Setting Standards for Excellence

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March 16, 2015

VIA EMAIL TO: 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 v2.0 Draft 1

Dear Ms. Jantz-Sell,

The National Electrical Manufacturers Association (NEMA) appreciates the opportunity to provide the attached comments on the subject proposal. These comments are submitted on behalf of NEMA Light Source Section companies.

As you may know, NEMA is the trade association of choice for the electrical manufacturing industry. Founded in 1926 and headquartered near Washington, D.C., NEMA represents nearly 400 electrical and medical imaging manufacturers. Our combined industries account for more than 400,000 American jobs and more than 7,000 facilities across the U.S. Domestic production exceeds $117 billion per year.

Thank you for your consideration of these comments. We look forward to working with you further on this important project. If you have any questions on these comments, please contact Alex Boesenberg of NEMA at 703-841-3268 or alex.boesenberg@nema.org.

Sincerely,

Kyle Pitsor

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Vice President, Government Relations

NEMA Comments to ENERGY STAR Specification for Lamps Version 2.0 Draft 1

General Comment about intent and impacts of the Draft V2.0 Specification:

The proposal as drafted will eliminate almost all, if not actually all, CFL products from the program. While the EPA did sort the qualified products list and show on the March 3rd webinar a few CFLs that fell above the proposed minimum standard, industry noted that the additional requirements such as starting time or run up time which are not listed on the QPL will force those apparent passing lamps out as well. NEMA urges the EPA to adopt the position that CFLs continue to play a beneficial role in market transformation, as is evidenced by the many CFL rebate programs still active, and adjust the specification to permit their transformative actions to continue. NEMA accepts that EPA wants to raise the bar, and we support it, as long as it can be done carefully and with respect for the relationships that individual performance parameters have with each other, i.e. raising one parameter can make it challenging or impossible to raise another. We recommend using efficiency (lumens per watt) as the driving factor to affect CFL eligibility in the ENERGY STAR Lamps program.

Comments to the Specification:

1. Comments to Section 1, Scope

    a) NEMA thanks the EPA for responding to previous requests with the addition of connected and color tunable products to the specification as well as adding an allowance for standby power which some popular lamp products require.

2. Comments to Section 2, Effective Date

    NEMA is concerned that the intended completion and implementation dates of the new specification as proposed are too close to the previous specification's completion and implementation for the reasons highlighted below:

    a) Industry is concerned with pursuing a program update of this magnitude using a draft test procedure, i.e. the DOE LED Lamps TP. We provide additional details under item 3.

    b) Sufficient time to recapture certification investments to Lamps V1.0 and V1.1: Industry deserves more time to sell lamps recertified to the earlier versions of the specification so as to recover their investments in those programs. All products were required to be certified to the Lamps program when the two programs for CFLs and LEDs were merged, and industry is still recapturing these costs. Adjusting the CFL requirements in V2.0 to allow more products to be administratively requalified will significantly reduce a duplicative, costly process.

    c) As noted in our General Comment, at present few CFL products, if any will be eligible to administratively requalify to the new specification as drafted. Likewise, it will be a significant challenge to certify many CFL products to the proposed levels. In the past, industry has received permission from EPA for the use of the ENERGY STAR mark to sell-through products certified to a previous specification, which we expect will be granted in this case as well. However, rebate managers evidence a disinterest in procuring "old" products, and based on our experience with the confusion that ensued following the last transition to a new version of the ENERGY STAR specification for this

product we request EPA to carefully consider both changes to the proposed performance requirements and implementation dates to assure sufficient availability of CFL product for rebate programs operated by utilities that are still interested in them.

d) We further encourage EPA to maintain more CFLs in the ENEGY STAR Lamps program so that they can continue to serve as a market driver for well-performing CFLs and not lose their influence on market demands and practices. The ENERGY STAR program is an invaluable reference and tool for those retailers and specifiers who want to incent CFL adoption and need the ENERGY STAR program to help them accomplish this.

e) We note that EPA set a precedent in Lamps V1.0 to allow 12 months to qualify to the new specification, while allowing/encouraging new products to be submitted right away to the new specification. We ask the EPA to continue this and request a minimum of 12 month phase-in period between the publication of the final Lamps v2.0 specification and the effective date of the requirements.

3. Comments to Section 3, Future Specification Revisions

a. NEMA understands that EPA updated the specification's test procedures to reflect the Department of Energy's (DOE) initial proposed test procedure for LED Lamps. DOE's proposed test procedure is not final, and there is some chance that the proposed test procedure will not be the final test procedure. We believe it would be inconsistent with policy for EPA to adopt a test procedure that DOE has not formally approved, and it will create problems for the ENERGY STAR program later. At the EPA public meeting of March 3rd 2015, EPA staff indicated that the v2.0 might be published even if the DOE LED Lamps test procedure was not final, using the draft methods as the governing tests. While the timing of the DOE rulemaking lends one to believe that the LED Lamps TP will be finalized within the coming months, there is no guarantee of this. NEMA believes it would be detrimental to use the LED Lamps test procedure as of the most recent proposal (June 2014), owing to the many comments it received and the anticipated changes they may cause. NEMA strongly urges the EPA to commit to waiting for the DOE Final Rule so that changes to the Final Rule for test procedures can be analyzed and incorporated effectively and fairly into the ENERGY STAR Lamps specification. Only then can the new specification be accurately finalized and implemented as per Section 2.

4. Comments to Section 4, Definitions

a) Throughout the document, the following terms are used: reported value, directly measured value, and certified value. It would be extremely useful if the EPA defined what they mean by these terms.

b) The presence of definitions for both Connected Lamps and Dimmable Lamps could cause confusion, since all or nearly all connected lamps will also be dimmable. It does not appear to be EPA's intention, judging from section 12, that a connected lamp MUST also work with a phase-cut control. We request EPA clarify this point.

5. Comments to Section 5, Test Criteria

a) Clause 5.1, Testing Color Tunable Lamps: Test condition 2 in section 5.2 is confusing, particularly the words "most consumptive". Discussion: Arguably, one could have a least

efficient ANSI white setting (2) that is *more* consumptive than the default (1), but, if the *most* consumptive point occurs at a third setting (3), then the manufacturer doesn't have to report anything but the default (1), which does not seem to be EPA's intention. If power consumption at these other settings is lower than the default, then energy is being saved, and we see no reason to be concerned about the efficacy of the lamp at such settings. Consider a hypothetical lamp which has default setting of 3000K, and maximum power consumption occurs at 5000K, but efficacy is higher at 5000K than at 3000K. There are no ANSI white CCTs at which efficacy is lower than at 3000K AND power consumption is higher than at 3000K. In this case, the full photometric testing would have to be done at 3000K (the default), and the 5000K power consumption would have to be reported. (But no full photometric testing at 5000K, since 5000K is more efficient than the default.) We also suggest that ENERGY STAR explicitly state that the testing is all done at full output power for each setting to exclude extra testing for lamps that have the feature that they imitate incandescents during dimming by gradually dropping CCT as intensity drops. Such lamps should not be treated as Color Tunable Lamps.

It is not clear what the words "selected by the manufacturer" are intended to mean. They could mean "marked on the package", "selected by the manufacturer for testing", "capable of being selected by a user and emitted by the lamp" or something else. It is not immediately clear what EPA hopes to gain by requiring testing at two points that would not be gained by testing at a single default point.

To address the comments above, we suggest changing the later part of the text in Section 5 to:

> "When testing a color tunable lamp, photometric performance testing (per section 9) shall be performed at:
>
> 1. The default setting from the factory[1].
> 2. The least efficient setting among the ANSI white light nominal CCTs (if that setting is different from the default AND if power consumption at that setting is more than 15% higher than at the default setting)
>
> Lamp performance at the test settings described above shall meet all photometric performance requirements of the specification. All other testing, including lumen and color maintenance testing, shall be performed at the default setting (or at the highest power setting among the ANSI white light nominal CCTs if that setting uses more than 115% of the default power setting). [Motivation: The lowest efficacy condition is likely to be one of the extremes of the allowed ANSI CCTs (e.g. 2200K, if the allowed ANSI CCTs are extended to include 2200 and 2500K). Under this condition, power is likely to be relatively low and at least one of the LEDs is likely to be driven at low

[1] The default setting is assumed to be maximum light output at one of the ANSI white CCT's.

power. The lumen maintenance testing at the lowest efficacy setting will therefore not exercise all of the LEDs. Testing at the default or highest power setting is more likely to have the LEDs maximally utilized (all LEDs driven at relatively high power). It will also provide greatest stress to the electronics, as well as greatest thermal stress.]

The power consumption of the setting with the maximum input power, regardless of chromaticity, shall be reported.

Testing for each required setting is to be done with light output set to maximum for that setting."

6. Comments to Section 6, U.S. Federal Regulations

   a) NEMA has no comments at this time.

7. Comments to Section 7, Product Certification

   a) Table 7.1: it is not clear what the words "(ANSI base adapter)" are intended to mean. We ask the EPA to clarify this.

8. Comments to Section 8, Methods of Measurement and Reference

   a) NEMA has no comments at this time.

9. Comments to Section 9, Photometric Performance

   a) Clause 9.1, Luminous Efficacy: In order to maintain sufficient numbers of CFL products in the program, the EPA needs to reduce the proposed Lumens Per Watt (LPW) requirements accordingly. NEMA recommends the below changes to the proposed levels in draft 1.0:

Category	**Recommended efficiency level**
Omnidirectional	65 LPW
Directional	50 LPW
Decorative ≥ 15 watts	55 LPW
Decorative < 15 watts	50 LPW

   To address concerns of the growing gap between CFL's maximum efficiency potential versus the evolution of increasingly efficient LED products, industry is willing to also discuss the creation of separate efficiency requirements to break CFLs out from other technologies in the specification.

   b) Clause 9.2: We note that the 3% tolerance for Light Output was removed, likely due to the incorporation of the DOE LED Lamps test procedure. We remind EPA this tolerance was added as a clarification during draft 4 of v1.0. We note that this will have an effect on Lumen Maintenance calculations in our comments to clause 10.1 below.

c) Clause 9.2, Light Output Reporting: We note that the EPA intends by these changes to align light output reporting with DOE and FTC, but it is unclear why the EPA proposes alignment for MR lamps since they do not have FTC/DOE labeling or reporting requirements at this time.

d) Clause 9.2 – Decorative equivalency table: During the v1.0 process, EPA added a column for Covered A-lamp CFLs to the Decorative equivalency table. The intent, as explained in the note box in draft #4, was that "Covered A-lamp CFLs may be evaluated as omnidirectional lamps or decorative lamps due to their decorative cover which reduces efficacy; however the light output levels must be consistent with the omnidirectional levels for equivalency claims." NEMA encourages EPA to reconsider this and allow decorative A-lamp CFLs to be classified as omnidirectional or decorative.

e) Clause 9.2, 3-Way Lamps: Lamps V1 eliminated the specific light output ranges for equivalency claims for three-way lamps (CFL), resulting in equivalency claims for CFL products that were not common replacements for consumers (e.g. the 50/100/150 CFL had to be classified as a 50/100/125 which is confusing to consumers). The lumen output requirements for 3-way lamps should be reinstated to eliminate confusion for consumers.

Proposal: Reinstate the two lines from the CFL v4.3 specification for 3-way equivalency (shown below)

30-70-100	Minimum of 1,200
50-100-150	Minimum of 2,150

f) Clause 9.6, Correlated Color Temperature: NEMA would like to bring to EPA's attention the forthcoming revision of ANSI/ANSLG C78.377. The 2015 revision (in development now) will include two new ANSI nominal CCTs, 2200 Kelvin and 2500 Kelvin, defined as quadrangles like the preceding CCTs. These new CCTs emulate a dimmed incandescent appearance while providing the high efficacy of solid state lighting versus the exceptionally low efficacy of incandescent lamps operated on dimmers. Many NEMA manufacturers are already selling sub-2700 Kelvin LED products, with many more in development. The addition of these CCTs to the ENERGY STAR Lamps specification would provide a vehicle for electric utilities to incentivize high efficacy products while providing this dimmed incandescent appearance. (For EPA's long-term planning, please note that the next revision beyond 2015 of ANSI C78.377 will consider standardization of white light chromaticities below the Planckian locus that are preferred by some consumers.) We note that the EPA's proposal for color characterization in Clause 15.2 does not include the flexibility to add CCT values such as these and provide additional discussion in our comments to 15.2.

g) Clause 9.7, Color Rendering: As per our opening remarks and other comments about allowing some CFLs to requalify, NEMA recommends the R9 requirement for CFLs be removed from the proposal. The products are mature in the market and, for fluorescent products, a positive R9 will reduce the efficacy compared to a product with an R9 less than zero. Removal of the proposed R9 requirement will afford a sufficient number of CFLs to requalify.

10. Comments to Section 10, Lumen Maintenance and Rated Life

a) Clause 10.1, Lumen Maintenance calculations: the tolerance that previously was applied to this requirement has been removed and therefore a product would now need an average of 95.8% at 3000 hr and 91.8% at 6000 hr to pass.

b) Clause 10.1, Lumen Maintenance Testing: Color tunable lamps may contain LEDs that are not generally covered by LM-80 testing. For instance, red, blue or green LEDs may be used. To avoid increasing the testing burden for LED manufacturers, we propose that ENERGY STAR early certification only require LM-80 testing on the LED that provides the greatest amount of light when the lamp is set for full output at the default CCT. (Lamps would still have to meet the 6000 hour requirement.)

c) Clause 10.1, Supplemental Testing Guidance:
   i. In the supplemental testing guidance for CFLs, clarification of the highlighted guidance is needed to make it clear that the five units tested will be operated vertical base-up only (unless the manufacturer restricts the lamp's position).
   ii. The reference for the <10W omnidirectional lamps has been eliminated. This poses confusion as to how to test these lamps. As proposed the wording for <10W lamps labeled "not for use in totally enclosed fixtures" says they are to be tested in ambient temperature conditions in accordance with IES LM 65-10. The text is not clear as to how to test those lamps that are not so labeled. NEMA recommends that the specific reference to omnidirectional lamps <10W be reinstated, and we recommend a specific testing table be added to reduce confusion and misinterpretation.

d) Clause 10.1, Lumen Maintenance Testing: The language of this section needs to be clearer on; the establishment of due dates including recording of actual dates samples are placed on life test and accounting for downtime due to laboratory or site maintenance or system failure issue (power outages, cooling water supply servicing or system replacement, etc.) It also needs to clarify who sets the start date for the testing.

e) Clause 10.2, Rated Life: The removal of the one-failure allowance will significantly impact product qualifications and design.

f) Clause 10.2, Rated Life: One might interpret the proposed language to mean that LED products must all be operational at the end of rated life. We suggest keeping the requirement in Lamps v1.1 that all tested units be operational at 3,000 hours and $\geq$90% of the lamps be operational at the end of 6,000 hours.

g) Clause 10.3, Rapid Cycle Stress Test Supplemental Testing Guidance: we suggest for clarity the EPA change the wording "… conducted at the highest setting." to "… conducted without a dimmer, or at the highest wattage setting listed for the model, respectively."

h) Clause 10.3, editorial: Change the title to "Rapid Cycle Stress Test: Compact Fluorescent Lamps"

11. Comments to Section 11, Electrical Performance Requirements

a) Clause 11.4, Start Time: NEMA recommends decreasing the start time to only 750ms, instead of the proposed 500ms. Such a small difference is imperceptible to consumers, and 750ms will allow a slightly increased measurement tolerance which will help eliminate marginal failures during verification testing.

b) Clause 11.5, Run-Up Time: As per our opening remarks, a reduction in minimum run-up time will cause most covered CFLs to be dropped from the market. They are at equilibrium for run-up time versus other performance parameters. Consumers who want faster run-up time will naturally be drawn to consider LED products, with higher efficiencies, while those for whom cost is the overwhelming concern can continue to purchase ENERGY STAR certified CFL products if the run-up time requirement is not changed. Covered and reflector CFLs should be allowed a run-up time of ≤ 120 sec.

c) Clause 11.7, Standby Power Consumption: We note that this section applies to all source types, but the method of measurement is the DOE test procedure for LED lamps. Connected CFLs therefore will need a test procedure for Standby Power.

12. Comments to Section 12, Controls Requirements

NEMA members are still developing comments and recommendations to improve this section, particularly with respect to requirements for connected lamps. It is important to not overly prescribe requirements for this emerging technology, but at the same time clear, useful guidance is also very important. We intend to submit those additional comments to EPA within a week and apologize for the delay.

13. Comments to Section 13, Lamp Toxics Reduction

a) NEMA has no comments at this time.

14. Comments to Section 14, Dimensional Requirements

a) NEMA has no comments at this time.

15. Comments to Section 15, Lamp Labeling Packaging and Warranty

a) Clause 15.2, Lamp Packaging: NEMA disagrees with EPA's proposal to include color terminology in the Specification. Color description is an area in which manufacturers communicate with their customers. It is also an area where retailers and private labelers use their own specific terminology. We respect that the EPA desires to reduce consumer confusion regarding color description, but we must respectfully point out that ENERGY STAR Lamps do not represent the majority of products on the market, thus ENERGY STAR terms will not affect those other products. Likewise, it is our assessment that the labeling of color on packaging is under the authority of the Federal Trade Commission, and that the FTC has elected to NOT pursue greater detail into terminology. Also, the EPA's charter for ENERGY STAR focuses on energy efficiency, descriptive labeling is therefore arguably outside the EPA's authority. Additionally, the original color proposal is unacceptable, as the terms Soft White, Warm White and Daylight are not consistent with the traditional industry use of these terms and if implemented would cause even further market confusion.

16. Comments to Appendix A:

a) NEMA has no comments at this time.

17. Comments to Appendix B:

    a) NEMA has no comments at this time.

Additional Comment:

1. We ask EPA to clarify/confirm that there are no intended changes to the "ENERGY STAR Lamps V1.0 Final Test Methods and Recommended Practices" document[2] which contains information regarding some of the tests given in the proposed draft v2.0.

[2] https://www.energystar.gov/sites/default/files/specs//ENERGY%20STAR%20Lamps%20V1%200%20Final%20Test%20Methods%20and%20Recommended%20Practices.pdf