REGULATORY REPORT CARD | February 2015

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AGENCY

Department of Energy

Rule title

Energy Conservation Program: Energy Conservation Standards for Commercial and Industrial Electric Motors

RIN	1904-AC28
Publication Date	December 6, 2013
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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?	**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	**23**/30

SUMMARY

The proposed regulation applies to commercial and industrial electric motors. 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 2) will have net benefits around $957 to $1,354 million annually and produce total benefits that include emissions reduction between $1721 and $2347 million annually. The regulation would impose $462 to $577 million of new costs annually. The analysis, however, fails to conduct any serious investigation into implicit costs of the regulation.

The regulation has weak economic reasoning. DOE appears mostly interested in improving energy efficiency, and identifies only environmental externalities as the market failure. The analysis assesses several alternatives to regulation (e.g., consumer rebates and tax credits) but dismisses these as not achieving 100 percent compliance. The alternatives are, therefore, deemed to not be serious energy reduction methods.

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	DOE appears to justify the rule on the basis of a broadened definition of the term "electric motors" under its authority, rather than specifically to address a systemic problem. It makes a perfunctory statement about "externalities related to environmental protection and energy security." No real documentation or explanation provided (73669).
Does the analysis outline a coherent and testable theory that explains why the problem is systemic rather than anecdotal?	3	1B	Environmental benefits stem largely from reduced carbon emissions. The externality theory here is not really explained, but is presumably incorporated in the deliberations of the interagency committee that established values for the social cost of carbon. DOE is mostly interested in improving energy efficiency, per its authority, so identifying a market failure seems to be an afterthought. DOE does not offer explanation as to why the market does not address the problem and why the regulation is needed. "DOE further notes that equipment achieving these standard levels are already commercially available for most equipment classes covered by today's proposal."
Does the analysis present credible empirical support for the theory?	2	1C	Evidence is provided for the issue of environmental externalities (the only systemic problem mentioned) tied to the topic of social cost of carbon. Discussion focuses on FUND, DICE, and PAGE models. NPRM mentions that consumers may undervalue energy savings but presents no direct evidence. No discussion on energy security, but it is implied that energy savings contributes to energy security for the US.
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 considered to be the "lowest observed efficiency under expanded scope" of DOE. There appears to be an assumption the efficiency of motors produced will not improve over time without the intervention of DOE. This is despite presenting evidence that over time market share of motors meeting NEMA Premium rating has increased. Why would such a trend not continue into the future?
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. There is no discussion of uncertainty regarding energy security. The analysis does not address the size or uncertainty of the size of the problem in regards to information problems or external benefits of a more reliable energy network.

2. Alternatives: How well does the analysis assess alternative approaches?	**4**		
Does the analysis enumerate other alternatives to address the problem?	5	2A	"DOE identified six non-regulatory policy alternatives that possibly could provide incentives for the same energy efficiency levels as the standards proposed for electric motors" (17-1). DOE also lists alternate energy efficiency standards—trial standard levels (TSLs).
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 proposed rule assesses four different TSLs for the motors. These rules are command and control. "The non-regulatory policy alternatives are: Consumer Rebates, Consumer Tax Credits, Manufacturer Tax Credits, Voluntary Energy Efficiency Targets, Early Replacement and Bulk Government Purchases." (17-1). A detailed discussion follows on all the nonregulatory policy alternatives except voluntary efficiency targets.
Does the analysis evaluate how alternative approaches would affect the amount of benefits or other outcome achieved?	4	2C	Estimates for all energy efficiency standards assume full compliance and provide benefit figures. Estimates for nonregulatory alternatives explicitly assume that compliance will not be 100 percent (17-3). A detailed analysis is completed for alternative approaches. However, the analysis is limited to NEMA Design A and B motors, which compose the vast majority of motors (73628).
Does the analysis identify and quantify incremental costs of all alternatives considered?	3	2D	The proposed rule provides detailed information on the benefits and costs associated with each alternative, so one can calculate the incremental costs as one moves from one alternative to the next. For the nonregulatory standards, only the net present value is presented for all the policies together, but only for NEMA Design A & B motors (17-25).
Does the analysis identify the alternative that maximizes net benefits?	**4**	2E	Each alternative's net benefits are calculated, including benefits of reducing emissions. (73665). For the nonregulatory alternatives, net benefits are presented for only two NEMA Designs.
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	The focus is on environmental benefits of emissions reductions (human health, extreme weather avoided, impacts on agriculture, etc.). For sulfur dioxide (SO2) and nitrogen oxide (NOx) reduction the health benefits are noted. Energy savings are sometimes considered an outcome in their own right, due to legislative language requiring DOE to consider national energy savings. Consumer cost savings are also identified.
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. Value of reduced carbon emissions is calculated using estimates of the social cost of carbon. Value of NOx emissions is calculated using a cost-per-ton figure. Reductions in SO2 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	By requiring firms to invest in more efficient—and costly—equipment upfront, operators will use less energy when operating the equipment. The theory is basically social engineering: imposing various standard levels will lead to purchase of appliances with the specified energy efficiency. However, it is not clear why consumers of electric motors do not demand such energy-saving measures if the measures are as effective in reducing costs as the rule claims.
Does the analysis present credible empirical support for the theory?	3	3D	The analysis does reference scientific studies from other federal agencies, among others. Original empirical support for the energy reduction claims is provided as part of the energy use analysis.
Does the analysis adequately assess uncertainty about the outcomes?	**5**	3E	The DOE employs a software package called "Crystal Ball" to generate probability distributions of life-cycle costs (consumer savings) and payback periods under several different scenarios. Different energy price forecasts, different price discount scenarios, and other input scenarios were used.
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 end users receiving a net benefit, paying a net cost, or experiencing no impact. Calculations are also conducted on impact on small business customers, customers located in lower electricity price regions, and customers tied to agricultural, commercial, and industrial sectors (11-1).
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	DOE calculates the cost of materials, fabrication, and production (including overhead) for each efficiency level based on a "teardown" analysis of physical units, and software modeling was used on cost-prohibitive units. Effects on industry cash flow are estimated. Conversion, shipping, installation, and repair costs are also included. Employment and utility impact analysis are completed using computer models. Impact on small business manufacturers is also calculated. Most calculations are focused on explicit costs and implicit costs are not discussed.
Does the analysis identify how the regulation would likely affect the prices of goods and services?	3	4B	DOE completes a mark up analysis such as manufacture markup, contractor or installer markup, sales taxes, etc., to calculate how it will impact consumers (TSD, chapter 6).
Does the analysis examine costs that stem from changes in human behavior as consumers and producers respond to the regulation?	3	4C	No discussion on the rebound effect. No serious analysis on how people might delay the purchase of equipment. For employment scenario, DOE finds that manufacturers will not ship jobs overseas for the larger motors due to shipping costs. Some work on price elasticity is completed, e.g., in shipment analysis.

If costs are uncertain, does the analysis present a range of estimates and/or perform a sensitivity analysis?	5	4D	DOE models three types of markup "scenarios to represent the uncertainty about the potential impacts on prices and profitability" (12-18). They are a flat markup scenario, two-tiered markup scenario, and preservation of operating profit markup scenario. Each scenario results in different revenue and cash flow. Uncertainties related to the social cost of carbon are also completed for environmental externalities. "Recognizing that several inputs used to determine consumer LCC and PBP are either variable or uncertain, DOE conducted the LCC and PBP analyses by modeling both the uncertainty and variability in the inputs using Monte Carlo simulation and probability distributions" (2-8).
Does the analysis identify all parties who would bear costs and assess the incidence of costs?	3	4E	DOE acknowledges that small manufacturers will be impacted disproportionately. The analysis also covers employment impacts. Customers located in areas with lower electricity prices, and customers who are part of the "industrial, agricultural, and commercial sector" are also analyzed (11-1). Specifically, without a discussion of elasticity, it is not determined as to how much of the additional manufacturing costs will be passed onto consumers.
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 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. NPRM walks through results of the analysis and concludes that TSL-2 yields the maximum energy savings that are technologically feasible and economically justifiable. 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. NPRM dismisses nonregulatory 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 from the data present 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. DOE chooses TSL-2, as it is the standard that yields maximum energy savings that is technologically feasible and economically justifiable.