Appliance Standards Awareness Project
American Council for an Energy-Efficient Economy
Natural Resources Defense Council
Northwest Energy Efficiency Alliance

December 30, 2014

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

RE: Docket Number EERE-2012-BT-STD-0045: Preliminary Technical Support Document for Ceiling Fan Light Kits

Dear Ms. Edwards:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), the American Council for an Energy-Efficient Economy (ACEEE), the Natural Resources Defense Council (NRDC), and the Northwest Energy Efficiency Alliance (NEEA) in response to the Department of Energy's (DOE or the Department) Preliminary Technical Support Document (PTSD) for ceiling fan light kits (CFLK). We support the general approach contained within the PTSD. Namely, the product class redefinition, the minimum allowable efficacy for the proposed "All Other CFLKs" product class, and the proposed efficiency metric. We expand on these comments below.

1. **DOE should combine product classes 1 and 3 as proposed in the PTSD and consider eliminating product class 2**

Prior to the compliance date of the current ceiling fan light kit standards, most CFLKs used medium screw base lamps. However, the product class structure of the existing standards has had the unintended consequence of causing a migration to candelabra and intermediate base sockets. As a result, more than 80% of CFLK sales (PTSD, p 8-33) are now comprised of these other socket types, even though they provide no distinct product utility advantage over medium base sockets. Since candelabra and intermediate base lamps are among the least efficacious lamps on the market today, the savings anticipated from the original standards have not been attained. Furthermore, by increasing the number of non-medium base sockets in the national inventory, the existing CFLK product structure has reduced the impact of the general service lamp standards enacted by Congress in 2007.

DOE's proposed adjustments to the product class structure would correct the unintended market distortions caused by the original CFLK standards. We strongly support DOE's proposal to combine product classes 1 and 3. As described in the PTSD, DOE can establish separate product classes if products (1) consume a different kind of energy, (2) have different capacities or other performance-related features that require a different efficiency standard, or (3) have a distinct consumer utility, or other factors that the Secretary deems appropriate (PTSD, p 3-2). CFLKs use the same kind of energy and do not have different capacities requiring separate efficiency standards. In terms of consumer utility,

defining product classes by socket type, as is currently the case, does not preserve any distinct utility or any other performance-related feature. CFLKs with different socket types equipped with LED or CFL lamps can provide the full range of features that consumers demand, including illumination levels, dimmability, start time and color temperature. Therefore, we fully support DOE's redefinition of the product classes.

DOE has proposed to maintain a separate product class for "externally ballasted/driven CFLKs." We recognize that this product class accounts for a very small share of total CFLK sales and believe that this market is unlikely to grow due to strong consumer preference for products that combine ballasts or drivers and lamps as integrated products. For consumers, finding replacement lamps for specific ballasts or drivers can be difficult. Similarly, most consumers may have difficulty diagnosing ballast or driver failure as the reason a fixture is not working. Even if they can, finding a replacement ballast or driver may prove time consuming and difficult, if one can be found at all. In some cases, a consumer may need to hire an electrician to diagnose the problem and wire in a new driver or ballast. Given that the market has not embraced externally ballasted/driven products to date, we question whether these types of products provide a distinct utility which merits its own product class. We urge DOE to consider again whether it is needed.

2. **The minimum efficiency requirement for lamps in the proposed "All Other CFLKs" group must be at least 45 LPW**

42 USC 6295(o)(1) prohibits DOE from "decreas[ing] the minimum required efficiency, of a covered product." If the minimum efficiency requirement for the "All Other CFLKs" product class is set below 45 LPW, the efficiency requirements for CFLKs with medium screw based lamps (currently set at 45 LPW) would be decreased. We agree with DOE's determination that by combining the current product class 1 and product class 3 into the proposed "All Other CFLKs" group, the minimum required efficiency must be at least 45 LPW to prevent backsliding.

3. **Many CFLKs on the market today already exceed 45 LPW and the technology will only improve between now and 2019**

CFL and LED technology is already prevalent in today's CFLK market. The Home Depot website currently offers over 265 CFL and over 45 LED CFLK options.[1] Lowe's currently offers over 100 integrated LED options.[2] Many of these CFLKs provide the same amenities enjoyed by consumers using incandescent CFLKs (e.g dimmability, sparkle). LEDs, in particular, are forecasted to improve in terms of the technology, availability, and price in the years to come.[3] Given the rapid emergence of LED technology and the already well established CFL technology, CFLK options exceeding 45 LPW are already abundant and will only improve by the 2019 compliance date.

4. **We agree with DOE's proposal to use an equation-based LPW metric for candidate standard levels**

In recent rulemakings DOE has used (or is proposing to use) equation-based LPW metrics for many other lighting standards (e.g. high-intensity discharge lamps, incandescent reflector lamps, general service

[1] December 29, 2014, query of homedepot.com
[2] December 29, 2014 query of lowes.com
[3] http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/energysavingsforecast14.pdf

lamps). We believe that this is the most effective metric from which to establish lighting standards for CFLKs.

At the CFLK public meeting on November 18, 2014, industry representatives suggested using lumen bins as an alternative approach—similar to those currently in effect for general service incandescent lamps (GSIL). We strongly oppose this approach. In our response to DOE's Framework Document for general service lamps, we stated the following in regard to lumen bins used for GSIL standards:

> As a result of the wide lumen ranges contained in the current (GSIL) standards, manufacturers have all selected the lowest allowable light output level within the applicable bin and are now producing 43 watt bulbs that deliver 750 lumens, instead of the 800 to 850 lumens that conventional 60W incandescent lamps offered. To remove the incentive for manufacturers to produce products in the "weak spot" of the standards (i.e., at the lowest lumen level in the bin), we urge DOE to establish smooth continuous standards that establish minimum efficiency levels as a function of light output. This approach has broad world-wide acceptance and has been applied by the European Union and its 28 member countries, and other countries around the world.

We echo these concerns here and urge DOE to use an equation-based LPW metric for CFLKs as proposed in the PTSD.

5. DOE should revisit its savings estimates to ensure that the true impact of each CSL is accurately captured

The energy savings estimated in the PTSD from the impact of the market meeting CSL 0 (45 LPW) seem much lower than they should be. Because a large portion of CFLKs use candelabra and intermediate base incandescent lamps, which are among the least energy efficient light sources on the market today, we would expect standards that bring these fixtures up to the efficacy levels achieved by today's efficient lighting technologies to be very large. Table 1 illustrates why DOE's savings estimates appear to be far too low.

Table 1:

	LPW	Watts	Lumens	Hours/Day	kWh/Year	Per unit KWh savings	DOE's incremental quad savings estimate
Base Case	7.3	180	1314	1.4	92.0	0.0	0
CSL 0	52.1	25.2	1314	1.4	12.9	79.1	0.286
CSL 1	61.5	21.4	1314	1.4	10.9	2.0	0
CSL 2	66.4	19.80	1314	1.4	10.1	0.8	0.044

In the table, we have inserted an LPW value for "base case" lamps which DOE indicates represents the 80% of CFLK's sold with candelabra sockets today (PTSD, p 8-33). For CSLs 0, 1 and 2, we have inserted the LPW values for DOE's representative lamps (PTSD, p 5-19). We calculated lumen output for the baseline lamp using DOE's assumption of 3 sockets per base case fixture (PTSD, p 8-33) and assumed higher CSL CFLKs would maintain lumen output. We inserted DOE's estimate of hours per day (PTSD, p

6-2) and calculated kWh/year. Base case candelabra socket fixtures are shown to use 92 kWh per year, while CSL 0 compliant CFLKs use 12.9 kWh per year, for a savings of nearly 80 kWh per year per CFLK. DOE estimates that raising CFLKs to CSL 0 (a per unit savings of nearly 80 kWh) will save 0.286 quads nationally. DOE estimates that raising standards from CSL 1 to CSL 2 (a per unit savings of 0.8 kWh) will save 0.044 quads nationally. These estimates appear to be inconsistent with one another. The per unit savings going from the base case to CSL 0 are about 100 times as great as the per unit savings going from CSL 1 to 2, yet the national energy savings impacts are only 6.5 times greater. (The disparity cannot be explained by high market penetration of CSL 0 compliant CFLKs since DOE estimates that nearly 60% of CFLKs will be at the base case (i.e. far less efficient than CSL 0) in 2019 if no new standards are implemented (PTSD, p 8-9)). We also do not understand why DOE estimates zero incremental savings from increasing standards from CSL 0 to CSL 1.

We recognize that the DOE analysis incorporates more complexity than the analysis shown here. However, the lack of proportionality between per unit savings and national savings is a red flag indicating potential inaccuracies in the underlying DOE analysis. We urge DOE to further investigate these disparities and revise its estimate to better reflect the impact of CSL 0 and the higher levels of national energy savings.

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

Respectfully submitted,

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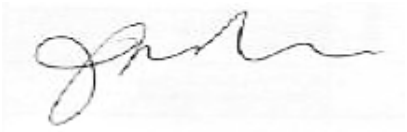
Appliance Standards Awareness Project



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