

June 11, 2009

Honorable Steven Chu
Secretary
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

RE: Re: Fluorescent Tube and Incandescent Reflector Lamps Rulemaking
Docket #: EE-2006-STD-0131

Dear Secretary Chu,

We are writing to express our concern about the US Department of Energy (DOE) proposed rule establishing energy-efficiency standards for General Service Fluorescent Lamps (GSFLs). The proposal is so weak it should be rewritten. Our concern relates to the significant amount of outdated lighting equipment the proposal will allow to continue to be sold in the US marketplace even though more energy-efficient, cost-effective replacements are readily available. Consequently, it will cost consumers a substantial amount of money (by allowing lighting products to be sold to them that unnecessarily increase their electricity bills) and result in additional emissions of greenhouse gases, mercury and other toxic pollutants from coal-fired power plants.

We feel there is no sound technical or economic justification for this rule to be so weak and limited in its scope. As written, it will perpetuate the manufacturing and sales of unsustainable fluorescent lamps, which not only are inefficient in their energy use but also often have a relatively short rated life, high mercury content, and poor light quality compared to the modern high-performance fluorescent lamps currently offered on the market. In addition, we feel DOE is also missing the opportunity to improve its weak fluorescent lamp ballast standards, which were adopted nearly a decade ago and lock consumers and businesses into using inefficient lighting systems for several more decades.

At a minimum, the DOE should adopt lighting-efficiency standards at least as stringent as those adopted under the European Union's *Eco-Design Standards for Energy Using Products (EuP) Directive*. These recently agreed to EU standards, include the phase-out of nearly all T12s and other halophosphate fluorescent lamps as well as "first generation" T8s; they also address a wider variety of lighting equipment than the DOE's proposed rule, including two-pin compact fluorescent lamps, high-intensity discharge (HID) lamps (which are typically used in street lights and other outdoor applications), ballasts and luminaires (which combine fixtures, lamps and ballasts).¹

The European Lamp Manufacturers have publicly acknowledged the importance of their role in "delivering rapid and cost-effective CO2 emissions reductions" that will assist in meeting an EU-wide "goal of a 20% increase in energy-efficiency by 2020."² The DOE's proposed rule pales in comparison

¹ Commission of the European Communities, *Draft Commission Regulation of implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council*; http://ec.europa.eu/energy/efficiency/ecodesign/doc/committee/2008_09_26_tertiary_sector_lighting_products_regulation_proposal_vote.pdf.

² European Lamp Companies Federation, "EU Member States Experts Vote on EuP Implementing Measure on Tertiary Sector Lighting," *The ELC Quarterly Newsletter*, October 2008; <http://www.elcfed.org/documents/05ELC%20Quarterly%203.pdf>

to this since the agency projects that most of the lighting-efficiency improvements will result in less than a 20% increase in energy efficiency (and as noted below, many lamp categories are excluded from the rule altogether).

There is no reason for the US to adopt lighting-efficiency standards that are weaker than those currently being implemented in Europe. Doing so places the US further behind on demonstrated leadership regarding climate change and other related environmental policy issues. Moreover, adoption of the current proposal will run the risk of turning the US into a dumping ground for inferior lighting products that do not meet the EU's stronger energy-efficiency requirements.

DOE's Proposed Standards are Narrower in Scope than those Agreed to in Europe

The DOE's proposed energy-efficiency standards for GSFLs apply to far fewer types of lighting products than those that have been agreed to by the European Union. While new European energy-efficiency standards cover nearly all types of GSFLs (irrespective of their size or shape), the DOE has chosen, instead, to apply its rule to only a few high-volume fluorescent lamp categories, giving other types of inefficient fluorescent lamps an exemption from consideration.

The rule covers six categories of general service fluorescent lamps:

- 4-foot Medium Bipin Fluorescent Lamps (T12s and T8s)
- 2-foot U-Shaped Fluorescent Lamps (T12s and T8s)
- 8-foot Slimline (T12s and T8s)
- 8-foot High Output Fluorescent Lamps (T12s and T8s)
- 4-foot T5 Fluorescent Lamps, Standard Output
- 4-foot T5 High Output (T5HO) Fluorescent Lamps

Among the types of fluorescent lamps that are excluded from the rule are T8s and T12s with other shapes and sizes such as 2-, 3-, 5-, 6-, and 7-foot linear fluorescent lamps, circular fluorescent lamps (e.g., T9s and T5s), and pin-based compact fluorescent lamps. Within many of the exempted lamp categories, there are substantial opportunities for energy-efficiency improvements that are not being captured by the rule. For example, there are high-efficiency 2- and 3-foot T8s that could easily replace 2-foot and 3-foot T12s and low-efficiency T8s (although some upgrades would require ballast and fixture replacements). It is important to note that the energy-efficiency of many linear T12 fluorescent lamp categories not covered by the proposed rule is lower than the lamp categories that are included. For example, while a typical 4-foot T12 has a nominal initial efficiency of approximately 80 lumens/watt, a typical 3-foot T12 has a nominal initial efficiency of less than 75 lumens/watt. Most of the fluorescent lamps that are exempted under the proposed rule are included in the EU's new lighting efficiency standards.³

Many of the rule's exclusions based on wattage that exist within each of these categories seem arbitrary and unjustified. For example, while T5 fluorescents ≥ 26 watts are covered, similar models under this threshold are left out. Similarly, high-output T5s are covered only when they use 51 watts or more, leaving out 24- and 39-watt models. In contrast, the EU's lighting-efficiency standards apply to a wider range of T5 fluorescent lamps, exempting only those that are ≤ 13 watts or > 80 watts.⁴

High-output fluorescent T8s and T12s are covered by the rule only when they are 8-foot in length. The proposed rule excludes all high-output T8s and T12s of other lengths, including 2-, 3-, 4-, 6- and 7-foot models. The rule also excludes very-high-output fluorescent lamps of all sizes. In contrast, the EU is

³ Commission of the European Communities, *op. cit.*

⁴ Commission of the European Communities, *op. cit.*

establishing energy-efficiency standards for T8s of all lengths and wattages and is phasing out T12s altogether.

In addition, although the EU includes circular fluorescent lamps (T9s and T5s) in its lighting-efficiency regulation, DOE has chosen not to address them under its proposed rule. Consequently, these products will continue to be sold in hardware stores and other outlets throughout the US without any standards. Circular T9s, which, like most T12s, are older, halophosphate lamps that typically run on less-efficient magnetic ballasts, can be replaced with circular T5s, which, like most T8s, are modern, triphosphate lamps that run on more-efficient electronic ballasts.

The proposed rule also fails to address “preheat” fluorescent lamps, which are the least efficient fluorescent lamps available on the US market. For example, while a typical 2-foot preheat T8 fluorescent lamp (F15T8/CW, commonly used in shop lights) has a nominal efficiency rating of approximately 50-60 initial lumens/watt (850-870 lumens/15 watts), a modern 2-foot T8 fluorescent lamp is almost twice as efficient: about 80-90 initial lumens/watt (1350-1500 lumens/17 watts). Preheat fluorescent lamps also have other environmental and economic disadvantages because they have a relatively short lamp life (5000 to 9000 rated hours) compared to modern fluorescent lamps (15,000 to 40,000 hours) and a relatively high mercury content (up to about 20 mg/lamp) compared to 5 mg or less for most equivalent, modern linear fluorescent lamps. Europe is requiring the phase-out of preheat T5 and T8 fluorescent lamps by 2010.

The proposed rule relies on circular logic that does not make sense. For example, preheat lamps are excluded from the rule because they are deemed low-volume items. However, they are low-volume items because they are relatively inefficient. There is no justification for continuing to allow these products to be offered in the US marketplace simply because their volume is low. It would not cost US industry substantially to reformulate these products; instead manufacturers would most likely simply replace them with other, more efficient products in their offering.

Finally, the agency is failing to upgrade its weak 2000 ballast standards, which will allow many low-efficiency ballasts (that are designed to work with low-efficiency lamps) to be sold for several more decades. Sadly, these are many of the same products that utilities across the country are offering rebates and other incentives to replace with more energy-efficient technologies.

DOE’s Proposed Rule Sets Relatively Weak Efficiency Standards for the Types of Fluorescent Lamps it Does Cover

According to the European Lamp Companies Federation (ELCF), a trade association with similar membership to the US-based National Electrical Manufacturers Association (NEMA) (including GE Lighting, Philips Lighting, and Osram-Sylvania), “On 26 September [2008], the representatives of the EU Member States adopted a draft regulation for an implementing measure for tertiary sector lighting products at the EuP [Eco-Design Directive] regulatory committee meeting in Brussels. This regulation is one of the implementing measures of the EuP Directive that will lead to exclude from the market less energy efficient products.”⁵

This EU energy-efficiency regulation relating to fluorescent lamps will:

- Phase out T8 halophosphate fluorescent lamps (including preheat models) by 2010;
- Phase out fluorescent lamps (T8 and T5) with color rendering index (CRI) < 80 by 2010; and
- Phase out T10 and T12 halophosphate fluorescent lamps by 2012⁶.

⁵ European Lamp Companies Federation, *op. cit.*

In contrast, within the categories of fluorescent lamps that are covered under the DOE's proposed rule, many T12s and nearly all T8s make the grade. Unlike Europe, which is completely phasing out T12 (halophosphate) and first generation T8 fluorescent lamps (with a CRI <80), the proposed rule sets energy-efficiency standards by lamp size and shape that allow a substantial number of low-efficiency models in each category to continue to be sold far into the future. For example, the proposed energy-efficiency standard for 4-foot standard-output T8 fluorescent lamps is woefully low and will do little to move the US toward greater use of more energy-efficient, environmentally preferable T8 lamps. (See attached Appendix 1 below, which identifies several models in this category that could be technically and economically replaced.) The DOE projects only a 12% improvement as a result of its standard for this category, which includes the most popular types of linear fluorescent lamps sold in the US.

Note: The DOE's argument that it cannot restrict lamps with a low CRI – even though low-CRI lamps nearly always have a lower energy-efficiency rating – because CRI is not an energy-efficiency rating per se contradicts the agency's research which has determined that a high CRI rating contributes to a lamp's energy efficiency because it enhances visual acuity, which allows for a lower-wattage lamp to be used. At a minimum, the agency should take CRI into consideration and set minimum energy-efficiency levels that effectively screen out fluorescent lamps with a relatively low CRI (<80) as is being done in Europe.

Recommendations

The DOE should revise its proposed rule to harmonize with the EU's Eco-Design Directive lighting-efficiency regulation in order to facilitate implementation, communication and compliance/market surveillance related to this rule. Specifically, the rule should establish energy-efficiency standards for a broader range of lighting categories, including, but not limited to:

- Additional wattages, sizes and shapes of fluorescent lamps (such as circular and compact fluorescent lamps);
- High-intensity discharge (HID) lamps (such as high-pressure sodium (HPS) and metal halide lamps);
- Ballasts; and
- Luminaires.

By doing so, it would meet the goal of the Energy Policy and Conservation Act to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified, resulting in a significant conservation of energy – and take an international leadership position that will effectively address our pressing global energy and climate change issues.

Sincerely,

Alicia Culver, Green Purchasing Institute/Green Lighting Campaign; Berkeley, CA

Michael Bender, Mercury Policy Project/Green Lighting Campaign; Montpelier, VT

Scot Case, EcoLogo/TerraChoice; Philadelphia, PA

Linda Christopher, Grassroots Recycling Network; Cotati, CA

Tom Lent, Healthy Building Network; Berkeley, CA

Stan Walerczyk, Lighting Wizards; Walnut Creek, CA

Eric Uram, Mercury-free Wisconsin; Madison, WI

Matt Prindiville, Natural Resources Council of Maine; Augusta, ME

Bill Sheehan, Product Policy Institute; Athens, GA

Karl Bruskotter, City of Santa Monica Office of Sustainability and the Environment; Santa Monica, CA

Stacey Foreman, City of Portland Bureau of Purchases; Portland, OR

APPENDIX 1: Summary of Efficiency Ratings of Various 4-Foot T8 Medium Bi-Pin Lamps

Below is a table that summarizes the energy-efficiency ratings of various models of 4-foot T12 and T8 fluorescent lamps. Lamps that are shaded in dark gray would be eliminated by the DOE’s proposed rule, which sets a minimum energy-efficiency rating of 84 lumens/watt for this category of lamps. Lamps without shading would pass the standard because they have a relatively high energy-efficiency rating in this class. Lamps with a light shading are models that we recommend being prohibited by DOE under its proposed rule because they are T12s or relatively inefficient T8s in this category.

Brand	Watts	Nominal Initial Lumens	Initial Efficiency Lumens /Watt	T8 or T12	CRI	Models	Max Mercury Content (mg)
Philips	34	2650	77.9	T12	62	F34/CW/RS/EW/ALTO	4.4 mg
Philips	34	2800	82.4	T12	82	F34T12/800/EW/ALTO	4.4 mg
Philips	34	3100	91.2	T12	85	F34T12/ADV/ALTO	4.4 mg
Philips	40	3200	80	T12	70	F40T12/CW	4.4 mg
Philips	40	3300	82.5	T12	85	F40T12/SOFT WHITE ALTO	4.4 mg
Philips	32	2800	87.5	T8	78	F32T8/TL700/ALTO	1.7 mg
Philips	32	2950	92.2	T8	85	F32T8/TL800/ALTO	1.7 mg
Philips	32	3100	96.9	T8	85	F32T8/ADV/ALTO	1.7 mg
Sylvania	34	2750	80.9	T12	52	F34CW/SS/ECO	9.5 mg
Sylvania	34	2800	82.4	T12	70	F34/D/SS/ECO	9.5 mg
Sylvania	34	2900	85.3	T12	80	F34/D800/SS/ECO	9.5 mg
Sylvania	40	3200	80.0	T12	79	F40/D/ECO	9.5 mg
Sylvania	40	3300	82.5	T12	80	F40/D800/ECO	9.5 mg
Sylvania	32	2800	87.5	T8	78	FO32/700/ECO	6-8 mg
Sylvania	32	2850	89.1	T8	78	FO32/700/XP/ECO	4.2 mg
Sylvania	32	2950	92.2	T8	85	FO32/800/ECO	3.5 mg
Sylvania	32	3000	93.75	T8	85	FO32/800/XP/ECO	3.5 mg
Sylvania	32	3100	96.9	T8	85	FO32/800XPS/ECO	3.5 mg
GE	34	2650	77.9	T12	60	F34CW/RS/WM/ECO	10 mg
GE	34	2750	80.9	T12	70	F34SP/RS/WM/ECO	10 mg
GE	34	2900	85.3	T12	82	F34SPX/WM/ECO	10 mg
GE	40	3200	80	T12	73	F40SP/ECO	10 mg
GE	40	3300	82.5	T12	75	F40XL/SP/ECO	10 mg
GE	40	3400	85	T12	82	F40SPX/ECO	10 mg
GE	32	2800	87.5	T8	78	F32T8/SP/ECO	3.95 mg
GE	32	2950	92.2	T8	86	F32T8/SPX/ECO	3.95 mg
GE	32	3100	93.75	T8	82-85	F32T8/XL/SPX/HL/ECO	3.95 mg
GE	32	2850	89.1	T8	81-84	F32T8/SXL/SP/ECO	3.95 mg

Note: The proposed rule sets the minimum efficiency for this category (except for models of >4500K) at 84 lumens/watt.