

**Appliance Standards Awareness Project
Natural Resources Defense Council
American Council for an Energy-Efficient Economy
Consumer Federation of America
National Consumer Law Center
Northwest Energy Efficiency Alliance**

June 24, 2021

Dr. Stephanie Johnson
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Building Technologies Office, EE-5B
1000 Independence Ave., SW
Washington, DC 20585-0121

RE: docket number EERE-20X21-BT-STD-0005

Submitted via email to GSL2021STD0005@ee.doe.gov

Dear Dr. Johnson:

We are submitting this letter on behalf of the Appliance Standards Awareness Project (ASAP), Natural Resources Defense Council (NRDC), American Council for an Energy-Efficient Economy (ACEEE), Consumer Federation of American, National Consumer Law Center (NCLC) (on behalf of its low-income clients) and Northwest Energy Efficiency Alliance, in response to the Department of Energy's (DOE) Request for Information (RFI) concerning the "Backstop Requirement for General Service Lamps" published in the Federal Register on May 25th. We appreciate the opportunity to provide input.

ASAP organizes and leads a broad-based U.S. coalition effort that works to advance and defend new appliance, equipment, and lighting standards that deliver large energy and water savings, monetary savings, and environmental benefits. ASAP is led by a steering committee that includes representatives from energy and water efficiency organizations, the environmental community, consumer and low-income advocacy groups, utilities, and state government.

NRDC is an international nonprofit environmental organization with more than 3 million members and online activists. For over 50 years NRDC's lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment.

ACEEE, a nonprofit research organization, develops transformative policies to reduce energy waste and combat climate change. ACEEE aims to build a vibrant and equitable economy – one that uses energy

more productively, reduces costs, protects the environment, and promotes the health, safety, and well-being of everyone.

The Consumer Federation of America (CFA) is an association of non-profit consumer organizations that was established in 1968 to advance the consumer interest through research, advocacy, and education. Today, more than 250 of these groups participate in the federation and govern it through their representatives on the organization's Board of Directors.

NCLC, a non-profit organization, uses its expertise in consumer law and energy policy to work for consumer justice and economic security for low-income and other disadvantaged people, including older adults in the U.S.

NEEA The Northwest Energy Efficiency Alliance (NEEA) is an alliance of utilities and energy efficiency organizations that pools resources and shares risks to transform the market for energy efficiency to the benefit of consumers in the Northwest.

Summary

In the Request for Information, the Department states that it is, "re-evaluating its prior determination that the Secretary of Energy ("Secretary") was not required to implement the statutory backstop requirement for general service lamps ("GSLs)."¹ The backstop requirement prohibits the sale of any GSL with a minimum efficacy less than 45 lumens per watt. The real-world effect of this requirement would be to eliminate grossly inefficient incandescent (including halogen) light bulbs from the market in favor of highly efficient, long-lasting, and very cost-effective LED bulbs. The notice goes on to describe the statutory definition of general service lamp and the expanded definition adopted by rule in January 2017. The Department solicits information on the availability of light bulbs that satisfy the 45 lumen per watt requirement.

ASAP and NRDC urge DOE to promptly implement the 45 lumen per watt backstop standard for light bulbs for both the statutory definition of general service lamp and the expanded definition. DOE has a non-discretionary legal obligation to implement these standards. Each month of additional delay costs consumers another nearly \$300 million in lost bill savings and results in another 800,000 tons of easily avoided climate emissions. Bulbs meeting the improved standards are extremely cost-effective for consumers making implementation a win-win for consumers and the climate. Prompt implementation is particularly important for low-income households since they typically have less access to efficient bulb choices than wealthier households. Equivalent standards have already been implemented in two states (California and Nevada) and across Europe, without disruption, demonstrating that the international supply chain can meet increased U.S. demand for LEDs. With more than adequate notice already served, manufacturers and sellers should be prepared to comply. To accommodate retailers with remaining non-compliant inventory while also avoiding further undue delay, we recommend that DOE immediately announce that the backstop has been triggered and that sellers must comply with respect to the highest sales volume lamps within 60 days. We recommend that DOE allow 120 days for retailers to sell out slow-selling bulb types. We elaborate on each of these points in the sections below.

¹ 86 Federal Register 28001.

The backstop has been triggered and DOE is legally obligated to implement it as soon as practical for the expanded definition of GSLs.

Under the Energy Policy and Conservation Act (EPCA), DOE was required to complete a rulemaking process by January 1, 2017, to 1) review the bulb types that were exempted from the initial light bulb efficiency standards and decide whether those exemptions should be maintained; and 2) consider setting a new, stronger light bulb efficiency standard. 42 U.S.C. § 6295(i)(6)(A). If DOE failed to issue a new standard by the January 1, 2017 deadline (or if it issued a weak standard), EPCA provides an automatic backstop minimum efficiency standard of 45 lumens per watt (LPW) for all “general service lamps,” effective beginning January 1, 2020. Id. § 6295(i)(6)(A)(v). This backstop has unambiguously been triggered.

January 1, 2017, came and went without DOE’s completion of the required rulemaking. DOE then released a “Statement Regarding Enforcement of the 45 LPW General Service Lamp Standard”. The DOE Statement explains, without equivocation, that EPCA, “requires that, effective beginning January 1, 2020, DOE shall prohibit the sale of any general service lamp that does not meet a minimum efficacy standard of 45 lumens per watt.”² No subsequent DOE action has, or even could, change this fact. The backstop is in effect and enforceable against all general service lamps.

More than a dozen states and municipalities and several non-governmental organizations filed litigation challenging both DOE’s December 2019 determination that the backstop had not been triggered and the September 2019 withdrawal of the expanded GSL definition as unlawful. These cases are currently held in temporary abeyance, at DOE’s request. In the absence of a resolution to those cases, we urge DOE to take administrative action to implement the backstop for both the statutory definition and the expanded definition lamps as soon as practical. To the extent that additional steps are needed to implement standards for the expanded definition lamps, we urge DOE to conduct those steps in parallel to implementing the standards for the statutory definition products. We believe this parallel approach will result in achieving some savings as soon as possible while minimizing further delay for the expanded definition lamps.

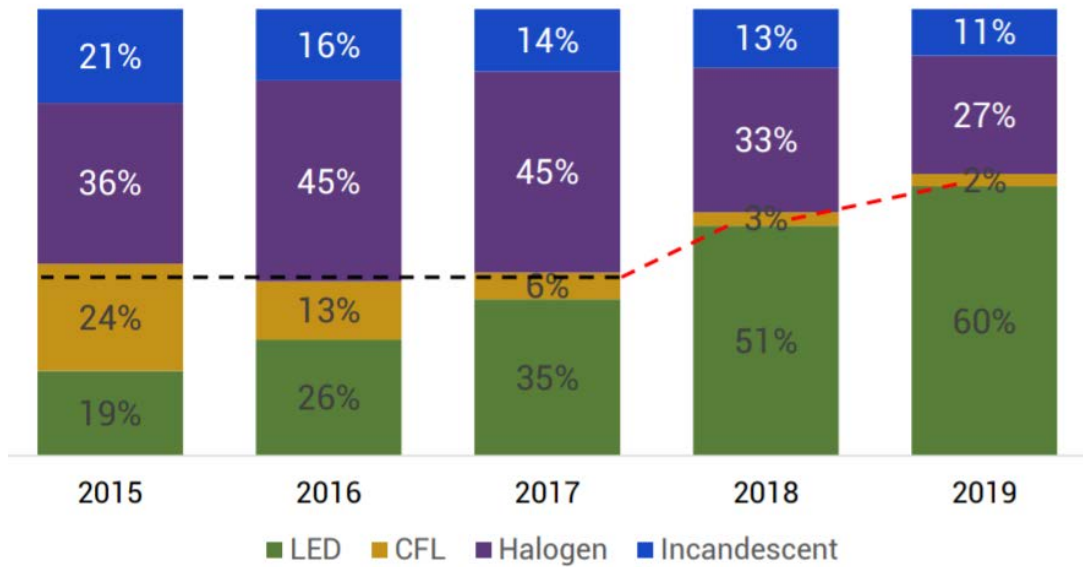
Incandescent (including halogen) bulbs still make up a very large share of current light bulb sales for both the statutory and expanded definitions of GSL.

The light bulb standards law enacted by Congress in 2007 spurred manufacturers to invest heavily in LED technology and those investments have yielded enormous benefits for consumers and the environment. LEDs have become very popular, gaining a 60% market share in 2019 according to Apex Analytics.³ But incandescent and halogen bulbs sales still represented 38% of all new bulb sales in 2019. We estimate that about a billion light sockets in the U.S. still employ an inefficient incandescent light bulb (including halogen incandescent bulbs).

² “Statement Regarding Enforcement of 45 LPW General Service Lamp Standard” U.S. Department of Energy, Office of the General Counsel. January 17, 2017. <https://www.energy.gov/gc/downloads/statement-regarding-enforcement-45-lpw-general-service-lamp-standard>

³ “COVID-19 and EISA Challenges Lead to Uncertainty in the Lighting Market: LED Market Update, Analysis, and Implications for Energy Efficiency Programs.” Apex Analytics. May 1, 2020. http://www.creedlighttracker.com/wp-content/uploads/2020/05/Spring-2020-Lighting-Update_050520_PDF.pdf

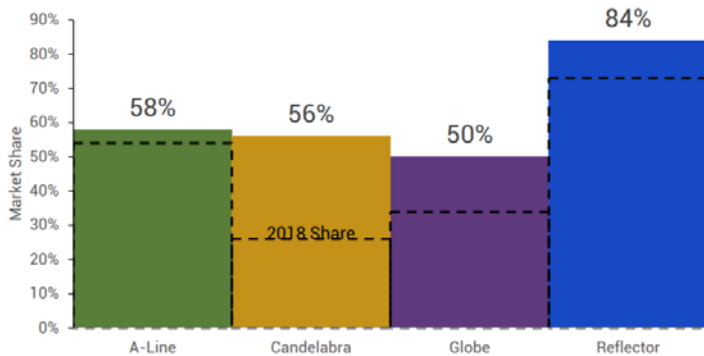
Figure 1. Total U.S. Market Share by Lamp Type and Year



Source: Apex Analytics

Apex Analytics' data also includes market share by bulb type as shown in the figure reproduced below.

Figure 2. 2019 U.S. LED Market Share of A-Line and Specialty Lamps



Source: Apex Analytics.

LED versions of A-line bulbs (i.e, the most common pear-shaped bulbs) had about a 58% market share in 2019. LED market share for candelabra, globe and reflector bulbs, three other high-sales-volume types covered in the expanded definition, were at 56%, 50% and 84% respectively.⁴ The total number of bulb sales in each of these categories is large. In total, about 3.4 billion light sockets in the US have an A-line bulb bulb and another 2 billion have a bulb type included in the expanded definition.⁵

⁴ Ibid.

⁵ U.S. Department of Energy. 2017. "2015 U.S. Lighting Market Characterization" prepared by Navigant Consulting. https://www.energy.gov/sites/prod/files/2017/12/f46/lmc2015_nov17.pdf

Apex Analytics describes their data as “based on lighting sales data from all channels (including DIY, grocery, drug, discount, club, and mass merchandiser).” Research conducted on behalf of the New York State Energy Research and Development Authority (NYSERDA) in fall 2020 used another approach. This research used retailer inventory as a proxy for market share. It found that LEDs had an overall market share in New York of 73%. The researches estimated LED market share at 77% for A-line bulbs; 72% for candelabra lamps; 61% for globes and 78% for reflectors.⁶ The New York report found that LED market share increased in 2020 relative to 2019, as expected, but one in four bulb sales was still an inefficient incandescent (including halogen) product late in 2020. New York ran LED light bulb promotional programs in 2020 which elevated LED sales compared to states without programs. (Note: the Apex Analytics data and New York data were gathered using different methodologies and may not be directly comparable.)

It is not surprising that incandescent bulbs continue to have a large market share. Manufacturers and retailers (both small and large) continue to promote them despite their high total cost of ownership compared to LEDs. Some manufacturers and retailers may prefer to sell incandescent products because of their short lifespan, which triggers another sale far sooner than if a consumer switches to an LED. The photograph below (Figure 3) shows the first full bay of lighting products on sale at a Lowe’s in Massachusetts in April 2021. While Lowe’s sells a large variety of LED bulbs, in the lighting aisle bay dedicated to A-line bulbs, inefficient, halogen incandescent products are prominently marketed just above eye level. (Note: Figure 4 below shows 16-pack LEDs shelved at floor level in the same bay as Figure 3. An LED that replaces a 60 watt incandescent bulb sells for \$1.31 per bulb and the halogen equivalent sold in the same quantity (shelved at eye level) sells for \$1.24 per bulb.)

⁶ New York State Energy Research and Development Authority (NYSERDA). 2020. “General Service Lamps: Stocking and Shelving Survey.” NYSEDA Report Number 21-20. Prepared by The Cadmus Group, LLC., Portland, OR. nysesda.ny.gov/publications

Figure 3.



Delay is costly for consumers, especially those who can least afford it, and causes needless climate change emissions.

In late 2020, ASAP published an updated estimate of the consumer and environmental impacts of implementing the backstop standard as part of an assessment of potential savings from a range of updated standards.⁷ Based on this recent modeling, each additional month that light bulb standards are delayed costs consumers nearly \$300 million in lost bill savings and results in another 800,000 tons of climate changing CO₂ emissions over the lifetimes of the incandescent bulbs sold in that month. An additional year of delay would cost consumers \$3.4 billion and result in an additional 9.5 million metric tons of CO₂.

The costs of this delay accrue disproportionately to consumers who can least afford it. Research conducted in the metropolitan Detroit area in 2018 found that energy-efficient lightbulbs are more

⁷ Mauer, J. and A. deLaski. "A Powerful Priority: How Appliance Standards Can Help Meet U.S. Climate Goals and Save Consumers Money." Appliance Standards Awareness Project and American Council for an Energy-Efficient Economy, November 2020. See especially appendix F, "Methodology for General Service Lamps." <https://appliance-standards.org/document/report-overview-powerful-priority-how-appliance-standards-can-help-meet-us-climate-goals>.

expensive and less available in high-poverty urban areas than in more affluent locations. The researchers found that the local stores where low-income consumers, who are disproportionately people of color, shop either did not stock LEDs at all, had a poor selection or had high prices compared to suburban sellers.⁸ Research in New York found that grocery stores and hardware stores stocked fewer LED options than home centers and warehouse clubs, especially in the more urban “downstate” region.⁹

If implemented soon, the backstop will save consumers about \$20 billion and reduce CO2 emissions by 50 million metric tons by 2030.

Compared to other standards within DOE’s jurisdiction evaluated for the 2020 ASAP report, the savings from light bulb standards accrue very quickly for three reasons. First, because the backstop has already been triggered and the standard is non-discretionary, the standard can and must be implemented as soon as practical. Second, the statutory standard governs the sale of products, regardless of manufacture date (most other standards allow the sell-through of products based on their date of manufacture). Third, incandescent light bulbs (including halogens) burn out quickly. As a result, once DOE implements the backstop standard, the remaining incandescent bulbs in the in-use stock will very rapidly shift to high efficiency products.

Based on ASAP’s recent modeling, implementation of the backstop for both the statutory definition and the expanded definition of GSL by mid-2021 would result in cumulative bill savings for consumers of \$20 billion and CO₂ emissions reductions of 50 million metric tons by 2030. Consumers would also save billions more on overall bulb expenditures since LEDs typically cost just slightly more than incandescent bulbs yet last many times longer.

LED bulbs are extremely cost effective compared to the incandescent or halogen bulbs they replace.

The table below (Figure 4) from a report ASAP published in 2018 shows the consumer economics of switching from an incandescent bulb to an LED for a range of different light bulb types.¹⁰

⁸ Reames, T. M. Reiner, M.B. Stacey. “An incandescent truth: Disparities in energy-efficient lighting availability and prices in an urban U.S. county.” *Applied Energy*. May 2018.

⁹ New York State Energy Research and Development Authority (NYSERDA). 2020. “General Service Lamps: Stocking and Shelving Survey.” NYSERDA Report Number 21-20. Prepared by The Cadmus Group, LLC., Portland, OR. nysesda.ny.gov/publications

¹⁰ “US Light Bulb Standards Save Billions for Consumers but Manufacturers Seek a Rollback.” Issue Brief. Appliance Standards Awareness Project and American Council for an Energy-Efficient Economy. July 2018. <https://appliance-standards.org/document/us-light-bulb-standards-save-billions-consumers-manufacturers-seek-rollback>

Figure 4.

Bulb type	Manufacturer	Bulbs			Electricity			10-year total savings with LED	
		Technology	Price	10-year cost	Watts	kWh/year	10-year cost		
A-type (60W equivalent)	EcoSmart	Halogen	\$1.49	\$11.92	43.0	36.1	\$46.93	\$58.85	\$4720
	EcoSmart	LED	\$2.37	\$2.37	8.5	71	\$9.28	\$11.65	
A-type (100W equivalent)	EcoSmart	Halogen	\$1.49	\$11.92	72.0	60.4	\$78.58	\$90.50	\$68.51
	EcoSmart	LED	\$5.62	\$5.62	15.0	12.6	\$16.37	\$21.99	
Globe (G25, 40W equivalent)	Sylvania	Incandescent	\$2.47	\$12.35	40.0	24.8	\$32.27	\$44.62	\$38.09
	EcoSmart	LED	\$3.30	\$3.30	4.0	2.5	\$3.23	\$6.53	
Reflector (BR30, 65W equivalent)	Philips/Signify	Incandescent	\$3.49	\$20.94	65.0	68.8	\$89.44	\$110.38	\$92.59
	Cree	LED	\$6.78	\$6.78	8.0	8.5	\$11.01	\$17.79	

Considering both the cost of the bulbs and operating costs, an LED will save a consumer about \$40 to \$90 over ten years compared to buying incandescent products. Using the midpoint of this range (\$65) and the average number of bulbs per household (45), the typical US household will save \$3,000 over ten years by switching from incandescent bulbs (including halogens) to LEDs. The cost of LEDs has continued to decline since 2018. Consumers can routinely find basic LED products for about \$1.50 per bulb when purchased in multi-packs. Figure 4 shows an example from a Lowe’s in Massachusetts in April 2021 priced at \$1.31 per LED bulb. But as the analysis in the table shows, even when LED prices are much higher, they result in big net savings for consumers.

Figure 5.



LED products that meet the 45 lumen per watt minimum efficiency level are widely available for the full range of products within both the statutory and expanded definitions of GSL.

All LED bulbs on the market today easily meet the minimum 45 lumen per watt minimum efficiency level required by the backstop and typically have efficiency levels that range from 80 to more than 100 lumens per watt. Stores throughout the US offer a wide assortment of LED bulbs that replace the full

range of bulbs included within the expanded GSL definition. These include LEDs with a wide variety of light outputs (including multiple light levels such as 3-way bulbs), color temperatures (e.g., warm, cool white, daylight), shapes (e.g., all sizes of candle, flame-tip, globe, reflector), and base types (e.g., different-sized screw bases, pin-bases) from a wide variety of manufacturers and brands. LEDs come in dimming and non-dimming versions and can include features such as dim-to-warm, which mimics the dimming of incandescent bulbs.

Home improvement stores such as Home Depot and Lowe's dedicate an entire store aisle to lighting, the majority of which is now LED products. Large discount department stores such as Wal-Mart and Target also have large lighting sections stocked with a wide variety of LED bulbs. Stores with less lighting shelf space tend to have narrower offerings for both LEDs and the incandescent products they replace. But independent local hardware stores including Ace, True Value, and others typically also have extensive LED bulb choices, including for less common applications. Drug stores (e.g., CVS, Walgreens, and others), dollar stores (e.g., Dollar General and Family Dollar), and grocery stores tend to stock a much more limited set of bulb offerings for both LEDs and incandescent bulbs. Market research in New York confirms that LED bulbs are available from a wide range of retail outlet types but that the share of LED inventory varies dramatically by outlet type from a high of 94% at "Upstate" warehouse clubs and supercenters to a low of 17% at "Downstate" grocery stores. This research shows that all types of retailers are familiar with LEDs and have access to LED supply.¹¹

To illustrate a sample of the huge range of LED bulb offerings that are available today, see the two photos below (Figures 6 and 7) taken at a Home Depot store in California this year showing a sample of the wide variety of candelabra shaped bulbs, reflectors, globes and A-line bulbs available. (Note, the wattages shown are the power levels for the traditional incandescent bulb that is being replaced.)

¹¹ New York State Energy Research and Development Authority (NYSERDA). 2020. "General Service Lamps: Stocking and Shelving Survey." NYSERDA Report Number 21-20. Prepared by The Cadmus Group, LLC., Portland, OR. [nyserdera.ny.gov/publications](https://www.nyserdera.ny.gov/publications) See Table 13.

Figure 6.

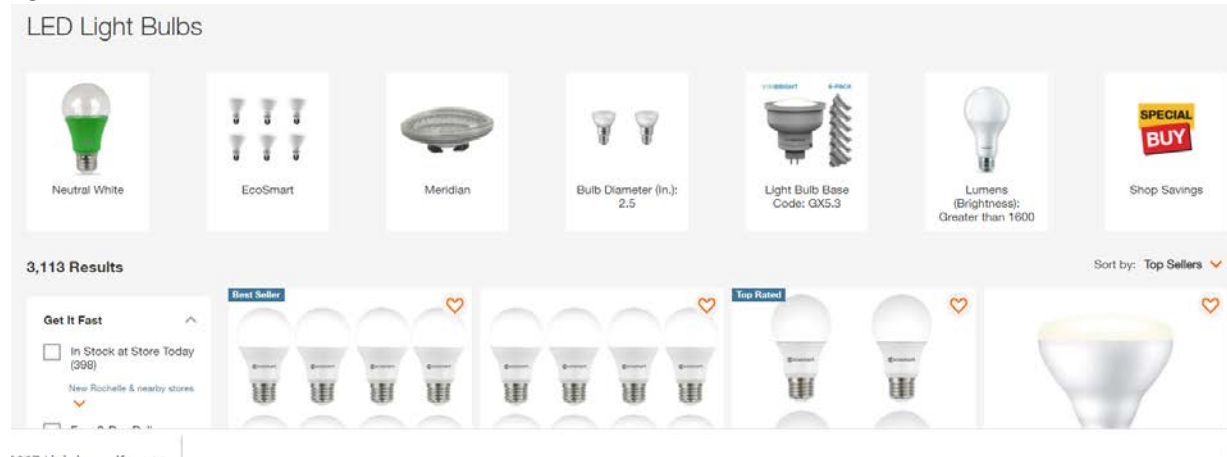


Figure 7.



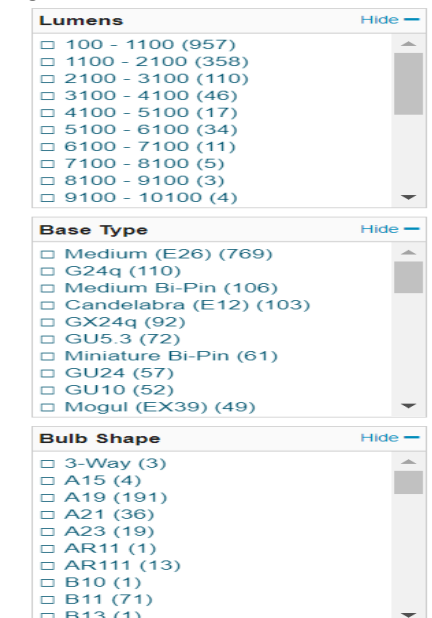
An even wider variety of bulbs are available on the internet. For example, as shown in the screen shot below (Figure 8), Home Depot’s website shows over 3,000 LED bulb models for sale, covering the range of lamps included in the expanded GSL definition.¹²

Figure 8.



A search on the popular light bulb site 1000bulbs.com showed a similarly extensive set of in-stock LED bulb offerings. The screen shot below (Figure 9) of search options illustrates the numerous LED offerings, including high light output, unusual base types, 3-way bulbs and less common bulb shapes.¹³

Figure 9.



¹² See https://www.homedepot.com/b/Lighting-Light-Bulbs-LED-Light-Bulbs/N-5yc1vZbm79?NCNI-5&searchRedirect=led%20light%20bulbs&semanticToken=d00r20r01122000000_202106120124195693741107484_us-central1-f0g7%20d00r20r01122000000%20%3E%20%20rid%3A%7B5b9be02e50a4b10d348ea0151af6ef1d%7D%3Arid%20st%3A%7Bled%20light%20bulbs%7D%3Ast%20ct%3A%7Bled%20light%20bulb%7D%3Act%20gr%3A%7BNo%20stage%20info%7D%20nr%3A%7Bled%20light%20bulb%7D%3Anr%20qu%3A%7Bled%20light%20bulb%7D%3Aqu

¹³ <https://www.1000bulbs.com/fil/categories/led-light-bulbs>

The world-wide supply chain for LED GSLs is more than capable of meeting additional LED demand.

The lighting industry has built a robust and extensive LED light bulb supply chain. This highly developed supply chain is successfully meeting the growing demand for LED bulbs around the world, including 60% of bulbs sold in the US today, and is poised to easily meet any demand increase caused when DOE implements the backstop. Experience in Europe and two states shows that the industry is ready.

The industry successfully supplied the LED bulbs that were needed to meet the demand for the incandescent (including halogen) light bulb phaseout that went into effect in all 27 European countries simultaneously in September 2018. Implementation of the European standards went smoothly without any problems related to product availability. Successful implementation in these 27 countries, which have a combined population of about 445 million (considerably larger than the US population of 331 million) demonstrates that the lighting industry can meet increased US demand.

A special provision in the federal law establishing light bulb standards (the Energy Independence and Security Act of 2007(EISA)) granted California and Nevada special authority to implement state level requirements. California implemented its 45 lumen per watt minimum efficiency standard for the statutory definition of GSLs on January 1, 2018 and for the expanded definition on January 1, 2020. Like the federal backstop standard, California standards apply based on the date of sale, which prohibits the sell-through of existing non-compliant inventory. Nevada adopted the backstop minimum standard for a very wide range of bulb types in 2020 with compliance required as of January 1, 2021, based on date of sale. In each case, the supply chain responded to the new standards and implementation has gone smoothly with no reported problems. In Europe, California and Nevada, all consumers have access to LED light bulbs that meet any need and that use a fraction of the energy and last many times longer than the incandescent bulbs they replace.¹⁴

Manufacturers and sellers should be ready to comply.

The lighting industry and retailers have known since enactment of the 2007 law that a standard of at least 45 lumens per watt was due to take effect on January 1, 2020. While the prior administration failed to implement the legally required standards, Executive Order 13990 issued by President Biden on January 20 effectively put all industry stakeholders on notice that the decision would be revisited.¹⁵ On February 19, DOE included the 2019 light bulbs rules on a list of actions to be reconsidered this year.¹⁶ Therefore, manufacturers and sellers should have at least been planning since then for DOE’s legally overdue action to implement the light bulb standards. If anybody had doubt about DOE’s intentions to implement the backstop, this RFI should remove it.

Similarly, the date of sale prohibition has been contained in law since 2007 and industry has thus received abundant notice that retailers and manufacturers may not sell through remaining inventory of

¹⁴ Sellers may also offer CFLs since they also meet the 45 LPW minimum efficacy, but faced with competition from superior LEDs, CFL sales have plummeted and, per the Apex Analytics data reported above, now comprise just a 2% market share.

¹⁵ “Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Challenge.” 86 Federal Register 7037.

¹⁶ “Review of Actions of the Prior Administration” memo from Kelly Speakes-Backman, Acting Assistant Secretary for Energy Efficiency and Renewable Energy.

https://www.energy.gov/sites/prod/files/2021/02/f82/eere_eo13990_memo_1.pdf

non-compliant products once the backstop is in effect. This mechanism deters manufacturers and retailers from importing and stockpiling excess inefficient products, an issue of greater concern in the light bulb context given their much lower unit price than the other products DOE regulates. Date of sale also simplifies any effort to monitor compliance – all one needs to do is check in a store or website to see if non-compliant bulbs are still being offered for sale after the compliance date. Congress deliberately created a date-of-sale requirement for light bulbs in part to address these concerns. DOE must give full effect to the path Congress has chosen and implement the date-of-sale standard expeditiously.

Retailers can act now to clear remaining inventories of non-compliant bulbs by marking them down and seeking to sell them out quickly in anticipation of DOE's implementation of the backstop. Any manufacturer or seller acquiring new non-compliant inventory is taking an unwise business risk that it will be permitted to sell those bulbs.

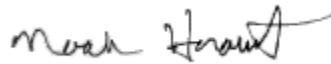
To provide retailers with a small amount of additional time to sell through their existing inventory, we recommend that DOE announce it will exercise its enforcement discretion by not enforcing the backstop until 60 days from DOE's notification that the backstop has been triggered and applies. If necessary, DOE should set two dates: 60 days for the high-volume products (e.g., A-line bulbs and most reflectors) and a later date, such as 120 days, for those products that are slower sellers. This prompt but staged approach would preserve most of the savings and provide some relief to sellers that have not planned for backstop implementation. Given the large cost of each additional month of delay – \$300 million in lost bill savings and 800,000 tons of climate emissions – DOE should not further accommodate sellers that have failed to adequately plan for the new standard.

Thank you for considering these comments.

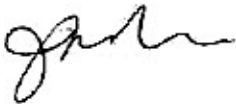
Sincerely,



Andrew deLaski
Executive Director
Appliance Standards Awareness Project



Noah Horowitz
Director
Center for Energy Efficiency Standards
Natural Resources Defense Council



Jennifer Amann
Buildings Program Director
American Council for an Energy-Efficient Economy



Charles Harak, Esq.
National Consumer Law Center,
(on behalf of its low-income clients)

A handwritten signature in black ink on a light-colored rectangular background. The signature is written in a cursive style and reads "Mel Hall-Crawford".

Mel Hall-Crawford
Energy Projects Director
Consumer Federation of America

A handwritten signature in black ink. The signature is written in a cursive style and reads "Louis Starr".

Louis Starr
Senior Engineer
Northwest Energy Efficiency Alliance