



National Electrical Manufacturers Association

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By email: [GSL2018STD0010@ee.doe.gov](mailto:GSL2018STD0010@ee.doe.gov)

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U.S. Department of Energy  
Office of the General Counsel, GC-33,  
1000 Independence Avenue SW  
Washington, DC 20585

**NEMA Comments on Energy Conservation Standards for General Service Lamps Notice of Proposed Rulemaking**

RIN 1904-AE26

RE: National Electrical Manufacturers Association Comments on Energy Conservation Program: Energy Conservation Program: Energy Conservation Standards for General Service Lamps Notice of proposed rulemaking and request for comment. 84 FR 3120 (February 11, 2019)

(Comments include Confidential Business Information)

Dear Ms. Sher:

As the leading trade association representing the manufacturers of electrical and medical imaging equipment, the National Electrical Manufacturers Association (NEMA) provides the attached comments on the DOE Notice of Proposed Rulemaking for Standards for General Service Lamps. These comments are submitted on behalf of NEMA Light Source Section Member companies. If there are further questions about any of the responses or data we have provided, we are available to answer your questions.

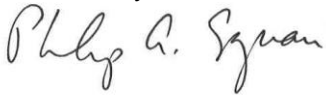
The National Electrical Manufacturers Association (NEMA) represents nearly 350 electrical equipment and medical imaging manufacturers that make safe, reliable, and efficient products and systems. Our combined industries account for 360,000 American jobs in more than 7,000 facilities covering every state. Our industry produces \$106 billion shipments of electrical equipment and medical imaging technologies per year with \$36 billion exports.

NEMA Comments include an Appendix containing Confidential Business Information, which we designate pursuant to 10 C.F.R. §1004.11. Accordingly, two copies are provided to the Department: one designated a Public Version with Confidential Business Information redacted; and one designated a Non-Public Version with the Confidential Business Information highlighted for attention. The redacted Confidential Business Information is a trade secret of NEMA and its Members who participate in NEMA statistical information program for lamps. This information is received, aggregated, and maintained in confidence, and the success of NEMA data program depends upon the data being unique and maintained in confidence. The information is not

publicly available, and it is not available from other sources. To our knowledge, the underlying data is not available to anyone else. We also designate other information confidential that would enable a reader to determine the confidential business information. There are other entities who make estimates of lamp shipments from time to time for a fee, and who do not have access to the underlying data. Disclosure would harm NEMA interests and would undermine NEMA ability to collect the information from the companies. Disclosure would also lessen NEMA willingness to provide information to the government when requested. This information should be maintained confidential for at least ten (10) years. The Department should treat the Confidential Business Information as exempt from disclosure.

If you have any questions on these comments, please contact Alex Boesenberg of NEMA at 703-841-3268 or [alex.boesenberg@nema.org](mailto:alex.boesenberg@nema.org).

Sincerely,

A handwritten signature in black ink that reads "Philip A. Squair". The signature is written in a cursive style with a large, prominent initial "P".

Philip Squair  
Vice President, Government Relations  
National Electrical Manufacturers Association

## NEMA Comments on Energy Conservation Standards for General Service Lamps Notice of Proposed Rulemaking

### 1. DOE welcomes comment regarding the proposed change in scope to the definitions of GSIL and GSL and the consequences of such change.

The Department of Energy (DOE) has concluded that its January 19, 2017 definitions rules,<sup>1</sup> expanding the definitions of “general service lamp” (GSL) and “general service incandescent lamp” (GSIL) beyond the definitions established by Congress<sup>2</sup> were not “legally justifiable” and included lamps in the definitions not “intended by Congress” that “could not meet the statutory definition of GSIL.” DOE has further concluded that in promulgating its 2017 definitions rules for GSIL and GSL, it “overstepped its limited authority,” “relied on factors which Congress did not intend it to consider,” and its action was “unauthorized as a matter of law.” 84 FR 3120-25 (February 11, 2019).<sup>3</sup>

NEMA agrees. We have previously provided an extensive analysis, including statutory construction to establish the intent of Congress in 2007 when it authorized the general service lamp rulemaking, explaining why NEMA believes as a matter of law and fact, that the prior definitions rules were legally erroneous.<sup>4</sup> It is not necessary to restate the entirety of that analysis here, but we summarize our concurrence with the above-quoted remarks.

A. *The 2017 definitions rules included lamps in the definitions of **General Service Incandescent Lamp** and **General Service Lamp** that were not “intended by Congress.”* In short, DOE included lamps in the definition that Congress expressly and unambiguously said in the statute were “not include[d]” in those definitions. DOE erroneously conflated two statutory terms with different meanings --- “not include” under the heading “Exclusions”, and “exempt” --- and misconstrued legislative intent. Courts of appeal and district courts have overwhelmingly recognized that these two terms have different meanings and have different significance for statutory construction. “This is more than a quibble. There’s a difference between exclusion and exemption, or, equivalently, between scope and coverage.” *Sandifer v. United States Steel Corp.*, 678 F.3d 590, 595-96 (7<sup>th</sup> Cir. 2012).<sup>5</sup>

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<sup>1</sup> See 82 FR 7276 (January 19, 2017) and 82 FR 7322 (January 19, 2017).

<sup>2</sup> 42 U.S.C. §6291(30)(D) and (30)(BB).

<sup>3</sup> “[I]t is not improper for an agency to engage in new rulemaking to supersede a defective rulemaking.” *Center for Science in Public Interest v. Regan*, 727 F.2d 1161, 1164 (D.C. Cir. 1984).

<sup>4</sup> We incorporate our prior remarks by reference. See NEMA Comments dated October 16, 2017, DOE Dkt. No. EERE-2017-BT-NOA-0052-0004.

<sup>5</sup> Accord, *Salazar v. Butterball LLC*, 644 F.3d 1130, 1136-39 (10<sup>th</sup> Cir. 2011); *Franklin v. Kellogg Co.*, 619 F.3d 604, 611-15 (6<sup>th</sup> Cir. 2010); *Allen v. McWane Inc.*, 593 F.3d 449, 458-59 (5<sup>th</sup> Cir. 2010); *Sepulveda v. Allen Family Foods, Inc.*, 591 F.3d 209 (4<sup>th</sup> Cir. 2009); *Anderson v. Cagle’s Inc.*, 488 F.3d 945, 955-58 (11<sup>th</sup> Cir. 2007); *Andrako v. United States Steel Corp.*, 632 F. Supp. 2d 398, 410 (W.D.Pa. 2009)(3<sup>rd</sup> Cir.); *Hosler v. Smithfield Packing Co.*, 2010 U.S. Dist. LEXIS 101915 at \*14 (E.D.N.C. 2010)(“the court agrees with the greater weight of authority in finding that § 203(o) is not an exemption, but rather a definitional exclusion, appearing as it does in a section setting out definitions and entitled ‘Definitions.’ *Allen*, 593 F.3d at 458”). For further analysis, see NEMA Comments, *id.* at pages 44-49 and

B. *The prior definitions rules included lamps in the definitions of **General Service Incandescent Lamp** and **General Service Lamp** that were not intended by Congress because they “could not meet the statutory definition of GSIL.”* The statutory test of whether the Secretary can include other lamps in the definition of “general service lamp” beyond the three types of light bulbs specified in the statute is that the “other lamps” must be “used to satisfy lighting applications traditionally served by general service incandescent lamps.” 42 U.S.C. §6291(30)(BB)(i)(IV). DOE did not apply that statutory test. Instead of looking at whether other lamps were “used to satisfy lighting applications traditionally served by general service incandescent lamps,” DOE improperly re-wrote the congressional definition,<sup>6</sup> and invented a subjective test for discontinuing an exemption from incandescent lamp regulation that is nowhere found in the statute: whether a lamp is a “convenient unregulated alternative.” And in trying to give meaning to this contrived phrase, DOE erroneously looked at *static* one-year sales figures for a lamp and arbitrarily said they were “high” and ignored other provisions in the statute that directed DOE to pursue a *dynamic* sales analysis to determine whether sales of other lamps were increasing over time to determine whether or not those other lamps should lose their exemption and be regulated under EPCA. See NEMA Comments *supra* note 4 at 50-59. Thus, as DOE has now noted, DOE “relied on factors which Congress did not intend it to consider.”

C. *DOE “overstepped its limited authority” and “relied on factors which Congress did not intend it to consider.”* To understand the types of lamps that might be “used to satisfy lighting applications traditionally served by general service incandescent lamps” and those which are not, the statutory definition of a general service incandescent lamp provides significant guidance. The traditional applications of the general service incandescent lamp are the specific statutory referent for those “other lamps.” As NEMA explained in its prior comments, the general service incandescent lamp is the “standard incandescent or halogen lamp type”, 42 U.S.C. §6291(30)(D)(i), which is a reference to the standard pear-shape bulb that provides omnidirectional light output. Thus the traditional general service incandescent lighting applications do not include light bulbs that provide focused or “directional” lighting such as reflector lamps.<sup>7</sup> The definition of general service incandescent lamp further informs that these

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nn. 51 and 53 (“not include” means not part of a whole or a set”; “exemption” refers to the state of being free from an obligation or regulation).

<sup>6</sup> As NEMA also noted in its prior comments, DOE’s construction of the statute effectively wrote the congressional text out of the law and rewrote 42 U.S.C. §6291(30)(BB)(i)(IV) as follows to secure a different meaning:

(IV) any other lamps the Secretary determines are used ~~to satisfy lighting applications traditionally served by general service incandescent lamps~~ in general lighting applications.

NEMA Comments dated October 16, 2017 at 34 & n39. DOE Dkt. No. EERE-2017-BT-NOA-0052-0004. See also *Nat’l Elec. Mfrs. Ass’n v. Department of Energy*, 654 F.3d 496, 506 (4th Cir. 2011)(refusing to re-write statutory language by inserting text in definition beyond the text that Congress supplied).

<sup>7</sup> DOE’s January 19, 2017 definitions rule included directional, reflector lamps in the definition of general service incandescent lamp and general service lamp. 82 FR 7322 (January 19, 2017). For more details about the different characteristics and applications of reflector lamps, see NEMA Comments, *supra* note 4 at 17-21, 27-28.

are lamps that provide light output across a wide range of lumens, from 310 lumens to 2600 lumens, 42 U.S.C. §6291(30)(D)(i)(III). Thus traditional general service incandescent lighting applications do not include light bulbs that provide only a limited range of light output, such as light bulbs with very dim light output because of their low wattage.<sup>8</sup> The definition of general service incandescent lamp further informs that that these are lamps with a medium screw base, 42 U.S.C. §6291(30)(D)(i)(II). Thus traditional general service incandescent lighting applications do not include light bulbs that do not screw into a standard medium screw base socket, such as candelabra base lamps, intermediate base lamps, or other odd pin-base, wedge-base, bayonet-base, or prong-base lamps.<sup>9</sup> The definition of general service incandescent lamp further informs that these are lamps capable of being operated at a voltage range at least partially within 110 and 130 volts, 42 U.S.C. §6291(30)(D)(i)(IV), which is the common domestic household electrical voltage. Thus general service incandescent lighting applications do not include light bulbs that operate at other voltages either above or below this range.<sup>10</sup> Finally, the definition of general service incandescent lamp further informs that that these are lamps that are intended for “general service applications,” 42 U.S.C. §6291(30)(D)(i)(I). Thus general service light applications do not include light bulbs that serve special service applications, including but not limited to applications such as providing heat, directional lighting, decorative lighting, marine signaling, mine service, appliance service, bug or insect deterrence, sign service, rough service, vibration service, showcase, traffic signals, or plant growth, for example. These defined characteristics of a GSIL are important to understanding the “lighting applications traditionally served by general service incandescent lamps.”

**Table I** below shows the broad lumen range of the different types of general service incandescent lamps and other general service lamps recognized by Congress in the statute and the actual reported lumens for different wattages of general service lamps. 42 U.S.C.

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<sup>8</sup> DOE’s January 19, 2017 definitions rule included certain lamps in the definition of general service incandescent lamp and general service lamp that only provided very dim illumination at low lumens below what general service incandescent, compact fluorescent, and general service LED traditionally provide, including tubular, candle-shape, and other small decorative globe-shape lamps. DOE also included light bulbs above this range to 3300 lumens. 82 FR 7276 (January 19, 2017).

<sup>9</sup> DOE’s January 19, 2017 definitions rule broadly included lamps with “any ANSI base” (subject to limited exceptions) that brought into the scope of potential regulation lamps that would never be used in lighting applications traditionally served by a general service incandescent lamp. 82 FR 7276 (January 19, 2017). See discussion at pages 23-25, *infra*.

<sup>10</sup> DOE’s January 19, 2017 definitions rule included lamps operating at 12 volts that require an expensive transformer in order to operate on household line voltage and have a small form factor to fit in a space that a general service incandescent lamp would never fit into (and therefore could not be an application traditionally served by general service incandescent lamps). It also included lamps operating at higher voltage around 240 volts, which are primarily sold to Europe where that is the common line voltage and is only used domestically in certain commercial applications. Because of the voltage difference, these were not applications where a general service incandescent lamp, as defined by Congress, would traditionally be used.

§6291(30)(D)(i)(III)(defining general service incandescent lamp to have “a lumen range of not less than 310 lumens and not more than 2600 lumens”) .<sup>11</sup>

**Table I  
EISA Lumen Range and Bins for General Service Incandescent Lamps  
and Reported Lumens of GSL Lamp Types Within Each Lumen Bin**

Lamp	Wattage	Lumen Bin			
		310 - 749	750-1049	1050 - 1489	1490-2600
		Reported Lumens	Reported Lumens	Reported Lumens	Reported Lumens
<b>Old 40W Equiv</b>					
Halogen	29	400-450			
CFL	9	550-600			
LED	5 to 6	450-465			
<b>Old 60W Equiv</b>					
Halogen	43		750-890		
CFL	13 to 15		800-900		
LED	8 - 9.5		760-800		
<b>Old 75W Equiv</b>					
Halogen	53			1050-1270	
CFL	18-20			1100-1250	
LED	10.5 - 12			1060-1230	
<b>Old 100W Equiv</b>					
Halogen	72				1490-1600
CFL	23-26				1600-1750
LED	14-16.5				1500-1650

A number of the specialty incandescent lamps such as the medium base decorative or specially shaped bulbs (e.g. B, BA, C, CA, F, G, S, and T) lamps that DOE illegally lumped in with general service lamps and have their wattage capped by definition at 40 watts, are only made and sold at or below the dimmest, lowest lumen level of this range (280 – 380 lumens). These lamps do not have the requisite lumen range for a general service incandescent lamp. As such, they are not “used to satisfy lighting applications traditionally served by general service incandescent lamps.”





40W specialty lamp	40W equiv GSL	60W equiv GSL	75W equiv GSL	100W equiv GSL
280 – 380 lumens	400-600 lumens	750– 900 lumens	1050-1270 lumens	1490-1750 lumens
Dimmer	Dim	Bright	Brighter	Brightest

In Table II below, we identify the lamps that Congress said are either included or “not included” in the definitions of general service incandescent lamp and general service lamp. In all cases, the lamps that are “not included” in the congressional definitions of general service incandescent lamp or general service lamp fail to meet one or more the definitional criteria that describes a general service incandescent lamp because they are either used in special service

<sup>11</sup> NEMA Comments dated October 16, 2017 at 12. DOE Dkt. No. EERE-2017-BT-NOA-0052-0004.

applications, they are too dim to be considered “general service” by the consumer, their light output is directional rather than omnidirectional, they have unique lamp bases that a general service incandescent lamp would not be used in, and/or because they don’t operate within the standard voltage range of 110 – 130 volts. **It is unambiguous that the light bulbs Congress explicitly said were not general service incandescent lamps or general service lamps deviate in a material way from the characteristics and lighting applications of a general service incandescent lamp as defined by Congress.**

**Table II. What General Service Lamps Have In Common and How Lamps That Are Not Included in Definition of General Service Lamp Differ**

Lamp Type/Primary Applications (EPCA Statutory references in footnotes)	Photo	Bulb Shape	Federal Standards Already Enacted?	Four common characteristics of the general service lamps explicitly identified by Congress			
				Omnidirectional Light?	Offered across a broad range of light output (310 – 2600 lumens)?	Medium Screw Base?	Operate on standard US household voltages (within 110 – 130 volt range)?
<b>Lamp types Congress Explicitly Included In Definition of General Service Lamp: 42 U.S.C. §6291(30)(BB)(i)</b>							
General Service Incandescent Lamp (GSIL) <sup>12</sup> Table/floor lamps, ceiling pendant fixtures, garage/home entryway		A17, A19	Yes	Yes	Yes	Yes	Yes
Medium base compact fluorescent lamp <sup>13</sup> Table/floor lamps, ceiling pendant fixtures, garage/home entryway		A17, A19, T2, T3, T4, T5	Yes	Yes	Yes	Yes	Yes
General service light-emitting diode <sup>14</sup> Table/floor lamps, ceiling pendant fixtures, garage/home entryway		A17, A19	No	Yes	Yes	Yes	Yes
General service induction lamp <sup>15</sup> Table/floor lamps, ceiling pendant fixtures, garage/home entryway		A17, A19	No	Yes	Yes	Yes	Yes

<sup>12</sup> 42 U.S.C. §6291(30)(D); 42 U.S.C. §6291(30)(BB)(i)(I).

<sup>13</sup> 42 U.S.C. §6291(S); 42 U.S.C. §6291(30)(BB)(i)(II).

<sup>14</sup> 42 U.S.C. §6291(30)(CC); 42 U.S.C. §6291(30)(B)(i)(III).

<sup>15</sup> 42 U.S.C. §6291(30)(BB)(i)(IV) (“other lamps . . . used to satisfy lighting applications traditionally served by general service incandescent lamps”).



<b>Lamp types Congress Explicitly Said Were “Not Included” in Definition of GSIL and General Service Lamp: 42 U.S.C. §6291(30)(BB)(ii)</b>							
Lamp Type/ primary Applications	Photo	Bulb shape	Already Regulated?	Omnidirectional light?	Offered across broad range of lumen output?	Medium screw base?	Operate on Standard Household voltages?
Appliance Lamp (40W or less) <sup>16</sup> Ovens, refrigerators		A15, A17, S14	No. Watts capped by definition.	Yes	No. Only at very dim light outputs.	Some yes. Others no.	Yes
Black light lamp <sup>17</sup> Decorative, artistic lighting effects, medical diagnostic.		A19	No.	Yes	No. Emits ultraviolet light and little visible light.	Yes	Yes
Bug Lamp <sup>18</sup> Repel bugs away from area.		A19	No.	Yes	No. Emits only long wavelength yellow and red light so as not to attract bugs.	Yes	Yes
Colored Lamp <sup>19</sup> Decorative, festive applications.		A19	No.	Yes	No. Colored glass coating reduces light output.	Yes	Yes
Infrared (heat) Lamp <sup>20</sup> To provide heat.		BR38, R40	No.	No. Directional	No. Emits little visible light, and is designed to provide heat.	Yes	Yes

<sup>16</sup> 42 U.S.C. §6291(30)(D)(ii)(I); 42 U.S.C. §6292(30)(BB)(ii)(I); 42 U.S.C. §6291(30)(T)(specifically designed to operate in a household appliance, maximum 40 watts”).

<sup>17</sup> 42 U.S.C. §6291(30)(D)(ii)(II) ; 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>18</sup> 42 U.S.C. §6291(30)(D)(ii)(III) ; 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>19</sup> 42 U.S.C. §6291(30)(D)(ii)(IV) ; 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>20</sup> 42 U.S.C. §6291(30)(D)(ii)(V); 42 U.S.C. §6292(30)(BB)(ii)(I)

Lamp Type/primary applications	Photo	Bulb shape	Already regulated?	Omnidirectional light?.	Offered across broad range of lumen output?	Medium screw base?	Operate on Standard Household voltages?
Left handed thread <sup>21</sup> Used in public spaces to deter theft.		A17, A19	No.	Yes	Yes	Not capable of being installed in an ANSI E26 medium screw base socket.	Yes. Not for households due to right-handed screw base for household fixtures.
Marine Lamp <sup>22</sup> Boats and docks.		T12, S11	No.	Yes.	No. Limited selection of light output.	Most do not; some do.	Some do; most do not (12V). Not for households.
Marine Signal Lamp <sup>23</sup> Water signaling application.		S25	No.	No.	No. Limited selection of light output.	Most do not.	Some do; most do not (12V, 24V). Not for households.
Mine Service Lamp <sup>24</sup> Mines.		PAR	No.	No. Directional.	No.	No. Medium Side Prong.	Yes. Not for household use.
Plant Light Lamp <sup>25</sup> Plant growth applications.		A19	No.	Yes	No	Yes	Yes. Plant grow light.
Reflector Lamp <sup>26</sup> Downlights, spotlights.		PAR20, PAR30, PAR38, R20, R16, BR30, BR40, MR16	Yes.	No. Directional	Yes	Generally yes, but exceptions (MR11, MR16, see Mine Service)	Yes, except some small diameter reflector (MR16, MR11).

<sup>21</sup> 42 U.S.C. §6291(30)(D)(ii)(VI); 42 U.S.C. §6292(30)(BB)(ii)(I)





<sup>22</sup> 42 U.S.C. §6291(30)(D)(ii)(VII); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>23</sup> 42 U.S.C. §6291(30)(D)(ii)(VIII); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>24</sup> 42 U.S.C. §6291(30)(D)(ii)(IX); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>25</sup> 42 U.S.C. §6291(30)(D)(ii)(X) ; 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>26</sup> 42 U.S.C. §6291(30)(D)(ii)(XI)(incandescent reflector lamp); 42 U.S.C. §6292(30)(BB)(ii)(I); 42 U.S.C. §6291(30)(BB)(ii)(II)(incandescent reflector lamp); 42 U.S.C. §6291(30)(F)(“ . . .contains an inner reflective coating on the outer bulb to direct light, an R, PAR, ER, PAR, or BPAR, or similar shape bulb. . .”).






Lamp Type/primary applications	Photo	Bulb shape	Already regulated?	Omnidirectional light?	Offered across broad range of lumen output?	Medium screw base?	Operate on Standard Household voltages?
Rough Service Lamp (≤ 40W) <sup>27</sup> Industrial equipment, worklights, ships, engine rooms, garage door openers, elevators, buses, trains.		A17, A19	Yes.	Yes	No. Only at very dim light outputs.	Yes	Yes
Shatter-resistant <sup>28</sup> Food service areas		A17, A19	No. Regulatory pathway dictated by 42 U.S.C. §6295(l)(4)(H)	Yes	Yes	Yes	Yes
Sign service Lamp <sup>29</sup> Signs , lava lamps		S11, S14, T6, T7, T8	No. Watts capped by definition of S and T lamps.	Yes	Typically low light output per lamp.	Yes	Yes
Silver Bowl Lamp <sup>30</sup> Decorative, atmospheric lighting		A19, G25, PS	No.	No	No.	Yes.	Yes.

<sup>27</sup> 42 U.S.C. §6291(30)(D)(ii)(XII); 42 U.S.C. §6292(30)(BB)(ii)(I); 42 U.S.C. §6291(30)(X) (“has a minimum of 5 supports with filament configuration that are . . .”).

<sup>28</sup> 42 U.S.C. §6291(30)(D)(ii)(XIII); 42 U.S.C. §6292(30)(BB)(ii)(I); 42 U.S.C. §6291(30)(Z) (“has a coating or equivalent technology . . . designed to contain glass if glass envelope is broken. . .”).

<sup>29</sup> 42 U.S.C. §6291(30)(D)(ii)(XIV); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>30</sup> 42 U.S.C. §6291(30)(D)(ii)(XV); 42 U.S.C. §6292(30)(BB)(ii)(I)

Lamp Type/primary applications	Photo	Bulb shape	Already regulated?	Omnidirectional light?	Offered across broad range of lumen output?	Medium screw base?	Operate on Standard Household voltages?
Showcase Lamp <sup>31</sup> Furniture display		T8, T10, T12	No. Watts capped by definition,	Yes.	Typically low light output.	Yes.	Yes
3-way Lamp <sup>32</sup> Special table/floor lamps where consumer wants 3 levels of light output.		A21	No. Regulatory pathway dictated by 42 U.S.C. §6295(l)(4)(F)	Yes	Yes	Yes	Yes
Traffic Signal Lamp <sup>33</sup> Traffic signals		A21	No.	Yes.	Limited light output offering specific to needs of traffic signals.	Yes	Yes. Not for household use.
Vibration Service Lamp (≤ 40W) <sup>34</sup> Industrial equipment, refrigeration equipment.		A19	Yes.	Yes	No. Only at very dim light outputs.	Yes	Yes
Globe (G40) Lamp <sup>35</sup> Bare ceiling fixture only. Too large for most floor/table/covered ceiling and doorway fixtures.		G40 (5" diameter)	No.	Yes	Yes	Yes.	Yes






<sup>31</sup> 42 U.S.C. §6291(30)(D)(ii)(XVI); 42 U.S.C. §6292(30)(BB)(ii)(I)(T-lamps under 10" length).

<sup>32</sup> 42 U.S.C. §6291(30)(D)(ii)(XVII); 42 U.S.C. §6292(30)(BB)(ii)(I); 42 U.S.C. §6291(30)(Y) ("employs 2 filaments, operated separately and in combination to provide 3 light levels. . .").

<sup>33</sup> 42 U.S.C. §6291(30)(D)(ii)(XVIII); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>34</sup> 42 U.S.C. §6291(30)(D)(ii)(XIX); 42 U.S.C. §6292(30)(BB)(ii)(I); 42 U.S.C. §6291(30)(AA) ("has filament configurations that are . . . listed in . . .")

<sup>35</sup> 42 U.S.C. §6291(30)(D)(ii)(XX); 42 U.S.C. §6292(30)(BB)(ii)(I)

Lamp Type/primary applications	Photo	Bulb shape	Already regulated?	Omnidirectional light	Offered across broad range of lumen output?	Medium screw base?	Operate on Standard Household voltages?
Tubular (T) Lamp ≤ 40W <sup>36</sup> Showcase, exit signs, music stands		T5, T6, T8, T10	No. Wattage capped by definition.	Yes.	No. Only at very dim light outputs.	Yes.	Yes
Globe (G16.5 – G30) Lamp ≤ 40W <sup>37</sup> Decorative, bathroom/dressing room vanity lights		G16.5, G25, G30	No. Wattage capped by definition.	Yes	No. Only at very dim light outputs.	Yes, but generally not G16.5 (candelabra base)	Yes
Candle shape (B, BA, CA, F) ≤ 40W <sup>38</sup> Decorative fixtures		B, BA, CA, F	No. Wattage capped by definition.	Yes.	No. Only at very dim light outputs.	Some, yes. Most do not (candelabra base).	Yes
S shape lamp ≤ 40W <sup>39</sup> Signs, appliances		S11, S14	No. Wattage capped by definition	Yes.	No. Only at very dim light outputs.	Yes	Yes.
General service fluorescent lamp <sup>40</sup> Ceiling fixtures/ shoplights		T5, T8, T12	Yes.	Yes	Yes	No	No. Requires separate control gear (ballast).

<sup>36</sup> 42 U.S.C. §6291(30)(D)(ii)(XXI); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>37</sup> 42 U.S.C. §6291(30)(D)(ii)(XXII); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>38</sup> 42 U.S.C. §6291(30)(D)(ii)(XXII); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>39</sup> 42 U.S.C. §6291(30)(D)(ii)(XXII); 42 U.S.C. §6292(30)(BB)(ii)(I)

<sup>40</sup> 42 U.S.C. §6291(30)(BB)(ii)(II); 42 U.S.C. §6292(30)(BB)(ii)(II); 42 U.S.C. §6291(30)(B)(general service fluorescent lamp).

By including several of these other lamps in the definition of general service incandescent lamp and general service lamp in the January 19, 2017 definitions rules --- lamps that are not used in applications traditionally served by general service incandescent lamps --- DOE “overstepped its limited authority” and its action was “unauthorized as a matter of law.”

It is worth pointing out that all of the types of specialty light bulbs that Congress explicitly stated were “not included” in the definitions of general service incandescent or general service lamp existed and were distributed in commerce in 2007, when the EISA-2007 amendments to EPCA were enacted into law. The fact that Congress explicitly referred to these light bulbs indicates that Congress was aware of them, and could have deemed them a general service incandescent lamp or general service lamp in 2007 if Congress believed they fit that definition. Congress did no such thing, further confirming the intent of Congress not to include them in the definitions. Nothing about these light bulbs has changed in the 12 years since 2007 and there is no valid reason why they should be considered general service lamps today.

**(i) Congress spoke directly to DOE Regulation of the Five Specialty Lamp Types and targeted specific issues with specific solutions**

NEMA agrees with the NOPR’s statement that Congress identified five types of specialty incandescent lamps that “are subject to standards in accordance with a specific regulatory process under 42 U.S.C. 6295(h)(4) [and a]s such, DOE [has] no need to undertake an additional process for determining whether to establish energy conservation standards for these lamp types as GSLs under 42 U.S.C. 6295(i)(6)(A)(i).” 84 FR at 3124. DOE’s conclusion is supported by the legal proposition, “When Congress speaks directly to an issue, the agency and the courts must give effect to the intent of Congress.” *Hoffman v. United States*, 57 Fed. Cl. 253, 268 & n.8 (Ct. Cl. 2003) citing *Chevron v. NRDC*, 467 U.S. 837, 842-43 (1984) See also, *Mobil Oil Corp. v. Higginbotham*, 436 U.S. 618, 625 (1978):

There is a basic difference between filling a gap left by Congress’ silence and rewriting rules that Congress has affirmatively and specifically enacted. In the area covered by the statute, it would be no more appropriate to prescribe a different measure of damages than to prescribe a different statute of limitations, or a different class of beneficiaries.<sup>41</sup>

NEMA has previously explained the reasons why, despite similarities with general service incandescent lamps (see Table II, *supra*), why these five lamps were treated differently by Congress.<sup>42</sup>

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<sup>41</sup> Accord *RadLAX Gateway Hotel v. Amalgamated Bank*, 566 U.S. 639, 645 (2012) (“[I]t is a commonplace of statutory construction that the specific governs the general . . . [T]hat is particularly true where . . . Congress has enacted a comprehensive scheme and has deliberately targeted specific problems with specific solutions.”); *Miles v. Apex Marine Corp.*, 498 U.S. 19, 24-25 (1990)(“Congress has spoken directly to the question of recoverable damages on the high seas, and when it does speak directly to a question, the courts are not free to ‘supplement’ Congress’ answer so thoroughly that the Act becomes meaningless.”); *UFCW Local 1500 Pension Fund v. Mayer*, 895 F.3d 695, 700 (9<sup>th</sup> Cir 2018).

<sup>42</sup> NEMA Comments, *supra* note 4 at 52-55. See also, for example, NEMA Comments dated November 8, 2016 at 16, DOE Dkt. No. EERE-2013-BT-STD-0051-0093 (explaining why 3-way incandescent lamps are not suitable for

**(ii) What Congress had in mind when it authorized DOE to include “other lamps” in the definition of general service lamp**

There is now a good example of exactly what Congress intended when it invited DOE to include in the definition of General Service Lamp “other lamps . . . used to satisfy lighting applications traditionally service by general service incandescent lamps.” 42 U.S.C. §6291(30)(BB)(i)(IV). As NEMA has previously explained, in 2007 when this provision was enacted into law, only the general service incandescent lamp and the compact fluorescent lamps were extant general service lamps. The general service LED lamp did not exist yet. There was talk and research about an LED lamp that might replace the general service incandescent lamp and compact fluorescent lamp, and like those lamps would provide omnidirectional light output, but much research and development needed to be done. Congress included the general service LED lamp in the definition of general service lamp in subclause III of this clause, and added a category IV to the definition for other lamps not yet known provided they were used in applications served by general service incandescent lamps. There is now such an “other lamp” that did not exist in 2007 that shares the common characteristics of each of the other general service lamps using induction technology and is used in applications traditionally served by general service incandescent lamps. See **Table II**, *supra* at page 5. See also NEMA Comments, *supra* note 4 at pages 29 and 39.

**(iii) The lamps excluded from the definition of general service incandescent lamp and general service lamp are not used in applications traditionally served by general service incandescent lamps.**

**(a) The applications where general service incandescent lamps are traditionally used**

Separate from Congress’ explicit statement identifying the lengthy list of light bulbs that are statutorily “not included” in the definition of general service incandescent lamp and general service lamp, it can easily be demonstrated that the lamps on that list are not “used in applications traditionally served by general service incandescent lamps” as required by 42 U.S.C. §6291(30)(BB)(i)(IV). The Secretary could never classify them as such, and therefore it is clear why Congress said they are not included in the definition of general service lamp or general service incandescent lamp.<sup>43</sup>

The applications traditionally served by general service incandescent lamps can be summed up as follows: table lamps, floor lamps, ceiling pendant and wall fixture applications,

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many applications traditionally served by general service incandescent lamps because of interoperability and safety issues with the standard receptacle used by most GSIL.

<sup>43</sup> Statutory support for the construction that the list of lamps that are statutorily “not include[d]” in the definition of either GSIL or GSL are also not used in applications traditionally service by general service incandescent lamps” can be found in the definition of another general service lamp: the medium base compact fluorescent lamp. See 42 U.S.C. §6291(S)(ii)(l)(bb)(“does not include any lamp that is unlikely to be used in general purpose applications such as the applications described in paragraph (D)”). Thus Congress has expressly stated that the lamps listed as “not included” in the definition of GSIL are “unlikely to be used in general purpose applications.”


garage and entranceway fixtures, and certain types of fixtures where the fixture accommodates the size of the A-17 and A-19 bulb shape and omnidirectional lighting is desired. **See Table III below.** These GSIL are not traditionally used in decorative fixture applications with candelabra base receptacles, because the medium screw base of the general service incandescent lamp will not fit. From the consumer's point of view, the A-line shape of the general service incandescent lamp bulb is not aesthetically matched with the decorative fixture and the GSIL looks awkward in the application or may not fit at all. Furthermore, general service incandescent lamps are not used in space-constrained areas where a bulb with a smaller/narrower form factor is needed for applications like furniture, appliances, or small diameter spot light fixtures;

- lighting applications with pin-based receptacles;
- lighting applications where directional lighting is desired; or
- 12 volt applications

**TABLE III  
LIGHTING APPLICATIONS TRADITIONALLY SERVED BY GENERAL SERVICE LAMPS**

Application	Photo	Photo of A-line lamp in application
Table lamp/ bedside fixture		
Floor lamp fixture		



<p>Ceiling pendant fixture</p>				
<p>Ceiling fixture</p>				
<p>Entrance way fixture</p>				
<p>Garage, basement, attic fixture</p>				

**(b) Consumers generally do not use reflector lamps in applications traditionally served by general service incandescent lamps for a variety of reasons**

Displayed below is a sampling of different light bulbs with very different form factors and designs that the DOE's January 19, 2017 definitions rule concluded were used in lighting applications traditionally served by general service incandescent lamps. Only the "A"-line, pear-shape light bulb (GSIL) on the bottom left is specifically identified by Congress in EPCA as a "general service lamp."





**Sample of Light Bulbs Deemed General Service Lamps in January 2017 Final Rule**



**Top row (L-R):** PAR 38 reflector lamp; BR 30 reflector lamp; PAR 20 reflector lamp; MR-16 reflector lamp (with GU-24 pin base). **Bottom row (L-R):** A-19 general service incandescent lamp; T-10 tubular lamp; B-10 decorative "bullet" or "torpedo lamp"; G16-1/2 globe lamp.




The PAR 38 and BR 30 reflector lamps are frequently too large for and do not fit in many lighting fixture applications traditionally served by general service incandescent lamps. The PAR 20 and MR 16 reflector lamps have a smaller form factor but have a small, focused beam width. When placed in a lighting fixture in the vertical up position (common for lighting applications traditionally served by general service incandescent applications) the beam of light points up at the ceiling (not an application traditionally served by general service incandescent lamps). See **Table IV** below.




**TABLE IV**  
**Examples of Directional Light Bulbs in General Service Incandescent Lamp Applications**

	
<p>A-line omnidirectional general service lamp in table fixture provides light to area at or below lamp, which is where it is primarily needed for this application.</p>	<p>PAR 20 directional reflector lamp in table fixture directs most of its light to ceiling and provides limited light to area at or below table lamp where needed for this application.</p>
	
<p>A-line omnidirectional general service lamp in floor fixture provides light to area at or below lamp, which is where it is primarily needed for this application.</p>	<p>PAR 20 directional lamp in floor fixture directs most of its light to ceiling and provides limited light to area at or below floor lamp where needed for this application.</p>

**TABLE V**







**Examples of Why Other Lamps are not Used In Applications Traditionally Served by GSIL**

Application	Photo	Comment
<p>Table lamp fixture with BR 30 reflector lamp.</p>		<p>BR 30 Reflector lamp does not fit in space made for GSIL/GSL and cannot be screwed into socket. Reflector lamp would direct light at ceiling if it worked. See Table III.</p>
<p>Floor lamp fixture with BR 30 reflector lamp</p>		<p>BR 30 Reflector lamp does screw into this floor lamp's socket, but directs light toward the ceiling. See also Table III.</p>
<p>Table lamp fixture with smaller PAR 20 reflector lamp (40° beam angle).</p>		<p>PAR 20 reflector lamp directs light to the ceiling where it is not useful to the consumer in a lighting application traditionally served by the general service incandescent lamp</p>

<p>Ceiling pendant fixture with BR 30 reflector lamp.</p>		<p>Reflector lamp will not fit in ceiling pendant fixture and cannot screw into socket. Bulb should not touch paper fixture; presents fire risk.</p>
<p>Ceiling fixture with BR 30</p>		<p>Ceiling fixture will not close to cover light bulbs because BR 30 reflector lamp form factor is too large for space under general service lamp fixture.</p>
<p>Outdoor entrance fixture</p>		<p>Reflector lamp fits in fixture but directs light to top of fixture where light is blocked by top.</p>

Reflector lamps are traditionally used in *different applications* compared to general service lamps, normally recessed sockets that takes advantage of the bulb's unique directional "downlight" capacity to a task area on a counter or workspace; in small recessed sockets where general service A-line lamp will not fit; in track lighting where directional light is narrowly focused to accent a spot on a wall; and in outdoor fixtures where illumination for security or accenting a garden area is desired by consumer. See **Table VI** below. **General service incandescent lamps are not traditionally used in these directional lighting applications.** See also, NEMA Comments, *supra* note 4 at 17-19 and 27-28 and 35.

**TABLE VI  
Reflector Lamp Applications**

Reflector lamp applications	Photo	Photo
<p>Recessed ceiling fixture for reflector lamp "downlight" application.</p>		
<p>Small recessed ceiling fixture for small diameter reflector lamp to accent bookshelves; general service incandescent lamp or other general service lamp would not fit.</p>		
<p>Track lighting General service incandescent lamp or other general service lamp will not fit in this fixture intended for reflector spot light application.</p>		
<p>Outdoor flood light fixture for PAR 38 reflector lamp</p>		

(c) **Consumers generally do not use decorative lamps in applications traditionally served by general service incandescent lamps for a variety of reasons**

**TABLE VII**

<p>Application</p> <p>Table lamp fixture; brighter range of light output offered by general service lamp that is not offered by the low wattage small globe lamp. Dimmer light bulb typically does not satisfy consumer requirements in this application.</p>	<p>1600 lumen general service lamp</p> 	<p>330 lumen G16-1/2 lamp (40W)</p> 
<p>Application</p> <p>Vanity bar fixture and vanity mirror utilizing G 16-1/2 light bulb for bathroom or dressing room fixtures is the common application for this lamp.</p>	<p>330 lumen G16-1/2 lamp (40W)</p> 	<p>330 lumen G16-1/2 lamp in vanity mirror</p> 
<p>Application</p> <p>Decorative candelabra fixture using G16-1/2 light bulb with candelabra base where smaller form factor sought for aesthetic</p>	<p>500 lumen G16-1/2 lamp (60W)</p> 	<p>G16.5 with candelabra base</p> 







purposes. GSIL will not fit in socket.		
Application	760 lumen B lamp (60W)	Blunt tip (“B”) with candelabra base
Decorative candelabra fixture using blunt tip (B) shape bulb with candelabra base where bulb matches decorative aesthetic of fixture. GSIL will not fit in socket.		



Decorative light bulbs such as those with a “candle” shape bulb (“B” blunt tip; “BA” bent tip; “C” flame tip; “CA” bent tip; “F” flame shape) and small globe shape lamps (G16.5) have a form factor that is not as large as the general service incandescent lamp’s pear shape bulb. Their smaller form factor permits them to be mounted on a smaller candelabra (E12) base and used in fixtures with candelabra base receptacles. That is the more common design of these decorative light bulbs. A fixture that receives a candelabra base lamp is not an application traditionally served by a general service incandescent lamp because the GSIL will not fit in its socket. But these decorative light bulbs also present a decorative aesthetic to the consumer that is not replicated in the general service incandescent lamp, which is not used in decorative applications. The decorative bulb serves a different application for the consumer than the GSIL. When these decorative bulbs are mounted on a medium screw base, they are by definition low wattage ( $\leq 40W$ )/low lumen lamps and will not serve the broader range of light outputs sought by consumers for applications traditionally served by general service incandescent lamps. **General service incandescent lamps are not traditionally used in these applications.**



**(d) Consumers generally do not use functional lamps (S shape or T shape) in applications traditionally served by general service incandescent lamps for a variety of reasons**

**Table VIII**

<b>Application</b>	<b>Marquee sign</b>	<b>S14 shape, 11W-40W, 65-360 lm</b>
<p>Sign lamps used to illuminate signs have a small form factor, S11 – S14, low wattage (<math>\leq 40W</math>) and low lumen output. Sometimes used in appliance applications. Not used in applications traditionally served by general service incandescent lamps.</p>		
<b>Application</b>	<b>Signs, lava lamps,</b>	<b>S11 shape, 7.5W-40W, 52 lm-360lm</b>
<p>Used in signs where lower light output is sought compared to S14 shape lamp. Sometimes used in night lights and lava lamps. Not used in applications traditionally served by general service incandescent lamps.</p>		
<b>Application</b>	<b>Music stands, showcase displays</b>	<b>T10, 15W-40W, 115 lm -415 lm</b>
<p>Music stands and showcase display light bulbs (T10, tubular form factor fits application). Low wattage and low lumen lamp. Not used in applications traditionally served by general service incandescent lamps.</p>		

Application	Exit signs	T-6, 15W-25W, 100 lm – 350 lm
Exit signs, commonly a candelabra base lamp used in exit signs; T6 also found with wedge and bayonet bases. Low wattage and low lumen output lamps. Not used in applications traditionally served by general service incandescent lamps.		

“S-shape” (commonly referred to as sign lamps) and “T-shape” (commonly referred to as tubular lamps) have a small form factor with functional design in mind: to fit in locations where a general service incandescent lamp will not fit such as a slender space in the case of T-shape lamp or where the application would not call for the bulb itself to stand out as in the case of S-shape bulbs. These lamps are, by definition and application, low wattage ( $\leq 40W$ ) and low lumen output light bulbs and will not serve the broader range of light outputs sought by consumers for applications traditionally served by general service incandescent lamps. Consumers do not buy “S” shape lamps to use in table lamps, floor lamps, ceiling pendant fixtures, ceiling fixtures, or home entrance fixtures. With the exception of perhaps a table lamp with a unique design that cannot accommodate a general service incandescent lamp and whose application requires only limited light output, consumers do not buy “T” shape lamps to use table lamps, floor lamps, ceiling pendant fixtures, ceiling fixtures, or home entrance fixtures. **General service incandescent lamps are not traditionally used in these applications.**

**(e) Candelabra base and intermediate base lamps**

The 2017 definitions rules incorporated “a lamp that has an ANSI base” in the definition of general service lamp and swept into the definition an enormous number of specialty lamps with lamp bases that are not traditionally used in applications served by general service incandescent lamps.<sup>44</sup> NEMA discusses two of them separately here: candelabra base lamps and intermediate base lamps.

NEMA’s October 16, 2017 Comments in this rulemaking described the candelabra base lamps to include a number of the specialty lamps discussed above used in applications different than the applications traditionally served by general service incandescent lamps.<sup>45</sup> Setting

<sup>44</sup> For the wide variety of lamp bases, see <https://www.bulbs.com/learning/basechart.aspx> See also, NEMA Comments dated November 8, 2016 at Appendix, ANSI SR24f – 2002, ANSI Assigned Photo Lamp Codes.

<sup>45</sup> See NEMA Comments dated October 16, 2017 at 10 (Table 3) and 22 (Dkt No. EERE-2017-BT-NOA-0052-0004).

aside the obvious hurdle to their use in those applications --- that they cannot operate because they will not screw into the medium screw base sockets --- it is clear that consumers use candelabra base lamps for different applications than a general service incandescent lamp is used for. And the same is true for intermediate base lamps.<sup>46</sup>

Notably, Congress treated candelabra base incandescent lamps and intermediate base incandescent lamps differently than general service incandescent lamps in EPCA and regulates them differently. These specialty incandescent lamps are offered with different performance characteristics than general service incandescent lamps. They are designed to have a longer life than a general service incandescent life and to provide that longer life their lumen output is reduced. In recognition of this fact, Congress imposed wattage caps on these lamps: 60 watts in the case of candelabra base lamps and 40 watts in the case of intermediate base lamps, and Congress did not impose the efficacy measure applicable to general service incandescent lamps.<sup>47</sup> This is a case where our earlier remarks pertinent to statutory construction resonate equally: When “Congress has spoken directly to the question . . . , and when it does speak directly to a question, the courts are not free to 'supplement' Congress' answer.” See note 41 *supra* and accompanying text citing cases (“[T]hat is particularly true where . . . Congress has enacted a comprehensive scheme and has deliberately targeted specific problems with specific solutions.”). Here Congress has deliberately targeted specific problems with specific solutions for candelabra base and intermediate base incandescent lamps in the context of a more comprehensive scheme for general service incandescent lamps and general service lamps.

In deciding to regulate candelabra base incandescent lamps and intermediate base lamps as general service lamps, DOE’s 2017 definitions rule made the same mistake it made with respect to incandescent reflector lamps by claiming authority pursuant to 42 U.S.C. §6295(i)(6)(A)(i)(II) to determine whether “the exemptions for *certain* incandescent lamps should be maintained or discontinued.” There was no “exemption” for either candelabra base incandescent lamps, or intermediate base incandescent lamps, or incandescent reflector lamps that could be discontinued or maintained.<sup>48</sup> Each of these types of lamps was already subject to a statutory obligation or liability imposed on lighting manufacturers under EPCA.<sup>49</sup> The future

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<sup>46</sup> *Id.* at 11 (Table 4).

<sup>47</sup> Energy Independence and Security Act of 2007, §321(a)(3), P.Law 110-140, 121 Stat. at 1578 (Dec. 19, 2007).

<sup>48</sup> See NEMA Comments dated October 16, 2017 at 48-49, (Dkt No. EERE-2017-BT-NOA-0052-004).







<sup>49</sup> *Id.* at 46 & n.53 (“Exemption” means: “The action of freeing or state of being free from an obligation or liability imposed on others: \*\*\* ‘regulatory exemptions’.” *Oxford Dictionary of English* (2010); “Freedom from a general duty or service; immunity from a general burden, tax, or charge.” Black’s Law Dictionary (“exemption”). The “*certain* incandescent lamps” that Congress is referring to here are those that were not already subject to a statutory obligation or liability imposed on manufacturers under EPCA. The word “certain” is a pronoun here and means “some, but not all.” *Oxford English Dictionary* (“certain”). Congress’ use of the word “certain” indicates that some incandescent lamps were exempt from EPCA regulation and others were not, and in fact that is the case: general service incandescent lamps, candelabra base incandescent lamps, intermediate base incandescent lamps, and incandescent reflector lamps are not exempt from a regulatory obligation under EPCA; certain other incandescent lamps were and are presently exempt from regulation under EPCA.




regulatory pathway prescribed for these lamps is set forth at 42 U.S.C. §6295(m), not §6295(i)(6)(A)(i)(II).

Candelabra base (E12) lamp	Intermediate base (E17) lamp
	

**(f) Lamps with other ANSI bases**

In addition to the candelabra base and intermediate base lamps, there were many, many other lamps with peculiar lamp bases that are not used with lamps to satisfy lighting applications traditionally served by general service incandescent lamps. They are too many to catalog here, see note 44 *supra*. But the examples pictured below, a small sampling of the diverse set of lamp bases, make the point that having “an ANSI base” does not have a place in the definition of general service lamp.

<b>TABLE IX – EXAMPLES OF SOME OTHER ANSI BASES NOT USED WITH LAMPS TO SATISFY LIGHTING APPLICATION TRADITIONALLY SERVED BY GENERAL SERVICE INCANDESCENT LAMPS</b>			
Double contact bayonet base		Single contact bayonet base	
Wedge base		Festoon base	
Mogul screw base (E39)		Side prong base	

GU-10 Twist and Lock base		GU-4 bi-pin base	
Single contact prefocus lamp base		Double-ended recessed single contact base	

**(g) “General Lighting Applications”**

Despite the obvious fact that DOE’s 2017 definitions rule unlawfully re-wrote the congressional definition of general service lamp,<sup>50</sup> we anticipate that other commenters may ask DOE to revive this error and re-insert the phrase “used in general lighting applications” in the definition of general service lamp and that phrase’s reference to “lighting that provides an interior or exterior area with overall illumination.” NEMA refers DOE to our previous Comments that confronted this illegal attempt to by-pass congressional intent.<sup>51</sup> Not only did DOE attempt to borrow the phrase from another part of the statute that is about lighting used in warehouses, street lighting, stadium lighting and search lights --- having nothing to do with consumer household light bulbs --- but the definition of the phrase, as interpreted by DOE --- that it is a lamp that provides “overall illumination” because it “provides a substantially uniform level of illuminance throughout an area” could not possibly apply to directional lamps or low lumen decorative lamps. See NEMA Comments dated October 16, 2017 at 35-36, DOE Dkt No. EERE-2017-BT-NOA-0052-004. Not only was this approach legally erroneous,<sup>52</sup> but it was factually incorrect to apply the illegal approach in the manner the January 2017 definitions rule applied it.

**(h) The availability of LED specialty lamps that are not general service lamps**

During the public meeting, one or more stakeholders described the availability of certain types of LED specialty lamps on the market as substitutes for the same type of incandescent specialty lamps as though that fact alone warranted including the specialty lamp in the definition

<sup>50</sup> See note 6, *supra*, and accompanying text.

<sup>51</sup> NEMA Comments dated October 16, 2017 at 34-37, EERE-2017-BT-NOA-0052-004.

<sup>52</sup> *Barnhart v. Sigmon Coal Co.*, 534 U.S. 438, 452 (2002)(“[When] Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion and exclusion.”). This is a case where different words are used. See *Vonage Holdings Corp. v. FCC*, 489 F.3d 1232, 1240 (D.C. Cir. 2007) (“[W]e have repeatedly held that where different terms are used in a single piece of legislation, the court must presume that Congress intended the terms to have different meanings.”). When Congress inserts a word or policy in one section of a statute, it does not mean that an agency can borrow it to construe a different section to bolster its efforts at statutory construction that is not consistent with the structure and text of the act. See *Univ. of Tex. Southwestern Med. Ctr. v. Nassar*, 133 S.Ct. 2517, 2528-29 (2013).

of general service lamp. Samples of each lamp were displayed. While NEMA would agree that there are energy savings that can be realized by using an LED medium base bent tip candle lamp in lieu of an incandescent medium base bent tip candle lamp --- which is one point the stakeholder was making ---, this fact has nothing to do with whether the medium base bent tip candle lamp is a general service lamp under EPCA. ***That is not the way Congress wrote the law in 2007.*** The statutory definition of general service lamp *does not include the phrase* --- “any other lamps that the Secretary determines [*a light-emitting diode equivalent exists for an incandescent version of that same lamp*].” That kind of re-writing of the statute by DOE is legally impermissible for the same reasons we have noted above with respect to this same clause. See note 6, *supra* and accompanying text.

Rewriting the statute in that manner is also not consistent with other provisions in the statute as NEMA has previously pointed out.<sup>53</sup> The apparent objective of the stakeholder’s argument is to apply a 45 lumen per watt energy conservation standard to incandescent lamps. The argument therefore presumes that Congress expected the Secretary to eliminate incandescent light bulbs from the market in this rulemaking. The structure of the EPCA provisions relating to the general service lamp rulemakings does not support the conclusion or inference --- expressly or impliedly --- that incandescent light bulbs were to be eliminated from the market just because a more efficient version of the same light bulb was available. That interpretation would effectively read §6295(i)(6)(B) relating to the Tier 2 rulemaking out of the statute. Why would Congress ask the Secretary of Energy to determine in the Tier 2 rulemaking whether standards in effect for general service incandescent lamps should be amended to make them more stringent than Congress’ 2007 standards if the Secretary was supposed to eliminate general service incandescent lamps in the Tier 1 rulemaking under §6295(i)(6)(A)? Why would Congress ask the Secretary to determine in the Tier 2 rulemaking whether the exemptions for certain incandescent lamps should be maintained or discontinued if the Secretary was supposed to eliminate those certain incandescent lamps from the market in the Tier 1 rulemaking? The presumption inherent in the argument that incandescent lamps should be eliminated from the market in this rulemaking because an LED version exists makes no sense in light of the structure of the statute pertaining to these rulemakings.

Congress could have made the decision in its 2007 legislation to replace the incandescent bulb with more efficient compact fluorescent (CFL) bulbs in 2020 and written the law that way. Congress knew that the CFL was more efficient than the halogen incandescent bulb. But Congress consciously decided not to adopt that legislation and rejected that approach. See NEMA Comments at 90 (October 16, 2017), EERE-2017-BT-NOA-0052-004; NEMA Comments at 26-30 (May 16, 2016), EERE-2013-BT-STD-0051-0066 (detailing legislative history). Importantly, there were no light-emitting diode products in production or marketed in 2007. That was still many years away.

Furthermore, as another stakeholder pointed out in the same public meeting, not every LED version of a specialty light bulb is a perfect or, from the consumer’s point of view, a satisfactory substitute for the incandescent version. That may be due to the significantly higher

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<sup>53</sup> NEMA Comments dated October 16, 2017 at 61-62, EERE-2017-BT-NOA-0052-004.

initial cost of some types of specialty LED lamps compared to the incandescent version of the same lamp, or it may be due to design differences that are still being resolved by manufacturers. The larger form factor of some LED versions of decorative lamps was mentioned as was the fact that LED lamps cannot be used in some applications where only incandescent lamps can be used (e.g. LED appliance lamps in ovens). These factors indicate that there are some very different economic justification issues for different types of specialty light bulbs compared to general service light bulbs.

DOE should reject the argument that because LED versions of certain specialty lamps are available in the market that Congress directed the Secretary to eliminate the incandescent version of these bulbs from the market. ***That is not the way Congress wrote the law and authorized DOE to decide.***

As Appendix A to these comments demonstrates, manufacturers have been aggressively competing to sell the more efficient version of particular lamps and innovating to lower the cost and price of LED products and deliver quality lighting. Consumers are buying more and more LED lamps such that LED reflector lamp shipments now exceed incandescent reflector lamp shipments and LED decorative lamp shipments are gaining ground on incandescent decorative lamp shipments. And part of that competition that is helping bringing down the cost of the LED lamps is the presence of the incandescent version in the marketplace so that consumers see the comparative value of energy efficient lamps.

#### **D. The consequences of correcting the definitions of GSIL and GSL**

The consequences of the change in the definitions proposed by DOE are that DOE is no longer violating the law, acting arbitrarily and capriciously, and exceeding the limited authority provided to the Secretary of Energy by Congress with respect to regulating general service lamps. This legal consequence has practical, regulatory consequences as well. It avoids sweeping into a regulatory scheme a broad array of light bulbs with odd bulb shapes and designs, limited light output, uncommon applications, and unusual lamp bases that would be inappropriate, for both technical and economic reasons, to regulate in the same manner as the general service incandescent lamp, the compact fluorescent lamp, or the general service LED lamp.<sup>54</sup> It further avoids sweeping into a regulatory scheme light bulbs that do not consume a significant amount of energy and whose regulation may not yield a significant amount of energy savings.

One thing that is not a consequence of this change in the definitions is that DOE is not without authority to regulate other lamps that are not general service incandescent lamps or general service lamps under other subsections of EPCA provided that certain statutory conditions precedent are determined to be met. Congress has provided DOE with limited regulatory authority to determine whether other incandescent lamps should be regulated. This is already reflected in DOE's decision to regulate rough service incandescent lamps and vibration

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<sup>54</sup> NEMA's previous comments explained in detail, for example, why reflector lamp standards must be different than general service incandescent and general service lamp efficacy standards. See NEMA Comments, *supra* note 4 at 20.

service incandescent lamps in the manner Congress directed at 42 U.S.C. §6295(l)(4)(D, E). See 82 FR 60845 (December 26, 2017) (establishing energy conservation standards for rough and vibration service lamps in accordance with the specific regulatory pathway in the text of the statute). The fact that the regulation of these lamps and the 3-way incandescent, high lumen incandescent and shatter-resistant incandescent lamps was statutorily located in subsection 6295(l) by Congress is instructive and describes the regulatory pathway for those lamps that is different than the regulatory pathway for general service incandescent lamps and general service lamps. Subsection (l) of section 6295 of EPCA is the statutory provision by which other products are on-boarded for energy conservation regulation as “covered products” for the first time by DOE. Ordinarily, subsection 6295(l) would require that “the aggregate household energy use within the United States by products of such type (or class) exceeded 4,200,000,000 kilowatt-hours (or its Btu equivalent) for any such 12-month period,” 42 U.S.C. §6295(l)(1)(B) and, pursuant to subsection 6292(b), “(A) classifying products of such type as covered products is necessary or appropriate to carry out the purposes of this chapter, and (B) average annual per-household energy use by products of such type is likely to exceed 100 kilowatt-hours (or its Btu equivalent) per year,” 42 U.S.C. §6292(b)(1), as conditions precedent for regulation under EPCA.<sup>55</sup> In the case of these five lamps, Congress dispensed with those conditions precedent and established a different set of conditions precedent reflected in subsection 6295(l)(4). The congressionally-specified conditions precedent for rough service incandescent lamps and vibration service incandescent lamps have occurred and those lamps are now covered products; the conditions precedent have not occurred for the other three types of incandescent lamps identified in 6295(l)(4).

Similarly, Congress directed DOE to determine, in the course of the general service lamp rulemaking, whether “the exemptions for certain incandescent lamps should be maintained or discontinued based, in part, on exempted lamp sales collected by the Secretary from manufacturers.” 42 U.S.C. §6295(i)(6)(A)(i)(II). DOE has in fact already determined that the exemptions for a number of unregulated lamps should be maintained as DOE previously determined not to regulate appliance lamps, bug lamps, black light lamps, colored lamps, infrared lamps, left-handed thread lamps, marine lamps, marine signal service lamps, mine service lamps, plant light lamps, sign service lamps (other than S-shape 40W or less), silver bowl lamps, showcase lamps (other than T-shape lamps 40W or less), traffic signal lamps, and G-shape lamps with a diameter of 5 inches or more. In the prior definitions rule, DOE erroneously determined to regulate (as general service lamps) shatter-resistant incandescent lamps, 3-way incandescent lamps, and high lumen incandescent lamps without following the specific regulatory pathway created by Congress for their regulation and ignoring the fact that the conditions precedent for their regulation were not met. In the prior definitions rule, DOE also erroneously determined to regulate medium screw base T-shape lamps with a length not more than 10 inches that use not more than 40 watts, and medium screw base small decorative

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<sup>55</sup> See *Hearth, Patio & Barbecue Ass’n. v. United States Dept of Energy*, 706 F.3d 499, 504-05 (D.C. Cir. 2012).



lamps of 40 watts or less (candle shape (B, BA, CA, and F) and globe (G-16.5, G25, G30)),<sup>56</sup> and S-shape lamps of 40 watts or less, without determining that “sales of exempted incandescent lamps have increased significantly”, P. Law 110-140 §321(A)(3)(E)(ii), or that the other conditions precedent for regulation in subsections 6295(f) or 6292(b) were met. There is data in the rulemaking record that shows sales of these exempt incandescent lamps have been decreasing or are flat, and it is likely most of them do not consume enough energy to meet the household energy use requirements of subsections 6295(f) or 6292(b) that are conditions precedent for regulation under EPCA.<sup>57</sup>

And similarly, DOE has authority to regulated non-exempt, already-regulated lamps such candelabra base incandescent lamps, intermediate base incandescent lamps, and incandescent reflector lamps.

#### **E. Withdrawal of certain supplemental definitions included in the January 2017 definition rules.**

##### **(i) NEMA supports the retention of certain definitions for the terms shown above that are not stricken by a strike-through.**

In the January 2017 definition rules, DOE defined for the first time certain terms. A number of these are statutory terms not defined in the statute, and refer to lamps that are “not included” in the definition of general service incandescent or general service lamp. Other terms were invented by DOE that Congress had not previously used. NEMA believes that it would be beneficial to define statutory terms that are undefined in the statute or are found in the current DOE regulations where DOE has adopted the statutory term or are appropriate in connection with these definitions. These include:

- “Black light lamp,”
- “Bug lamp,”
- “Colored lamp,”
- “General service light-emitting diode (LED) lamp,” [**Note:** see proposed definition below]
- “General service organic lighting-emitting diode (OLED) lamp,”
- “Infrared lamp,”
- “Integrated lamp,” [**Note:** see proposed definition of general service LED lamp below].
- “LED Downlight Retrofit Kit,”
- “Left-hand thread lamp,”
- ~~“Light fixture,”~~<sup>58</sup>
- “Marine lamp,”
- “Marine signal service lamp,”
- “Mine service lamp,”

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<sup>56</sup> Candelabra base and intermediate base incandescent lamps with these bulb shapes are already regulated under EPCA and by DOE with energy conservation standards. P. Law 110-140 Sec. 321(3)(C) and 10 CFR §430.32(x)(2,3) and therefore do not enjoy exemptions from regulation under EPCA for purposes of §6295(i)(6)(A)(i)(II).

<sup>57</sup> See NEMA Comment dated May 16, 2016 at 44-46, DOE Dkt. No. EERE-2013-BT-STD-0051-0066.

<sup>58</sup> For the terms that have a strike-through, NEMA does not see the need for a definition.

- ~~“Non-integrated lamp,”~~
- “Other fluorescent lamp,” [Note: term is used in ceiling fan light fixture test procedure]<sup>59</sup>
- ~~“Pin base lamp,”~~
- “Plant light lamp,”
- “Reflector lamp,”
- “Showcase lamp”
- “Sign service lamp,”
- “Silver bowl lamp,”
- ~~“Specialty MR lamp,” and~~
- “Traffic signal lamp.”

**(ii) NEMA requests DOE to modify the definition of General Service light-emitting diode (LED) lamp to be consistent with the proposed definitions rule and the intent of Congress.**

This modified definition proposed below is derived from the congressional definition of the medium base compact fluorescent lamp. The underscored text is proposed revised text, and strike-through text would delete text from the January 19, 2017 rule.

General service light-emitting diode (LED) lamp means an integrated lamp incorporating light-emitting diodes with a medium screw base, a rated input voltage range of 115 to 130 volts and which is designed as a direct replacement for a general service incandescent lamp; however, the term does not include --

(1) Any lamp that is --

(i) Specifically designed to be used for special purpose applications; and

(ii) Unlikely to be used in general purpose applications, such as the applications described in the definition of "General Service Incandescent Lamp" in this section; or

(2) Any lamp not described in the definition of "General Service Incandescent Lamp" in this section that is excluded by the Secretary, by rule, because the lamp is --

(i) Designed for special applications; and

(ii) Unlikely to be used in general purpose applications.<sup>60</sup> ~~or non-integrated LED lamp designed for use in general lighting applications (as defined in this section) and that uses light-emitting diodes as the primary source of light.~~

**2. DOE requests comment on whether any potential lack of clarity on what standards may apply to certain GSLs and GSILs caused financial hardship to retailers trying to plan their inventory.**

The NOPR prefaces this question with reference to consumer channel lamp shipments 2016-2018 (Graph IV.1) for a wide variety of incandescent and halogen incandescent lamps, including lamps that are already regulated and those that are not regulated. The data displayed is consistent with NEMA shipment data for these two broad categories of lamps through the retail store channel during the period. During the DOE’s public meeting on February 28, 2019,

<sup>59</sup> 10 CFR Part 430, Subpart B, Appendix V ¶13.

<sup>60</sup> This mirrors the statutory definition of medium base compact fluorescent lamp at 42 U.S.C. §6291(S), except it replaces the term “integrally ballasted fluorescent lamp” with “integrated lamp incorporating light-emitting diodes.” The term “light-emitting diodes is already defined in the statute, 42 U.S.C. §6291(CC), and NEMA would encourage DOE to retain its 2017 definition of “integrated lamp” for this purpose.

questions were asked about the types of lamps represented by these two broad categories. Both of these categories include large incandescent and halogen lamps and exclude miniature or very small light bulbs. In the halogen category, the lamps include A-line halogen (regulated at 10 CFR 430.32(x)(1)), as well as halogen reflector lamps (regulated at 10 CFR 430.32(n)(6)). In the incandescent category, the lamps include a broad array of incandescent lamps including those excluded from the definition of general service incandescent lamp such as Decorative (B, BA, CA, F, G and T shape bulbs(both medium and candelabra bases), 3-way, A-line under 40 watts, traffic signal lamps, A-line greater than 150W, rough service, vibration service, other specialty lamps (including lamps for applications such as sign, aviation, railway, appliance, floodlighting, etc.), large >PAR38 reflector lamps, bulged reflector lamps, and R (blown glass) reflector lamps. Some of these incandescent lamps are already regulated at 10 CFR 430.32(x)(2), (3).

We understood the point of the graphic was to partially illustrate the magnitude of uncertainty as to which products will be eligible for sale after 2019. 89 FR at 3126-27 (February 11, 2019). This uncertainty is created by the illegally broad definition of general service lamp in January 2017. NEMA would agree that this data “partially” makes that demonstration. The incandescent lamp data includes some incandescent light bulbs that DOE did not propose to include in the January 19, 2017 definition of general service lamp in the first place; however it does include the lamps that DOE erroneously included in that definition and those represent a number of these incandescent lamps as well as lamps that DOE did not include. With respect to the halogen data, it includes halogen incandescent reflector lamp shipments that DOE’s NOPR would no longer include in the definition of GSIL or GSL --- lamps that Congress and DOE are already regulating separately under the statute and are explicitly excluded from the statutory definition of general service lamp.

#### **Clarity on what standards may apply.**

Congress has presented to DOE three alternative approaches to energy conservation regulation for general service lamps under subparagraph §6295(i)(6)(A) that DOE must follow depending upon certain circumstances described in the statute. Just as the market requires clarity on which lamps are regulated in this rulemaking, the market requires clarity about the standards that will apply to the lamps that will be regulated by this rulemaking.

**Alternative One:** DOE determines whether to amend or not amend standards for general service incandescent lamps (GSIL) and compact fluorescent lamps (CFL), and/or whether or not to adopt new standards for general service LED lamps and general service induction lamps. In the case of GSIL, this determination is mandated by 42 U.S.C. §6295(i)(6)(A)(i)(I); in the case of CFL and General Service LED lamps, the Secretary has discretion under 42 U.S.C. §6295(i)(6)(A)(ii)(I) (“The rulemaking shall not be limited to incandescent lamp technologies”). In the event that DOE determines to amend current energy conservation standards for GSIL, that amendment was to be published by January 1, 2017. 42 U.S.C. §6295(i)(6)(A)(iii). NEMA agrees with DOE that the plain language of EPCA demonstrates there is no statutory deadline for publication if DOE determines that standards for

GSIL cannot be amended.<sup>61</sup> Whether or not DOE amends standards in effect for GSIL or CFL and/or adopts standards for general service LED and induction lamps, the outcome must “produce savings that are greater than or equal to the savings from a minimum efficacy standard of 45 lumens per watt,” and if the standards outcome does not produce those savings the Secretary must prohibit the sale of any general service lamps that has an efficacy less than 45 lumens per watt. 42 U.S.C. §6295(i)(6)(A)(v).

**Alternative Two:** In addition to the determinations in Alternative One, DOE must consider a minimum standard of 45 lumens per watt for general service lamps. 42 U.S.C. §6295(i)(6)(A)(ii)(II). While DOE’s consideration of this minimum standard is mandatory, DOE has discretion whether or not to adopt such a minimum standard. Adoption of such a standard could be concurrent with adoption of amended or new standards for specific types of general service lamps such as GSIL, CFL and general service LED or induction lamps whose efficacy is greater than 45 lumens per watt. It could also be concurrent with a determination that the Secretary cannot amend standards for general service incandescent lamps.

**Alternative Three (the Backstop):** If, for example, the DOE determines to amend standards currently in effect for GSIL, then the Secretary must prohibit the sale of any general service lamp that does not meet a minimum 45 lumen per watt standard beginning January 1, 2020 because DOE failed to publish such a standard by January 1, 2017. 42 U.S.C. §6295(i)(6)(A)(v)(“fails to complete a rulemaking in accordance with” clause (iii)). If the DOE determines that standards adopted under Alternative One do not “produce savings that are greater than or equal to the savings from a minimum efficacy standard of 45 lumens per watt,” the Secretary must prohibit the sale of any general service lamps that has an efficacy less than 45 lumens per watt. 42 U.S.C. §6295(i)(6)(A)(v)(“or if the final rule does not produce” the specified energy savings). As we demonstrate later in these Comments, the weighted average of general service lamps in sockets is reasonably estimated to be almost 70 lumens per watt, indicating that this last requirement has been vastly exceeded without regulation.

The “lack of clarity” or “uncertainty” and “financial hardship to retailers” that DOE has described in this NOPR, arises out the lack of clarity as to the timing that amended or new standards may take effect, what those standards will be, the scope of products that may or may not be included in any general service lamp regulation, the statutory basis of the standard (*i.e.*, Backstop or not) and the statutory language in the Backstop that requires the Secretary to “prohibit the sale of any general service lamp that has an efficacy less than 45 lumens per watt.” The latter requirement phrased in terms of sales prohibition runs contrary to general approach in EPCA, which is to prohibit manufacture on or after a date in the future and is unusual.

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<sup>61</sup> *National Electrical Manufacturers Association v. California Energy Commission*, 2017 U.S. Dist. LEXIS 211213 at \*16-17 \*(E.D. CA. 2017)(“Properly read, the plain language of the statute requires the Secretary to find first “that the standard in effect for [GSILs] should be amended” before imposing an obligation on the Secretary to “publish a final rule no later than January 1, 2017.”).

**Phased-in effective dates.** One aspect of the statutory alternatives described above that we have not yet mentioned in these comments is Congress' direction to DOE to "consider phased-in effective dates under this subparagraph" after considering several factors.<sup>62</sup> 42 U.S.C. §6295(i)(6)(A)(iv). Congress' reference to "this subparagraph" is a reference to subparagraph §6295(i)(6)(A), which includes each of the alternatives described above, including the Backstop. This authority to "phase-in" effective dates for general service lamp energy conservation standards is one way of dealing with "uncertainty" and "financial hardship to retailers" as well as the impact on manufacturers. Thus if the Secretary determines that it is technically feasible and economically justifiable to adopt a minimum 45 lumen per watt standard for general service lamps under Alternative Two with a "manufactured-by compliance date, or if DOE determines that the Backstop has been triggered under the circumstances described in Alternative Three and the Secretary must prohibit the sale of certain lamps with an efficacy of less than 45 lumens per watt, the Secretary has authority to phase-in those compliance dates in either case.

What the foregoing discussion also indicates is that DOE should complete standards rulemaking that it has said in the NOPR that it is undertaking with all deliberate speed and to resolve these uncertainties as soon as possible.

To assist DOE with respect to overcoming a lack of clarity *on what standards may apply to certain GSLs and GSILs*, NEMA takes the opportunity to revisit its prior recommendations in this rulemaking.

**General service incandescent lamps.** NEMA has previously explained that the option to save energy by merely reducing the wattage of a general service halogen incandescent lamp cannot be economically justified because it will shorten the life of the incandescent bulb and force the consumer to buy a replacement lamp sooner thereby nullifying the economic value of the minor energy savings. NEMA also previously explained that a more efficient general service halogen IR bulb made and sold by GE and Philips that was briefly on the market could not, because of its very high cost that was not offset by energy savings, be economically justified compared to the general service halogen incandescent lamp that has been on the market for a decade now. That product was commercially unsuccessful.<sup>63</sup>

The only additional information in the rulemaking record relevant to the question of whether the energy conservation standard for general service incandescent lamps can be amended is contained in a comment identifying efforts by TCP International and ADLT (Venture

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<sup>62</sup> The factors are: (I) the impact of any amendment on manufacturers, retiring and repurposing existing equipment, stranded investments, labor contracts, workers, and raw materials; and (II) the time needed to work with retailers and lighting designers to revise sales and marketing strategies." *Id.*

<sup>63</sup> For further details, see NEMA Comment dated May 16, 2016 at 50-56, DOE Dkt. No. EERE-2013-BT-STD-0051-0066.

Lighting) to make a more efficacious general service halogen incandescent lamp.<sup>64</sup> Photos of prototypes of these lamps are displayed in the comment. Both companies are members of NEMA and have informed us as follows: (1) TCP never introduced such a product to the market or commercialized because the cost of the product was too high; (2) Venture Lighting developed what it called its Vybrant 2X “hybrid halogen” bulb between 2011 and 2013, a 50 watt incandescent bulb that produced approximately 1600 lumens. Venture briefly exposed this product to the market *only through its website for about 3 months in 2013*, but had to withdraw the product for technical and product performance reasons because the lamp experienced “hot shock” issues whereby the filament would cross over on itself and create short life or immediate failure. Because of the technical obstacles<sup>65</sup> and cost issues, Venture concluded the product would not be commercialized and discontinued the project.<sup>66</sup> DOE can verify these facts with the companies. If the DOE were to adopt a standard for general service incandescent lamps based on these products, no one would make and sell the product. *Compare* 80 FR 4042, 4141 (February 19, 2015)(DOE doubt that manufacturers would invest to produce incandescent reflector lamp required to meet proposed standard weighs against adopting proposed energy conservation standard).

It is NEMA’s conclusion that the current energy conservation standard for the general service incandescent lamp cannot be amended in accordance with the criteria set forth in 42 U.S.C. §6295(o), and therefore the Secretary should determine not to amend standards for general service incandescent lamps.

**Compact fluorescent lamps.** DOE previously proposed to amend standards for compact fluorescent lamps. 81 FR 14528 (March 17, 2016). The DOE acknowledged that its proposed standard could not be met by the CFL technology and would eliminate the product from the market. NEMA asserted that such a proposal was not lawful under EPCA. NEMA responded in its public comments as follows:<sup>67</sup>

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<sup>64</sup> See Appliance Standards Awareness Project et al Comment dated October 16, 2017 at 17-19, DOE Dkt. No. EERE-2017-BT-NOA-0052-0011.

<sup>65</sup> The technical challenges are substantial. A filament needs to be accurately positioned both initially and over time (‘sag’ prevention) with extreme precision in order to maximize absorption of infrared light and lamp efficacy. If the filament moves from its precise location only slightly, the lamp loses its efficacy. Minor vibration can cause this to happen. This places both mechanical and chemical constraints on the filament construction and materials used. A fuse link is required for safe operation of the light bulb and this creates additional design challenges for accurate filament positioning. If these issues could be overcome to create a long-lasting, safe light bulb, it would be like asking the consumer to buy an expensive Bradley armored vehicle when the consumer really needs or wants is a regular automobile.

<sup>66</sup> A July 2013 entry in the blog post cited in the ASAP et al Comment, *id.* at 19 & n.24, *id.*, confirms that the Vybrant 2X product is no longer available, and a February 27, 2014 entry states the product had “not been restocked due to an issue.”

<sup>67</sup> See NEMA Comment dated May 16, 2016 at 36-37, DOE Dkt. No. EERE-2013-BT-STD-0051-0066.

In connection with the NOPR, the Department considered another candidate standard --- denominated “EL2” --- that is technologically feasible for the CFL to meet, and would increase energy savings over the baseline. Given the unfavorable current long-run market prospects for the CFL, see Part Two, Section IV, *infra*, and the significant manufacturer investment it would take to redesign the CFL to meet EL2, few, if any, manufacturers may invest in the CFL’s future, but that would be the market’s determination, not the government’s unauthorized action.

NEMA recommends DOE maintain the current energy conservation standard for the medium base CFL. If the DOE decides to amend the CFL standard, NEMA recommends that DOE go no higher than EL-2 if that standard is economically justified. Consistent with our comments elsewhere in this submission, we expect the market will likely reduce the presence of this lamp in the market to near-zero at some point.

The declining market trend for the CFL described by NEMA in 2016 has only accelerated. NEMA believes it is highly unlikely that investment will be forthcoming to manufacture and sell a CFL meeting the EL-2 standard and therefore EL-2 will be tantamount to eliminating the product from the market if the market does not kill the CFL on its own.<sup>68</sup> By NEMA’s estimate, shipments of CFLs from manufacturers account for only about 8% of general service lamp shipments, which is down considerably from its high in 2014. Whereas at least 300 million units of CFLs were sold each year from 2007 to 2014, NEMA estimates those shipments were 40-45 million units in 2018, an approximately 85% decline in four years. As NEMA explained previously, several lamp manufacturers have already abandoned making and selling the CFL and some retailers have abandoned selling the CFL.<sup>69</sup>

**General service light-emitting diode (LED) lamps.** DOE previously proposed a new energy conservation standard for the general service LED lamp. 81 FR 14528 (March 17, 2016). NEMA commented that it would be supportive of a slightly modified proposal that resolved issues at very low wattage levels.<sup>70</sup> NEMA continues to support its slightly modified proposal at this time for the general service LED lamp and would encourage DOE to propose that standard in a Final Rule. Consistent with the proposed definitions rule, that standard would not be appropriate for reflector or other special lamps. We look forward to providing further input to DOE on this subject after resolution of the definitions rule.

**Consideration of a minimum 45 lumen per watt standard for general service lamps.** DOE previously proposed a minimum 45 lumen per watt standard for general service lamps, subject to certain exclusions including the general service incandescent lamp. 81 FR 14528, 14630 (March 17, 2016). NEMA’s comments on this proposal were primarily directed at

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<sup>68</sup> Nothing has changed in CFL technology since 2016. GSLEDs now cost similar to produce as CFLs and have a greater efficacy and consumer acceptance. There is no business case to invest further in the CFL.

<sup>69</sup> NEMA Comment, *supra* note 53 at 61.

<sup>70</sup> *Id.* at 68-69.

the impact on a number of specialty lamps that were not excluded from the proposed standard. Given that the circumstances that led DOE to exempt general service incandescent lamps from a minimum 45 lumen per watt standard in 2016 have changed, DOE would now have to consider the impact caused by the elimination of the general service incandescent lamp by this proposal that would not be able to meet a 45 lumen per watt standard.

NEMA submits that the Secretary's consideration of this standard ought to consider an express statutory goal also embedded in the statute: whether standards "produce savings that are greater than or equal to the savings from a minimum efficacy standard of 45 lumens per watt." See 42 U.S.C. §6295(i)(6)(A)(v). NEMA demonstrates in these Comments that this congressional energy efficiency objective has been substantially surpassed before this rulemaking has been concluded. See Table XIV *infra* and text at pages 44-45.

**Backstop.** During the course of this rulemaking, some Commenters have taken the position that the Backstop has been triggered by DOE's failure to publish any energy conservation standards by January 1, 2017. Some of those Comments appear to assume that the Backstop is essentially self-executing without any further action on the part of the Secretary.

NEMA disagrees. EPCA is unambiguous in this regard. The statute states: "If the Secretary determines that the standards in effect for general service incandescent lamps should be amended, the Secretary shall publish a final rule not later than January 1, 2017, with an effective date that is not earlier than 3 years after the date on which the final rule is published." 42 U.S.C. §6295(i)(6)(A)(iii). The Secretary has not made such a determination yet. If the Secretary makes a determination to amend general service incandescent lamp standards, then there was an obligation to publish such a rule not later than January 1, 2017. If the Secretary determines that such standards cannot be amended, then there is and was no obligation to publish a rule by January 1, 2017.

Nor is the "backstop" self-executing. Members of the public and States cannot declare that the backstop has been triggered.<sup>71</sup> EPCA is clear that the Secretary must first do something: "*the Secretary shall prohibit* the sale of any general service lamp that does not meet a minimum efficacy standard of 45 lumens per watt." 42 U.S.C. §6295(i)(6)(A)(v). For the Secretary to make such a prohibitory order or rule, the Secretary must make findings that the conditions precedent for that order have occurred: that "the Secretary fail[ed] to complete a rulemaking in accordance with clauses (i) through (iv) or if the final rule does not produce savings that are greater than or equal to the savings from a minimum efficacy standard of 45 lumens per watt." *Id.* Congress has assigned to the Secretary the exclusive authority to make a prohibitory order, and to this time that has not happened.

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<sup>71</sup> See *UFCW Local 1500 Pension Fund v. Mayer*, 895 F.3d 695, 700 (9th Cir 2018) ("Congress contemplated that companies would contravene the conditions of ICA exemptions and concluded that the SEC, not the courts, should decide in the first instance what to do when that happens. Congress has thus 'deliberately targeted' the 'specific problem[]' alleged here with a 'specific solution[]'." *RadLAX Gateway Hotel, LLC v. Amalgamated Bank*, 566 U.S. 639, 645, 132 S. Ct. 2065, 182 L. Ed. 2d 967 (2012)").



**Backsliding.** NEMA agrees with DOE's position stated in the NOPR that (a) rescinding the January 19, 2017 definition of **General Service Lamp** because it was unlawful and inconsistent with congressional intent is not "backsliding" within the meaning of 42 U.S.C. §6295(o)(1), because, in the case of DOE's illegal 2017 definition of general service lamp, the government cannot illegally "backslide" from a position it could not legally stand upon in the first place; and (b) DOE has not yet amended any standards that would represent "backsliding."

**Consideration of whether exemptions should be maintained or discontinued.** DOE has already decided to discontinue the exemption of rough service incandescent lamps and vibration service incandescent in accordance with the specific statutory regulatory regime for those lamps stated in the statute. 82 FR 60845 (December 26, 2017). The specific conditions precedent for the regulation of three other types of exempt incandescent lamps specifically called out by Congress in §6295(l)(4) have not occurred yet, and therefore discontinuance of the exemptions for those three lamps is unwarranted under the statute.

As for other incandescent lamps that remain exempt because neither Congress nor DOE has previously regulated them, NEMA has previously demonstrated that the shipments of decorative lamps (including medium base candle-shape and small globe lamps and tubular) have declined substantially. See NEMA Comment dated November 8, 2016 at 17-19. This trend would counsel against regulating these lamps since Congress has signaled that it expects evidence of increasing shipments and sales as a precondition for regulation of exempt incandescent lamps.<sup>72</sup> *Data provided in Appendix A demonstrates that shipments of decorative and special shape incandescent lamps (candelabra base, intermediate base, and medium base) generally have been in a continuous decline since 2011 and there is no evidence of increasing shipments. Shipments of decorative incandescent lamps are 54% lower in 2018 than they were in 2011.* A further factor counseling against regulation would be the fact that the energy use by these lamps does not exceed the minimum threshold that Congress has authorized for regulation under §6292(b). See discussion in NEMA's Comments dated May 16, 2016 at pages 16-17 and 45-46 (example, globe lamps do not consume the minimum level of energy for regulation under EPCA).

### **3. DOE requests comment on the potential range of cost savings associated with this proposed action.**

Given that DOE has not yet proposed standards for any of the lamp products --- both those included in the definitions of GSIL and GSL --- and those that were excluded by Congress, it is difficult to answer this question beyond the general observation that a significant number of specialty lamp products that are potentially swept up in the illegal January 19, 2017 definition because of its application to any lamp base, any bulb shape, and the possibility that DOE might at a future date choose to regulate other specialty lamps as general service lamps in

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<sup>72</sup> See P.L. 110-140, 121 STAT. 1578 (December 19, 2007)( requires evidence that sales of exempted incandescent lamps have increased significantly since the date on which standards on general service incandescent lamps were established.").

a manner not intended by Congress, and whose regulation DOE may not be able to justify in isolation have avoided a certain regulatory burden.

The proposed rule would avoid significant cost associated with potential stranded inventory in manufacturer warehouses as well as the distribution channel (depending on what energy conservation standard DOE were to adopt) for a number of lamps that Congress never intended to regulate in this manner.

**4. DOE seeks comments and data on the following questions:<sup>73</sup>**

**A. In general.**

These questions appear to be primarily directed to retailers to sort through the impact of alternative standards scenarios on the distribution channel. Individual retailers should be able to relate their discrete experiences in response to these questions, which will differ based on the size of the retailer, the type of retailer (e.g., big hardware store, small hardware store, grocery store/drug store, warehouse club stores, etc), the particular lamp product, and perhaps geographic location. NEMA responds to these questions with a general narrative. Generally speaking, the duration of a particular lamp's commercial journey through the distribution channel to the ultimate customer can vary based on the type of retailer, the type of light bulb, and the price of the light bulb, among other variables.

- High volume lamps tend to move more quickly through the channel to customers than lower volume specialty lamps. Thus, the specialty lamps that the NOPR proposes to exclude from the definition of general service lamp are more likely to have a longer shelf-life before actual purchase. These specialty lamps would have greater retail risk exposure from a sales prohibition order such as that contemplated by the "backstop." And within the group of specialty lamps, some may be unusual niche products that have a longer shelf-life and sell at higher price points than rapid turnover, lower priced light bulbs.
- Large retail hardware stores tend to move light bulbs more quickly through distribution channel to the customer than smaller or other, specialty retail stores.
- Urban/suburban retail stores tend to move light bulbs more quickly than rural retail stores.

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<sup>73</sup> The questions posed by DOE are these (84 FR at 3127): (1) How long does it take for a product, such as a lamp, to move through a major retailer's distribution centers to the store, including transit? (2) How long are lamps on the shelf at major retailers before they are purchased? (3) How many units and lamp types of incandescents, CFLs, and LEDs do major retailers have in distribution, transit, and in stores? (4) For affected retailers, what proportion of bays, sales, or inventory is lighting products? The Department is particularly interested in data from Home Center/DIY stores and discount, variety, and department stores. (5) How much time would it take retailers to identify and source new products for an open retail bay? (6) What are the opportunity costs associated with an open bay? (7) Which retailers are affected by additional uncertainty pertaining to the ability to sell certain lamp types beginning in January 2020? The Department is particularly interested in data from Home Center/DIY stores and discount, variety, and department stores, but welcomes data pertaining to all affected retailers.

What follows is a high level generalization based on manufacturer experience in working with their retail customers.

Manufacturer to retailer warehouse distribution center:

- The retail channel pipeline starts when a purchase order is placed with the lamp factory for goods to be delivered to the retailer's distribution center.
- Because manufacturers are producing goods based on retailer demand, under most conditions once placed the retailer cannot cancel or modify the order without penalty.
  - o For lower to medium volume products the retailer typically places regular stocking orders for carton/pallet quantities from the manufacturer's warehouse to the retailer's DC based on a 1 to 2 week lead time.
  - o For commodity and high volume products the retailer may include in their standard stock order (1 to 2 week lead time) or may book larger full container orders for goods to deliver directly to the retailer's distribution center based on a 60 to 75 day or longer lead time.
- Once goods are received by the retailer they will remain in their distribution center between 2 and 4 weeks until the goods are shipped to individual store locations based on individual item/store demand.

Retail goods on the store shelf:

- The individual store will typically carry enough inventory to maintain the product availability on the shelf to avoid ever completely running out of a product which will result in lost sales revenue and may cause a lessening of foot traffic by consumers who had to go elsewhere to make a purchase and not come back for future needs.
  - o For lower to medium demand products that sell at a slower rate the retailer may only order every few months due to the longer sales cycle. Estimated time on the shelf is between 30 and 90 days.
  - o For commodity and high demand products retailers prefer to maintain a minimum of 2 weeks inventory (i.e. goods on the shelf plus backup inventory to the labor/cost associated with having to place orders more frequently)
  - o Specialty seasonal demand products (e.g. colored lamps and some decorative lamps, among others) are a mixed bag. A reasonable estimate would say these products typically spend between 30 and 90 days on the shelf, which aligns with the comment above about low/medium volume products. But variances are likely:
    - Seasonal products may be high volume for short periods after which unsold goods can sit for an extended period including up to a full year unless aggressively discounted by the retailer (sometimes at a financial loss).

- Most lighting retailers carry a wide variety of options to create ongoing consumer traffic by marketing the fact that they offer hard to find items. These specialty items may sell quickly at times but are more likely to remain on the shelf for long periods of time due to inconsistent demand from consumers.

From a very general, high-level view, the total time between the retailer's initial order placed to factory and when the goods may be purchased by a consumer can range from a quick turnover of at best 4 to 6 weeks on a small number of very popular sku's and could reasonably take up to 6 months or in some, rarer cases even longer to turnover.

Different retailers will have different amounts of consumer traffic and different products will sell at a faster or slower pace than others (e.g. a 43W halogen A-line lamp will sell at a faster pace than a globe lamp).

## **B. Other Data**

### **1. Lamp shipments to retailers/distributors**

To continue to inform DOE of the long-term and current trends with respect to a number of the lamp types impacted by the Department's January 2017 definitions rule, NEMA updates the shipment data in its prior Comments through calendar year 2018. See NEMA Comments dated October 16, 2017 at 78 – 83, Appendix A, Dkt No EERE-2017-BT-NOA-0052-004.

The lamp shipment trends previously described by NEMA continue. See Appendix A, *infra*. General service LED lamp shipments continue to demonstrate very strong growth, while all other categories of general service lamp shipments are declining. Specialty incandescent lamp shipments such as incandescent reflector lamps are also declining significantly, as are shipments of all five types of specialty lamps regulated pursuant to 42 U.S.C. §6295(l)(4).

- General service incandescent lamp (GSIL) shipments continue to decline. NEMA previously reported that 2016 GSIL shipments were 44% of 2011 shipments. In 2017 and 2018, GSIL shipments were 34% and 29% of 2011 shipments respectively. In the two-year period since 2016, GSIL shipments declined by 35% overall.
- Compact fluorescent lamp (CFL) shipments continue to decline rapidly. NEMA previously reported that 2016 CFL shipments were 40% of 2011 shipments. In 2017 and 2018, CFL shipments were only 27% and 16% of 2011 shipments respectively. In the two-year period since 2016, CFL shipments declined by almost 60% overall. As all CFL shipments are imported for domestic

consumption, the NEMA shipment data for CFL corresponds to a similar decline in imports of CFLs over the same period.<sup>74</sup>

- General service LED (GSLED) shipments continue to show robust growth in shipments. NEMA previously reported that 2016 GSLED shipments were 12,750% higher than 2011 shipments. In 2017 and 2018, GSLED shipments were 18,150% and 26,150% of 2011 shipments respectively. In the two-year period since 2016, GSLED shipments have grown by over 100%. GSLED shipments became the largest lamp type by volume in the general service lamp (GSL) category during the third quarter of 2017.<sup>75</sup> Beginning in 2017, Customs entry data for GSLED was reported for the first time. As almost all GSLED shipments are imported for domestic consumption, the NEMA shipment data for GSLED corresponds to a similar increase in imports of GSLEDs for domestic consumption over the same two-year period.
- As of the 4<sup>th</sup> Quarter of 2018, the relative share of GSL shipments was
  - Halogen incandescent lamps: 27.4%
  - Compact fluorescent lamps: 5%
  - General service LED lamps: 67.6%
- Incandescent reflector lamp (IRL) shipments continue to decline. As previously reported by NEMA, previous DOE estimates of IRL shipments from 2011-2015 exaggerated actual shipments of IRL by over 90% during the entire period from 2011-2015, and by 160% in 2015 alone. NEMA previously reported that 2016 IRL shipments were 70% of 2011 shipments. In 2017 and 2018, IRL shipments were 54% and 44% of 2011 shipments respectively. In the two-year period since 2016, IRL shipments declined by 28% overall.
- Shipments of the 5 types of specialty incandescent lamps regulated pursuant to 42 U.S.C. §6294(l)(4) have declined in four of the 5 categories since 2011. Since DOE established new energy conservation standards for vibration service and rough service incandescent lamps effective in 2018, shipments of those two lamp types declined in 2018 over 2017<sup>76</sup> as might be expected since the impact was to make the lamps less desirable from a light output and cost point of view. Shipments of vibration and rough service lamps declined substantially in the months after the DOE standards took effect, and continued to decline in the first

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<sup>74</sup> Import and domestic shipment data will vary slightly due to a difference in timing between a product's entry into the United States and its subsequent shipment to a domestic customer.

<sup>75</sup> <https://www.nema.org/Intelligence/Pages/Lamp-Indices.aspx>

<sup>76</sup> See Appendix A, *infra*: From 6 million in 2017 to 4.7 million in 2018 in the case of vibration service lamps; 5.8 million in 2017 to 3.8 million in 2018 in the case of rough service lamps.

quarter of 2019. Q1 2019 shipments of these bulbs were 46% of their Q1 2018 shipments and they are expected to continue to decline.

## 2. Estimates of GSL Installed Base (Lamp Stock)

With certain assumptions about lamp life and the duration of time a light bulb remains in a socket, NEMA can offer estimates about the installed base of general service lamps by lamp type from the annual shipment data. For purposes of these estimates, NEMA estimates the service life of the three principal types of general service lamps is on average, based on DOE estimates about average hours of use, as shown in **Table X** below:

**TABLE X**

Lamp type	Lamp average service life to retirement <sup>77</sup>	DOE Lamp Life estimate based on average hours of use <sup>78</sup>
General service incandescent (halogen) lamp	1.4 years <sup>79</sup>	1.15 yrs. for 1000 hour rated lamp 2.28 yrs. for 2000 hour rated lamp
Compact fluorescent lamp	6 years <sup>80</sup>	11 yrs. for 8000 hour rated lamp
General service LED lamp	9 years <sup>81</sup>	N/A (not available)

<sup>77</sup> These assumptions and estimates are inherently an exercise of averages and informed estimates. Estimates of lamp life represent test results that identify the mid-point of a time period in which half the lamp sample fails and half the lamp sample continues to provide light. Additionally, lamp life is impacted by estimated hours of use, which can vary dramatically by the location where they are used. Some light bulbs are “on” 5-10 minutes a month, while others may be on 3-6 hours per day. Complicating estimates are the fact that some light bulbs are retired and replaced for a variety of reason before end of life, and some light bulbs have their life extended when lighting controls (dimmers) are used. Some lamps are impacted by the frequency turned on and off (e.g. fluorescent).

<sup>78</sup> U.S. DOE, 2015 U.S. Lighting Market Characterization, Table E.8 (November 2017)(average daily hours of use). The hours of use cited in this 2017 report vary slightly from that reported in a 2015 DOE publication. *Compare* U.S. DOE, 2014 Adoption of Light-Emitting Diodes in Common Lighting Applications at 46, 49 (July 2015).

<sup>79</sup> Based on 876 hours of use per year (2.4 hours/day). Approximately 80% of halogen incandescent lamp shipments are 1000 hour rated life; approximately 20% of halogen incandescent lamps shipments are 2000 rated life. A blended estimate of average service life for the general service incandescent (halogen) lamp life is 1.4 years.

<sup>80</sup> NEMA’s average service life estimate may be conservative. *See* NEMA Comments dated October 16, 2017 at 3 & n. 9, DOE Dkt. No. EERE-2017-BT-NOA-0052-0004 (explaining the wide range of CFL *rated* lamp life: 8.65 – 17.2 years). Based on 766 hours of use per year (2.1 hours/day), a CFL rated for 8000 hours average life would last 10.4 years. For this estimate, NEMA has selected a shorter average service life (6 years) on the belief that some degree of early retirement of CFLs for GSLEDs is occurring. We believe this is not an unreasonable consideration. A 5 or 7-year average service life might be a reasonable estimate too.

<sup>81</sup> The rated life of LEDs (based on chip life) typically ranges from 10000 to 20000 hours, and assuming average hours of usage (2.1 hours/day) comparable to the CFL results in a lamp life estimate of 13 or more years. At this point, it is irrelevant for purpose of this exercise because the GSLED has not been available commercially for even

To estimate the installed base of these lamps by year's end 2019, the time between a shipment from a manufacturer to a retailer or distributor and the actual installation of a light bulb in a socket has to be accounted for. There is no hard data to account for this fact. It is also complicated by the fact that light bulbs sold in packages of four or more result to some degree in a consumer household inventory of lamps that are not installed shortly after purchase ("pantry effect"). At this point in time, the pantry effect is less likely to occur for the GSLED because the consumer may be paying a higher price for the GSLED and/or the consumer desires to secure the energy savings from an LED shortly after purchase. While some GSLs are likely installed in the same year that a manufacturer ships the lamp to a retailer, that fact is probably not true for many GSLs. To account for the time interval, NEMA uses a **prior year approach**, so that in estimating 2019 year-end lamp stock, we start with 2018 and prior year manufacturer shipments and sum prior annual shipments (from Appendix A) over the estimated average service life of the lamp. This is believed to be a reasonable approach to estimate general service lamp stock. The foregoing assumptions and calculations generate the following estimate (**Table XI**) of GSL lamp stock from 2015 - 2019, with the total number of GSL sockets estimated to be in the range of 2.6 – 2.8 billion with some variability within the range year over year inevitable.

**TABLE XI**

Year	Stock of General Service Lamps (millions)				Percentage Stock of GSL by Technology			
	GSIL	MBCFL	GS LED	Total	GSIL	MBCFL	GS LED	Total
2015	811	1914	53	2778	29%	69%	2%	100%
2016	605	1904	178	2687	23%	71%	7%	100%
2017	522	1667	433	2622	20%	64%	17%	100%
2018	459	1448	767	2674	17%	54%	29%	100%
2019	369	1172	1248	2789	13%	42%	45%	100%

An alternate scenario would change one assumption underlying **Table XI** about lamp service and increase the estimated average service life of GSIL from 1.4 years to 2 years. Extending the average service life of the GSIL results in a slight increase in the estimate total stock of general service lamps to a range between 2.9 and 3.1 billion sockets (**Table XII**), and an increase in the percentage of installed GSIL, while a slight reduction in the percentage of installed CFL and GS LED.

**TABLE XII**

Year	Stock of General Service Lamps (millions)				Percentage Stock of GSL by Technology			
	GSIL	MBCFL	GS LED	Total	GSIL	MBCFL	GS LED	Total
2015	1158	1914	53	3125	37%	61%	2%	100%
2016	864	1904	178	2946	29%	65%	6%	100%
2017	746	1667	433	2846	26%	59%	15%	100%
2018	655	1448	767	2870	23%	50%	27%	100%
2019	527	1172	1248	2947	18%	40%	42%	100%

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9 years. We have not included the general service induction lamp in this table or analysis. Its service life is comparable to an LED, but it was only introduced to the market in 2017.

A third scenario --- where GSIL service life is on average 2 years after installation and CFL average service life is 7 years (instead of 6 years) after installation --- the following estimate (**See Table XIII**) of GSL lamp stock from 2015 – 2019 is generated. Extending the average service life estimates of GSIL and CFL in that manner extends the total lamp stock to 3.2 – 3.3 billion,<sup>82</sup> but in terms of the relative share of the lamp stock by technology this does very little to alter the overall picture (the relative share of CFL and GSLED are flipped in 2019 only, but GSIL occupies relatively the same position).

**TABLE XIII**

Year	Stock of General Service Lamps (millions)				Percentage Stock of GSL by Technology			
	GSIL	MBCFL	GS LED	Total	GSIL	MBCFL	GS LED	Total
2015	1158	2251	53	3462	33%	65%	2%	100%
2016	864	2175	178	3217	27%	68%	6%	100%
2017	746	2024	433	3203	23%	63%	14%	100%
2018	655	1748	767	3170	21%	55%	24%	100%
2019	527	1498	1248	3273	16%	46%	38%	100%

Probabilistically, GSL lamp stock is reasonably believed to be in between the two scenarios in **Table XI** and **Table XII**, but GSIL shipments in recent years will not justify a materially higher allocation for GSIL than that presented in **Table XII**.<sup>83</sup>

**3. The Weighted Average of General Service Lamp Lumens per Watt (LPW) Installed in Domestic General Service Lamp Sockets at the end of 2019 is estimated at 69.4 LPW, but under any Scenario Well In Excess of 45 LPW.**

The significance of this exercise relates to a prior NEMA Comment in this rulemaking, which included a preliminary evaluation of under what circumstances the installed base of general service lamps in 2020 consumed less energy than a lamp with a 45 lumen per watt efficacy in every general service lamp socket. See NEMA Comment dated May 16, 2016 at 97-103 (Appendix A), DOE Dkt. No. EERE-2013-BT-STD-0051-0066. The analysis presented in that preliminary evaluation revealed that the energy savings outcome was reached when halogen incandescent and traditional incandescent lamps accounted for no more than 39% of GSL installed base. *Id.* at 99 and 102 - 103. NEMA noted that the preliminary evaluation's allocation of GSLED stock (at 47%) was more conservative than a 2015 DOE forecast for 2020 and beyond, which projected that GSLEDs would account for 55% of installations. *Id.*

<sup>82</sup> For reference, a May 2013 DOE Report, *Adoption of Light Emitting Diodes in Common Applications* (Navigant) estimated 3.3 billion GSL sockets in 2010.

<sup>83</sup> A fourth scenario, reducing the average service life of the CFL to five years, reduces the total stock of GSL to between approximately 2.6 and 2.8 billion sockets, increases the portion of installed GSIL to 20% and reduces the portion of CFL and LED to 32% and 48% respectively. This represents an outer bound scenario in NEMA's view, but not the most probable scenario. In NEMA's view, **Table XII** is closest to the most likely representation of the market.



The estimates of year-end 2019 stock allocation presented above reveal that the market has moved much more rapidly away from GSIL than previously forecast as GSIL now accounts for only 13-18% of general service lamp sockets, well below 39% of the GSL sockets under the preliminary evaluation just three years ago.

NEMA's preliminary analysis in early 2016 did not have the shipment data for GSLEDs that we now have and GSLED shipments only began to accelerate in 2015, therefore the preliminary analysis was only presented as a plausible scenario analysis that seemed to be supported by DOE's own forecasts.<sup>84</sup> The available shipment data we now have enables us to revisit the scenario analysis. Deploying the percentage of stock of GSL by technology from **Table XII** yields a substantial amount of energy savings from the installed base of general service lamps over the energy consumed by a hypothetical 45 lumen per watt lamp in all general service lamp sockets, **see Table XIV** below (showing the market has already achieved an estimated 5.43 billion kWh energy savings in excess of Congress' energy savings in EISA-2007 --- the 45 LPW benchmark), and **supports the conclusion that a final rule, even if the Secretary determines that standards in effect for general service incandescent lamps cannot be amended, will nevertheless "produce savings that are greater than or equal to the savings from a minimum efficacy standard of 45 lumens per watt" in 2019 and that Congress' goal for energy savings by 2020 is satisfied.** See 42 U.S.C. §6295(i)(6)(A)(v). **Table XIV** also calculates that **the weighted average of general service lamps' lumens per watt (LPW) in sockets is approximately 69.41 LPW, well above the statutory 45 LPW threshold.** All other scenarios result in a weighted average LPW in excess of Congress' statutory goal in EISA-2007.

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<sup>84</sup> As NEMA previously pointed out in its May 2016 Comments, it makes no difference what the actual total stock of GSL lamps is for purposes of this analysis. It could be higher or lower, but the outcome against EISA's statutory goal is the same. See NEMA Comment dated May 16, 2016 at 97 (Appendix A), DOE Dkt. No. EERE-2013-BT-STD-0051-0066.

**Table XIV**

Based on Estimated 2019 Stock of General Service (A-line) Lamps										
Lamp Type	Representative Lumens	Watts	L/W	Installed Units (billions)	Percent	Percent	Hours/Day	Hours/Yr	kWh/year per lamp	Aggregate kWh
					All	Lamp Type				Billions
Incandescent				0.0029	0.10%					
	1490	100	14.9	0.000725	0.03%	25.0%	1.9	693.5	69.35	0.05027875
	1050	75	14	0.000638	0.02%	22.0%	1.9	693.5	52.0125	0.033183975
	750	60	12.5	0.001218	0.04%	42.0%	1.9	693.5	41.61	0.05068098
	310	40	7.75	0.000319	0.01%	11.0%	1.9	693.5	27.74	0.00884906
Halogen Incandescent				0.519	17.90%					
	1490	72	20.7	0.129775	4.48%	25.0%	2.4	876	63.072	8.1851688
	1050	53	19.8	0.114202	3.94%	22.0%	2.4	876	46.428	5.302170456
	750	43	17.4	0.218022	7.52%	42.0%	2.4	876	37.668	8.212452696
	310	29	10.7	0.057101	1.97%	11.0%	2.4	876	25.404	1.450593804
CFL				1.16	40.00%					
	1600	23	69.6	0.255088026	8.80%	22.0%	2.1	766.5	17.6295	4.497074351
	1250	18	69.4	0.143318232	4.94%	12.4%	2.1	766.5	13.797	1.977361644
	825	13	63.5	0.678866129	23.41%	58.5%	2.1	766.5	9.9645	6.764561544
	520	9	57.8	0.082727613	2.85%	7.1%	2.1	766.5	6.8985	0.57069644
LED				1.21800	42.00%					
	1600	16.05	99.7	0.267842427	9.24%	22.0%	2.1	766.5	12.30090271	3.294703637
	1200	12.27	97.8	0.150484143	5.19%	12.4%	2.1	766.5	9.404907975	1.415289521
	825	8.74	94.4	0.712809436	24.58%	58.5%	2.1	766.5	6.698755297	4.774935982
	450	5.12	87.9	0.086863994	3.00%	7.1%	2.1	766.5	3.924061433	0.340859648
Total All				2.9	100.00%					46.92886129
Weighted average LPW			69.41205							
<b>Hypothetical 45LPW lamp</b>	<b>Lumen level</b>	<b>Wattage</b>	<b>LPW</b>	<b>Installed Units (billions)</b>	<b>Percent</b>	<b>Percent</b>	<b>Hours/Day</b>	<b>Hours/Yr</b>	<b>kWh/year per lamp</b>	<b>Aggregate kWh</b>
	1600	35.6	45	0.725		25.0%	2.1	766.5	27.25333333	19.75866667
	1200	26.7	45	0.638		22.0%	2.1	766.5	20.44	13.04072
	825	18.3	45	1.218		42.0%	2.1	766.5	14.0525	17.115945
	450	10.0	45	0.319		11.0%	2.1	766.5	7.665	2.445135
Total All				2.9		100%				52.36046667
Notes:										
Operating hours from 2015 DOE Lighting Market Characterization (November 2017)										
As with DOE, assumes LED and CFL hours of use are the same.										
Allocation of lamp types by lumen/wattage bin per 2016 NEMA Survey										
<a href="#">The August 2014 DOE Report, Energy Savings Forecast of Solid-State Lighting in General Illumination Applications forecasts that by 2020 the A-line LED will represent 55% of residential, comm</a>										
LED lumen per watt figures from March 2016 NOPR. All other lumen per watt figures computed after identifying common wattages.										
Representative lumens based on Internet survey of manufacturer and retail websites identifying common products										
Total installed units from DOE May 2013 Report, <i>Adoption of Light Emitting Diodes in Common Applications (Navigant)</i>										
									<b>Energy Savings</b>	<b>5.431605378</b>

## APPENDIX A

### Updated Confidential Lamp Shipment Data

Pursuant to 10 CFR 1004.11, NEMA designates portions of Appendix A Confidential Business Information and that it be treated confidentially not subject to disclosure, because it contains exclusive proprietary data collected from manufacturers who, in the aggregate, account for a substantial share of lamp shipments in the United States. This type of data is collected by no other entity, and it is collected on a requirement that the data not be shared with others. The aggregated data is not provided to firms or persons who have not provided the input data for the aggregated data reports. There are other organizations that make estimates of similar data without access to manufacturer data, and NEMA has found that those other sources are not often reliable. Disclosure of NEMA data would harm NEMA competitively. We provide the confidential information with the DOE solely on the condition that it is treated confidentially and will not be disclosed, and to assist the government in assessing the reasonableness of estimates provided by NEMA in these Comments.

The data collected by NEMA is not provided by every manufacturer or seller of lamps in the United States. The percentage extent to which the NEMA data covers the entirety of lamp shipments will vary between incandescent, compact fluorescent, and LED lamps. This is because certain lamps are imported to the United States by non-manufacturer importers more than other types of lamps. The estimate of that variance is confidential, because it could expose NEMA collected data. Notwithstanding that the NEMA shipment data does not provide 100% coverage, the NEMA data is still very valuable because, the NEMA manufacturers represent such a significant part of the shipments for lamps, the data confirms trends in the market that correspond to what the market is actually experiencing. Other sources of information are available to NEMA members to fill gaps not accounted for by the aggregated NEMA reports, including, but not limited to, U.S. government data on imports of these products. In the tables below, we present both confidential NEMA data, and “NEMA adjusted data” that accounts for these other sources of information that captures the remaining shipments not captured in the NEMA reported data. NEMA and its members believe these adjustments portray a reasonable estimate of the total domestic shipments by manufacturers.

The tables provided in this Appendix A mirror tables that were provided in previous NEMA Comments dated October 2017 in this rulemaking. The prior data was through either 2015 or 2016. We now update this information for the years 2017 and 2018.

Data redacted in **BLACK** is deemed business confidential and proprietary. Data provided to DOE pursuant to 10 CFR 1004.11.

**General Service Incandescent Lamp Shipments 2011 – 2018 (millions of units)**

	2011 Domestic Shipments	2012 Domestic Shipments	2013 Domestic Shipments	2014 Domestic Shipments	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
DOE NODA	737	634	626	499	441	N/A	N/A	N/A
NODA Index	100	86	84.9	67.7	59.9	N/A	N/A	N/A
NEMA								
Index	100	83	80	58	45	44	34	28
Adjusted NEMA								
Index	100	84	80	58	45	44	34	29

2011 = 100.

**Medium Base Compact Fluorescent Lamp Shipments 2011 – 2018 (millions of units)**

	2011 Domestic Shipments	2012 Domestic Shipments	2013 Domestic Shipments	2014 Domestic Shipments	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
HTS Import Data 8539310060	302 million	315 million	309 million	328 million	262 million	124 million	66 million	42 million
Index	100	104.3	102.3	108.6	86.7	41	22	14
NEMA								
Index 2011=100	100	108	109	111	80.5	36.9	24	15
NEMA Adjusted								
Index 2011=100	100	108	109	111	87	40	27	16

**General Service (A-line) LED Lamp Shipments 2011 – 2018 (millions of units)**

	2011 Domestic Shipments	2012 Domestic Shipments	2013 Domestic Shipments	2014 Domestic Shipments	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
HTS Import Data 8539500010							382.3	558
NEMA								
Index 2011=100	100	275	591	2350	7866	16025	15958	22950
Adjusted NEMA								
Index	100	200	450	1900	6250	12750	16700	24050

**General Service Lamp Shipments 2011 – 2018 (GSIL, CFL, GSLED)**

	2011 Domestic Shipments	2012 Domestic Shipments	2013 Domestic Shipments	2014 Domestic Shipments	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
Adjusted NEMA								
Index	100	90.3	88.3	75.1	66.9	65.1	61.5	67.5

**MEDIUM BASE INCANDESCENT REFLECTOR LAMPS\***  
**Shipment Data 2011-2018**

	2011 Domestic Shipments	2012 Domestic Shipments	2013 Domestic Shipments	2014 Domestic Shipments	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
DOE NODA	308,000,000	312,000,000	315,000,000	319,000,000	316,000,000	N/A	N/A	N/A
Index 2011=100	100	101	102	103.5	102.5			
NEMA								
Index 2011=100	100	92.5	93.2	88	73.6	70.1	53.7	43.9
NEMA adjusted								
Index	100	92.5	93.2	88	73.6	70.1	53.7	43.9

\*Includes incandescent reflector lamps as defined by Energy Policy and Conservation Act, including PAR, R, ER, BR, and BPAR.

**MEDIUM BASE LED REFLECTOR (PAR,R) LAMPS**  
**Shipment Data 2015-2018**

	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
NEMA				
Index 2015=100	100	199	263	326
NEMA adjusted				
Index	100	199	263	326

**Shipments of five types of incandescent lamps regulated by DOE under 42 U.S.C. §6295(l)(4) 2011-2018, (000's) of units**

Lamp Type	2011	2012	2013	2014	2015	2016	2017	2018
Rough service	6,829	6,045	6,237	7,267	10,914	9,764	5,860	3,881*
Index	100	88.5	91.3	106	159.8	143	85.8	56.8
Vibration service	914	1,077	1,407	5,220	7,071	6,869	6,018	4,723*
Index	100	117	154	571	773	751	658	516
3-way	31,619	28,854	34,773	35,340	32,665	31,768	28,468	22,098
Index	100	91.2	109	111	103	100.4	90	69.8
Shatter-resistant	1,210	1,455	1,093	1,042	689	548	474	400
Index	100	120.2	90.3	86.1	56.9	45.2	39.2	33
High lumen	9,878	12,373	9,296	5,232	4,049	3,679	2,794	2,465
Index	100	125.2	94.1	52.9	41	37.2	28.3	24.9

[https://www1.eere.energy.gov/buildings/appliance\\_standards/standards.aspx?productid=16](https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=16)

Index: 2011 = 100

\*DOE energy conservation standards applied effective end of May 2018.

**Decorative/Special Shape<sup>85</sup> Incandescent Lamps (candelabra, intermediate and medium screw base)  
Shipment Data 2011-2018 (millions)**

	2011 Domestic Shipments	2012 Domestic Shipments	2013 Domestic Shipments	2014 Domestic Shipments	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
NEMA	██████	██████	██████	██████	██████	██████	██████	██████
Index 2011=100	100	87.3	78.4	71.6	66.1	65.9	56.5	46.0
NEMA adjusted	██████	██████	██████	██████	██████	██████	██████	██████
Index	100	87.3	78.4	71.6	66.1	65.9	56.5	46.0

**Decorative/Special Shape LED Lamps (candelabra, intermediate and medium screw base)  
Shipment Data 2015-2018 (millions)**

	2015 Domestic Shipments	2016 Domestic Shipments	2017 Domestic Shipments	2018 Domestic Shipments
NEMA	██████	██████	██████	██████
Index 2015=100	100	149	185	353
NEMA adjusted	██████	██████	██████	██████
Index	100	149	186	353

<sup>85</sup> Includes, B, BA, C, CA, F, G, and some “decorative” T (tubular) shape lamps