



The NEMA Lamp Section submits the following final comments in response to DOE's request for stakeholder input on the Draft revision to the CFL Energy Star specification dated December 12, 2002.

### **Revision Process**

While NEMA agrees that it may be appropriate to begin a general discussion regarding potential changes to the current Energy Star specification for CFLs, NEMA believes that stakeholders should have been consulted prior to development of an initial draft and prior to the establishment of an implementing schedule with an effective date. The current Energy Star specification has only been in effect for slightly over one year. At the conclusion of the revision process for the current specification (effective date October 1, 2001), the Department agreed that before another revision cycle would be initiated, stakeholders and DOE would convene to review and discuss the experiences gained in applying and enforcing the current version.

In this manner it would be possible to have a constructive dialogue regarding any perceived need to further revise specific requirements, the rationale for each, and an initial discussion on possible specific changes that might be appropriate, including any change in scope or covered products.

NEMA urges the Department to reconsider its current approach, which did not follow this process. As a result, it is not possible to fully understand DOE's rationale behind proposed changes in the current Draft.

### **Timing for an Overall Revision- April 1 Effective Date**

NEMA strongly objects to the proposed effective date of April 1, 2003 for a revised specification. The proposed changes have significant implications for manufacturers and require careful evaluation. Any implementation date should be arrived at only after stakeholders have had a chance to submit detailed comments, participate in an open workshop with other stakeholders and the Department, and after there is general consensus that there are compelling reasons for any changes or for a full revision.

In addition, an effective date of April 1 will have a very negative commercial impact on manufacturer/partners that have CFL testing underway in accordance with the requirements and sample sizes in the existing specification. Such a near term date would completely negate in-process tests and would require testing

to be re-started, incurring increased costs and delaying introduction of any new models into the Energy Star program.

### **Item 1- Minimum Efficacy Requirements**

NEMA notes that DOE has maintained the existing minimum efficacy requirements and contends that it would be premature to make the minimum efficacy requirements for covered products more stringent.

#### Rationale:

The current efficacy minimums are already far superior to what can be achieved with incandescent technology, and are still representative of current best practice CFL technology. Slight increases of several LPW in efficacy are not meaningful when contrasted with the very significant increase in efficacy between a 14 LPW incandescent lamp and current Energy Star qualified CFLs.

### **Item 2- Elimination of the Pre-Qualification Option**

NEMA strongly objects to total elimination of the pre-qualification option as proposed by DOE.

#### Rationale:

The pre-qualification option requirements were developed at DOE's request and adopted in Version 2 of the Energy Star Specification as a means to provide for a timely introduction of CFLs while minimizing the performance risk for consumers that was not addressed in the first Energy Star Specification (Version 1). It is imperative that the prequalification option be maintained, although further discussion may lead to some modification if appropriate.

Requiring full data for lumen maintenance and life will extend the time for qualification significantly, especially for CFL's with 10-12,000 hour ratings. Elimination of the pre-qualification option will encourage manufacturers to only produce shorter life lamps since qualification will be quicker. Such a change will also unfairly penalize manufacturers with CFLs currently planned for pre-qualification under provisions of the existing requirements.

NEMA believes that DOE should clearly state its reasons for wanting to eliminate pre-qualification, including any supporting data that would indicate where the current pre-qualification process is deficient. Given that information, and with a then better understanding of any perceived deficiency with the current pre-qualification scheme from DOE's perspective, NEMA is confident that it can propose a modification to the pre-qualification option that will eliminate the deficiency while preserving the benefits of this approach.

NEMA surmises that one potential reason for DOE's proposed elimination of the prequalification option is to reduce the risk that initially qualified products (prequalified) will not achieve full or final qualification later in life. If this is true, NEMA appreciates the Department's concerns since NEMA has raised similar concerns.

NEMA also believes that the closely related subject of enforcement must be discussed as part of any consideration to eliminate prequalification since enforcement may be the fundamental issue that DOE is attempting to solve via this proposal.

### **Item 3- Scope Coverage of Circle and Square Adapter Products**

NEMA does not agree with the scope language change as it relates to Circle and Square shaped adapter products since the new language is ambiguous. Either the original language should be maintained or DOE should clarify the intent of the change so that it can be properly evaluated for comment.

#### Rationale:

DOE's proposed revision of Scope language related to circle and square adapter products is confusing and needs clarification. The phrase "and lamp systems" has been eliminated. In addition, in (B.) the more proper description phrase "circle and square lamps...and having electronic ballast adapters that are tested and packaged with the lamp" has been changed to language that would imply that only integral (non-separable) products may be qualified. However, NEMA is not persuaded this is DOE's specific intent since other portions of the Draft Specification (e.g., page 8, "Note: Testing with a reference ballast...") continue to maintain requirements intended for qualification of adapter products. Hence the need for additional discussion and clarification.

NEMA would strongly oppose eliminating circle and square shaped compact lamps with (separable) electronic ballasts (adapters) from the Energy Star CFL program. Such products provide an environmentally preferable option for very high use applications such as the hotel/motel/hospitality segment. The requirement to have the lamp and its intended adapter ballast tested/packaged ensures that the combination meets the appropriate performance standards.

### **Item 4- CRI for Niche Application Colored CFLs**

NEMA strongly urges a detailed stakeholder discussion on the advisability and necessity of extending qualification beyond "white" colors, for which the current specifications were derived, to a full range of colored CFLs. If it becomes advisable for the Energy Star CFL Program to incorporate such niche products, then there needs to be a complete technical discussion on what the appropriate specifications should be for such products (i.e., 'bug light' and/or saturated color lamps) beyond the proposed changes to the basic color related specifications of CRI and CCT.

NEMA does not agree with a "greater than 77.00" requirement for all niche colored lamps. This proposal may work for bug light lamps, but in general there should be no CRI or CCT requirement for niche colors. In addition, the lumen maintenance requirements would need to be fully reconsidered since the requirements in the current specification were not developed with the intent that they would apply to colored applications where phosphor systems may have very

different functional and performance properties than those used for general illumination.

Rationale:

The establishment of a CRI requirement for Energy Star CFLs was intended to ensure that lamps marketed for general service illumination of people and objects (so called “white color lamps”) would provide sufficiently accurate color rendering. “Colored lamps”, by contrast, are not intended to provide accurate color rendering. By design they are intended to provide a biased or saturated color for a special purpose or to accentuate a color. It is technically possible to measure CRI or CCT for a colored lamp but that data has little practical meaning since such lamps are not used to light spaces for general purpose illumination, nor are they marketed for such use.

**Item 5- Sample Size Requirements**

NEMA initially objects to the sample size testing modifications proposed by DOE.

Rationale:

Without a basis for DOE's proposed increase in CFL sample sizes, NEMA's initial reaction is that the proposals are overly burdensome and therefore not acceptable. (Example- requirement to add 5 base down units for all photometric testing out to 40% of life. What is achieved by this additional cost/burden?) NEMA desires to understand DOE's reasons for increasing sample sizes so that it may better evaluate the implications of the proposed changes or assist DOE in improving any deficiency related to sample sizes that it has identified. DOE's proposal to test 5 different lamps in two orientations for a total of ten lamps increases the testing burden without any obvious benefit.

In addition, it is not clear how DOE would plan to evaluate some of the data under the proposed new sampling. In other areas, such as destructive transient testing, one would anticipate no significant difference in the outcome with respect to orientation.

NEMA is open to the possibility that some changes in sample sizes may be appropriate but only if a compelling rationale can be made on a case by case (test by test) basis as to a justification for a change.

**Item 6- Base up/Base down Testing**

Significant discussion needs to occur on this topic. Note 1 at the bottom of page 5 of the draft requires minimum efficacy to be evaluated as the average of the lesser of the lumens per watt measured in the base up and base down positions. NEMA does not agree with this as it is contrary to the method specified in LM-66. In addition, there has been a significant shift to newer physical lamp configurations such as spiral shaped designs that may need further photometric evaluation if such requirements are to be set for both orientations.

Lumens, CRI, CCT, and lumen maintenance should be specified under VBU orientation unless the product is position restricted.

Rationale:

Rated lumens are measured in the base up position unless the lamp is rated specifically for base down operation. This is because some lamp configurations have insufficient photometric stability in the base down position. The reason to initially consider the base down case was to allow a determination/calculation of whether the difference in lumens between base up and base down exceeded the FTC "5%" requirement. If this is DOE's intent, perhaps this calculation should be explicitly required in a revision of the specification.

**Item 7- Allowable Tolerances for Reported Data**

The subject of tolerances for each specification needs detailed technical discussion. Tolerances should be established to avoid issues related to practical measurement uncertainty while still providing for suitable enforcement where customer satisfaction/deception would otherwise occur. Several examples follow.

*Photometric Measurement Tolerances*

A single sided tolerance of -3% (not +/-) is still appropriate for efficacy and lumen output as indicated in Note 1. Perhaps such tolerances should be established for all photometric requirements rather than simply increasing the number of significant decimal places for the current numerical specifications.

Rationale:

Some specification requirements are more important than others. Those that are less critical or discernable should have correspondingly relaxed tolerances. For example, a practical CCT tolerance (already accepted by the Energy Star Residential Fixture Program) would be a double sided tolerance of +/- 200K. CRI is calculated from spectral power distributions that have additional uncertainty. A determination of CRI to the nearest 0.1, per EPACT, is reasonable, with perhaps an overall negative tolerance of -3 CRI applied.

*Power Factor Measurement Tolerance*

NEMA's experience is that both the current and proposed specifications (0.50) are needlessly restrictive. A negative tolerance of 0.05, based upon the practical tolerances of electrolytic capacitors, should be applied to allow for typical variation since this requirement was originally intended to function as a nominal specification.

Rationale:

There are two fundamental classes of power factor for low cost electronic ballasts: normal (nominal 0.5) and high PF (greater than 0.9). The original intent of setting a "0.5" nominal, minimum for power factor was to allow a so-called normal PF ballast circuit to be utilized and to prevent extremely low values (significantly less than "0.5"). It is neither desirable nor necessary to evaluate this

requirement to two significant decimal places from a manufacturing or utility perspective.

In addition, it is not beneficial to establish this requirement for both a base up and base down condition. One orientation (same base up industry standard as used for photometry) is sufficient. Any change in PF that occurs from orientation is not significant for either the end user or utility and should not add an unwarranted conformance complexity and testing burden.

### **Item 8- Electrical Performance**

Transient Testing should be allowed in either the base up or base down position and should not be required in both positions. The sample size should be returned the previous 5 units.

#### Rationale:

There is no significant difference in product transient withstand as a function of orientation. Unless DOE can provide justification for a doubling of the sample size for this destructive test, 5 units is still sufficient for such a type-test.

Laboratory data requirements for Power Factor, Run-up Time, and Starting Time should be expanded to allow manufacturer data if the manufacturer has been approved in a third party client test data program for CFL safety with a NRTL (Nationally Recognized Testing Laboratory) such as UL, CSA, or ETL. Such testing programs have a good track record and should be expressly allowed for basic electrical measurements.

### **Item 9- Packaging and Labeling**

NEMA does not agree with the proposed changes in packaging/labeling, particularly by the proposed April 1st date.

#### Rationale:

Packaging and labeling changes are time consuming, disruptive, and expensive.

The production of new packaging involves graphic design, artwork, and negotiations with suppliers. These resources are expensive, limited, and subject to considerable lead times. Packaging cannot be changed at short notice without costly consequences. April 1 is already an unrealistic date for products that are either in production or planned for launch in 2003. In addition, no compelling reason has been advanced by DOE that would justify destruction of existing packaging that is compliant with the current requirement and that is already in the supply chain pipeline.

NEMA is open to a discussion with DOE regarding the reasons for these proposed packaging changes on a case by case basis. If consensus is reached on any of the proposals, then NEMA would be willing to work with DOE to develop a more practical time line that would allow for a cost effective rolling change with a realistic end date for any agreed change.

NEMA's position is that any eventual new labeling requirements should conform to the same implementation timing as the new Energy Star logo, so that all package changes can be managed with a minimization of cost and disruption.

#### *Size and location of Energy Star Logo*

A minimum length of 0.5 inch is reasonable, but DOE should restrict its stipulation that the logo must be on the front of the package to the most common consumer packages- blister or clam shell types. DOE should permit the location of the logo to be on the front, sides, or back of box-type package more likely to be used in commercial applications.

#### Rationale:

Blister and clam shell packages are consumer oriented. It is more burdensome to restrict packaging flexibility for packaging that is potentially used in multiple sales channels (including C&I).

#### **Item 10- Data Reporting**

NEMA does not agree with the proposed increased frequency of reporting model and shipment data to DOE.

#### Rationale:

While NEMA understands the need for the basic reporting requirements that currently exist, DOE has not made a compelling case that would justify adding to the burden presented by such reporting. NEMA is willing to consider a compromise to its initial position if DOE can provide a rationale that would justify this additional effort in terms of value added to the program and its stakeholders.

#### **Item 11- Warranty**

NEMA does not agree with the proposed changes in warranty requirements.

#### Rationale:

NEMA believes that a more complete discussion of the entire warranty subject is required, focusing on at least three important (and potentially related) areas: 1 year vs. 2 years, limited warranty vs. guarantee, and a common definition for what is intended by terms such as "1 year or 2 years". (For example, consistent use of the same assumed "hours per day" usage so actual test life is consistent with claimed "elapsed time" or "calendar" life.)

NEMA prefers to preserve the ability to use the term "guarantee" and to simultaneously describe a manufacturer's "limited warranty" on the same package.

Rationale: Some companies currently use both terms for CFLs and similar product lines. DOE has not presented any persuasive case to prohibit the

appropriate use of both terms. The word “guarantee” should be acceptable if backed by a stipulated limited warranty.

### **Item 12- Lamp Life and Durability (Rapid Cycle) Testing**

NEMA strongly objects to the elimination of the Weibull testing option.

#### Rationale:

Weibull testing is a statistically valid approach for minimizing the resources associated with lifetime testing. As currently specified, application of the Weibull option is very protective of the consumer (conservative) yet beneficial in minimizing testing costs.

NEMA strongly objects to the elimination of the rapid cycle test.

#### Rationale:

NEMA believes the rapid cycle test has proven effective in ensuring that only suitably robust designs are approved for Energy Star. The rapid cycle test ensures that a minimum number of starts must be attained (related to the claimed life time) and provides a reasonable stress test for a consumer product.

### **Item 13- Unqualification Process**

NEMA fully supports DOE’s desire to protect the reputation of the Energy Star mark and to ensure that products that are unqualified do not continue to be promoted or sold as qualified. However, there are complexities that arise in trying to stipulate exactly how this should work. NEMA believes that stakeholders should discuss this in concert with DOE.

For example, it is not clear whether DOE’s “60 day grace period” applies generally or only to special utility/REPS programs. Any response to a final notice of “unqualification” takes a finite time to accomplish. This minimum reaction time should be generally applicable to all cases. In addition, it should be noted that manufacturers or private labelers do not typically legally own the products on store shelves. Thus, these partners cannot force the retailers to take any specific action regarding products that potentially become unqualified.

Rationale: Cross stakeholder discussion is needed on this subject.

When a manufacturer discontinues a model, the current practice is to show it as “delisted” on the Energy Star web site. NEMA recommends such a model be identified as “discontinued” to differentiate it from a conformance “delisting” or “unqualification”. Discontinued models are no longer offered for sale by the manufacturer but may still remain in the retail segment. Discontinued models could be periodically purged after a reasonable set period of time. Thus, there would be three categories of listing: qualified, discontinued, unqualified.

#### Rationale:

Eliminate confusion regarding various reasons for “delistment”. The



“discontinued” listing is currently used for other types of Energy Star consumer programs, i.e., refrigerators.

The current specification levies a penalty for forced unqualification. That penalty has been eliminated in the proposed revision. The current penalty (6 months denial of program access for new models) should be maintained for cases where DOE finds evidence of deception. DOE should have discretion in applying this provision, but the provision should be available.

Rationale:

Some consequences provision should be maintained.

**Item- 14 Referenced Standards**

ANSI C78.901-2001 (American National Standard for Electric Lamps- Single Base Fluorescent Lamps- Dimensional and Electrical Characteristics) is a consolidation and revision of ANSI C78.1-1991, ANSI C78.2-1991, ANSI C78.3-1991, and ANSI C78.4-1995. It should be listed under Section 3, Reference Standards, and identified as replacing C78.1 and C78.4 in the current specification. It should also be noted that C78.901 only applies for lamps used with adapters under Energy Star scope. In addition, the following standards references need to be updated:

LM9-1999

LM40-2001

LM65-2001

LM66-2000 in title...single ended compact...

Rationale:

ANSI C78.901 supercedes these standards and their supplements.

**Conclusion**

NEMA believes that once these and other comments are received and posted, DOE should subsequently convene a workshop within two months to enable the Department and its administrative contractor to share its own experiences and perspective regarding the current specification, facilitate cross-stakeholder discussion on the various issues raised by the proposed changes and comments received (including input from stakeholders on possible scope changes), and to cooperatively develop a more realistic time frame for a revised specification.

End NEMA Final Comments—January 24, 2003