

***Appliance Standards Awareness Project  
Northeast Energy Efficiency Partnerships  
Natural Resource Defense Council  
Northwest Energy Efficiency Alliance  
American Council for an Energy Efficient Economy***

Ms. Lucy deButts  
U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
Building Technologies Office, EE-2J  
1000 Independence Avenue SW  
Washington, DC 20585-0121

November 8, 2016

Docket Number: EERE-2013–BT–STD–0051

RIN: 1904-AD09

Dear Ms. deButts,

The Appliance Standards Awareness Project, the Northeast Energy Efficiency Partnerships, the Natural Resources Defense Council, the Northwest Energy Efficiency Alliance, and the American Council for an Energy Efficient Economy wish to thank the Department of Energy (DOE) for providing us with the opportunity to comment on the notice of proposed definition and data availability (NOPDDA) for general service lamps released in pre-publication form on October 7, 2016. In May of this year, we submitted comments with three additional cosigners on DOE’s GSL NOPR.

### Summary

The NOPDDA proposes to cover as general service incandescent lamps (GSILs) eight lamp types currently exempted from the definition of general service lamps. By bringing these products into scope, DOE would eliminate a significant danger of these exempt lamp types becoming substitutes for traditional incandescent lamps and being widely used for general illumination. We believe that the GSL standards Final Rule would be further strengthened by including additional currently exempted lamps under the definition of GSILs as discussed below.

We strongly support coverage of all reflector lamps as GSILs. Hundreds of millions of IRLs and non-IRL reflectors are sold each year. More efficient alternatives are already widely available at affordable prices. DOE’s proposal would move the market in the direction of technology neutral standards for this very common lighting product.

In the NOPDDA DOE also proposes several positive changes to the definitions of lighting products that we believe will reduce the possibility of exempted lamp types becoming loopholes that could undercut the effectiveness of the GSL standards. We recommend several additional changes to further enhance the effectiveness of the Final Rule.

We appreciate that DOE has addressed concerns we raised at the NOPR stage.

Our comments on the GSL NOPR included the following recommendations:

1. **Incandescent Reflector Lamps (IRLs).** Like general service incandescent lamps and medium base compact fluorescent lamps, IRLs provide general lighting and we recommended that they should be included in the definition of GSLs and subject to the same standards.
2. **Exemptions.** Many of the 22 lamp types exempted from the definition of GSLs are capable of providing general lighting and we recommended that they should not be exempt from the definition.

We appreciate DOE's careful consideration of our input and the revisions proposed in the NOPDDA.

We strongly support DOE's proposal to include IRLs under the definition of GSILs.

In the GSL NOPR DOE proposed to continue explicitly exempting IRLs<sup>1</sup> and reflector lamps that are not IRLs from the definition of GSILs, and thereby of GSLs. In our comments on the GSL NOPR we requested that DOE cover all reflector lamps (including IRLs) as GSLs. The fact that IRLs are regulated under their own standards, like medium based compact fluorescent lamps and general service incandescent lamps, does not excuse them from inclusion by DOE as GSLs. Our GSL comments also specifically referenced the legal analysis submitted as part of EarthJustice's comments. In the NOPDDA DOE agrees with EarthJustice's argument, and proposes to include reflector lamps within the definition of GSILs.

In the NOPDDA DOE proposes to exempt R20 short lamps and "specialty MR-lamps" from the definition of GSILs. We support these exemptions with reservations. The new definitions for these exempt lamp types must be drawn narrowly to prevent them from being used for general illumination. We recommend that DOE add more specificity to the definition for specialty MR-lamps. An improved definition could include additional maximum rated lifetimes for certain types of specialty lamps, restrictions on rated operating voltages, etc. We also note that DOE's analysis of the R20 short lamp was performed in 2013, before LED substitutes for incandescent R20 short lamps were available. If DOE were to repeat this analysis today it might find that there are suitable and significantly more energy efficient options available.

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<sup>1</sup> Incandescent reflector lamps (IRLs) are defined in 10 CFR 430.2 as lamps which are not colored or designed for rough or vibration service applications; which contain an inner reflective coating on the outer bulb to direct the light; have an R, PAR, ER, BR, BPAR, or similar bulb shape; have an E26 medium screw base; have a rated voltage at least partially in the range of 115 and 130 volts; have a diameter that exceeds 2.25 inches; and have a rated wattage that is 40 watts or higher.

We strongly support DOE's proposed modifications to the definitions for general service lamps and general service incandescent lamps, with modifications.

We believe that the proposed revisions to the GSL and GSIL definitions make them clearer and lessen the chance of loopholes developing that could undercut the GSL standards. We recommend that DOE modify the definitions for both GSLs and GSILs to include lamps with rated outputs as low as 120 lumens. We support the extended comments on this topic provided by NRDC and NEEP in separate letters filed to this docket. This change would ensure that 25 and 40W incandescent lamps and decorative lamps with similar light output would also be subject to minimum energy efficiency standards. These lamps are often installed in high use applications and more efficient alternatives are available (see NRDC comments Figures 2 & 3).

We strongly support DOE's proposed inclusion of currently exempted lamps under the definition of GSILs.

In the GSL NOPR DOE argued that the 22 lamp types currently exempted from the definition of GSLs in EISA should continue to be exempted because:

- The only way to cover the exempted incandescent lamps as general service lamps (GSLs) would be to eliminate the exemption that makes them not general service *incandescent* lamps (GSILs); and
- Because the Appropriations Rider prohibits using funds to implement standards for GSILs, DOE cannot establish standards for incandescent versions of any of the 22 exempt lamps.

In our comments on the NOPR we stated that DOE has the regulatory authority, without obstruction from the Rider, to review the 22 lamp types currently exempted as GSLs and to remove the exemptions as appropriate. In our comments we recommended that 16 of the 22 lamp types exempted in the GSL NOPR no longer be exempt from the definition of GSILs. In the NOPDDA DOE has proposed to remove exemptions for eight lamp types. The eight lamp types DOE proposes to include under the definition of GSILs<sup>2</sup> are mostly the ones we believe pose the greatest risk to the effectiveness of the proposed general service lamp rule. We strongly support the inclusion of these additional eight lamp types within the definition of GSILs and GSLs.

We recommend that mine service, traffic signal, marine, showcase, silver bowl, bug and plant light lamps also be included in the definition of GSILs.

When standards come into effect and remove an inefficient lamp type from the market it changes the dynamics of that market. An exempted niche variant of the removed, inefficient lamp type can rapidly evolve to become a loophole that undercuts the effect of the standard. These exempted niche variant lamps typically are low-volume, high-priced products before the standard comes into effect, but can

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<sup>2</sup> Reflector Lamps; G shape lamps  $\geq 5$  inches in diameter; T shape lamps  $\leq 40$  W and  $< 10$  inches long; B, BA, CA, F, G16-1/2, G-25, G30, S or M-14 lamps if  $\leq 40$  W; vibration service lamps; rough service lamps; shatterproof lamps, and 3-way lamps.

become high-volume, low-priced, and inefficient loopholes once the standards are in place. Examples include modified spectrum, vibration and rough service lamps, and GSFLs with CRI of 87 and higher.

We support DOE's proposed revisions to the definition of "designed and marketed" (see below) but respectfully note that this requirement has, so far, been insufficient to prevent inefficient low volume, high priced niche lamps from turning into high volume, low priced loopholes.

The NOPDDA proposes to continue the exemption of mine service, traffic signal, marine, showcase, silver bowl, bug, and plant light lamps from the definition of GSL. The definitions for marine, mine, and traffic signal lamps proposed in the NOPDDA require only that these lamp types be designed and marketed for use in boats, mines and traffic signal applications respectively. There is otherwise little difference between either the manufacturing or performance of these lamp types and GSILs commonly used for general illumination. There are also energy efficient alternatives available to incandescent lamps for all three applications. We recommend that DOE include marine, mine, and traffic signal lamps in the definition of GSILs.

In the NOPDDA a "showcase lamp" is defined as a lamp that has a T-shape as specified in ANSI C78.20 and ANSI C79.1<sup>3</sup>, is designed and marketed as a showcase lamp, and has a maximum rated wattage of 75 watts. Similar to our concerns regarding marine, mine, and traffic signal lamps we believe that the proposed definition for showcase lamps is insufficient to prevent this lamp type from potentially becoming a loophole. Incandescent showcase lamps are widely available (see Appendix A) and would fit into many light fixtures. In the NOPDDA DOE is proposing to include many T-shape lamps in the definition of GSILs and we strongly recommend that showcase lamps also be included.

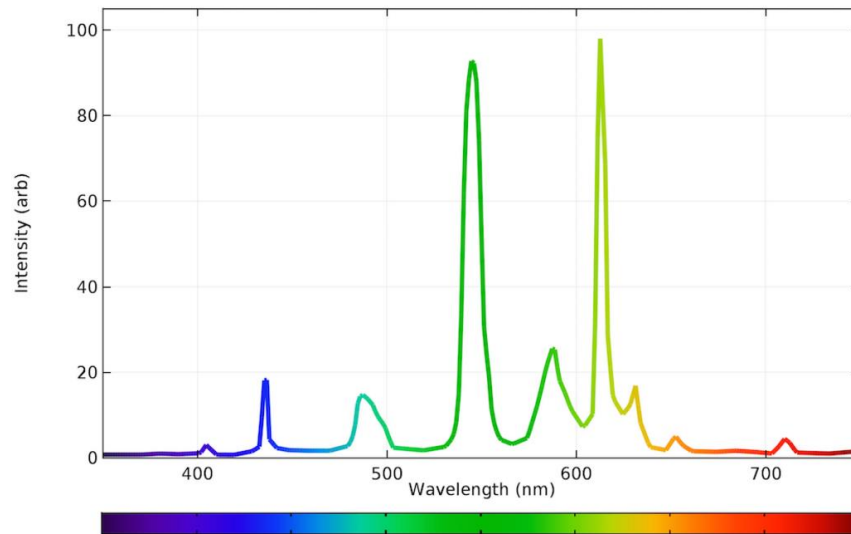
Similarly, we believe that the definition for silver bowl lamps as a lamp that *"has a reflective coating applied directly to part of the bulb surface that reflects light toward the lamp base and that is designed and marketed as a silver bowl lamp"* is insufficient to prevent this lamp type from potentially becoming a loophole because it does not set a minimum requirement for the percentage of the total bulb surface that must have a reflective coating, and it does not require that the reflective coating be opaque. More energy efficient alternatives to incandescent silver bowl lamps are available (see Appendix A). We recommend that silver bowl lamps also be included in the definition of GSILs.

In the NOPDDA DOE proposes definitions for bug lamps and plant lights intended to limit the loophole risk presented by these products. However, we believe that the proposed modifications to the definitions are insufficient to prevent bug lamps and plant lights from turning into loopholes that could undercut the effectiveness of the proposed GSL standards. The NOPDDA proposes that a bug lamp *"means a lamp that is designed and marketed as a bug lamp, has radiant power peaks above 550 nm on the electromagnetic spectrum, and has a visible yellow coating."* Figure 1 shows that the emission spectrum of typical fluorescent lamps exhibit radiant power peaks above 550 nm.

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<sup>3</sup> incorporated by reference; see §430.3

Figure 1: Spectrum of typical fluorescent lamp



In other words many fluorescent lamps could easily meet the bug lamp definition and some fluorescent lamps naturally appear yellowish due to the phosphor mix they employ. Furthermore, a poster presented at the American Academy of Arts and Sciences 2016 Annual Meeting<sup>4</sup> found that “warm” light LEDs attracted fewer insects (were better bug lamps) than conventional incandescents, CFLs, halogens, cool light LEDs and incandescent bug lamps. In this first comparison study warm light LEDs exhibited greater utility by attracting fewer insects than the other “bug lamp” options. DOE could further modify the definition of bug lamp, but we believe that there is no reason that bug lamps should continue to be exempted and we recommend that DOE include them in the definition of GSILs.

Horticultural lighting is a rapidly expanding market, driven by the expansion of indoor agriculture and the availability of efficient LED lamps that are tuned to emit light most beneficial for plants. The inaugural Horticultural Lighting Conference was held on October 12, 2016 and featured exhibits by many major lighting companies. A recent article in LED Magazine notes: “Both packaged LED manufacturers and makers of solid-state lighting (SSL) finished products are moving to capture a slice of what is a rapidly growing marketplace<sup>5</sup>.”

The NOPDDA defines a plant light as a “lamp that is designed to promote plant growth by emitting its highest radiant power peaks in the regions of the electromagnetic spectrum that promote photosynthesis: blue (440 nm to 490 nm) and/or red (620 to 740 nm). Plant light lamps must be designed and marketed for plant growing applications.” We believe that this definition creates a significant loophole potential. As shown in Figures 1 and 2, it is easy for fluorescent and possibly incandescent lamps to meet the plant light definition. However, LED lamps are better at growing plants and cost significantly less to operate. As shown in Appendix A, incandescent plant lights are currently available on the market that can substitute for popular GSIL and IRL products. We recommend that DOE include plant light lamps in the definition of GSILs.

<sup>4</sup> <http://www.aaas.org/abstract/light-pollution-and-insects-insect-attraction-various-types-residential-lights>

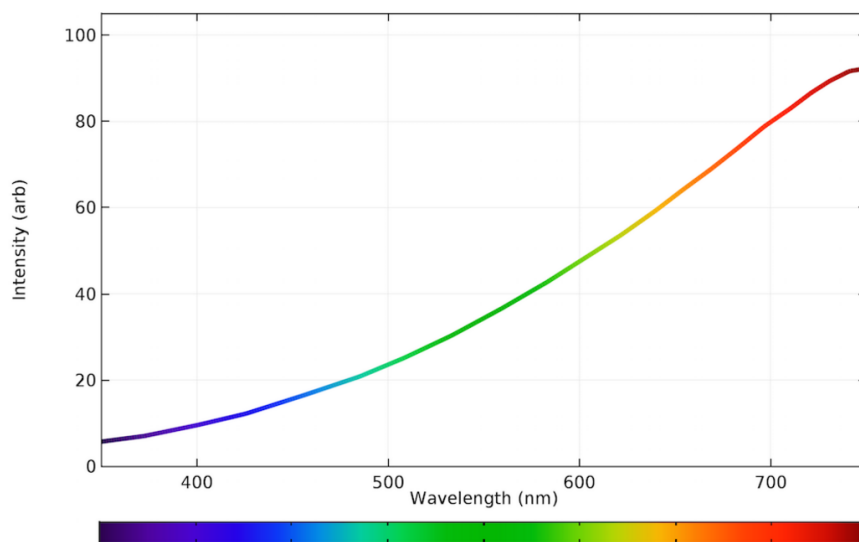
<sup>5</sup> LED technology serves rapidly growing horticultural market. LEDs Magazine published March 23, 2015.

We recommend that the definitions of infrared lamps and colored lamps be modified to reduce the risk of loopholes.

In the NOPDDA the definitions for infrared lamps and colored lamps have been improved by the addition of language that specifically relates the electromagnetic radiation they emit to the applications they are designed to serve. However, the proposed language is still insufficient to prevent the exploitation of these products as loopholes to the proposed GSL standards.

Radiant power is the radiant energy that a lamp emits per unit of time. The radiant power peak is the point on the electromagnetic spectrum that a lamp emits the most radiant energy per unit of time. Figure 2 shows the typical radiant power curve for an incandescent light bulb. The radiant peak for most incandescent lamps is in the infrared, rather than the visible, range of the spectrum.

Figure 2: Emission spectrum of a typical incandescent bulb<sup>6</sup>



The NOPDDA proposes that an infrared lamp, “means a lamp that is designed and marketed as an infrared lamp, has its highest radiant power peaks in the infrared region of the electromagnetic spectrum (770 nm to 1 mm), and which has a primary purpose of providing heat.” Figure 1 shows that most incandescent bulbs would meet the radiant peak requirement in the proposed definition. We recommend that DOE amend the definition to more specifically limit the share of radiant power that infrared lamps may emit in the visible range (390 nm to 700 nm) to no more than 1% of total radiant power. We also recommend that infrared lamps be defined as being rated for at least 125 watts.

In the NOPDDA DOE proposes that colored lamps be defined as having a color rendering index less than 40 **OR** as having a correlated color temperature less than 2,500 K or greater than 7,000 K. “Warm white” A-lamps are rated as having CCTs as low as 2,000 K and many would meet the proposed definition of colored lamps. We recommend that DOE change the proposed definition to read “a color rendering index less than 40 **AND** a correlated color temperature less than 2,000 K or greater than 7,000 K”. This will ensure that products meeting the definition of colored lamps will not be appropriate for providing general illumination.

<sup>6</sup> <https://www.comsol.com/blogs/calculating-the-emission-spectra-from-common-light-sources/>

We strongly support the DOE's proposed modification to the language defining how special use products are designed and marketed, with modification.

In particular, we support DOE's proposal to clarify that specialty products must be "exclusively designed" for and marketed "solely" for the specialty application. The proposed definition will properly clarify that specialty products may not be marketed for both specialty and general lighting uses.

DOE generally proposes to use "designed and marketed" only as an affirmative requirement, i.e., the product is defined as one designed and marketed for the specialty use. But in one case – the definition of colored lamps – DOE proposes to define the product as one "designed and marketed" as a colored lamp and not "designed and marketed" for general lighting applications. It is not clear why it is necessary in the case of colored lamps and none of the other definitions to include this negative prohibition as well. In all cases, the requirement that the product be "designed and marketed" as the specialty product should already require that it be *only* designed and marketed for that use.

We suggest that DOE use the "designed and marketed" term consistently in all the product definitions in order to avoid any possible confusion about whether the prohibition against marketing any of these specialty lamps for general lighting applications applies only where (as in the case of colored lamps) DOE has expressed that limitation as a negative prohibition. This could be done either by including the negative statement in all definitions or including only the affirmative statement in all cases.

We also support the requirement that the specialty application of the lamp appear on the product packaging. This is important because some of these specialty products may otherwise appear similar to general service lamps and be mistaken for them by consumers. In order to further protect against misapplication of these specialty products for general lighting uses, we recommend that DOE add the words "prominently displayed" between "designation" and "on the packaging." With this addition, the definition would read:

"Designed and marketed means exclusively designed to fulfill the indicated application and, when distributed in commerce, is designated and marketed solely for that application, with the designation **prominently displayed** on the packaging and all publicly available documents (e.g., product literature, catalogs, and packaging labels)."

We recommend that DOE carefully review ongoing changes in the lighting industry when evaluating the impacts of the NOPDDA on employment.

During the NOPDDA public meeting on October 21, 2016 as well as during the NOPR public meeting in April, some manufacturer representatives claimed that the proposed standards and changes to definitions would have negative impacts on jobs in the lighting industry. The vast majority of incandescent halogen lamps offered for sale in the US are no longer made domestically and only a small number of jobs would be negatively impacted by the standards. More importantly, the lighting industry agrees that lighting is moving to solid state technologies. Solid state products provide a much larger domestic job growth potential than currently exists for incandescent products. Many new lighting industry jobs have already been created at the new and existing companies which manufacturers LEDs.

We support the more extensive discussion on this topic included in the NRDC comments submitted on the GSL NOPDDA.

We appreciate the opportunity to provide these comments and look forward to the final rule.

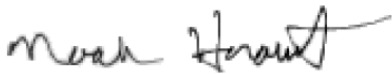
Sincerely,



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Appliance Standards Awareness Project (ASAP)



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## Appendix A:

All of the following GSIL examples were found during internet searches between 10/31/2016 and 11/7/2016.

### Example – Showcase Lamp

1000Bulbs

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Trending Searches

[\\$8.99 LED T8s](#) [\\$110 250W Equal LED Wall Pack](#) [\\$1.79 60W Equal LED](#) [\\$89.99 LED Troffers](#) [Halloween Lights](#) [Christmas Lights](#) [4 Pack LEDs Only \\$5](#) [175W Equal LED Wall Pack Only \\$85](#)

Home / Light Bulbs / Incandescent / Picture - Exit - Display Light Bulbs / Tubular T10 Picture - Exit - Display Light Bulbs

PRODUCT CATEGORIES

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BULBRITE

Bulbrite 704060 - 60 Watt - T10

Frost - 2,500 Life Hours - 635 Lumens - 130 Volt

★★★★★ 5 / 5 [Read all 2 reviews](#) [Write a review](#)

\$1.10 ea

Quantity

-

+

+ Add To Cart

IN-704060

#### Comparable Products

					
Description	Bulbrite 704060 - 60 Watt - T10	Bulbrite 704115 - 15 Watt - T10	Satco S3899 - 60 Watt - T10	Satco S3896 - 60 Watt - T10	GE Reveal 48707 - 40 Watt - T10
Price	\$1.10	\$1.25	\$1.32	\$1.32	\$9.35
SKU	IN-704060	IN-0015T10CL	IN-0080T10FR120	IN-0080T10CL	IN-0040T10RVL
Brand	Bulbrite	Bulbrite	Satco	Satco	GE
MPN (Part No.)	704060	704115	S3899	S3896	48707
	Current Item	Add To Cart	Add To Cart	Add To Cart	Add To Cart

FREE




6 PACK OF LED BULBS WITH \$100 PURCHASE

SEE STORE FOR DETAILS

ADD TO CART
SHOP NOW

Example – Incandescent Plant Light


Lighting Technology: Incandescent ✕

<input type="checkbox"/> Compare	<input type="checkbox"/> Compare	<input type="checkbox"/> Compare
		
<p><b>Philips 75-Watt Agro Plant Light BR30 Flood Light Bulb</b></p>	<p><b>Philips 120-Watt Agro Plant Light BR40 Flood Light Bulb</b></p>	<p><b>Philips 60-Watt Incandescent A19 Agro Plant Light Bulb</b></p>
<p>Model# 415281 ★★★★★ (25)</p>	<p>Model# 415307 ★★★★★ (13)</p>	<p>Model# 429480 ★★★★★ (26)</p>
<p><b>\$7.48</b></p>	<p><b>\$8.97</b></p>	<p><b>\$5.48</b></p>
<p>Ship to Home <b>FREE WITH \$45 ORDER</b> <b>FREE</b> Store Pickup Today</p>	<p>In Store Only <b>FREE</b> Store Pickup Today</p>	<p>Ship to Home <b>FREE WITH \$45 ORDER</b> <b>FREE</b> Store Pickup Today</p>

Example – Incandescent Traffic Signal Lamp

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qty: 1

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  - Landscape Lighting
  - Home Decor
  - Plastics & Glass
  - Specialty Items

2 results for "LED Light Bulbs - Silver Bowl" Sort By Lowest Price



View Specifications



LED - A19 - 5 Watt - 40W Incandescent Equal - 300 Lumens - 2200 Kelvin Very Warm White - Filament Type

Brand: PLT  
MPN (Part No.): KA196MSCS22K  
Dimmable: No  
Safety Rating: Not Applicable

Enclosed Fixture Rated: No  
Voltage: 120  
Base Type: Medium (E26)

\$7.99 ea

Quantity

1

Add to Cart

PLT-10557



View Specifications



LED - A19 - 6.5 Watt - 60W Incandescent Equal - 700 Lumens - 2700 Kelvin Warm White - Filament Type

Brand: MaxLite  
MPN (Part No.): SB8\_5A19DLED27  
Safety Rating: UL  
Bulb Finish: Clear Silver Bowl

Enclosed Fixture Rated: Yes  
Voltage: 120  
Base Type: Medium (E26)



\$11.90 ea

Quantity

1

Add to Cart

MAX-76530