

Reforming the Energy Policy and Conservation Act Learning from Experience on Energy Efficiency

Sofie E. Miller, Senior Policy Analyst²

The George Washington University Regulatory Studies Center

Need for Reform

The Energy Policy and Conservation Act of 1975 (EPCA), as amended, grants the Department of Energy (DOE) broad authority to regulate the maximum energy intensiveness of everyday household appliances such as microwaves and dishwashers. As the pace of these energy efficiency regulations has increased, the effects of these standards—and the analyses on which they are based—reveal a need to revisit this statutory authority to reduce burdens for consumers.

DOE's analyses of its energy efficiency standards rely heavily upon assumptions about analytical inputs like future energy prices and consumer behavior. Problems with these initial assumptions and analyses can lead to suboptimal standards that saddle consumers with high costs for little benefit. These analytical problems can be identified using retrospective review, which creates better information for the next round of regulatory analysis. However, DOE doesn't systematically review the effects of its standards, and the standard amendment process laid out in

¹ This working paper 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>.

² Sofie E. Miller is Senior Policy Analyst at the George Washington University Regulatory Studies Center. She can be reached at sofiemiller@gwu.edu or (202) 994-2974. The author thanks Summer Fellow Jacob Yarborough for contributing to data used in section six of this working paper.

EPCA doesn't allow time to learn from previous rules before pursuing new standards. Further, EPCA prohibits DOE from reducing the stringency of its efficiency standards, which makes it impossible to correct regulatory mistakes. Each of the above problems can be addressed via EPCA reform.

The points below illustrate three reasons to rethink EPCA's appliance standard provisions:

1. The pace of regulations setting energy efficiency standards has accelerated during the last decade and is likely to continue. These standards regulate appliances used by most consumers and, because they affect almost all households and incur such large potential benefits and costs, they merit close inspection.
2. American households reflect significant diversity and have very different needs and preferences when it comes to appliances regulated by DOE's efficiency standards. As a result, one-size-fits-all energy efficiency standards can deprive consumers of the ability to make purchases that best suit their unique circumstances and constraints. In such cases, these regulations are a cost to consumers rather than a benefit.
3. Efficiency standards are particularly costly for low-income households who have different constraints and are less able to benefit from the tradeoff between higher upfront costs and lower long-term energy bills as a result of increased efficiency.³

Proposed Reforms

To address the problems outlined above, Congress and DOE should consider the following EPCA reforms:

- EPCA should be revised to allow DOE enough time between its energy efficiency standards to allow for an effective review of each rule's effects before increasing the stringency of its standards. Alternatively, Congress could eliminate the requirement for DOE to consider at regular intervals whether to increase the stringency of its standards, or it could replace that requirement with a "sunset" provision that prevents obsolete standards from remaining in place indefinitely, but does not mandate an escalation.
- To evaluate the outcomes of its biggest rules, DOE should incorporate plans for retrospective review into its economically significant or major rules. If Congress decides to maintain the current EPCA standards review process, it should require DOE to evaluate the impacts of its standards—particularly on consumers and vulnerable populations—during this process.

³ Sofie Miller before the U.S. House Energy and Commerce Subcommittee on Energy and Power, "Home Appliance Energy Efficiency Standards under the Department of Energy— Stakeholder Perspectives." June 10, 2016. <https://regulatorystudies.columbian.gwu.edu/home-appliance-energy-efficiency-standards-under-department-energy%E2%80%93stakeholder-perspectives>

- As part of this evaluation, when possible DOE should encourage surveys or other measures of actual consumer behavior to ensure that its assumptions about household appliance energy use are accurate.
 - DOE should also consider using existing measures—such as the Herfindahl-Hirschman Index—to assess whether its existing energy efficiency standards have had negative effects on competition in the regulated industries, and take this information into account for future related rulemakings.
- Remove EPCA’s anti-backsliding provision to allow DOE to fully respond to the results of its retrospective reviews. This would allow the agency to make policy adjustments if a thorough review indicates that the standard in question harms consumers or a vulnerable consumer sub-group, such as low-income and/or elderly households.
- Congress should consider revisions to EPCA that could improve DOE’s regulatory analysis of its standards, including the following:
 - Congress should consider what the purpose of the rebuttable presumption should be in establishing new energy efficiency standards, such as by changing the statutory language to allow the Secretary of Energy to consider the rebuttable presumption when determining whether standards are economically justified.
 - The Department should consider establishing guidelines for determining whether new standards are economically justified, such as by defining a threshold for the proportion of consumers who experience net costs. Alternatively, Congress could amend EPCA to specify the appropriate threshold of consumer net costs beyond which standards are no longer economically justified.
- There is no good justification for DOE’s current statutory authority to issue energy efficiency standards via direct final rule. The EPCA should be revised to restrict the use of these rules, which cuts consumers out of the rulemaking process and provides an opportunity for businesses to restrict competition.
 - Consumers are inadequately represented in the negotiated rulemakings that lead to direct final rules. Barring comprehensive reform to end the use of direct final rules, EPCA should be amended to require negotiated rulemakings and joint petitions to include consumer representatives.

Statutes Establishing Federal Energy Efficiency Standards

Four key statutes define DOE’s energy efficiency program: the Energy Policy and Conservation Act of 1975, the National Appliance Energy Conservation Act of 1987, the Energy Policy Act of 1992, and the Energy Independence and Security Act of 2007. Each statute is discussed briefly below.

Energy Policy and Conservation Act of 1975

The Energy Policy and Conservation Act of 1975 (EPCA), as amended, authorizes DOE to establish energy conservation standards for consumer appliances that are both technologically feasible and economically justified, while also resulting in a “significant conservation of energy.”⁴ The EPCA requires DOE to establish energy and water efficiency standards for twenty different categories of covered consumer products, including refrigerators, freezers, furnaces, dishwashers, clothes dryers, televisions, faucets, and lamps.⁵

In addition to this wide range of explicitly covered appliances, EPCA also gives DOE the authority to establish energy conservation standards for “[a]ny other type of consumer product which the Secretary classifies as a covered product under subsection (b).”⁶ This subsection of the Act allows the Secretary broad discretion in classifying consumer products as a “covered product.”⁷ Since energy use is a function of water use in many appliances (e.g., clothes washers and dish washers), the statute gives the Department authority to regulate the energy and water usage of a wide swath of products used every day in nearly every American household.

The EPCA also delegates authority to DOE to establish energy conservation standards for twelve classes of commercial appliances, including commercial ice machines, air conditioners, heating equipment, walk-in coolers and freezers, and commercial clothes washers.⁸ Beyond these explicitly covered products, DOE also has authority to regulate “[a]ny other type of industrial equipment which the Secretary classifies as covered equipment under section 341(b).”

National Appliance Energy Conservation Act of 1987

The National Appliance Energy Conservation Act of 1987 (NAECA) amended EPCA to include more stringent efficiency standards and “required manufacturers to meet minimum nationwide energy-efficiency standards for such appliances as refrigerators, freezers, furnaces, room and central air conditioners, water heaters, dishwashers, washers and dryers, televisions and kitchen ranges and ovens.”⁹

⁴ 42 U.S.C. 6295(o)(3)(B) and 6313(d)(4) (<http://www.gpo.gov/fdsys/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap77-subchapIII-partA-sec6295.htm>)

⁵ Energy Policy and Conservation Act, as amended, §322 (<http://legcounsel.house.gov/Comps/EPCA.pdf>)

⁶ Energy Policy and Conservation Act, as amended, §322(a) (<http://legcounsel.house.gov/Comps/EPCA.pdf>)

⁷ Energy Policy and Conservation Act, as amended, §322(b) (<http://legcounsel.house.gov/Comps/EPCA.pdf>)

⁸ Energy Policy and Conservation Act, as amended, §340 (<http://legcounsel.house.gov/Comps/EPCA.pdf>)

⁹ “Appliance Bill Approved.” In *CQ Almanac 1987*, 43rd ed., 324. Washington, DC: Congressional Quarterly, 1988. <http://library.cqpress.com/cqalmanac/cqal87-1145090>.

NAECA also instructs DOE to determine via rulemaking at regular intervals whether to amend its existing efficiency standards.¹⁰ Notably, NAECA prohibits DOE from issuing any future efficiency standards that allow increased maximum energy usage, a stipulation known as the “anti-backsliding” provision.¹¹

The NAECA of 1987 was amended by the National Appliance Energy Conservation Amendments of 1988 to specify Federal energy conservation standards for fluorescent lamp ballasts.¹²

Energy Policy Act of 1992

The Energy Policy Act of 1992 (EPAct of 1992) added several covered appliances, including commercial heating and cooling equipment, warm air furnaces, and boilers,¹³ and prescribed ranges of minimum energy efficiency standards for new equipment, including lamps. The EPAct of 1992 also expanded the criteria that the Secretary of Energy should evaluate when determining whether an amended standard is “economically justified.”¹⁴

Energy Independence and Security Act of 2007

Although Title I of the Energy Policy Act of 2005 is dedicated to energy efficiency, these provisions apply primarily to government procurement and federal building performance standards. Appliance efficiency was not reformed again until the Energy Independence and Security Act of 2007 (EISA), which amended EPCA to increase federally mandated efficiency standards for certain appliances and require the Secretary of Energy to issue efficiency standards for furnace fans. The EISA also established a new process for the promulgation of new standards, including changes to the standard review cycle requiring DOE to consider whether standards should be increased at six year intervals rather than the five years specified in the NAECA.¹⁵ The number of energy efficiency standards promulgated by the federal government has increased rapidly since passage of EISA.

¹⁰ Though the National Appliance Energy Conservation Act of 1987 instructs DOE to revisit its standards within 5 years of the issuance of the previous standards, this timeframe was amended to 6 years by the Energy Independence and Security Act of 2007.

¹¹ National Appliance Energy Conservation Act of 1987, codified at 42 U.S.C. 6295(o)(1) (<https://www.govtrack.us/congress/bills/100/s83/text>)

¹² S. 2167 (100th): National Appliance Energy Conservation Amendments of 1988, <https://www.govtrack.us/congress/bills/100/s2167/text>

¹³ H.R. 776 (102): Energy Policy Act of 1992, §122(a)(1)(B) <https://www.ferc.gov/legal/maj-ord-reg/epa.pdf>

¹⁴ H.R. 776 (102): Energy Policy Act of 1992, §342 (a)(6)(B)(i) <https://www.ferc.gov/legal/maj-ord-reg/epa.pdf>

¹⁵ Energy Independence and Security Act, “Subtitle A—Appliance Energy Efficiency” §305(a) <https://www.gpo.gov/fdsys/pkg/BILLS-110hr6enr/pdf/BILLS-110hr6enr.pdf>

Opportunities for Reform

The EPCA, as amended, requires DOE to determine at six-year intervals whether updated energy efficiency standards are necessary,¹⁶ and to promulgate a new standard if DOE makes such a determination. Despite this regular determination process, DOE does not interpret EPCA to require evaluation of its existing standards and their effects on regulated entities and consumers.

In reforming EPCA, Congress would have the opportunity to require DOE to evaluate the effects of its standards before increasing their stringency rather than simply evaluating whether further increases in efficiency are technically feasible. This will likely require greater lead time between the date of the standards and initiation of a new determination. As explored below, the six year review window does not provide sufficient time for the agency to gather data on standard implementation as manufacturers are typically given a few years to comply.

Additional EPCA reforms could specify that DOE should ensure the accuracy of the assumptions that underpinned its *ex ante* analysis, including evaluating the effects of consumer behavior on the stated goals of its standards. Such a review would improve future analyses and standards by identifying unrealistic assumptions and fixing them in future rulemakings. Due to the extensive consumer impact of these rules, EPCA could also be reformed to specify the appropriate threshold of consumer net costs beyond which standards are no longer economically justified.

1) EPCA Six Year “Review” Cycle Shortcuts Actual Review

The EPCA’s six year review timeframe has led to multiple occasions on which DOE has determined that such updates are necessary very shortly after implementation of its previous standards and without allowing time for an evaluation of the standards’ effectiveness. This approach does not allow the Department to learn from implementation of past standards before issuing new rules, which is particularly important given that EPCA precludes DOE from reversing the stringency of its standards once in place.¹⁷

DOE’s *ex ante* analyses of its energy efficiency standards rely heavily upon assumptions about future prices of energy and other goods, opportunity costs, producer and consumer preferences, and behavior. When DOE initiates new standards before the effects of previous standards are known, its *ex ante* analysis will suffer from uncertainty in baseline assumptions, as well as uncertain predictions of future effects.

Below are two recent examples of how retrospective review of previous efficiency standards can be useful prior to the promulgation of updated standards.

¹⁶ 42 U.S.C. 6295(m)(1)

¹⁷ National Appliance Energy Conservation Act of 1987, codified at 42 U.S.C. 6295(o)(1)

Automatic Commercial Ice Makers

On January 28, 2015, DOE published a final rule updating energy efficiency standards for automatic commercial ice makers.¹⁸ At publication of DOE's proposed rule in 2014, DOE already regulated energy and water use rates for 13 of the 25 equipment classes covered by the proposed rule.¹⁹ While DOE was statutorily required to make a determination by January 1, 2015 as to whether updating these standards was "technically feasible and economically justified,"²⁰ it would have made the most sense for DOE to first review the efficacy of its existing standards, including unintended consequences and effects on consumers, in order to course-correct if necessary before issuing a new rule.²¹

General Fluorescent Lamps

On January 26, 2015, DOE published a final rule increasing the stringency of energy efficiency standards for general service fluorescent lamps (GSFLs), which are fluorescent tubes that are generally installed in ceilings.²² DOE had already prescribed certain energy efficiency standards for GSFLs, most recently in its 2009 Lamps Rule, which went into effect as of July 14, 2012. For certain GSFL product classes, many manufacturers were granted a stay of enforcement of the 2009 Lamps Rule and, as a result, the standards had not yet been fully implemented at the time that the 2015 rule was proposed.²³

When updates to the GSFL rule were proposed, commenters expressed concern that the limited time between the rulemakings would 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.^{24,25} Further, some manufacturers argued that "the market has not fully shifted to reflect the impacts of the July 2012 standards and there is

¹⁸ 80 FR 4645

¹⁹ 79 FR 14866

²⁰ 42 U.S.C. 6313(d)(3)(A)

²¹ For example, as noted in a previous comment submitted to DOE, manufacturers were still uncertain as to the effect of DOE's 2010 standards when DOE published the proposed rule that would revise them. In the text of DOE's proposed rule, some manufacturers argued that updating the standards again so soon "would negatively impact both manufacturers and end users." (79 FR 14866) One manufacturer reported that the previous efficiency standards had required nearly all of the company's engineering resources for between 1 and 2 years, a significant commitment of resources. (79 FR 14904) Additionally, manufacturers were still analyzing the effects of the 2010 standards on equipment repair costs (79 FR 14894), and the lack of this information hampered DOE's analysis of potential changes in these costs as a result of its proposed standards.

²² "General Service Fluorescent Lamps." *Appliance and Equipment Standards Rulemakings and Notices*, U.S. Department of Energy Office of Energy Efficiency & Renewable Energy.
http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/70

²³ 79 FR 24082

²⁴ 79 FR 24082

²⁵ 79 FR 24136

little to no accurate information available regarding future market shares and technology capability.”²⁶ This lack of information hampers DOE’s efforts to construct an effective rule based on sound analysis.

Instead of proceeding with new rulemakings before the results of previous standards are known, DOE should retrospectively review its previous standards to assess the validity of its *ex ante* analysis before using the same models and assumptions to issue new energy efficiency rules. DOE should also consider mitigating factors that could have accomplished or undermined reductions in energy consumption absent the rule (e.g. energy prices, potential rebound effects, unintended consumer behaviors, etc.). DOE should measure the environmental benefits of its previous rules to improve its *ex ante* analyses of energy efficiency standards going forward.

Opportunities for Reform

In the future, it would be reasonable for DOE to review the effects of any existing energy efficiency standards before pursuing updated, more stringent standards. This will allow DOE to measure the efficacy of its assumptions and to use actual (rather than hypothesized) baselines in its *ex ante* analyses, improving the quality of analysis and regulatory outcomes.

However, DOE is prevented from following such an approach by statutory language requiring six year review cycles. Promulgating updates to the existing standards so soon may not give DOE the chance to evaluate how effective its standards were in reducing energy consumption, which is the primary goal of these rules. Congress should consider revising EPCA as amended by the NAECA and EISA to either 1) remove the requirement for DOE to regularly determine whether to amend its standards or 2) increase the amount of time between a previous standard and a new determination.

The Department should resist updating its efficiency standards until after the effects—intended or not—are known, and Congress should not rush the Department to make such determinations within a six-year review cycle. Current standards typically involve a number of years between publication of the final rule and implementation of the standards to give manufacturers time to reformulate manufacturing processes to meet new design standards. For example, a recent ceiling fan regulation involves a three-year delay between final rule and compliance.²⁷ The need for lead time means that DOE is currently tasked with determining whether to update its standards after they have been in effect for a very short amount of time. A 10-year review cycle is more likely to provide the Department with relevant information on program implementation, regulatory outcomes, and unintended effects.

²⁶ 79 FR 24082

²⁷ 82 FR 6826

2) Verifying Assumptions about Consumer Behavior

DOE tends to conduct detailed *ex ante* analyses of the costs and energy savings associated with its proposed rules, but these (necessarily) are heavily dependent on assumptions about producer and consumer behavior and product lifespans. If these assumptions are incorrect, these rules create burdens for many households instead of the forecasted benefits. To determine whether the large cost savings that DOE forecasts actually materialize for consumers, the Department should consider ways to collect information on consumer behavior, such as via surveys or other instruments.

For example, in 2001 DOE finalized an energy conservation standard for residential clothes washers that relied on questionable assumptions about appliance usage. To calculate cost savings, the Department assumed that households used their clothes washers 392 times per year, or more frequently than once per day. While this assumption was based on data from Proctor & Gamble,²⁸ it doesn't necessarily reflect the experiences or behaviors of most households. In fact, a subsequent Rasmussen Research survey of 1,997 consumers found that only 15% of respondents used their clothes washer as frequently as DOE assumed, and nearly 70% of respondents did not use their appliance frequently enough to break even on DOE's proposed standards.²⁹ This survey, which was initiated by an independent university-based research center, may provide a blueprint for how DOE can collect data on consumer behavior to inform its future rules as part of its retrospective review efforts.³⁰

DOE frequently makes use of survey data from the Residential Energy Consumption Survey (RECS), a recurring survey conducted by the Energy Information Administration. Where these data are not available or when DOE chooses to normalize these data to fit its specifications, they may not represent actual consumer behaviors. Below are three examples of assumptions about consumer behavior and energy usage that could be measured *ex post* by survey data or other measures to ensure that regulatory burdens on consumers and households are minimized.

In setting its 2011 standards for residential furnaces, air conditioners, and heat pumps,³¹ DOE relied on an assumption that households will heat or cool their households relative to a threshold

²⁸ 65 FR 59561

²⁹ For example, see the survey results in: *Addendum to Public Interest Comment on the Department of Energy's Proposed Clothes Washer Efficiency Standards*. Docket No. EE-RM-94-403. Arlington, VA: Mercatus Center Regulatory Studies Program. 2000.
(http://mercatus.org/sites/default/files/publication/Clothes_Washer_Standards.pdf)

³⁰ This independently-commissioned survey was later confirmed by the findings of the Residential Energy Consumption Survey, which estimated that consumers on average use 295 wash cycles per year.

³¹ 76 FR 37407

of 65 degrees Fahrenheit.³² For example, DOE derived annual energy use for these appliances based on the idea that they would be running on days below/above this temperature threshold for any region. In reality, many households likely use very different heating and cooling thresholds depending on insulation, energy prices, and time of day, among other considerations. For example, many households may turn off the heat or the air conditioning during the day while the occupants are at work, regardless of temperature. If households respond differently than DOE's equation suggests the result may be lower appliance usage—and a lower payoff from increased efficiency—than DOE's analysis assumes. In such cases, an *ex post* analysis can verify which assumptions were accurate, which helps in turn to improve future *ex ante* analysis of consumer behavior and energy use.

On the other hand, DOE's 2011 standards for residential clothes dryers had access to survey data on the frequency of clothes washer use from the RECS (295 annual wash cycles, a significant decrease from the 392 annual wash cycles that DOE projected in 2001).³³ Despite the fact that RECS data indicate that about 84% of all washed loads are dried, the Department assumed 283 dryer cycles per year rather than ~250 ($295 \times 0.84 = 247.8$). In this case, even with survey data available DOE used other assumptions on consumer behavior that could alter whether many households benefit from increased standards.

In another case, the fundamental analytical assumptions on which the benefit-cost analysis hinged pertained to product lifespan. In its 2012 direct final rule setting energy efficiency standards for dishwashers, DOE estimated that the average product lifespan of a residential dishwasher was 15.4 years,³⁴ despite the availability of RECS and manufacturer data which put the estimated product lifespan at 9 – 10 years.³⁵ This discrepancy is particularly notable because these increases in energy and water efficiency do not pay off for the average consumer for 11 years, at which point RECS and industry data indicate that many appliances are no longer functioning.

Opportunities for Reform

In each of the cases listed above, *ex ante* verification of these behavioral assumptions would have been ideal. Retrospective review provides an opportunity for the Department to revisit these

³² U.S. Department of Energy (DOE), "Technical Support Document: Energy Efficiency Program for Consumer Products: Residential Air Conditioners, Heat Pumps, and Furnaces," June 2011, page 7-7, 7-15.

³³ U.S. DOE, "Technical Support Document: Energy Efficiency Program for Consumer Products and Industrial Equipment: Residential Clothes Dryers and Room Air Conditioners," April 2011, page 7-4.

³⁴ U.S. DOE, "Technical Support Document: Energy Efficiency Program for Consumer Products and Industrial Equipment: Residential Dishwashers," May 2012, page 8-21.

³⁵ U.S. Energy Information Administration (EIA), "Home Appliance Characteristics by Type of Housing Unit," 2005 RECS Survey Data, <http://www.eia.gov/consumption/residential/data/2005/hc/pdf/tablehc2.9.pdf>.

assumptions *ex post* and identify areas where incorrect assumptions created burdens for regulated households by projecting a higher, less realistic payoff from more efficient appliances.

DOE is currently required by statute to revisit the stringency of its standards at six-year intervals. The Department does not use this opportunity for review to assess whether its projected benefits for consumers actually materialized. In considering reforms to EPCA, Congress should require DOE to conduct actual retrospective reviews of its rules—and their effects on consumers—before DOE is permitted to conduct a new rulemaking.

Such review has dual benefits. First, it provides DOE with necessary information on the accuracy of its *ex ante* assumptions, which improves both future analyses and future regulatory outcomes. Second, it provides an important opportunity for the Department to reconsider the stringency of its existing standards in cases where consumers are bearing large burdens.

3) Removing the Anti-Backsliding Provision

The EPCA, as amended by the NAECA, prohibits DOE from issuing any future efficiency standards that would allow increased maximum energy usage, a stipulation known as the “anti-backsliding” provision.³⁶ Because EPCA also requires DOE to reevaluate its standards at six-year intervals, this provision acts as a one-way ratchet to continually increase efficiency standards regardless of changes in markets, consumer behavior, and energy prices. In addition, this provision locks DOE in to standards that prove via subsequent review to be ineffective or extremely burdensome to consumers.

One example of where this provision has been a particular impediment is efficiency standards for residential dishwashers, which were last promulgated via direct final rule in 2012. As mentioned in the above section, DOE’s direct final rule estimated that the average product lifespan of a residential dishwasher was 15.4 years,³⁷ despite the availability of RECS and manufacturer data estimating an average product lifespan of 9 – 10 years.^{38,39} The payback period for the increased standards was 11 years, meaning most consumers did not benefit from mandated efficiency.

³⁶ National Appliance Energy Conservation Act of 1987, codified at 42 U.S.C. 6295(o)(1) (<https://www.govtrack.us/congress/bills/100/s83/text>)

³⁷ U.S. DOE, “Technical Support Document: Energy Efficiency Program for Consumer Products and Industrial Equipment: Residential Dishwashers,” May 2012, page 8-21.

³⁸ U.S. Energy Information Administration (EIA), “Home Appliance Characteristics by Type of Housing Unit,” 2005 RECS Survey Data, <http://www.eia.gov/consumption/residential/data/2005/hc/pdf/tablehc2.9.pdf>.

³⁹ Appliance Magazine, “32nd Annual Portrait of the Appliance Industry,” September 2009. Page 37, *The Life Expectancy/Replacement Picture*.

A mere two years later, DOE published a proposed rule to further tighten the dishwasher standards,⁴⁰ which the Department estimated would result in net costs for over half (53%) of consumers.⁴¹ In response to significant input and criticism from the regulated community, DOE determined in December 2016 not to continue its rulemaking.⁴²

The case of dishwashers is an example of when previous standards created a burden for consumers, particularly elderly and low-income consumers.⁴³ And yet, rather than opting to correct the error and decrease the burdens to consumers, the Department determined following review to increase the standards' stringency—despite additional net costs to a significant proportion of consumers. This illustrates a need to alter the incentives within DOE and provide opportunities for DOE to respond to consumer burdens by decreasing efficiency mandates rather than continually increasing them.

Opportunities for Reform

Congress should consider removing the anti-backsliding provision to allow DOE to fully respond to the results of its retrospective reviews. One alternative could be to allow the Department to promulgate standards that could increase maximum energy usage in cases where review has illustrated a clear burden for consumers. This would allow the agency to make policy adjustments if a thorough review indicates that the standard in question harms consumers or a vulnerable consumer sub-group, such as low-income and/or elderly households. Such a reform would also provide DOE with new opportunities to adjust its previous standards on the margins if specific provisions prove to be difficult to implement.

4) Strengthening the Rebuttable Payback Presumption

EPCA creates a “rebuttable presumption” that an efficiency standard is presumed to be economically justified if it causes a product’s purchase price to increase by less than three times

⁴⁰ Department of Energy Proposed Rule, “Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers,” 79 FR 76141. December 19, 2014.
<https://www.federalregister.gov/documents/2014/12/19/2014-29519/energy-conservation-program-energy-conservation-standards-for-residential-dishwashers>

⁴¹ DOE Proposed Rule, “Table V.3—Average LCC Savings Relative to the Base-Case Efficiency Distribution for Standard Residential Dishwashers.” 79 FR 76171.

⁴² Department of Energy Final Rule, “Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers,” 81 FR 90072. December 13, 2016.
<https://www.federalregister.gov/documents/2016/12/13/2016-29328/energy-conservation-program-energy-conservation-standards-for-residential-dishwashers>

⁴³ Sofie E. Miller, “Public Interest Comment on the Department of Energy’s Direct Final Rule: Energy Conservation Standards for Residential Dishwashers,” *The George Washington University Regulatory Studies Center*. Docket ID No. EERE-2011-BT-STD-0060.

the value of the first year's energy cost savings. This rebuttable presumption is described in the statutory text below:

If the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy, and as applicable, water, savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure, there shall be a rebuttable presumption that such standard level is economically justified. A determination by the Secretary that such criterion is not met shall not be taken into consideration in the Secretary's determination of whether a standard is economically justified.⁴⁴

Many rules prescribing energy efficiency standards do not meet this presumption of economically justified; however, the language of the statute prohibits the Secretary of Energy from taking this indicator into account when determining whether a given standard is economically justified. This hampers the Secretary's ability to critically examine standards—such as the dishwasher standards discussed above—for which consumer benefits do not materialize for over a decade. Such standards impose high upfront costs on consumers without ensuring that the commensurate benefits will occur during the product lifetime. In these cases, consumers are mandated by DOE regulations to make a high upfront investment in energy efficiency that is not likely to pay off for many households.

Opportunities for Reform

Congress should consider what the purpose of the rebuttable presumption should be in establishing new energy efficiency standards. For many appliances with relatively short life spans, such as pool pumps and ceiling fans, the threshold established by the rebuttable presumption may not only indicate when standards are economically justified, but also when they are not. Changes to the statutory language allowing the Secretary to consider the rebuttable presumption when determining whether standards are economically justified would address this problem.

5) Establishing a Threshold for Negative Consumer Impacts

As is true for all regulations, there is a distribution of regulatory benefits and costs across the regulated public in DOE's efficiency standards, with some consumers benefitting and others experiencing net costs. DOE typically considers what proportion of consumers will bear net costs in its determination of whether a standard is economically justified.

⁴⁴ 42 U.S.C. 6295(o)(2)(B)(iii)

However, it is unclear what threshold DOE is using, if any, to determine what proportion of consumers bearing net costs is too much. For example, in a 2011 rule the Secretary determined that 56% of consumers bearing a net cost for one product class of room air conditioners was economically unjustified.⁴⁵ However, in 2015 the Secretary deemed economically justified a proposed standard for dishwashers which would have resulted in net costs for 53% of standard residential dishwasher consumers.^{46,47}

One recent example is DOE's standards for split-system central air conditioners, which left a significant share of households bearing a net burden. DOE projected that between 25% and 45% of households will bear a net cost as a result of the efficiency standards, depending on the affected region.⁴⁸ The most adversely affected regions are the hot-dry region and the hot-humid region, which together comprise 19 states.⁴⁹ These regions include six of the nation's 15 most populous states which alone have a combined 29.6% of the total U.S. population.

This standard is not an outlier: many of DOE's efficiency rules pose net costs for large swaths of the regulated public, including its standards for residential dishwashers,⁵⁰ furnace fans,⁵¹ water heaters,⁵² room air conditioners,⁵³ pool heaters,⁵⁴ and refrigerators.⁵⁵ This indicates that not only

⁴⁵ "In particular, the fraction of consumers experiencing an LCC cost is 56 percent for room air conditioners with 8,000-13,999 Btu/h, with louvers, which is the product class with the largest market share. Based on the above findings, the Secretary has concluded that TSL 5 is not economically justified." 76 FR 22556

⁴⁶ DOE Proposed Rule, "Table V.3—Average LCC Savings Relative to the Base-Case Efficiency Distribution for Standard Residential Dishwashers." 79 FR 76171.

⁴⁷ However, as explained on page 14, due to pushback from the regulated community DOE decided not to finalize these standards.

⁴⁸ 82 FR 1832, *Table V-3—LCC Impacts Relative to the No-New-Standards Case for Split-System Central Air Conditioners*.

⁴⁹ "The Hot-Dry region is comprised of four states (CA, AZ, NV, and NM); the Hot-Humid region is comprised of 15 mid-Atlantic and Southern States (VA, DE, DC, MD, GA, NC, SC, FL, AL, KY, MS, TN, AR, LA, OK, and part of WV)." The U.S. Department of Energy, *TECHNICAL SUPPORT DOCUMENT: ENERGY EFFICIENCY PROGRAM FOR CONSUMER PRODUCTS: Residential Central Air Conditioners and Heat Pumps*. "Chapter 7: Energy Use Analysis," Footnote c, page 7-4. August 2015.

⁵⁰ DOE estimated that 18.7% of consumers would bear net costs, while only 17% of consumers would experience a net benefit (with 64.1% of consumers feeling no impact). 77 FR 31956, *Table V.20—Summary of Results for Residential Dishwasher Trial Standard Levels: Consumer and Manufacturer Impacts*.

⁵¹ DOE estimated that between 24% and 33% consumers of the four most widely-used residential furnace fans (non-weatherized non-condensing gas, non-weatherized condensing gas, weatherized gas, and electric furnace/modular blower fans), which represent 80% of projected shipments through 2045, would experience net costs from the standards. 78 FR 64111 – 64113, *Tables V.2 through V.9*.

⁵² DOE estimated that 27% and 33% of Gas-Fired Storage Water Heater and Electric Storage Water Heater consumers, respectively, would bear net costs as a result of its rule. 75 FR 20186, *Tables VI.7 and VI.8*.

⁵³ DOE estimated that half of the room air conditioner product classes regulated in this standard would result in net costs for between 22.7% and 64.6% of specific product class consumers. (Specific product classes and associated percent of consumers with net costs are as follows: Room Air Conditioners, > 11,000 Btu/h, Without Louvers - 22.7%; Room Air Conditioners, 8,000-13,999 Btu/h, With Louvers - 33.6%; Room Air Conditioners, < 6,000

is DOE’s current approach inconsistent, but it also can lead to net costs for significant numbers of regulated consumers. These costs are particularly pernicious because, as DOE’s analyses find, they tend to be particularly burdensome for low-income and elderly households.

In some cases, the Department took substantial net costs for consumers into account after receiving comments from the public, such as in its proposed revisions to the dishwasher standards and its proposed standards for residential gas furnaces. In both cases, DOE received comments noting the considerable costs to consumers that would result from its proposed standards. In response, DOE determined not to further pursue its revised dishwasher standards,⁵⁶ and issued a revised proposed rule for residential gas furnaces to reduce the burdens on consumers.⁵⁷ However, these revisions occurred after significant agency resources were dedicated to developing and publishing proposed standards. A consistent standard for determining how much net cost is too much would preserve these agency resources and prevent consumers from being burdened with insufficiently tailored regulations.

Opportunities for Reform

The Department should consider establishing consistent internal standards for how to regulate when significant proportions of the regulated public would bear net costs, perhaps including a threshold for consumer net costs beyond which standards are considered economically unjustified. Alternatively, Congress could consider the appropriate threshold for population proportion that is disproportionately burdened by DOE’s standards.

The EPCA as amended currently lists seven factors which the Secretary of Energy shall consider in determining whether a standard is economically justified, including “the economic impact of the standard on the manufacturers and on the consumers of the products subject to such standard.”⁵⁸ Congress could add to this provision a specification outlining which economic impacts on consumers are acceptable—for instance, by stating a rebuttable presumption that a standard imposing net costs on 30% or more of relevant consumers is not economically justified.

Btu/h, With Louvers - 64.6%. For one additional product class, Room Air Conditioners, > 25,000 Btu/h, With Louvers, DOE estimated that only 3.5% of consumers would benefit, while 8.9% would experience net costs and 87.6% would feel no impact.) 76 FR 22531 – 3, *Tables V.9 through V.14 at TSL 4*.

⁵⁴ DOE estimated that 78% of consumers would either feel no effect of the standard or bear a net cost, while only 22% would benefit. 75 FR 20188, *Table VI.16—Gas-Fired Pool Heaters: LCC and PBP Results*.

⁵⁵ DOE estimated that 46% of consumers of top-mount refrigerator-freezers and 42% of consumers of side-by-side refrigerator-freezers would bear net costs from its standard. 76 FR 57565 – 6, *Table VI.5 and Table VI.7*.

⁵⁶ Department of Energy Final Rule, “Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers,” 81 FR 90072. December 13, 2016.

⁵⁷ Department of Energy Supplemental Notice of Proposed Rulemaking, “Energy Conservation Program: Energy Conservation Standards for Residential Furnaces,” 81 FR 65719. September 23, 2016.

⁵⁸ 42 U.S.C. §6295(o)(2)(B)(i)(I-VII)

One potential approach would be to render every standard surpassing that threshold voluntary, such as through the use of efficiency labeling.

6) Restricting the Use of Direct Final Rules

The EPCA currently grants DOE the authority to issue energy efficiency standards via direct final rule (DFR), which allows the Department to issue a standard in final form without going through the traditional notice-and-comment process. This authority is limited to circumstances where DOE receives:

a statement that is submitted jointly by interested persons that are fairly representative of relevant points of view (including representatives of manufacturers of covered products, States, and efficiency advocates), as determined by the Secretary, and contains recommendations with respect to an energy or water conservation standard...⁵⁹

In such a case, the Department may issue a DFR to establish the jointly recommended standards.

Between 2010 and 2014, DOE used this mechanism to implement standards for dishwashers,⁶⁰ residential central air conditioners and heat pumps,⁶¹ clothes washers,^{62,63} and room air conditioners.⁶⁴ DOE estimates that together these rules would result in \$1.15 billion in costs to consumers and \$4.25 billion in benefits (2010\$).⁶⁵ These are large rules that merit careful consideration and review rather than a direct final rulemaking that diverges from the traditional rulemaking process.

As far as direct final rules are concerned, EPCA is a statutory exception to the rule. As Susan Dudley and Jerry Brito explain in *Regulation: A Primer*:

The [Administrative Procedure Act] provides “good cause” exemptions to the informal rulemaking notice-and-comment requirements if the regulatory agency can show that traditional procedures are “impracticable, unnecessary, or contrary

⁵⁹ Public Law 94–163, as Amended. “ENERGY POLICY AND CONSERVATION ACT,” §325 (p)(4)(A). <http://legcounsel.house.gov/Comps/EPCA.pdf>

⁶⁰ 77 FR 31917

⁶¹ 76 FR 37407

⁶² 77 FR 32307

⁶³ 76 FR 22453

⁶⁴ 76 FR 22453

⁶⁵ See the totals for RINs 1904-AC64, 1904-AA89, 1904-AB90, and 1904-AC06 in Appendix B of: Sofie E. Miller, “Whose Benefits Are They, Anyway? Examining the Benefits of Energy Efficiency Rules 2007 – 2014.” *The George Washington University Regulatory Studies Center*, September 2, 2015.

<https://regulatorystudies.columbian.gwu.edu/whose-benefits-are-they-anyway-examining-benefits-energy-efficiency-rules-2007-2014>

to the public interest”... Agencies will also sometimes use Direct Final Rules (DFRs) to issue regulations considered “routine or noncontroversial,” relying on the “unnecessary” component of the “good cause” exception. For example, the EPA routinely issues DFRs to approve revisions to state implementation plans under the Clean Air Act, and these generate little or no public comment. DFRs become effective on a certain date unless the agency receives adverse public comment. If it does, it must withdraw the rule, but it may commence regular informal notice-and-comment rulemaking to promulgate the regulation.⁶⁶

DOE’s DFR for dishwashers had many problems already noted here, including unreasonable assumptions about product lifetime and disproportionate distribution of consumers who experience net costs versus net benefits.⁶⁷ Another recent example is the 2017 DFR for central air conditioners and heat pumps, described above, which left a significant share of households bearing a net burden. DOE projected that between 25% and 45% of households will bear a net cost as a result of the efficiency standards, depending on the affected region.⁶⁸ Although less stringent regulatory alternatives were available—and were projected by DOE to provide consumers with greater benefits at a lower cost—DOE did not deviate from the high cost recommendation provided in its DFR, despite receiving adverse comment.

Although DOE determined that the negotiated rulemaking committee’s recommendations on which the air conditioner and heat pump DFR was based “was submitted jointly by interested persons that are fairly representative of relevant points of view,”⁶⁹ there is no point of view within the negotiated rulemaking committee representing the interests of consumers, who are directly burdened by this rule. DOE should not pursue such regulations via direct final rule, as this burdens consumers and shortcuts their participation in the rulemaking process.

Opportunities for Reform

DOE should be particularly cautious before enacting new efficiency standards via direct final rule given the significant economic burden they pose to U.S. households and the lack of a consumer voice in the negotiated rulemaking process. The EPCA should be revised to restrict the use of these rules, which cuts consumers out of the rulemaking process and provides an

⁶⁶ Susan E. Dudley & Jerry Brito. Chapter 4, “The Regulatory Process: How the Sausage is Made” in *Regulation: A Primer*, 2nd Ed. *Mercatus Center at George Mason University and the George Washington University Regulatory Studies Center*. 2012.

⁶⁷ DOE estimated that 18.7% of consumers would bear net costs, while only 17% of consumers would experience a net benefit (with 64.1% of consumers feeling no impact). 77 FR 31956, *Table V.20—Summary of Results for Residential Dishwasher Trial Standard Levels: Consumer and Manufacturer Impacts*.

⁶⁸ 82 FR 1832, *Table V-3—LCC Impacts Relative to the No-New-Standards Case for Split-System Central Air Conditioners*.

⁶⁹ 82 FR 1791

opportunity for businesses to restrict competition. Consumers are inadequately represented in the negotiated rulemakings that lead to direct final rules. Barring comprehensive reform to end the use of direct final rules, EPCA should be amended to require negotiated rulemakings and joint petitions to include consumer representatives.

7) Measuring Anti-Competitive Effects

As noted in a 2016 *Regulatory Insight* by the GW Regulatory Studies Center, regulations have had a significant influence on marketplace competition since the formation of the U.S. federal regulatory system.⁷⁰ Recognizing the importance of this relationship, on April 15th 2016 President Barack Obama signed Executive Order 13725 instructing federal agencies to identify and address barriers to competition. DOE could greatly benefit from an opportunity in statute to reevaluate existing rules that create barriers to competition.

Pursuant to EPCA, DOE is required to consider “the impact of any lessening of competition, as determined in writing by the U.S. Attorney General, that is likely to result from the imposition of the standard” before finalizing a new energy efficiency rule.⁷¹ This evaluation is conducted by the Antitrust Division within the Department of Justice (DOJ).

While this prospective evaluation is finalized before the rule goes into effect, it is also important to measure anti-competitive effects after a standard is implemented to determine whether the standard is economically justified, as required by statute. DOE may want to consult with DOJ in this process, and should consider applying the Herfindahl-Hirschman Index (HHI), which DOJ uses to evaluate the anti-competitive effects of mergers, to measure concentration in the regulated industries pre- and post-enforcement of these standards.⁷² DOJ should report the results to Congress in addition to DOE.

Opportunities for Reform

As it plans for retrospective review of each of its economically-significant efficiency regulations, DOE should commit to measuring any anti-competitive effects, and to examining changes in the HHI upon implementation of its standards. In some cases, it may be appropriate to use other measures or proxies to evaluate the effects of efficiency standards on competition.⁷³

⁷⁰ Sofie E. Miller, Daniel R. Pérez, Susan E. Dudley, & Brian Mannix. “Regulatory Reforms to Enhance Competition: Recommendations for Implementing Executive Order 13725.” The George Washington University Regulatory Studies Center. May 11, 2016.

⁷¹ 42 U.S.C. 6295(o)(2)(B)(i)(V). <http://www.gpo.gov/fdsys/pkg/USCODE-2010-title42/pdf/USCODE-2010-title42-chap77-subchapIII-partA-sec6295.pdf>

⁷² “Herfindahl-Hirschman Index.” *Antitrust Division: Public Documents: Merger Enforcement*. U.S. Department of Justice. Last updated July 29, 2015. <https://www.justice.gov/atr/herfindahl-hirschman-index>

⁷³ For example, in cases where DOE rules shift production from an entire market segment (e.g. from gas equipment to electric), the HHI may not be an appropriate measure of changes in competition.

Understanding the regulations' effects on market structure will be important to understanding whether the rules achieve their stated objectives, and the benefits and costs associated with implementation. This should inform the public about any unintended, anti-competitive effects of DOE's energy efficiency standards, and improve DOE's analysis of future standards.