaluates the lamps.

In view of the above, NEMA urges the EPA to continue its previously evidenced support of this important industry effort, and refer to the NEMA SSL-7A marking program as an acceptable source of flicker and compatibility evaluations and marking. We look forward to examining the results of the NEMA standard and marking program as a potential future requirement for ENERGY STAR certification for dimming products.

The ENERGY STAR method of measurement for light source flicker states: "Products marketed as dimmable that are designed for phase cut dimming operation (i.e., alterations to the line voltage to the UUT) must be tested with a minimum of 5 dimmers from at least 2 different manufacturers." Section 12.1 of Lamps V2.1 states "As an alternative, a lamp designed to be compliant with NEMA SSL 7A may be tested against all dimming performance requirements with a corresponding NEMA SSL 7A compliant dimmer." NEMA requests EPA to clarify that the NEMA flicker standard is also available as alternate method of measurement for light source flicker.