Public Interest Comment\(^1\) on
The Department of Energy’s Proposed Rule:
Energy Conservation Program: Energy Conservation Standards for General Service Fluorescent
Lamps and Incandescent Reflector Lamps
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The George Washington University Regulatory Studies Center
Retrospective Review Comment Project

The George Washington University Regulatory Studies Center strives to improve regulatory policy through research, education, and outreach. As part of its mission, the Center conducts careful and independent analyses to assess rulemaking proposals from the perspective of the public interest. This comment on the Department of Energy’s proposed rule setting energy efficiency standards for general service florescent lamps and incandescent reflector lamps does not represent the views of any particular affected party or special interest, but is designed to evaluate whether DOE’s proposal incorporates plans for retrospective review, pursuant to Executive Order 13563.

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\(^1\) This comment reflects the views of the author, and does not represent an official position of the GW Regulatory Studies Center or the George Washington University. The Center’s policy on research integrity is available at http://regulatorystudies.columbian.gwu.edu/policy-research-integrity.

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Introduction

The proposed rule would set energy efficiency standards for eight separate product classes of general service florescent lamps (GSFLs) and incandescent reflector lamps (IRLs) pursuant to the Energy Policy and Conservation Act (EPCA), as amended. According to DOE’s office of Energy Efficiency and Renewable Energy, GSFLs are fluorescent tubes that are generally installed in ceilings, and IRLs are directional lamps such as spotlights and floodlights that have a reflective coating on the inside of the bulb to focus and aim the light.

According to the 2010 U.S. Lighting Market Characterization, IRLs and GSFLs combined represent almost 37 percent of the total installed lighting base in the U.S., consuming 333 terawatt hours (TWh) of energy annually. Because IRLs and GSFLs constitute a significant portion of the lighting market, DOE anticipates that promulgating updated energy efficiency standards for IRLs and GSFLs will save a significant amount of energy. Because GSFL and IRL products are used by both residential and commercial consumers, businesses and everyday consumers will both be affected by the proposed standards.

When issuing energy efficiency standards for appliances DOE is statutorily required by EPCA to achieve the maximum improvement in energy efficiency that is both technologically feasible and economically justified, while also resulting in a “significant conservation of energy.” This statutory language gives the Department important guidelines when issuing energy efficiency standards.

As a part of its ongoing Retrospective Review Comment Project, the Regulatory Studies Center examines significant proposed regulations to assess whether agencies propose retrospective review as a part of their regulations, and submits comments to provide suggestions on how best to incorporate plans for retrospective review into their proposals. To facilitate meaningful retrospective review after the promulgation of a final rule, multiple government guidelines instruct agencies to incorporate retrospective review plans into their proposals during the rulemaking process.

Incorporating Retrospective Review into NPRMs

Through a series of Executive Orders, President Obama has encouraged federal regulatory agencies to review existing regulations “that may be outmoded, ineffective, insufficient, or excessively burdensome, and to modify, streamline, expand, or repeal them in accordance with what has been learned.” On January 18, 2011, President Obama signed Executive Order 13563,
Improving Regulation and Regulatory Review, which reaffirmed the regulatory principles and structures outlined in EO 12866. In addition to the regulatory philosophy laid out in EO 12866, EO 13563 instructs agencies to

consider how best to promote retrospective analysis of rules that may be outmoded, ineffective, insufficient, or excessively burdensome, and to modify, streamline, expand, or repeal them in accordance with what has been learned. Such retrospective analyses, including supporting data, should be released online whenever possible.\(^5\)

This ex-post review makes it possible for the government and the public to measure whether a particular rule has had its intended effect. In his implementing memo on retrospective review, former Administrator of the Office of Information and Regulatory Affairs, Cass Sunstein, stated the importance of designing regulations to facilitate their evaluation:

> With its emphasis on “periodic review of existing significant regulations,” Executive Order 13563 recognizes the importance of maintaining a consistent culture of retrospective review and analysis throughout the executive branch. To promote that culture, *future regulations should be designed and written in ways that facilitate evaluation of their consequences* and thus promote retrospective analyses and measurement of “actual results.” To the extent permitted by law, agencies should therefore give careful consideration to how best to promote empirical testing of the effects of rules both in advance and retrospectively.\(^6\)

[Emphasis added]

This emphasis is repeated in Sunstein’s June 14, 2011 memo, “Final Plans for Retrospective Analysis of Existing Rules.” In its Final 2013 Report to Congress on the Benefits and Costs of Federal Regulations, the Office of Management and Budget (OMB) states that such retrospective analysis can serve as an important corrective mechanism to the flaws of ex ante analyses. According to that report, the result of systematic retrospective review of regulations:

> should be a greatly improved understanding of the accuracy of prospective analyses, as well as corrections to rules as a result of ex post evaluations. A large priority is the development of methods (perhaps including not merely before-and-after accounts but also randomized trials, to the extent feasible and consistent with


law) to obtain a clear sense of the effects of rules. In addition, and importantly, *rules should be written and designed, in advance, so as to facilitate retrospective analysis of their effects.*

In one instance, DOE references retrospective review in the text of its proposed rule, indicating that the agency intends to retrospectively review rare earth prices for use in future efficiency regulations. In addition, the agency makes explicit (and extensive) mention of the tenets of President Obama’s Executive Order 13563 in two sections of the proposal. It is apparent that DOE gave EO 13563 serious consideration during the development of this rule, and it follows that the agency would additionally be receptive to suggestions on how best to build further retrospective review into the text of its final rule, pursuant to EO 13563.

**Retrospective Review Requirements**

To evaluate whether DOE’s proposal was “designed and written in ways that facilitate evaluation of [its] consequences,” we measure it against five criteria:

- Did DOE clearly identify the problem that its proposed rule is intended to solve?
- Did DOE provide clear, measurable metrics that reviewers can use to evaluate whether the regulation achieves its policy goals?
- Did DOE commit to collecting information to assess whether its measurable metrics are being reached?
- Did DOE provide a clear timeframe for the accomplishment of its stated metrics and the collection of information to support its findings?
- Did DOE write its proposal to allow measurement of both outputs and outcomes to enable review of whether the standards directly result in the outcomes that the agency intends?

**Identifying the Problem**

The first of the “Principles of Regulation” outlined by President Clinton in EO 12866 makes it clear that, as a first step, agencies must be able to identify the problem that justifies government action through regulation:

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7 79 FR 24179
8 79 FR 24076
9 79 FR 24179

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Each agency shall identify the problem that it intends to address (including, where applicable, the failures of private markets or public institutions that warrant new agency action) as well as assess the significance of that problem.

This step is crucial to the formulation of any policy. Without knowledge of the problem that the agency is trying to address, the public cannot assess whether the policy or regulation at hand has had the intended effect, which is key in retrospectively evaluating regulation. Pursuant to EOs 12866 and 13563, in its proposed rule DOE lists three problems that it believes justify its standards:

(1) There is a lack of consumer information and/or information processing capability about energy efficiency opportunities in the lighting market.

(2) There is asymmetric information (one party to a transaction has more and better information than the other) and/or high transactions costs (costs of gathering information and effecting exchanges of goods and services).

(3) There are external benefits resulting from improved energy efficiency of GSFLs and IRLs that are not captured by the users of such equipment. These benefits include externalities related to environmental protection and energy security that are not reflected in energy prices, such as reduced emissions of GHGs [greenhouse gases].

As DOE explains in its proposed rule, two types of market failure could potentially be addressed by setting energy efficiency standards for IRLs and GSFLs. First, energy use related to lighting results in some greenhouse gas emissions. Because the social cost of greenhouse gas emissions may not be fully represented in the price of energy, these emissions are externalities which regulatory policies could address. Second, consumers are currently purchasing lamps with higher long-term energy costs than others available in the market, which may indicate that they do not have sufficient information about the energy cost savings that higher-efficiency products make possible, since energy efficient products are already available in the marketplace. This asymmetric information, if it exists, could be remedied by improved labeling or other types of consumer education campaigns.

However, neither of the potential market failures cited by DOE is directly addressed by its proposed energy efficiency standards. DOE estimates domestic externality benefits of the
proposed standard of between $394 million and $1.295 billion, compared to costs to US citizens of $12.83 billion. The costs to American citizens outweigh the social benefits of the standard by between 10 to 1 and 32 to 1, indicating that resolving this externality alone is insufficient to justify the costs incurred by DOE’s proposal.

Additionally, DOE does not in any instance in its rule address the market failure of information asymmetry, although the agency has many tools at its disposal to do so. DOE could remedy this asymmetric information or lack of information by improved labeling or other types of consumer education campaigns. However, this rule does not provide the public with new information, easier access to information, or any other relevant type of information about the energy efficiency of general service florescent lamps and incandescent reflector lamps: instead, it bans certain low-efficiency products from the marketplace. Therefore, the informational asymmetry the Department relies on to justify its proposed rule is not even addressed by the rulemaking, and is thus unlikely to be addressed in implementation.

Given all of this information, it is clear that DOE’s proposal is highly unlikely to address the problems that the agency identifies. It is fair to ask DOE what problem this rule is actually intended to address, and what purpose these standards serve, as they do not address the problems identified by the agency.

Because the proposed rule does not address the problems that DOE identifies, it may be better to measure the outcomes of DOE’s rule against the agency’s authorizing statute: Do the proposed efficiency standards result in the maximum improvement in energy efficiency that is both technologically feasible and economically justified, while also resulting in a “significant conservation of energy”?

**Measurement Criteria**

In order to measure the success of this rule following implementation, it is necessary for DOE to define what constitutes a “success.” Any stated metrics of success should be linked to the problems identified, and demonstrate that the standards that the agency is proposing actually

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12 In each case, the domestic benefits expected to result are about 7 – 23% of the worldwide values DOE emphasizes in its proposal. This is because, relying on an integrated assessment model (the FUND model), DOE would expect the direct benefit to the U.S. to be between 7 – 10% of the global benefit of CO\textsubscript{2} reductions. The 23% value is derived assuming that benefits to the U.S. are proportional to the domestic share of global GDP, resulting in an overall 7 – 23% range.


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provide customers with the relevant information, effectively reduce information asymmetry in the marketplace, and significantly reduce emissions of CO₂ from use of GSFLs and IRLs.

Although DOE does not explicitly say that it will use any metric or set of metrics to evaluate its rule, the agency does reference some anticipated outcomes of its proposal that could potentially be measured after its implementation. Therefore, the ability to measure these intended outcomes can help the agency and the public evaluate the rule’s success or failure.

However, two of the three problems identified by the agency—lack of access to information and information asymmetry—are not addressed at all by the rule, and DOE provides no metrics by which to measure them. This indicates that either the problems that DOE identified to address through these standards are flawed, or that DOE’s rule is fundamentally flawed in that it does not address these problems. Therefore, it is necessary to also evaluate whether the rule’s outcomes address the goals outlined in the authorizing statute, and whether the proposed efficiency standards result in the maximum improvement in energy efficiency that is both technologically feasible and economically justified, while also resulting in a “significant conservation of energy.”

**Stated Metrics**

While DOE doesn’t explicitly state how its rule can best be measured, there are a number of potential metrics stated in its proposed rule which may enable measurement both of the rule’s success, and the accuracy of DOE’s ex ante analysis.

**Economic Effects on GSFL/IRL Markets**

- DOE doesn’t expect the GSFL standards to result in any plant closings or significant loss of employment. (79 FR 24071)
- DOE anticipates some negative effects on manufacturers of IRLs: IRL manufacturers may choose to close existing U.S. manufacturing plants, and IRL manufacturing plants may decrease employment as a result of these standards. (79 FR 24071)
- DOE believes that the market share of IRLs would decline under the proposed standards, but IRL products would not be eliminated. (79 FR 24142)
- DOE acknowledges that there could be a loss of domestic employment due to the required increase in efficacy of 4-foot MBP lamps as a result of a possible increase in the price of rare earth oxides. (79 FR 24164)
- The high costs associated with increasing the efficacy of IRLs could cause some IRL manufacturers to exit the market. (79 FR 24164)
Assumptions

- DOE assumes that there would be no rebound effect for residential or commercial lighting as a result of increased energy efficiency. (79 FR 24132)
- While DOE expects the lighting demand for GSFLs and IRLs to be eroded by increased penetration of LEDs into the market, DOE assumed in its analysis that consumers would not switch from GSFLs to LEDs in response to the proposed standards. (79 FR 24134)

Outcomes

- DOE states that the proposed standards for GSFLs and IRLs will save a significant amount of energy and will result in significant environmental benefits. (79 FR 24071)
- DOE expects that these energy savings would result in cumulative emission reductions of 170.7 million metric tons (MMt) of carbon dioxide (CO₂), 210.8 thousand tons of nitrogen oxides (NOₓ), 2.81 thousand tons of nitrous oxide (N₂O), 732.7 thousand tons of methane (CH₄), 0.321 tons of mercury (Hg), and 250.7 thousand tons of sulfur dioxide (SO₂). (79 FR 24071)
- DOE speculates that reduced demand for electricity may reduce the costs of maintaining the nation’s electricity system. (79 FR 24169)
- DOE anticipates that these energy savings will improve the security and reliability of the nation’s energy system. (79 FR 24081)

Unintended Consequences

- While DOE doesn’t require manufacturers to shorten lamp lifetime to meet its proposed efficiency levels, manufacturers can choose to do so, leaving consumers with lower-quality lighting options. (79 FR 24109)
- Requiring manufacturers to make additional investments in developing higher-efficiency GSFL and IRL technologies could divert resources away from the development of light-emitting diode (LED) technology, which has the potential to save more energy. (79 FR 24135)
- More stringent GSFL standards could shift the manufacture of GSFLs from America to China because of the lower price of rare earth oxides in China. (79 FR 24137)
- GSFL manufacturers could potentially increase the amount of mercury in GSFLs in order to comply with the proposed GSFL standards. (79 FR 24165)
- DOE states that its proposed standards will not lessen the utility or performance of GSFLs and IRLs. (79 FR 24169)

Only one of the problems identified by the agency is addressed by any of the metrics stated in DOE’s proposed rule: internalizing the externality of greenhouse gas emissions. However, as
previously noted, DOE’s own analysis makes clear that the costs of the proposed rule would greatly exceed the externality benefits. Therefore, none of the stated metrics are actually applicable to the outcomes that DOE states it intends for this rule.

However, some of the above metrics are applicable to the outcomes stated in the authorizing statute, which requires the proposed efficiency standards to result in the maximum improvement in energy efficiency that is both technologically feasible and economically justified, while also resulting in a “significant conservation of energy.” If manufacturers exit the market in response to the proposed standards, resulting in reduced domestic supply and employment, this could indicate that the proposed rule is not, in fact, technologically feasible and economically justified. Further, if the proposed standards discourage investment into LED technologies, it is possible that the standards will not result in a significant conservation of energy, as required by statute.

**Information Collection**

This proposed rule does not include DOE’s plans for information collection to review the effect of its standards. In order for retrospective review to be effective, consistent with the requirements of the Paperwork Reduction Act, DOE should commit to collecting the information needed to assess whether its stated metrics are being accomplished, and whether its assumptions proved to be accurate.

**Timeframe**

The text of the proposed rule does not include a timeframe for retrospective review. In its final rule, DOE should commit to measuring the above stated metrics and assumptions on a regular basis to provide timely feedback on the rule’s outcomes, costs, and unintended consequences.

**Measure Linkages**

As DOE commits to measuring the effects of its rule, it should also be aware of mediating factors that may have accomplished or undermined the stated metrics absent the rule. For instance, if investments in energy efficiency for GSFLs and IRLs detract research and development resources from LED development, it is possible that the standards may result in less energy conservation than could have been achieved absent a standard. Or, alternatively, if residential and commercial customers independently increase demand for energy efficient GSFLs and IRLs, the energy efficiency goals of this rulemaking could have been met without additional regulation. Determining linkages between the rule and the measured outcomes is necessary to ensure that the policy itself resulted in the desired outcomes, rather than other factors beyond the agency’s control.
Review of Previous Standards

As mentioned in this proposal, DOE has already prescribed certain energy efficiency standards for IRLs and GSFLs, most recently in its 2009 Lamps Rule. Compliance with these standards was required as of July 14, 2012. Further, for certain GSFL product classes, many manufacturers were granted a stay of enforcement of the 2009 Lamps Rule and, as a result, the standards have not yet been fully implemented. While DOE is statutorily required to make a determination about whether to update these standards, it may make the most sense for DOE first to review the efficacy of its existing standards in order to course-correct if necessary before promulgating a new rule.

Manufacturers have expressed concern that the limited span of time between the rulemakings will have a severe and negative impact on manufacturers, who may not be able to recover investments in new technologies or to develop products meeting even higher standards than those in the 2009 Lamps Rule. Further, some manufacturers argue that “the market has not fully shifted to reflect the impacts of the July 2012 standards and there is little to no accurate information available regarding future market shares and technology capability.” Further, manufacturers are still unsure as to how the 2009 Lamps Rule will affect future sales, since there are a large number of lighting options on the market, and manufacturers are still waiting to see which types of lamps consumers will choose.

This information indicates that it would be best for DOE to delay proposing new standards until the full effect of its previous standards is known, and DOE should initiate that process by conducting a retrospective review of its 2009 Lamps Rule.

Review of Anti-Competitive Impacts

When the Department of Justice reviewed DOE’s 2009 Lamps Rule, it found that the standards would have anti-competitive impacts on the IRL industry. However, it does not appear that DOE took these findings into consideration when finalizing its 2009 rule. In a comment to DOE, the Edison Electric Institute expressed concern that the proposed standards would additionally reduce competition in the GSFL and IRL industries.
As it reviews the effects of its 2009 Lamps Rule, DOE should also undertake to evaluate the effects of its standard on competition. DOE should consider applying the Herfindahl–Hirschman Index (HHI), which DOJ uses to evaluate the anti-competitive effects of mergers, to measure concentration in the GSFL and IRL industries pre- and post-enforcement of the 2009 standards.\(^{19}\)

Additionally, DOE should commit to measuring any potential anti-competitive effects of its current proposed standards using changes in the HHI between now and implementation of its final rule. This should inform the public about any unintended anti-competitive effects of DOE’s energy efficiency standard.

**Recommendations**

As DOE explains in its proposed rule, there are three problems that DOE is trying to address by setting energy efficiency standards for GSFLs and IRLs: lack of consumer information, asymmetric information about the benefits of energy efficient commercial appliances, and externalities related to greenhouse gas emissions. However, two of the problems cited by DOE—lack of consumer information about energy efficiency and information asymmetry—are not even addressed in its proposed energy efficiency standards. Additionally, DOE does not explain why residential and commercial GSLF and IRL consumers would suffer from either informational deficits or cognitive biases that would cause them to purchase products with high lifetime costs without demanding higher-price, higher-efficiency products. This asymmetric information, if it exists, could be remedied by improved labeling or other types of consumer education campaigns rather than banning products from the marketplace, especially given the projected penetration rates of LEDs.

DOE’s approach, in addition to ignoring any potential underlying information asymmetry issues, is contrary to President Obama’s instruction to agencies in Executive Order 13563:

> Where relevant, feasible, and consistent with regulatory objectives, and to the extent permitted by law, each agency shall identify and consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public. These approaches include warnings, appropriate default rules, and disclosure requirements as well as provision of information to the public in a form that is clear and intelligible.\(^{20}\)


DOE’s proposal does not maintain flexibility and freedom of choice for purchasers of GSFLs and IRLs, and the resulting benefits to not justify the costs as required both by statute and by Executive Order.

If DOE nevertheless proceeds to issue the standards as proposed, it should commit to measuring whether the rule meets the statutory standard of achieving the maximum improvement in energy efficiency that is both technologically feasible and economically justified, while also resulting in a “significant conservation of energy.”

Each of the below recommendations addresses a specific stated metric listed previously in this comment, and is intended to simplify DOE’s retrospective review of this rule to the extent possible.

**Outcomes**

- DOE should commit to measuring reductions in energy usage as a result of these standards, and attempt to quantify any ensuing environmental benefits.
- DOE should commit to measuring the effects of these energy savings on the security, reliability, and costs of maintaining the nation’s energy system.

**Assumptions**

- DOE should evaluate whether there was a measurable rebound effect resulting from use of more energy efficient lamps. If DOE’s expectation of no energy rebound is not correct, DOE should attempt to identify why, and should apply the lessons learned to estimating similar effects in future analyses.

**Unintended Consequences**

- DOE should assess whether the development of LED technologies is impeded by investments in energy efficient GSFL and IRL technologies, and the extent to which energy conservation is obstructed as a result.
- DOE should measure whether its standards resulted in any plant closings or significant loss of employment, and whether the standards resulted in domestic firms moving their production facilities outside the United States.
- DOE should commit to assessing whether its standards resulted in increased mercury, shorter lamp lifespan, decreased product optionality, or any other factors that may lessen the utility or performance of GSFLs and IRLs.
Review of Anti-Competitive Effects

- DOE should commit to reviewing the effects of its rule on competition in the GSFL and IRL industries by using the HHI to compare market concentration before and after implementation of its rule.

Review of 2009 Lamps Rule

- DOE should commit to reviewing the effects of its 2009 Lamps Rule before determining whether to update the standards for GSFLs and IRLs. In addition, DOE should use the HHI to measure whether its 2009 rule had anti-competitive effects.