REGULATORY REPORT CARD | May 2014

MERCATUS CENTER
George Mason University

AGENCY

Department of Energy

Rule title
Energy Conservation Standards for Residential Furnace Fans

RIN	1904-AC22
Publication Date	October 15, 2013
Comment Period Closing Date	December 24, 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?	**3**/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?	**4**/5
4. Costs: How well does the analysis assess costs?	**4**/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?	**5**/5
6. Cognizance of Net Benefits: Did the agency maximize net benefits or explain why it chose another alternative?	**4**/5
Total Score	**24**/30

SUMMARY

The proposed regulation applies to residential furnace fans. 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 will save consumers around $872 million–$1.565 billion annually and produce total benefits (which include emission reductions) between $1.451 billion and $2.172 billion annually. The regulation would impose $231—$290 million of new costs on consumers annually.

The regulation names some potential market failures that might explain why consumers do not purchase more energy-efficient furnace fans (lack of consumer information, asymmetric information, externalities and high transaction costs). 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. Thus, it is something of a mystery how the regulation can create the claimed benefits for consumers. The analysis assesses several alternatives to regulation (e.g., consumer rebates and tax credits), but it assesses their effectiveness only for two of the furnace fan classes: non-weatherized gas furnace, non-condensing, and non-weatherized gas furnace, condensing.

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?	**3**		
Does the analysis identify a market failure or other systemic problem?	3	1A	A single paragraph lists reasons consumers may under-value future energy savings, which implies that energy efficiency standdards may generate private benefits: "(1) A lack of information; (2) a lack of sufficient salience of the long-term or aggregate benefits; (3) a lack of sufficient savings to warrant delaying or altering purchases; (4) excessive focus on the short term, in the form of inconsistent weighting of future energy cost savings relative to available returns on other investments; (5) computational or other difficulties associated with the evaluation of relevant tradeoffs; and (6) a divergence in incentives (for example, renter versus owner or builder versus purchaser)." These are attributed to "economic research" with no citations. They may be plausible but are not explained. Environmental externalities (costs created by emissions) are also mentioned.
Does the analysis outline a coherent and testable theory that explains why the problem (associated with the outcome above) is systemic rather than anecdotal?	3	1B	No theory is elaborated regarding private benefits. Environmental benefits stem largely from reduced carbon emissions. The externality theory here is not really explained but presumably incorporated in the deliberations of the interagency committee that established values for the social cost of carbon. The DOE is mostly interested in improving energy efficiency, as it has the authority to do, so identifying a market failure seems to be an afterthought.
Does the analysis present credible empirical support for the theory?	2	1C	Evidence is mostly provided for the issue of environmental externalities tied to the topic of Social Cost of Carbon. Discussion focuses on FUND, DICE, and PAGE models. There is hardly any discussion of evidence about the other systemic problems. The TSD reports a literature review showing consumer discount rates for appliances range from 20 to 39 percent, and it calculates interest rates on consumer debt and investments, but it does not explicitly argue that the difference between the two indicates consumer irrationality. The NPRM mentions that consumers may undervalue energy savings but presents no direct evidence.
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 analysis calculates "base case" efficiency levels in the absence of new standards, then compares standards to these. The baseline is the "least-efficient furnace fans used in commericially-avaliable, residential HVAC models that have a large number of annual shipments." The Energy Information Adminsitration's forecast of electricity prices is used. Prices of furnace fans are assumed constant over time based on a cursory examination of historical trends.
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 this problem. Consumers' undervaluation of energy savings is assumed to exist with certainty. Calculations of consumer savings do not reflect any variability or uncertainty about the extent of consumer irrationality.

2. Alternatives: How well does the analysis assess alternative approaches?	4		
Does the analysis enumerate other alternatives to address the problem?	5	2A	Yes, the analysis enumerates alternative energy efficiency standards plus five non-regulatory alternatives.
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)?	4	2B	All alternatives are alternative ways of getting consumers to purchase more energy-efficient furnace fans—not alternative ways to improve overall energy efficiency or reduce emissions. The DOE evaluated a "baseline" level of energy efficiency plus six other higher levels. A separate chapter assesses some effects of consumer rebates, consumer tax credits, manufacturer tax credits, voluntary efficiency targets, and bulk government purchases for some of the product classes. Early replacement is mentioned but not analyzed.
Does the analysis evaluate how alternative approaches would affect the amount of benefits or other outcome achieved?	3	2C	Estimates for all energy efficiency standards assume full compliance and provide benefit figures. Estimates for non-regulatory alternatives explicitly assume that compliance is not full, and only "net present value" is reported; a separate benefit figure for consumers is not provided. These estimates focus only on two furnace fan classes: non-weatherized gas furnace, non-condensin; and non-weatherized gas furnace, condensing.
Does the analysis identify and quantify incremental costs of all alternatives considered?	3	2D	Cost of each efficiency level is estimated. Costs of non-regulatory alternatives are unclear because the analysis merely reports the net present value to consumers, not the separate benefits and costs.
Does the analysis identify the alternative that maximizes net benefits?	4	2E	Net benefits of each alternative are not reported but could have been calculated based on the information in the analysis. Life-cycle cost to consumers is reported; this is essentially a net benefit to consumers (excluding benefits of emissions reductions). Net benefits of chosen alternative are calculated. For the non-regulatory alternatives, net benefits are presented for only two furnace classes.
Does the analysis identify the cost-effectiveness of each alternative considered?	**3**	2F	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	Principal benefits are consumer cost savings and environmental benefits of reduced emissions reductions. Health benefits are noted for SO2 and NOx reduction. 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?	5	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. The value of nitrogen oxide emissions is calculated using a cost per ton figure. Reductions in sulfur dioxide and mercury emissions 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	The theory is basically social engineering: imposing various standard levels will lead to purchase of appliances with the specified energy efficiency. Analysis includes a "rebound effect" (e.g., more people may leave furnace fans on all the time because they are more energy efficient).
Does the analysis present credible empirical support for the theory?	4	3D	Extensive calculations predict the energy savings assuming the theory is correct. Little evidence is presented to justify this assumption. Calculations make use of empirical findings that appliances are a "normal" good and demand is relatively inelastic. The analysis reports that consumers implicitly use high discount rates to value future energy savings, but it uses a lower rate based on consumers' cost of borrowing.
Does the analysis adequately assess uncertainty about the outcomes?	5	3E	The analysis utilizes a distribution of energy use values rather than just an average. It employs a software package called "Crystal Ball" to generate probability distributions of life-cycle cost based on variability in key input parameters. Several appendices also recalculate life-cycle costs (consumer savings) under several different energy price forecasts, economic growth forecasts, and other scenarios. The NPRM presents high and low estimates of benefits, as well as a primary estimate.
Does the analysis identify all parties who would receive benefits and assess the incidence of benefits?	**5**	3F	Monte Carlo analysis identified the percentage of households receiving a net benefit, paying a net cost, or experiencing no impact. These calculations are performed separately for low-income and senior-only households. Effects on different regions are also estimated.
4. Costs: How well does the analysis assess costs of the regulation?	4		
Does the analysis identify all expenditures likely to arise as a result of the regulation?	4	4A	The DOE calculates the cost of materials, fabrication, and production (including overhead) for each efficiency level based on a "teardown" analysis of physical units. Effects on industry cash flow are estimated. Conversion, shipping, installation, and repair costs are also included.
Does the analysis identify how the regulation would likely affect the prices of goods and services?	4	4B	The analysis acknowledges that higher prices for furnaces will result. It includes markups and sales taxes to calculate effects on retail prices of furnaces to consumers. It calculates an average discount rate based on interest rates on various forms of consumer debt and rates of return on types of investments.
Does the analysis examine costs that stem from changes in human behavior as consumers and producers respond to the regulation?	3	4C	Elasticity of demand for furnaces is incorporated into analysis, but the "relative price" used includes the DOE's estimate of operating cost savings. Higher prices will result in people deciding to fix old furnaces. The lower marginal cost of using the furnace means that there will be a rebound effect. The analysis estimates the differences in installed utility capacity associated with each efficiency level. It also assesses direct employment effects in the fan manufacturing industry and indirect employment effects that stem from the change in consumer spending (more on products, less on electricity).
If costs are uncertain, does the analysis present a range of estimates and/or perform a sensitivity analysis?	4	4D	Monte Carlo analysis appears to accommodate some variability in costs to consumers, but analysis of costs to industry does not account for uncertainty or variability. The NPRM presents high and low estimates of costs as well as the primary estimate.

Does the analysis identify all parties who would bear costs and assess the incidence of costs?	**5**	4E	Markup analysis at all levels indicates that ultimately the consumer will be affected. The analysis shows separate effects on low-income and senior-only households. The DOE acknowledges that the regulation may have a disproportionate impact on small businesses. The analysis includes employment effects and regional effects.
5. Use of Analysis: Does the proposed rule or the RIA present evidence that the agency used the analysis in any decisions?	**5**	5	Legislation requires the DOE to determine whether the benefits of a proposed standard exceed the burdens, taking into account the costs to consumers and manufacturers, savings in operating costs, energy savings, any reduced utility or performance, and any lessening of competition, among other factors. The NPRM walks through results of the analysis and concludes that TSL 4 yields the maximum energy savings that are technologically feasible and economically justifiable. The DOE concludes that the energy savings, net gains to consumers, and emission reductions outweigh the potential losses to manufacturers. Thus, the results of the analysis appear to play a major role in the decision. The NPRM dismisses non-regulatory alternatives because the analysis found they would not lead to adoption of as much energy-efficient technology as mandatory standards would.
6. Net Benefits: Did the agency maximize net benefits or explain why it chose another alternative?	**4**	6	Neither the technical support document nor the NPRM calculates net benefits for each alternative standard level, although it would have been possible to do so. A table shows the separate benefits, costs, and net benefits of the chosen standards, but not the alternatives. "Net present value" to consumers is a type of net benefit to consumers calculation. The chosen standard maximized this for some product classes, but a lower standard appeared to maximize it for more. The DOE explains that it is required to choose the standard yielding maximum energy savings that are technologically feasible and economically justifiable, not the standard that maximizes net benefits.