



November 4, 2019

To: Office of Energy Efficiency and Renewable Energy, Dept. of Energy

Subject: Comments on Energy Conservation Program: Energy Conservation Standards for General Service Incandescent Lamps (84 Fed. Reg. 46,830, Sept. 5, 2019)

Docket: EERE-BT-STD-0022

The Institute for Policy Integrity at New York University School of Law¹ respectfully submits comments on the Department of Energy's proposed determination not to increase the efficiency of general service incandescent lamps.² Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

The Department of Energy has made an initial determination that the energy conservation standards for general service incandescent lamps (GSILs) do not need to be amended—even though improved efficiency is “technologically feasible”³ through application, for example, of halogen infrared (HIR) technology,⁴ and even though a new standard that prompted consumers to switch to more efficient products like LEDs and CFLs would save consumers billions of dollars.⁵ Instead, the Department has concluded that increasing the efficiency of GSILs “would not be economically justified” because increasing the standard for incandescent lamps would affect purchase prices and operating costs in a way that would prompt many consumers to switch from HIR-type GSILs to other products, like LEDs and CFLs, that deliver even greater lifetime cost- and energy-savings, and so would—according the agency—make GSILs “unavailable” in the marketplace.⁶ The Department concludes that it “cannot find economic justification in a standard the purpose of which is to force the unavailability of a product type, performance characteristic or feature in contravention of EPCA.”⁷

There are at least two major problems with this conclusion. First, the Department has made a determination about “economic justification” without considering a factor that Congress intended the agency to consider: specifically, “the need for national energy conservation,”⁸ and environmental effects in particular. Second, the Department has instead based its determination about “economic justification” on a factor that Congress did not intend for the agency to consider: specifically, the Department has taken a separate statutory test on “unavailability,”⁹ conflated it with the separate definition of “economically justified,” and used that single conflated factor to trump the seven statutorily defined factors that the agency is supposed to consider “to the greatest extent practicable” to “determine whether the benefits of the standard exceed its burdens” and so is “economically justified.”¹⁰ Moreover, the Department grossly misinterprets and misapplies the test for “unavailability.”

¹ This document does not purport to present New York University School of Law's views, if any.

² 84 Fed. Reg. 46,830 (Sept. 5, 2019).

³ *Id.* at 46,857.

⁴ *Id.* at 46,837, 46,840

⁵ *Id.* at 46,858.

⁶ *Id.* at 46,858.

⁷ *Id.* at 46,858.

⁸ 42 U.S.C. § 6295(o)(2)(B)(i)(VI).

⁹ 42 U.S.C. § 6295(o)(4).

¹⁰ 42 U.S.C. § 6295(o)(2)(B)(i).

The Department also has made errors, failed to test assumptions, and underexplained its methodology and reasons for estimating key inputs, such as product costs, future electricity prices, and discount rates.

Failure to Consider the Need for National Energy Conservation, and Forgone Environmental Benefits

The Energy Policy and Conservation Act (EPCA) requires the Department to weigh the benefits and burdens of proposed efficiency standards to determine whether they are economically justified, and lists six specific statutory factors, including “the need for national energy and water conservation.”¹¹ (The seventh factor is a catchall for other “relevant” considerations.) The Department acknowledges that, in assessing the “need for national energy conservation” factor, the agency normally would analyze environmental benefits, including reduced greenhouse gas emissions and air pollution associated with fossil-fuel based energy production, as well as benefits to the reliability of the nation’s energy system and to national security that come from reduced overall energy demand.¹² However, here the Department announces that because it “has tentatively concluded [that] amended standards for GSILs would not be economically justified . . . DOE did not conduct a utility impact analysis or emissions analysis.”¹³

That conclusion puts the cart several steps before the horse. Analyses of emissions, reliability, national security, utility impacts, and other elements of the “need for national energy conservation” are required by statute to be *an integral part of* the determination of whether a standard is economically justified, and so must *not be conducted after* a determination is already made. In the proposed determination, the Department reports a manufacturer impact analysis,¹⁴ as required by the first statutory factor for economic justification;¹⁵ a lifecycle cost analysis,¹⁶ as required by the second statutory factor;¹⁷ a national energy savings analysis,¹⁸ as required by the third statutory factor;¹⁹ and a utility/performance impact evaluation,²⁰ as required by the fourth statutory factor.²¹ The fifth statutory factors requires a determination by the Attorney General of any impacts on competition;²² here, the Department reports it did not consult with the Attorney General about competition effects, because it is not proposing new standards.²³ That said, the Department claims that consideration of “impacts on competition” is a factor in the “qualitative part” of its manufacturing impact analysis,²⁴ as included in Chapter 11 of the *Technical Support Document*.²⁵ (Notably, the analysis does not consider possible impacts to competitiveness if U.S. manufacturers fall behind the world market for more efficient lightbulbs.²⁶)

¹¹ 42 U.S.C. § 6295(o)(2)(B)(i)(VI).

¹² 84 Fed. Reg. at 46,835.

¹³ *Id.*

¹⁴ 84 Fed. Reg. at 46,850.

¹⁵ 42 U.S.C. § 6295(o)(2)(B)(i)(I).

¹⁶ 84 Fed. Reg. at 46,843.

¹⁷ 42 U.S.C. § 6295(o)(2)(B)(i)(II).

¹⁸ 84 Fed. Reg. at 46,853.

¹⁹ 42 U.S.C. § 6295(o)(2)(B)(i)(III).

²⁰ 84 Fed. Reg. at 46,835.

²¹ 42 U.S.C. § 6295(o)(2)(B)(i)(IV).

²² 42 U.S.C. § 6295(o)(2)(B)(i)(V).

²³ 84 Fed. Reg. at 46,835.

²⁴ DOE, *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: General Service Incandescent Lamps at 2-7* (2019) [hereinafter 2019 TSD].

²⁵ *Id.* at 11-1.

²⁶ *Cf. id.* at 3-5 (comparing the European and Canadian regulatory standards).

Only for the sixth statutory factor—the need for national energy conservation—does the Department skip conducting any analysis at all.²⁷ Not only does the Department conclude that “there are no energy savings or benefits from transitioning to HIR technology”²⁸ without having considered any of the likely emissions benefits, but the Department also does not assess any emission benefits, reliability benefits, or national security benefits from the energy demand reductions that would accompany the so-called “consumer choice” scenario wherein consumers would switch from GSILs to CFLs or LEDs.

The omission of any analysis of forgone benefits to the environment, reliability, and national security is troubling, given the well-established understanding of the sixth statutory factor in the “economically justified” test. In 2016, the U.S. Court of Appeals for the Seventh Circuit concluded that: “To determinate whether an energy conservation measure is appropriate under a cost-benefit analysis, the expected reduction in environmental costs *needs to be taken into account.*”²⁹ Interpreting nearly identical statutory language that EPCA applies to the Department of Transportation’s setting of vehicle efficiency standards (“the need of the United States to conserve energy”³⁰), the U.S. Court of Appeals for the D.C. Circuit observed in 1988 that the Department of Transportation has interpreted that language as “*requir[ing]* consideration of . . . environmental . . . implications,”³¹ and the U.S. Court of Appeals for the Ninth Circuit held that the Department of Transportation’s failure to monetize climate benefits explicitly in its economic assessment of vehicle efficiency standards was arbitrary and capricious.³²

From among the earliest energy conservation standards that the Department of Energy issued following EPCA’s 1987 amendments—and consistently since then, under administrations of both political parties—the agency has considered the economic and other effects of avoided carbon emissions when assessing the national need for energy conservation. Under President George H.W. Bush’s administration in 1989, the Department of Energy agreed with public commenters that “environmental effects,” including the “national security” implications of “mitigating global warming and pollution,” counted toward the “economic justification” for efficiency standards, under the “need of the nation to conserve energy” prong.³³ Less than two years later, again at the behest of commenters, the agency not only “quantified” the “social benefits” of environmental effects like “global warming” to help justify the selected standards, but further noted that environmental effects “have also been considered in the development of the selected standard levels.”³⁴ These practices continued through subsequent presidential administrations.³⁵ Yet suddenly, in this proposed determination, the Department abandons over 30 years of regulatory and judicial precedents under administrations of both parties; instead, the Department has concluded that, rather than being an integral and statutorily required element of the

²⁷ See *generally id.* and at 10B-1 (not analyzing “emissions” or “reliability” at all in the Technical Support Document, despite explaining it is agency policy “to use FFC measures of energy use *and emissions* when analyzing proposed energy conservation standards”) (emphasis added); 84 Fed. Reg. at 46,835, 46,849.

²⁸ *Id.* at 46,848, 46,857.

²⁹ *Zero Zone Inc. v. Dept. of Energy*, 832 F.3d 654, 677 (7th Cir. 2016) (emphasis added). See also *id.* at n.24 (further concluding that the agency also likely had the authority, if not the requirement, to consider environment effects under the first statutory factor on economic impacts, because “[e]nvironmental benefits have an economic impact”).

³⁰ 49 U.S.C. § 32,902(f).

³¹ *Pub. Citizen v. Nat’l Highway Traffic Safety Admin.*, 848 F.2d 256, 263 n.27 (D.C. Cir. 1988) (R.B. Ginsburg, J.) (quoting 42 Fed. Reg. 63,184, 63,188 (Dec. 15, 1977) and adding emphasis to the word *requires*).

³² *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d 1172, 1203 (9th Cir. 2008); see also *id.* at 1197-98 (indicating that, due to advancements in “scientific knowledge of climate change,” “[t]he need of the nation to conserve energy is even more pressing today than it was at the time of EPCA’s enactment”).

³³ 54 Fed. Reg. 47,916, 47,924, 47,937, 47,940 (Nov. 17, 1989).

³⁴ 56 Fed. Reg. 22,250, 22,259 (May 14, 1991).

³⁵ *E.g.*, 62 Fed. Reg. 50,122, 50,143 (Sept. 24, 1997); 73 Fed. Reg. 58,772, 58,814 (Oct. 7, 2008); 79 Fed. Reg. 17,726, 17,738 (Mar. 28, 2014).

economic justification test, assessing the national need for energy conservation (including environmental effects) is a separate and secondary afterthought, dispensable if the agency has already made up its mind. That attitude toward the forgone environmental and other effects of failing to improve GSIL efficiency not only violates a longstanding history of practice; it violates the EPCA and the Administrative Procedure Act as well.

The forgone effects that the agency fails to consider would likely have been large and significant. An October 2019 letter from several U.S. senators indicates that by withdrawing all the lightbulb efficiency standards that were to take effect by 2020, and instead determining that no amended efficiency standard is necessary, the Department of Energy has forgone “around 38 million metric tons per year” of reductions in carbon dioxide emissions.³⁶ Valued using the social cost of carbon methodology that the Department of Energy has in the past recognized as the best available tool for measuring climate damages,³⁷ a reduction of 38 million metric tons per year of carbon dioxide emissions would generate about \$1.9 billion per year in climate benefits.³⁸ A single year of such forgone climate benefits (\$1.9 billion) is therefore even greater than the cumulative net present value of nine years’ worth financial benefits to consumers that the agency calculates will be forgone by not amending the efficiency standards for GSILs (\$1.1-\$1.6 billion).³⁹

Misapplication and Misinterpretation of the “Unavailability” Test

Even as the Department essentially removes the “need for national energy conservation” prong from the statutory definition of “economically justified,” the Department seeks to import a new factor into the definition: unavailability. Specifically, the agency claims it “cannot find economic justification in a standard the purpose of which is to force the unavailability of a product type, performance characteristic or feature in contravention of EPCA.”⁴⁰

To begin, while EPCA does prohibit standards if the agency finds it is “established by a preponderance of the evidence that the standard is likely to result in the unavailability in the United States in any covered product type (or class) of performance characteristics . . . that are substantially the same as those generally available in the United States at the time of the Secretary’s finding,”⁴¹ that test is in a separate section of the statute and is not a listed factor under the definition of “economically justified.” Even if it could somehow be applied to the definition of “economically justified” as an additional factor, it cannot trump the other explicitly listed statutory factors, all of which the agency must consider “to the greatest extent practicable” by weighing all “benefits” against “burdens.”⁴²

Additionally, EPCA’s test for “unavailability” sets a fairly high bar, which has not been met here. The finding must be made on the “preponderance of the evidence.” In the proposed determination, the agency implies and assumes that GSILs would become “unavailable,” but never explicitly makes that finding or explains its evidence. Also, the test is for “unavailability,” not just for less availability, nor for more difficult or more costly availability. Table IV.11 of the proposed determination shows GSIL market share distribution in the year 2023 under either a scenario with no new efficiency standards, versus a

³⁶ See Sen. Edward Markey et al., Letter to Sec’y Perry, Oct. 11, 2019, EERE-2019-BT-STD-0022-0060.

³⁷ See *Zero Zone*, 832 F.3d at 678.

³⁸ Converted to 2018\$, the social cost of carbon for year 2020 emissions is over \$50 per ton. See Interagency Working Group on the Social Cost of Greenhouse Gases, *Technical Update* (2016), https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf.

³⁹ 84 Fed. Reg. at 46,855 (reporting calculations at both a 3% and 7% discount rate).

⁴⁰ 84 Fed. Reg. at 46,858.

⁴¹ 42 U.S.C. § 6295(o)(4).

⁴² 42 U.S.C. § 6295(o)(2)(B)(i).

scenario with new efficiency standards that prompts consumers to switch from HIR-type GSILs to other products.⁴³ Under the “no new standards” scenario, in the year 2023, GSILs of the EL-0 (baseline halogen) and EL-1 (HIR) types together have 11.3% of the residential market share; under increased efficiency standards, they would together have 3.8% of the residential market share, while LEDs, CFLs, and exempted-incandescent slightly increase their market shares.⁴⁴ The agency never explains why this level of consumer product switching, with 3.8% of residential consumer purchases still going to HIR-type GSILs, means that GSILs are “unavailable.” To the contrary, the agency even notes that “consumers who are resistant to changing technology” could switch to a kind of shatter-resistant incandescent lamp that is still an incandescent even though it is exempt from the definition of GSILs.⁴⁵

Perhaps most importantly, it is not clear, and the agency never explains, why LEDs, CFLs, and other available products are not “substantially the same” in terms of performance and relevant features. Consumer preferences change, both naturally over time and also in response to regulatory standards, and the agency even broadly concludes that “the standards considered in this proposed determination would not reduce the utility or performance of products under consideration in this proposed determination.”⁴⁶ Indeed, the reason consumers so readily switch to LEDs and CFLs in the “consumer choice” scenario is presumably that many consumers view the products as providing substantially the same performance while improving efficiency and delivering cost savings.

Finally, the statute also requires a finding that the proposed standard would be “likely to result in the unavailability.” This language—“likely”—is both forward-looking and probabilistic, and so should require consideration of various reasonable assumptions about what the future might look like if the standards were implemented. Yet it does not seem that the agency considered any reasonable scenarios for technological development. The Department of Energy identified 14 technology options for improving the efficiency of GSILs;⁴⁷ eight options were “screened out” due to various considerations,⁴⁸ though the agency did not seem to consider how adoption of the regulation could prompt technological development that would change the cost, performance, or feasibility of these options. The agency was left with six options⁴⁹ that it concluded were technologically feasible and would not “have a significant adverse impact on the utility of the product . . . or . . . result in the unavailability of any covered product type.”⁵⁰ The agency then decided, however, not to model three of the options—“thinner filaments, higher efficiency inert fill gas, or higher efficiency burners”—because the agency “did not believe including those design options would increase the efficacy beyond that achieved by the combination of an IR coating and higher temperature and pressure operation.”⁵¹ However, the agency does not consider whether, in the face of regulatory pressure, technological development would reduce the cost or increase the efficiency of these additional technology options in ways that would bear on whether the standard is “likely to result in the unavailability” of lamps.⁵²

⁴³ 84 Fed. Reg. at 46,846.

⁴⁴ *Id.*

⁴⁵ 84 Fed. Reg. at 46,841.

⁴⁶ 84 Fed. Reg. at 46,835.

⁴⁷ 84 Fed. Reg. at 46,837.

⁴⁸ 84 Fed. Reg. at 46,838.

⁴⁹ 84 Fed. Reg. at 46,838.

⁵⁰ 84 Fed. Reg. at 46,837.

⁵¹ 84 Fed. Reg. at 46,840.

⁵² Compare DOE, 2019 TSD at 3-14 to 3-15 (noting, for example, that krypton could both result in higher efficacy and increase the life of the lamp) with 84 Fed. Reg. at 46,840 (dismissing the alternate inert fill gas option without further discussion).

Overall, the Department of Energy has neither explained why the proposed standard would lead to the likely unavailability of products with substantially similar characteristics, nor has it explained why unavailability is at all relevant to—let alone determinative of—the definition of “economically justified.” Instead, the agency uses the slight potential shift in consumer purchases from GSILs to other kinds of lamps as an excuse to forgo billions of dollars in net consumer benefits and environmental benefits.

Problematic Assumptions about Key Inputs, Such as Product Prices, Electricity Prices, and Discount Rates

The Department of Energy determined that the operational savings from replacing current GSILs with HIR-type GSILs would not payback the increase in upfront purchase price during the expected lifetime of the lamps for most consumers.⁵³ This conclusion also informed the agency’s further determination that, in the face of a new efficiency standard, many consumers would switch to different lamps.⁵⁴ Key inputs into that analysis include estimated product cost, future energy prices, and discount rates. The agency’s estimations of these key inputs are plagued by unexplained choices, a failure to test assumptions, and outright errors.

On product costs, according to the Technical Support Document, the estimated increase in price from a baseline GSIL (\$1.81 in 2018\$) to the HIR (\$7.00 in 2018\$)—i.e., a difference of \$5.19 in 2018\$—could not be calculated directly from market data and so instead is based on “the incremental change in end-user price from the baseline halogen lamp to the more efficient HIR lamp determined in the 2015 IRL ECS final rule”; the 2019 Technical Support Document cites specifically to the 2015 Technical Support Document.⁵⁵ However, the 2015 Technical Support Document shows a weighted price difference of just \$2.39 in 2012\$ (\$11.22 minus \$8.83; equivalent to about \$2.62 in 2018\$, according to the CPI Inflation Calculator) between the baseline IRL and the HIR-IRL lamp.⁵⁶ That is half the price difference that the Department now attributes to adding the HIR technology to GSILs. Furthermore, the prices from the 2015 TSD were based on an HIR lamp with a rated life of 2,500 hours and initial lumen output of 980 lumens, as compared to a baseline IRL rated at only 1,500 hours.⁵⁷ In the current analysis, the agency is attempting to price an HIR-type GSIL with a rated lifetime of only 1,000 hours and only 750 initial lumens, as compared to a baseline GSIL with same lifetime and lumens.⁵⁸ The agency never explains why the 2015 price figures for IRLs—which reflected not just an efficiency increase but a significant lifespan increase—would be applicable here to price the addition of HIR technology to GSILs without any corresponding increase in lifetime hours. The agency also does not grapple with the discussion in the 2015 TSD about the tradeoffs between lifetime, lumens, efficiency, and cost. In 2015, the agency “observed lifetime changes for different technologies. For example, a halogen lamp typically has a lifetime of around 1,500 hours, while an HIR lamp typically has a lifetime of 2,500-4,400 hours. DOE

⁵³ 84 Fed. Reg. at 46,852.

⁵⁴ 84 Fed. Reg. at 46,853.

⁵⁵ DOE, 2019 TSD, at 6-4.

⁵⁶ DOE, *Final Rule Technical Support Document: General Service Fluorescent Lamps and Incandescent Reflector Lamps* at 7-6 (2014) [hereinafter 2015 TSD]; see also *id.* at 5-55 (showing the specifications for the baseline IRLs (a.k.a. “improved halogen”) and EL-1 for IRLs (a.k.a. “HIR”). The weighted price of \$11.22 is for the HIR-IRL lamp with a 2,500-hour lifespan and 980 initial lumens; for the lamp with a 4,200-hour lifespan and 1,120 initial lumens, the weighted price is \$12.98. 2015 TSD at 7-6. But even the difference between that figure and the baseline (\$4.15 in 2012\$ = \$4.54 in 2018\$), is less than the \$5.19 difference used by the Department in this analysis. The tables at 80 Fed. Reg. 4042, 4,114 (Jan. 26, 2015) report slightly different installed cost figures, but installed costs include taxes and installation costs, not just product prices, and even still, none of those figures would obviously yield the sum used by the Department here. As such, it remains unclear where that figure comes from.

⁵⁷ 2015 TSD at 7-6.

⁵⁸ 2019 TSD at 6-4.

considered the possibility that manufacturers would produce lamps with a shorter lifetime than the baseline lamps in order to increase efficacy. . . . DOE assumed that the cost of the lamp with a shortened lifetime at EL 1 was equivalent to the cost of the baseline lamp because the lamp would utilize the same technology.”⁵⁹ In the current analysis, the Department does not seem to consider how adjusting the lifetime and wattage could affect cost, or whether different lamp options with different lumens or wattage but comparable performance might have a different lifetime, and how such different lifetimes could affect the payback period.⁶⁰

Furthermore, neither the 2015 analysis, and certainly not the 2019 analysis, make clear whether, or how, the Department might have considered how technological development can change costs over time, despite instructions from the Office of Management and Budget to base estimates of costs “on credible changes in technology over time.”⁶¹ In addition to technological development, learning is another way that costs can commonly decrease over time.⁶² However, the 2019 Technical Support Document makes clear that while “price learning” effects were applied to CFLs and LEDs, “price learning is assumed to have no effect on the representative GSILs analyzed,”⁶³ because “GSILs and traditional incandescent lamps represent a mature technology that have reached a stable price point due to the high volume of total cumulative shipments.”⁶⁴ The Department never explains why this assumption—that additional price learning cannot occur for “mature technology”—would be true for HIR-type lamps that currently are “not commercially available.”⁶⁵

On future energy prices, the Department relies on the U.S. Energy Information Administration’s “reference case” from the *2019 Annual Energy Outlook*.⁶⁶ The Department takes those reference case estimates, which end in year 2050, and then assumes the same trend in prices will continue out to year 2080.⁶⁷ As a result, the Department assumes relatively flat energy prices into the distant future.⁶⁸ While the *2019 Annual Energy Outlook* does anticipate relatively “flat” residential and commercial prices in the reference case,⁶⁹ those estimates hide significant variability within the underlying factors. For example, even in the reference case, an estimated increase in future fuel prices is presumed to be offset by more efficient generators and increased use of renewable energy, while an overall drop in generating costs is offset by increased transmission and distribution costs.⁷⁰ If any of those underlying inputs change, prices could change significantly. Indeed, the EIA reports that electricity prices “vary considerably across scenarios” that adopt different, but still reasonable, assumptions about fuel availability and technology.⁷¹ Importantly, the EIA’s reference case does not account for potential future changes in

⁵⁹ 2015 TSD at 5-54.

⁶⁰ See 2019 TSD at 5-5 (first adjusting a 3000-hour lifetime lamp down to 1000 hours in order to increase lumens, and then reducing lumens down to 750 in order to decrease wattage from 45 watts to 34.3 watts, but not discussing cost effects or other options for combinations of lifetime, lumens, and wattage). Cf. 2015 TSD at 8B-127 (“Because the LCC and PBP results are highly dependent on product prices, DOE examined sensitivities to the medium lamp price results . . . by considering the low and high prices developed.”)

⁶¹ OMB, *Circular A-4*, at 37 (2003).

⁶² *Id.* at 37.

⁶³ 2019 TSD at 8-8.

⁶⁴ 2019 TSD at 9-14.

⁶⁵ 84 Fed. Reg. at 46,836.

⁶⁶ 84 Fed. Reg. at 46,844.

⁶⁷ 2019 TSD at 8-10 to 8-11.

⁶⁸ *Id.* at 8-11, fig. 8.2.1.

⁶⁹ EIA, 2019 AEO, at 146.

⁷⁰ *Id.* at 98.

⁷¹ *Id.* at 98.

laws, including future state- or federal-level policies that could affect electricity prices.⁷² The Department of Energy never considers other reasonable assumptions about future electricity prices, and whether such assumptions would change its determinations.⁷³

Finally, on discount rates, the Department of Energy uses an average rate of 4.3% for the residential sector, and 8.4% for the commercial sector, in order to calculate lifecycle costs and payback periods (though the Department uses 3% and 7% rates for net present value calculations).⁷⁴ The Department relies on data going back to 1995 for the residential rate,⁷⁵ and data going back to at least 1998 (as well as “a forty-year geometric average of Federal Reserve data”) for the commercial rate.⁷⁶ Given that “[i]nterest rates have fallen steadily for the last three decades, as have most economists’ forecasts for future interest rates,”⁷⁷ the Department does not sufficiently explain why such old data is relevant to calculations of future discount rates, nor does the Department test its payback determination against other reasonable discount rate assumptions.

Changes to the estimation of any of these key inputs could change the payback determination, the modeling of consumer decisions to switch to other lamp products, and the net present value calculations. The Department of Energy must test the sensitivity of its key inputs to various other reasonable assumptions. A full weighing of all the benefits and burdens of the proposed efficiency standard will show that the standard is economically justified.

Conclusion

The Department of Energy has mistakenly made a determination that increasing the efficiency of GISLs is not “economically justified,” despite billions of dollars in benefits to consumers and the environment. In making that determination, the Department ignores one required statutory factor, and relies instead almost entirely on a misinterpretation and misapplication of a separate statutory test. The Department never explains why the statute would prohibit a standard simply because it would encourage consumers to switch to even more efficient products that deliver substantially the same, or better, performance. Finally, the Department’s analyses fail to explain or test key assumptions. Instead of depriving the American people of billions of dollars of forgone environmental and financial benefits, the Department should support the speedy transition to more efficient lamps.

Sincerely,

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⁷² *Id.* at 5.

⁷³ *Cf.* 2015 TSD at 8B-79 (testing “the impacts of high and low growth trends for future electricity prices, as lamp and lamp-and-ballast system operating costs are directly related to future electricity prices”).

⁷⁴ 2019 TSD at 8-4; compare *id.* at 10-19.

⁷⁵ 2019 TSD at 8-15.

⁷⁶ 2019 TSD at 8-22.

⁷⁷ U.S. Council of Economic Advisers, Issue Brief: Discounting for Public Policy: Theory and Recent Evidence on the Merits of Updating the Discount Rate (2017) at 2, *available at*: https://obamawhitehouse.archives.gov/sites/default/files/page/files/201701_cea_discounting_issue_brief.pdf.