REGULATORY REPORT CARD | November 2014

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AGENCY

Office of Energy Efficiency and Renewable Energy, Department of Energy

Rule title

Energy Conservation Program: Energy Conservation Program for Halide Lamp Fixtures

RIN	1904–AC00
Publication Date	August 20, 2013
Comment Period Closing Date	October 21, 2013
Stage	Proposed rule

REGULATORY SCORING

	SCORE
1. Systemic Problem: How well does the analysis identify and demonstrate the existence of a market failure or other systemic problem the regulation is supposed to solve?	**2**/5
2. Alternatives: How well does the analysis assess the effectiveness of alternative approaches?	**4**/5
3. Benefits (or Other Outcomes): How well does the analysis identify the benefits or other desired outcomes and demonstrate that the regulation will achieve them?[1]	**4**/5
4. Costs: How well does the analysis assess costs?	**3**/5
5. Use of Analysis: Does the proposed rule or the RIA present evidence that the agency used the Regulatory Impact Analysis in any decisions?	**4**/5
6. Cognizance of Net Benefits: Did the agency maximize net benefits or explain why it chose another alternative?	**4**/5
Total Score	**21**/30

SUMMARY

The proposed regulation applies to metal halide lamp fixtures. The goal of this energy efficiency regulation is to achieve "the maximum improvement in energy efficiency that is technologically feasible and economically justified." An analysis of environmental benefits is completed with the attendant uncertainties of the benefits of carbon reduction. The DOE estimated that the regulation (trial standard level 3) will save consumers around $139 to $186 million annually and produce total benefits, which includes emissions reductions, between $202 and $150 million annually. The regulation would impose $64 to $68 million in new costs to consumers annually.

The regulation names some potential market failures that might explain why consumers do not purchase more energy-efficient furnace fans (e.g., lack of information). It provides little evidence that these potential market failures actually exist. The DOE appears mostly interested in improving energy efficiency, with identifying a clear market failure being an afterthought. The analysis assesses several alternatives to regulation (e.g., consumer rebates and tax credits) but dismisses these as not achieving serious energy reduction.

The Regulatory Studies Program at the Mercatus Center at George Mason University issues Regulatory Report Cards scored by a team of economists for economically significant proposed regulations. For more information about the program, scorers, other scores, and scoring conventions, see www.mercatus.org/reportcard.

1. Systemic Problem: How well does the analysis identify and demonstrate the existence of a market failure or other systemic problem the regulation is supposed to solve?	**2**		
Does the analysis identify a market failure or other systemic problem?	2	1A	The DOE notes that the economic literature explains why individuals appear to undervalue energy efficiency improvements. This is due to "(1) a lack of information, (2) a lack of sufficient savings to warrant accelerating or altering purchases . . . , (3) inconsistent weighting of future energy cost savings relative to available returns on other investments, (4) computational or other difficulties associated with the evaluation of relevant tradeoffs, and (5) a divergence in incentives (e.g., renter versus owner; builder vs. purchaser)." Two citations in journals are provided, as is a DOE draft paper (NPRM, 51545). Uncertainty about the future and hidden welfare losses could also play a role. However, the primary justification for DOE action appears to be that the the EPCA "directs DOE to conduct a rulemaking to determine whether to amend these standards" (NPRM, 51470).
Does the analysis outline a coherent and testable theory that explains why the problem (associated with the outcome above) is systemic rather than anecdotal?	2	1B	The DOE is mostly interested in improving energy efficiency, as it has authority to do so from EISA 2007 and earlier acts. The externality theory is not clearly explained but indirectly used when talking about the social cost of carbon. Environmental benefits come from reduced carbon emissions and other gases. Even if one is to ignore the claimed benefits of reduced CO_2 emissions, the estimated benefits exceed the estimated costs. If this were true, we should anticipate market participants to gravitate toward more efficient ballasts as a cost-savings approach. No explanation is provided for why no such approach is employed by market participants. Further, since the beneficiaries are profit-maximizing firms rather than fallible consumers, the irrationality theory is questionable.
Does the analysis present credible empirical support for the theory?	2	1C	A fairly comprehensive empirical analysis, centering on FUND, DICE, and PAGE models, indicates that estimated benefits exceed the estimated costs of adopting the rule. The DOE argues this analysis provides the "economic justification" for the rule. However, this analysis does not explain why the problem is systemic in nature, particularly given that estimated operating costs savings exceed the estimated incremental equipment costs. The NPRM mentions that consumers may undervalue energy savings but does not provide direct evidence other than mentioning two journal articles in footnotes.
Does the analysis adequately address the baseline? That is, what the state of the world is likely to be in the absence of federal intervention not just now but in the future?	3	1D	The baseline is the absence of any new standards in some cases and in other cases a typical unit that has the lowest efficiency for a certain equipment class. The DOE states, "By definition, no new regulatory action yields zero energy savings and an NPV of zero dollars." This indicates a lack of understanding of how markets work to encourage private solutions to social problems when it becomes profitable to do so (RIA, 18-3, 5-2). Elsewhere, a discussion of high-shipment and low-shipment scenarios is spelled out indicating that firms and markets might adapt quicker to new technology than regulators assume. The high-shipment scenario is when metal halide fixtures get replaced quickly with newer technology, such as solid-state lighting (NPRM, 51506).
Does the analysis adequately assess uncertainty about the existence or size of the problem?	2	1E	Multiple values for the social cost of carbon reflect uncertainty about the size of the problem. Consumer undervaluation of energy savings is assumed with certainty to exist.

2. Alternatives: How well does the analysis assess alternative approaches?	**4**		
Does the analysis enumerate other alternatives to address the problem?	5	2A	Six other alternatives are discussed, including no action, customer rebates, customer tax incentives, manufacturer tax credits, voluntary energy efficiency programs, and bulk government purchases. The analysis also lists alternative energy efficiency standards.
Is the range of alternatives considered narrow (e.g., some exemptions to a regulation) or broad (e.g., performance-based regulation vs. command and control, market mechanisms, nonbinding guidance, information disclosure, addressing any government failures that caused the original problem)?	5	2B	The range is quite diverse. The DOE compared the baseline with five trial standard levels. A separate chapter discusses customer rebates, customer tax credits, manufacturer tax credites, voluntary envergy efficiency programs, and bulk government purchases. However, the focus of the trial standard levels is on changing ballasts and not on other ways to reduce energy use.
Does the analysis evaluate how alternative approaches would affect the amount of benefits or other outcome achieved?	4	2C	A short narative is provided for each of the alternatives not chosen; however, the analysis of each is surface level and generally based on unsubstantiated and sometimes questionable assumptions that arguably impact the comparison relative to the chosen alternative. For instance, estimates for all energy efficiency standards assume full compliance and provide benefit figures. For nonregulatory alternatives, the DOE assumes 100 percent compliance is unlikely and energy savings and net present value are shown.
Does the analysis identify and quantify incremental costs of all alternatives considered?	4	2D	Net energy savings and net present values are provided based on very limited analysis. The discussion of costs and benefits from the unchosen alternatives is very limited.
Does the analysis identify the alternative that maximizes net benefits?	**5**	2E	Net present value of all trial standard levels are shown. The chosen standard is one that allows for the "maximum improvement in efficiency that is technologically feasible and economically justified, and will result in esignificant conservation of energy." This alternative seems to maximize net benefits in some scenarios (NPRM, 51535), but when emissions are included, it does not (NPRM, 51541). For nonregulatory alternatives, net present values are shown for high and low shipment cases.
Does the analysis identify the cost-effectiveness of each alternative considered?	3	2F	Arguments are presented explaining why other alternatives may not be as effective in reducing energy usage for metal halide lamps. Net energy savings and net present values are computed for each, although the analysis is limited. Cost-effectiveness is not calculated. Cost per ton of emissions avoided or cost per unit of energy saved could have been calculated.
3. Benefits (or other Outcomes): How well does the analysis identify the benefits or other desired outcomes and demonstrate that the regulation will achieve them?	**4**		
Does the analysis clearly identify ultimate outcomes that affect citizens' quality of life?	4	3A	The rule may lead to reductions in emissions, which would improve air quality and reduce greenhouse gases, the latter of which impacts people internationally, as well. Energy savings are sometimes considered an outcome in their own right due to legislative language requiring the DOE to consider national energy savings.

Does the analysis identify how these outcomes are to be measured?	4	3B	Consumer cost savings are calculated as the monetary value of energy savings. The value of reduced carbon emissions is calculated using estimates of the social cost of carbon. Nitrogen oxide emissions are also calculated. Reductions in other gases (sulfur dioxide, mercury, methane, and nitrous dioxide) are quantified but not monetized.
Does the analysis provide a coherent and testable theory showing how the regulation will produce the desired outcomes?	3	3C	Mandating more efficient metal halide lamps is shown to lead to reduced energy consumption. The theory is basically social engineering. If the DOE regulates, then people will benefit from less emisisons and energy savings. The rebound effect is seen as minimal (RIA, 11-6).
Does the analysis present credible empirical support for the theory?	3	3D	Extensive calculations predict energy savings and reduced emissions if the theory is correct. There are passing mentions in footnotes to two academic studies. The DOE does not provide a strong price analysis.
Does the analysis adequately assess uncertainty about the outcomes?	**5**	3E	Yes, the analysis assesses uncertainty by using different energy use values. The DOE uses a software package called "Crystal Ball" to generate probablity distributions for life-cycle costs based on variability in key input parameters. Different energy price forecasts, different economic growth scearios, different shipment scenarios, and different value of emission scenarios are used. Sensitivity analysis is also completed with shorter time horizons.
Does the analysis identify all parties who would receive benefits and assess the incidence of benefits?	4	3F	The parties that are most affected are firms (utilities, warehouses, and transportation facilities), while others are also affected (RIA, 12-3). Whether or not the energy savings will be passed on to consumers (households) remains unclear. Reduced emissions also benefit all, including foreigners.
4. Costs: How well does the analysis assess costs of the regulation?	**3**		
Does the analysis identify all expenditures likely to arise as a result of the regulation?	3	4A	The analysis includes estimates of installation costs, replacement costs, and the increased price of the more efficient metal halide lamp. The impact on small manufacturers and their required upgrading of product lines is not well developed.
Does the analysis identify how the regulation would likely affect the prices of goods and services?	3	4B	The analysis suggests that prices of the more efficient metal halide lamps will rise because they use newer materials, have better technology, will be marked up, and face high taxes, etc. It also mentions the potential for users of metal halide lamps to purchase foreign products instead. In order to form a more accurate estimate of the impact on the price, one must formulate a better understanding of the price elasticity of demand.
Does the analysis examine costs that stem from changes in human behavior as consumers and producers respond to the regulation?	3	4C	There is a brief discussion on the rebound effect with the conclusion that it is a minor effect. There will be minor impacts on employment. Discussion occurs on new and emerging technologies. However, there appears to be little consideration of elasticity of demand to estimate the response of users of metal halide lamps.
If costs are uncertain, does the analysis present a range of estimates and/or perform a sensitivity analysis?	4	4D	The Monte Carlo analysis appears to accommodate some variability in costs. Probability distributions are used for several operating cost inputs, and multiple markup scenarios are used for the impact of new standards. High shipment and low shipment costs are shown.

Does the analysis identify all parties who would bear costs and assess the incidence of costs?	3	4E	The analysis adequately identified those who will bear the direct costs associated with the new standards; however, the incidence of these costs is not sufficiently addressed. For example, without a discussion of elasticities, the DOE cannot determine how much of the additional manufacturing costs will be passed on to consumers. The assumption is that the markup will remain constant, which may or may not be true.
5. Use of Analysis: Does the proposed rule or the RIA present evidence that the agency used the analysis in any decisions?	**4**	5	The NPRM walks through the results of the analyisis and chooses TSL 3 as the regulation that is teachnologically feasible and economically justifiable. Energy savings and emission reduction benefits outweigh the costs. However, given the surface-level attention given the other alternatives, it can appear that the agency was predetermined to choose the proposed rule and made convenient assumptions to exclude the alternative solutions.
6. Net Benefits: Did the agency maximize net benefits or explain why it chose another alternative?	**4**	6	The highest customer net present value comes from Trial Standard Level 5, mainly because of emission reduction benefits. However, the DOE chose TSL 3 because this is where energy savings are maximized, technologically feasible, and economically justifiable.