Appliance Standards Awareness Project
Northwest Energy Efficiency Alliance
American Council for an Energy-Efficient Economy
Consumers Union
Natural Resources Defense Council
Northeast Energy Efficiency Partnerships
Northwest Power and Conservation Council

June 30, 2014

Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
Mailstop EE-2J
1000 Independence Avenue SW
Washington, DC 20585-0121

RE: Docket Number EERE-2011-BT-STD-0006 (RIN # 1904-AC43): Notice of Proposed Rulemaking for General Service Fluorescent Lamps and Incandescent Reflector Lamps

Dear Ms. Edwards:

This letter constitutes the joint comments of the Appliance Standards Awareness Project (ASAP),Northwest Energy Efficiency Alliance (NEEA), American Council for an Energy-Efficient Economy (ACEEE), Consumers Union, Northeast Energy Efficiency Partnerships (NEEP), Northwest Power and Conservation Council, and the Natural Resources Defense Council (NRDC) in response to the release of the Notice of Proposed Rulemaking (NOPR) for general service fluorescent lamps (GSFLs) and incandescent reflector lamps (IRLs). The Collaborative Labeling and Appliance Standards Program (CLASP) also contributed to the development of these comments. We appreciate the opportunity to provide input to the Department of Energy ("DOE" or "the Department") on this matter.

BACKGROUND AND SUMMARY

The Energy Policy Act of 1992 required the Department to initiate two rounds of rulemaking for GSFLs and IRLs. Initiation of the first round of rulemaking was required by October 24, 1995, and any necessary amendments were to be implemented as early as April 24, 2000.[1] The Department was then to initiate a second round of rulemaking no later than October 24, 2000, with any amendments to go into effect as early as April 24, 2005.[2] However, the Department did not issue the final rule for the first round of rulemaking until July 14, 2009,[3] which went into effect July 14, 2012. Despite these delays, Congress' intent was for the first rulemaking to be closely followed by the initiation of the second— the dates set by Congress requiring the Department to initiate the second rulemaking *no later* than 6 months after the effective date of the first rulemaking, with a five year lag between effective dates.[4]

[1] 42 U.S.C. 6295(i)(3).
[2] 42 U.S.C. 6295(i)(4).
[3] 74 FR 34080
[4] 42 U.S.C. 6295(i)(3)-(4).

Therefore, we continue to support the Department's current schedule of issuing its final rule in November 2014 for an effective date of November 2017.

Overall, we strongly support the proposed standards for GSFLs and IRLs. The proposal builds on the achievements of the 2009 standard—which increased minimum efficiency by 19% for GSFLs and 62% for IRLs—by increasing minimum efficiency by an additional 4% and 8% respectively. In the proposal, DOE estimates that over 30-years of product sales, this proposed increase would save consumers and businesses a combined 353 billion kWh, $3-$8 billion dollars (depending on discount rate), and cut CO2 emissions by 170 million metric tons. While the vast majority of DOE's projected savings from this rulemaking come from the proposed standards for GFSLs (3.5 quads), the savings from the proposed IRL standards are still significant (0.013 quads) and, based on DOE's analysis, the proposed standards are cost-effective for both residential and commercial consumers.

The proposed levels and associated savings represent the achievements of over two decades of work by manufacturers, utilities, efficiency advocates and the Department to drive efficiency and innovation. Our comments focus on ways in which DOE can better secure the projected savings for this rulemaking and ways in which even greater savings could be achieved.

KEY ISSUES

A. DOE should prevent the high CRI exemption for GSFLs from being further exploited as a loophole

We are deeply concerned that the manufacturers' improper exploitation of the exemption for GSFLs with a high color rendering index (CRI) is undercutting the current federal standards and, if not addressed, will undercut the proposed standards also. Section 321(30)(B) of the Energy Policy and Conservation Act (EPCA) defines a GSFL as ". . . any fluorescent lamp which can be used to satisfy a majority of fluorescent lighting applications, but does not include any lamp designed and marketed for the following nongeneral applications: . . . (8) Lamps with a Color Rendering Index of 87 or greater."[5] Therefore, for the exemption to apply to a high CRI lamp, it must be designed and marketed for its nongeneral application (i.e. high CRI) and not for general replacement purposes.

We have found numerous examples of high CRI lamps that do not meet current federal standards that are being marketed as suitable general replacement lamps. From a simple review of big box retailer and manufacturer websites we found high CRI offerings from several manufacturers, including each of the major manufacturers.[6] [7] [8] Furthermore, based on informal visits to big box retailers, a very large percentage (possibly up to 50%) of available products in the 4ft category were high CRI lamps, with no obvious distinction provided by the packaging.

Almost all of the lamps we found online were T12 4ft BiPin, sold in multi-packs, costing as little as $1.50 per lamp,[9] with efficacy ratings as low as 54 lpw.[10] This is compared to efficacy ratings of 89 lpw required

[5] 42 U.S.C. § 6291(30)(B) (emphasis added)
[6] GE example: http://genet.gelighting.com/LightProducts
[7] Osram example: http://www.lowes.com/pd_255319-3-24348_4294698950
[8] Philips example: http://www.homedepot.com/p/Philips-4-ft-T12-40-Watt-Soft-White-Deluxe-3000K
[9] http://www.lowes.com/pd_402208-3 22459_4294698950
[10] http://www.lowes.com/ProductDisplay?partNumber=402210-3-22479

by current standards and 92.4 lpw required by proposed levels for lamps at or below a CCT of 4,500 K. Therefore, a single high CRI 2,600 lumen lamp, with an average rated life of 36,000 hours, could use 720 kWh more than a regulated lamp over the course of its life.

In some cases, the lamp's high CRI rating is mentioned in a line in the product description, but in most cases the CRI is simply included as part of the lamp's overall specification details. Many examples that we found were explicitly marketed for general lighting purposes. Figure 1, taken from the Home Depot website,[11] is an example:

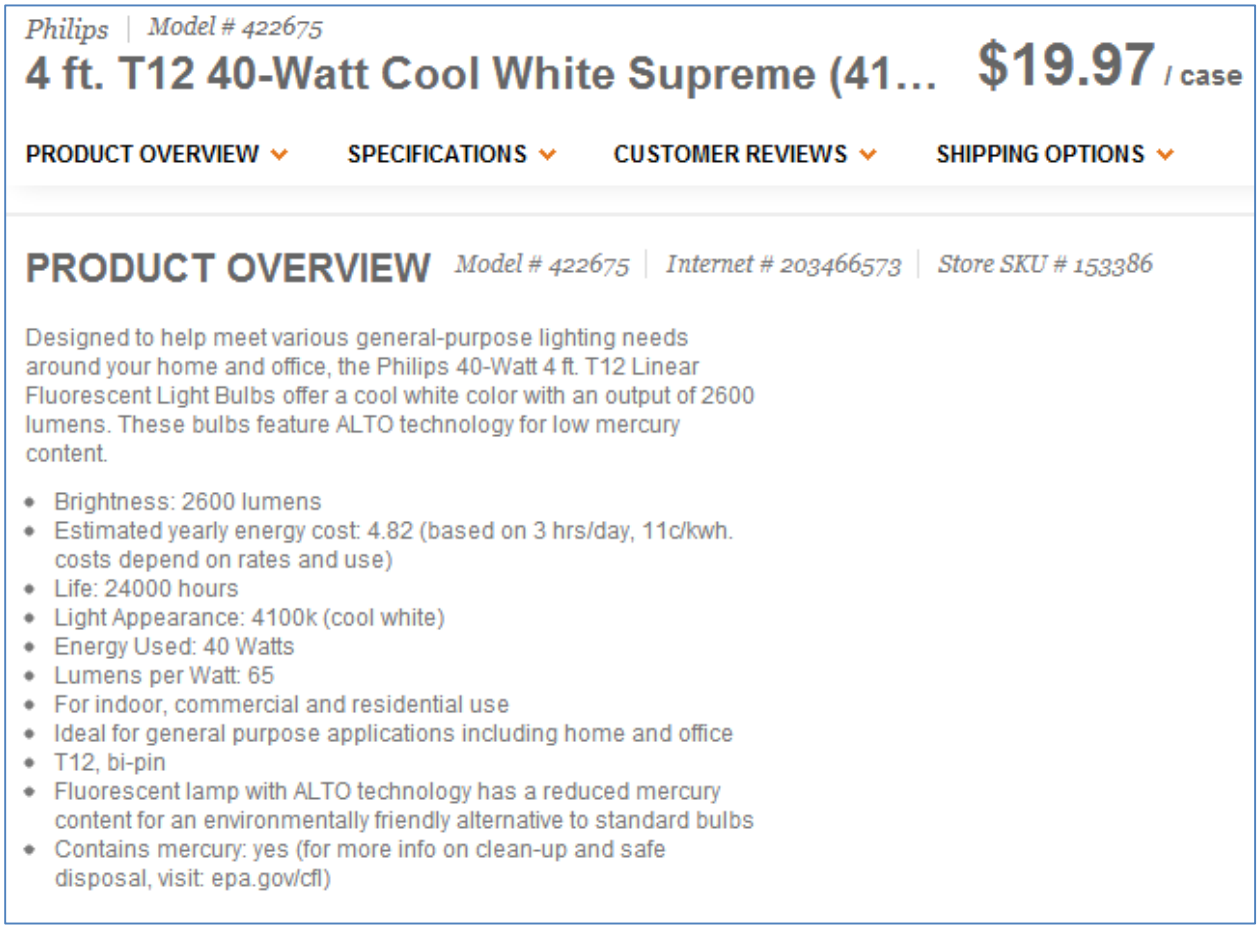


Figure 1 – Home Depot Product Overview of High CRI Lamp

The Department has attempted to address or add clarity to this issue by proposing a definition for the term "designed and marketed."[12] The proposal defines designed and marketed to mean ". . . that the intended application of the lamp is stated in a publically available document (e.g. product literature, catalogs, packaging labels, and labels on the product itself)." At the DOE public meeting on May 5, 2014, Earthjustice commented that the proposed definition would allow manufacturers to simply state the lamps high CRI somewhere in a single document that is publically available in order to satisfy this

[11] http://www.homedepot.com/p/Philips-4-ft-T12-40-Watt-Cool-White-Supreme-4100K
[12] 79 FR 24067 at 24188

requirement.[13] We agree with Earthjustice and believe that the proposed definition would do nothing to prevent or dissuade manufacturers from continuing to sell high CRI lamps as cheap, extremely inefficient alternatives to general service fluorescent lamps subject to federal standards.

To help ensure that high CRI lamps are actually designed and marketed as lamps having a nongeneral application and to help close this loophole, we support the proposal of Earthjustice to modify the proposed definition to say that ". . . the intended application of the lamp is clearly and conspicuously stated in all publicly available documents (e.g., product literature, catalogs, packaging labels, and labels on the product itself)."

B. To the extent that DOE's current sampling procedures for enforcement testing may be more demanding than are required for lamp certification, we urge DOE to consider this issue as part of a review of the sampling procedures for lamps, rather than by weakening the proposed standards to accommodate any misalignment with enforcement requirements.

At the DOE public meeting, industry representatives expressed concern that DOE's proposed standard levels for GSFLs could not be reliably achieved. This concern seems to derive from two separate issues:

1) DOE's proposed GSFL standards were derived from an analysis that used a combination of catalog initial lumen output and ANSI rated wattage for the various lamps analyzed. DOE then compared these efficacy results with certified values for lamps where these values were available, and "then used available certification data to adjust the initial efficacy levels, if necessary, thereby ensuring that the proposed levels can be met based on the certification values submitted by manufacturers to demonstrate compliance with standards."[14] The Department does not say how much or in what direction its adjustments changed the proposed efficacy levels. There was concern expressed by many stakeholders about the use of catalog values that might lead to proposed standard levels that are unrealistic given the certification requirements and the values reported by manufacturers.

2) The certification testing requirements, especially with regard to test samples, are different from the enforcement testing requirements. Whereas manufacturers are required to test 21 lamps from multiple production lots from a period of months for certification testing, enforcement testing can reach a finding of non-compliance on the basis of testing as few as 4 lamps, ostensibly from a single manufacturing cohort. Manufacturers are concerned that a lamp that they are comfortable with certifying as compliant with the proposed standards might be found to be non-compliant in the enforcement testing regime, asserting that the proposed efficiency levels are so high as to leave no room for compliance margin.

We are satisfied that DOE has substantially resolved the first issue by using catalog lumen and ANSI rated wattages for identifying baseline products and establishing initial efficiency levels, and then using certified values to adjust those levels to ensure that a sufficient number of certified lamp models can meet proposed standard levels. Our observations of the certified efficacy levels for a significant number of lamps, from several manufacturers, suggest that the proposed standard levels for the 4-foot and 8-ft T8/T12 products are reasonable.

[13] Earthjustice, NOPR Public Meeting Transcript, at pp 27
[14] 79 FR No.82, p.24095(1)

However, at the DOE public meeting, some manufacturers stated that DOE's sampling procedures for enforcement testing may impose much narrower compliance margins for performance variations across lamp production runs than the Department's certification testing requirements. Lamp production and testing may be unique enough to merit a sampling methodology for enforcement testing that is specific to these products. DOE should consider this issue as part of a review of the sampling procedures for lamps, rather than by weakening the proposed standards to accommodate any misalignment with enforcement requirements.

C. DOE should include and set efficiency standards for 2-foot linear lamps as part of this rulemaking

Throughout this rulemaking process the Department has declined to include additional lamp types in its scope of coverage. Specifically, DOE has asserted that linear fluorescent lamps shorter than 4 feet do not comprise a sufficiently large share of annual lamp sales and energy savings to warrant coverage. We find the Department's arguments in this regard less than convincing.

First, DOE states that it did not receive specific shipments data on 2-ft linear lamps and instead relied on the *2010 U.S. Lighting Market Characterization* (LMC) report in order to estimate sales and energy savings potential. That study did not have specific data on 2-ft linear lamps, and may or may not have used protocols that would identify such lamps. In addition, the LMC study data is now outdated, primarily because it was gathered prior to the effective date of the last round of GSFL standards, and so includes no market impacts of the standards. While we recognize that the specific data provided to DOE from Vermont and California at the PTSD stage of this rulemaking may represent only 13 to 14% of the market, we are troubled by DOE rejection of more recent lamp-specific data in favor of older non-lamp-specific data. DOE improperly rejected field survey data from Vermont as "anecdotal," instead relying on unreliable and outdated information.

The Department says that, "GE advised that 2-foot linear lamps should not be included in the scope of this rulemaking. While installing these lamps may be customary in California, GE stated that they are not very common across the nation. Further, GE commented that DOE had received shipment data in preliminary manufacturer interviews that showed the sales of 2-foot straight lamps to be significantly less than the sales of 4-foot lamps."[15] The term "not very common" and the assertion that "the sales of 2-foot straight lamps to be significantly less than the sales of 4-foot lamps" are hardly a sound basis for assessing the energy savings potential of standards for these products. While it is undoubtedly true that 2 foot lamps sell in much smaller volumes than 4 foot lamps, what matters is their absolute sales volume and relative inefficiency. Sales that are even a small fraction of the volume of the 4 foot lamps would still yield significant savings, especially since the baseline 2 foot lamps are extremely inefficient.

Furthermore, in researching the efficacy of typical 2-ft linear lamps, we find efficacies of 58 lpw for T12 lamps, 77 lpw for standard T8 lamps, and 88 lpw for more efficient T8 lamps. By comparison, 2-ft U-shaped lamp efficacies range from 85 to 94 lpw (DOE certified values).

In interviews, manufacturers told DOE that 2-ft linear lamps are used in "kitchens, bathrooms, vanity lighting, hospitality applications, cabinets, and to round out edges of ceilings in commercial spaces."[16]

[15] FR 79, No.82, p.24085(2)
[16] FR 79, No.82, p.24085(3)

The Edison Electric Institute noted that these lamps are used in task lighting, as well.[17] Given the breadth of applications, as well as the applicability in 2x2 ceiling lighting fixtures in commercial buildings, there is reason to believe that there will be a significant market for these lamps for some time to come. And, because the baseline efficacy of these lamps is so low compared to other lamp classes that directly compete with 2 foot lamps that are subject to existing standards, the efficacy improvement (and savings potential) per lamp is substantially higher than for other lamp types.

The original Congressional standards for IRLs exempted BR and ER lamp types. Following their exemption from standards, sales of these products skyrocketed. We suggest that the Department may well be making the same unfortunate mistake in the case of fluorescent lamps shorter than four feet. Therefore, we again urge DOE to set standards for 2-ft linear fluorescent lamps.

D. DOE should only create separate product classes for 6 inch wide and 1 5/8 inch wide 2 foot U-shaped GSFLs and extra-long life GSFLs if a technical barrier impacting efficacy potential is identified

1. 2 foot U-shaped GSFLs

At the DOE public meeting, industry stakeholders proposed dividing the 2ft U-shaped GSFL product class into two separate categories—lamps with a 1 5/8in spacing and those with 6in spacing.[18] Industry's reason for this proposal is that under the proposed levels only full wattage 1 5/8in lamps and only reduced wattage 6in lamps would qualify.[19] Industry representatives acknowledged that this was simply an observation and that a technical explanation (if any) for this difference had currently not been identified.[20]

As mentioned in the comments submitted by the CA IOUs, Osram Sylvania has several reduced wattage and full wattage lamps with 6in spacing that meet the proposed standards. In our own review of GE and Philips product offerings, there was little difference in efficacy between full and reduced wattage 1 5/8in lamps with low CCT.[21] [22] The wattage of these lamps ranged from 26W-31W and all had an efficacy between 85-86 lpw. Unless DOE can demonstrate the existence of a technical barrier restricting efficacy based on the width of these lamps, separate product classes are neither required nor justified.

2. Extra-long life GSFLs

At the DOE public meeting, industry members also proposed a separate product class for extra-long life GSFLs, lamps with a rated lifetime of around 80,000 hours.[23] Similar to incandescent technology, industry members cited a trade-off between efficacy and lifetime, and that as efficacy requirements increase, manufacturers will focus on shorter lifetimes to help meet these requirements. Although we agree that extra-long life lamps may be cost-effective for consumers where lamp replacement costs and

[17] FR 79, No.82, p.24085(2)
[18] Osram, NOPR Public Meeting Transcript, at pp 34
[19] Osram, NOPR Public Meeting Transcript, at pp 59-60
[20] Osram, NOPR Public Meeting Transcript, at pp 62; NEMA, NOPR Public Meeting Transcript, at pp 62
[21] GE information: http://www.gelighting.com/LightingWeb/na/images/64406_29W_26W_Ecolux_T8_Mod-U-Line_SellSheet_tcm201-21064.pdf
[22] Philips information: http://www.usa.lighting.philips.com/pwc_li/us_en/connect/tools_literature/downloads/sg100-2013.pdf
[23] NOPR Public Meeting Transcript, at pp 68-79

logistics are particularly challenging, we note that DOE's economic analysis of standard levels could be used to capture the monetary impact of any adverse effect a TSL may have on lamp life. Moreover, as industry acknowledges, the market for these lamps is relatively new and whether a technical barrier exists preventing them from meeting the proposed standards while retaining longer lifetimes is unclear. Interestingly, the CA IOU comments include a number of examples of reduced wattage extra-long life 4ft medium BiPin lamps that would meet the proposed levels.

E. DOE should reconsider its interpretation of the Congressional budget rider and continue its rulemaking for previously exempt IRLs

We join Earthjustice in urging DOE to reconsider its interpretation of the Congressional budget rider as preventing its continuation of the rulemaking for previously exempt IRLs.[24] In the proposed rule, DOE misquotes the language contained in the budget rider, saying that ". . . section 322 states that none of the funds made available by the Act may be used to implement or enforce standards for BPAR incandescent reflector lamps, BR incandescent reflector lamps, and ER incandescent reflector lamps."[25] Section 322 does not state that. Rather, it states that no funds may be used ". . . to implement or enforce the standards established by the tables contained in section 325(i)(1)(B) of the Energy Policy and Conservation Act (42 U.S.C. 6295(i)(1)(B)) with respect to BPAR incandescent reflector lamps, BR incandescent reflector lamps, and ER incandescent reflector lamps."[26] From a plain reading of this text, DOE is only prevented from implementing or enforcing standards contained in the tables in section 325(i)(1)(B). Nothing prevents DOE from implementing or enforcing standards developed in response to a separate Congressionally-required rulemaking. Therefore, we urge DOE to discontinue its suspension of the rulemaking for previously exempt IRLs and proceed based on the actual parameters laid out in the budget rider.

F. DOE should reduce or eliminate the modified spectrum allowance

In response to the Department's framework document and PTSD, we highlighted concerns regarding the 15% allowance afforded to IRLs with modified spectrum lenses. The comments made reference to a study conducted by Ecos Consulting in 2009[27] which found an average light loss of 9-11% associated with IRL modified spectrum lenses. The study also highlighted the feasibility of modified spectrum IRLs exceeding TSL5 efficacy levels in the 2009 IRL lamp rule. We continue to urge the Department to consider eliminating the 15% allowance as technology does exist to achieve high efficiency levels without the need for such an allowance. Should the Department determine the continued need for an allowance, however, we request that the allowance be reduced to 10%, reflecting the findings of the Ecos study.

We also question the need for a separate product class at all. With more efficient technologies such as CFLs and LEDs, manufacturers are able to achieve various light output characteristics such as those marketed as daylight and natural light and including those which meet the definition of modified

[24] (1) lamps rated 50 W or less that are ER30, BR30, BR40, or ER40; (2) lamps rated 65 W that are BR30, BR40, or ER40; and (3) R20 IRLs rated 45 W or less.

[25] 79 FR 24067 at 24070

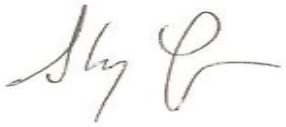
[26] The Consolidated Appropriations Act, 2014 (Public Law 113–76, Jan. 17, 2014) (emphasis added)

[27] Ecos Consulting (prepared for Pacific Gas & Electric, Natural Resources Defense Council, and the Appliance Standards Awareness Project), 2009. *Optical Losses of Modified Spectrum Lenses on Incandescent Reflector Lamps*.

spectrum.[28] [29] CFLs and LEDs achieve these effects by modifying their mix of phosphors in order to absorb portions of the yellow, green and red wavelengths in the visible spectrum. The desired light characteristics are achieved without paying the efficiency penalty associated with adjusted spectrums in incandescent technologies. Furthermore, there appears to be very few, if any, modified spectrum lamps available that are covered by this rulemaking, negating the need for any class distinction at all.

As always, we appreciate the opportunity to comment on these matters.

Sincerely



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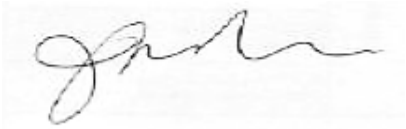

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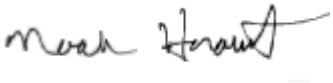

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[28] GE Reveal LED:
http://genet.gelighting.com/LightProducts/Dispatcher?REQUEST=CONSUMERSPECPAGE&PRODUCTCODE=69193
[29] GE Reveal CFL:
http://genet.gelighting.com/LightProducts/Dispatcher?REQUEST=CONSUMERSPECPAGE&PRODUCTCODE=61164

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