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Public Interest Comment<sup>1</sup> on  
The Department of Energy's  
Direct Final Rule: Energy Conservation Standards for Residential Dishwashers  
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The George Washington University Regulatory Studies Center raises awareness of regulations' effects to improve regulatory policy through research, education, and outreach. As part of its mission, the GW Regulatory Studies Center conducts careful and independent analyses to assess rulemaking proposals from the perspective of the public interest. This comment on the Department of Energy's direct final rule on energy efficiency standards for dishwashers does not represent the views of any particular affected party or special interest, but is designed to evaluate the effect of the Department's proposals on overall consumer welfare.

## Introduction

Thank you for the opportunity to comment on the Department of Energy's direct final rule *Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers*. These standards, effective in September, will establish both a maximum per-year energy consumption standard and a per-cycle water use standard, requiring all standard residential dishwashers manufactured in (or imported into) the United States after May, 2013 to use fewer than 307 kilowatt hours of energy per year and limiting the amount of water used per cycle to five gallons from the current limit of 6.5 gallons. These standards are intended to reduce American energy consumption, decrease global greenhouse gas emissions, and lower American consumers' energy bills long-term. However, examining the Department's regulatory impact analysis raises questions as to whether the rule is *economically justified*, as is required by statute.

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<sup>1</sup> This comment reflects the views of the author, and does not represent an official position of the GW Regulatory Studies Center or the George Washington University. The Center's policy on research integrity is available at <http://www.gwu.edu/~regstudies/Research.html>.

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## Statutory Authority

When issuing energy efficiency standards for residential appliances DOE is statutorily required by the Energy Policy and Conservation Act of 1975 (EPCA) to achieve the maximum improvement in energy efficiency that is both technologically feasible and economically justified, while also resulting in a “significant conservation of energy.” This statutory language gives the Department important guidelines when issuing energy efficiency standards, especially for appliances—such as dishwashers, air conditioners, clothes dryers, and furnaces—that are a part of everyday life in many American households.

Of primary importance is the requirement that these efficiency standards be economically justified. Naturally, regulations and bans will incur costs – but it is necessary to consider the magnitude of the accompanying benefits when judging whether a rule is economically justified. The language of the EPCA reads:

Any new or amended energy conservation standard prescribed by the Secretary under this section for any type (or class) of covered product shall be designed to achieve the maximum improvement in energy efficiency, or, in the case of showerheads, faucets, water closets, or urinals, water efficiency, which the Secretary determines is technologically feasible and economically justified.<sup>3</sup>

The statute continues to explain that, in determining whether a standard is economically justified, the Secretary shall determine whether the benefits of the standard exceed its burdens after considering the comments submitted on the proposed rule. In making this determination, the Secretary shall consider: 1) the economic impact of the standard on both the manufacturers and the consumers; and 2) the savings in operating costs throughout the estimated average life of the covered product in the type (or class) compared to any cost increase resulting from the rule, in addition to other considerations such as projected water and energy savings resulting from the rule.<sup>4</sup>

## Economic Analysis

As the Department notes in its supporting documents, Executive Order 12866 requires executive branch agencies to measure both the costs and the benefits of proposed rules:

Under Executive Order 12866, agencies must, to the extent permitted by law, “assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.”<sup>5</sup>

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<sup>3</sup> 42 USC Chapter 77 § 6295(o)(2)(A): Energy conservation standards. <<http://www.law.cornell.edu/uscode/text/42/6295>>.

<sup>4</sup> 42 USC Chapter 77 § 6295(o)(2)(B)(i)(I) – (VII): Energy conservation standards. <<http://www.law.cornell.edu/uscode/text/42/6295>>.

<sup>5</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 16: Monetization of Emission Reductions Benefits*, §16.2.1. <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch16\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch16_rev.pdf)>

The Department is required both statutorily and under Executive Order 12866 to issue rules that are justified economically, which would mean under EO 12866 that the benefits of the rule justify the costs. To allow for an examination of whether the costs of this rule are justified by the purported benefits, DOE provides a technical support document outlining the anticipated costs and benefits of the direct final rule, which adopts the Trial Standard Level 2 (TSL 2) standards. These technical support documents indicate that the Department anticipates the new efficiency standard for dishwashers will save 140 billion gallons of water from the year 2013 through 2047, a 34-year window. By this measure, the direct final rule will conserve just over 4 billion gallons of water annually.

The benefits expected to result from these standards fall into two categories: consumer savings from reduced appliance operating costs, and the monetized value of reduced global carbon emissions.

- **Reduced Emissions**

In calculating the benefits anticipated to result from this rule, DOE monetizes the reduction in carbon emissions using the social cost of carbon (SCC), which places a value on the benefit of reduced carbon dioxide emissions. Between 2013 and 2047, DOE estimates that greenhouse gas emissions can be reduced by 4.06 million tons through the implementation of the dishwasher efficiency standards, which computes to 119,411 tons reduced annually. The Department monetizes the global benefit of this reduction at anywhere between \$16 million and \$242 million, or between \$4 and \$59 per ton of reduced emissions.<sup>6</sup>

Between 1 and 17 percent of the total benefits of this rule accrue from monetized reductions in carbon emissions: it is concerning that the benefit of reducing these emissions varies by \$226 million. This variation reveals a high level of uncertainty about the actual value of reducing these emissions. It is laudable that the Department provided a range (which likely includes within it the actual value of these reductions) in place of a point estimate (which would almost certainly be incorrect). However, the variation in estimated benefits from reducing emissions alone constitutes anywhere from 16 to 33 percent of the total benefits of this rule.

Additionally, these benefits are monetized using the global value of reducing domestic emissions, further complicating the analysis. While the costs will be borne by the American consumers and businesses that are directly affected by the rule, the reduction in carbon emissions resulting from this rule is monetized based on its global, rather than localized, value. That is, the Department weighs not only domestic but international benefits from this rule against entirely domestic costs, which swings the analysis in favor of stricter efficiency standards.

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<sup>6</sup> These do not appear to be annual benefits: “The SCC values...reflect the present value of future climate-related impacts resulting from the emission of one metric ton of carbon dioxide in each year. These impacts continue well beyond 2100.” Proposed Rule: *Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers*, <<https://www.federalregister.gov/articles/2012/05/30/2012-12340/energy-conservation-program-energy-conservation-standards-for-residential-dishwashers#p-121>>

This appears to violate the directive in OMB Circular A-4, reinforced in the Regulatory Impact Analysis Primer, that states: “The analysis should focus on benefits and costs that accrue to citizens and residents of the United States. Where the agency chooses to evaluate a regulation that is likely to have effects beyond the borders of the United States, these effects should be reported separately.”<sup>7</sup>

Interestingly enough, the Department was able to calculate domestic benefits from the reduction of carbon emissions expected to result from this rule, and included its findings in chapter 16 of the direct final rule’s technical support document:<sup>8</sup>

**Table 16.4.2 Dishwashers: Estimates of Domestic Present Value of CO<sub>2</sub> Emissions Reduction Under Trial Standard Levels**

TSL	Million 2010\$			
	5% Discount Rate, Average <sup>±</sup>	3% Discount Rate, Average <sup>±</sup>	2.5% Discount Rate, Average <sup>±</sup>	3% Discount Rate, 95 <sup>th</sup> Percentile <sup>±</sup>
1	0 to 1	2 to 6	3 to 10	6 to 18
2	1 to 4	6 to 18	9 to 31	17 to 56
3	19 to 64	104 to 341	177 to 583	316 to 1,039
4	30 to 98	160 to 525	273 to 898	487 to 1,599

\* Domestic values are presented as a range between 7% and 23% of the global values.

\*\* Columns are labeled by the discount rate used to calculate the SCC and whether it is an average value or drawn from a different part of the distribution. Values presented in the table are based on escalating 2007\$ to 2010\$ for consistency with other values presented in this notice, and incorporate the escalation of the SCC over time.

Instead of focusing on domestic benefits and separately reporting any international effects, the Department focused on global benefits in the text of the direct final rule and separately reported the (much smaller) domestic effects in a final chapter of the technical support document. Using domestic estimates for the final analysis, as instructed in the OMB Circular A-4, the benefits of emission reductions resulting from this rule shrink from between \$16 million and \$242 million to between \$1 and \$56 million, a manageable \$55 million range that significantly affects the economic justifiability of this rule.

- **Consumer Savings**

The majority of the entire anticipated benefits from this direct final rule (between 87.8 and 94 percent)<sup>9</sup> are from energy savings to consumers, who will pay for and use less energy and water than under the previous dishwasher efficiency standard. These reduced operating costs are

<sup>7</sup> Circular A-4: Regulatory Impact Analysis, A Primer. Page 5.

<[http://www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4\\_regulatory-impact-analysis-a-primer.pdf](http://www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf)>

<sup>8</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 16: Monetization of Emission Reductions Benefits*, Table 16.4.2.

<[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch16\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch16_rev.pdf)>

<sup>9</sup> This percentage is calculated by dividing the 7 percent rate discounted costs by the 7 percent rate discounted benefits, multiplied by 100, and by dividing the 3 percent rate discounted costs by the 3 percent rate discounted benefits, multiplied by 100.

supposed to yield consumers between \$80 million and \$460 million in net benefits at discount rates of 7 and 3 percent, respectively.

Although consumers will pay more upfront for their dishwashers because of the energy efficiency standard, Department analysis suggests that consumers will eventually be able to recover these higher costs through lower operating costs during the life cycle of the appliance. The time required for the cumulative reduced operating costs to equal the higher upfront appliance cost, or the consumer breakeven point, is called a payback period.

The Department estimates that dishwasher prices for consumers will increase by 13 percent, or \$44 dollars, as a result of these standards. Of course, it will be difficult for some consumers to make this expenditure, especially for low-income Americans and for Americans on a fixed income, such as the elderly. DOE believes that the higher expense will be justified by reduced energy bills throughout the lifetime of the product; however, the Department's analysis shows that consumers will only reach a breakeven point for their dishwashers *after 11.8 years* of steady use.

This being the case, many consumers will not see these benefits come to fruition: separate external estimates put the average lifespan of a dishwasher at between 9 and 12 years, meaning many American households will pay the higher appliance cost without gaining the benefit of lower long-term energy bills.<sup>10</sup> In fact, for 18.7 percent of consumer households, this rule will impose a net cost, while an additional 64.1 percent of consumer households will not see any benefit.<sup>11</sup> Only 17.2 percent of consumers will see their dishwashers last long enough to reap the energy efficiency benefits of this rule.

- **Distributive Impacts**

It is important when examining the Department's analysis to ask a simple question: who will pay the costs of this rule, and who will receive the benefits? As already seen, consumers will pay a higher upfront cost that, in many cases, will not be recovered through lower operating expenses. However, as the Department notes in the direct final rule, some population subgroups will be disproportionately affected by these standards: senior-only households and low-income households.<sup>12</sup>

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<sup>10</sup> "Appliance Life Expectancy." *Learn The Average Lifespan Of Home Appliances*. Mr. Appliance: Expert Appliance Repair. <<http://www.mrappliance.com/expert/life-guide/>>

"InterNACHI's Standard Estimated Life Expectancy Chart for Homes." *InterNACHI*. International Association of Certified Home Inspectors. <<http://www.nachi.org/lifea-expectancy.htm>>.

<sup>11</sup> Proposed Rule: *Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers, Table V.20* <<https://www.federalregister.gov/articles/2012/05/30/2012-12340/energy-conservation-program-energy-conservation-standards-for-residential-dishwashers#page-31956>>

<sup>12</sup> Proposed Rule: *Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers, Consumer Subgroup Analysis*. <<https://www.federalregister.gov/articles/2012/05/30/2012-12340/energy-conservation-program-energy-conservation-standards-for-residential-dishwashers#h-74>>

The following table is from chapter 11 of the Department’s technical support document, and it illustrates the changes that senior-only households will experience upon implementation of this rule.<sup>13</sup>

**Table 11.4.1 Standard-Sized Dishwashers: LCC and PBP Results for Senior-Only Households**

Level	Life-Cycle Cost <u>2010\$</u>			Life-Cycle Cost Savings				Payback Period Median <u>years</u>
	Average Installed Price	Average Operating Cost	Average LCC	Average Savings <u>2010\$</u>	% Households with			
					Net Cost	No Impact*	Net Benefit	
Baseline	630	397	1,027	NA	0	100	0	NA
1	656	366	1,022	0	2	96	1	7.2
2	674	342	1,016	2	16	71	13	13.3
3	726	324	1,050	-19	54	38	8	42.3
4	734	261	996	24	36	20	44	8.5
5	745	191	936	78	29	9	62	5.7

\* “No impact” means that the base case product assigned to the household has greater efficiency than the level indicated, so the household is not affected.

At TSL 2, the trial standard level proposed in the direct final rule, the average installed price for senior-only households increases by \$44 dollars as a result of this rule over the baseline, the same amount as for the typical American household. However, the Department estimates that for senior-only households, given less frequent washing, it will take *over 13 years* to recover this higher upfront cost, longer than most dishwashers are expected to last. That is, the elderly will be left paying a higher upfront cost on a fixed income and will likely never be able to recover these costs in reduced energy bills.

This is the case as well for low-income households, which DOE defines as households which are below the poverty line. This is illustrated again through TSL 2 in the following table.

**Table 11.4.3 Standard-Sized Dishwashers: LCC and PBP Results for Low-Income Households**

Level	Life-Cycle Cost <u>2010\$</u>			Life-Cycle Cost Savings				Payback Period Median <u>years</u>
	Average Installed Price	Average Operating Cost	Average LCC	Average Savings <u>2010\$</u>	% Households with			
					Net Cost	No Impact*	Net Benefit	
Baseline	630	402	1,032	NA	0	100	0	NA
1	655	370	1,025	0	2	96	1	5.6
2	674	344	1,018	3	16	71	13	13.6
3	725	325	1,050	-17	53	38	9	41.4
4	734	263	997	26	39	20	41	9.1
5	744	189	933	84	32	9	59	6.0

\* “No impact” means that the base case product assigned to the household has greater efficiency than the level indicated, so the household is not affected.

<sup>13</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 11: Consumer Subgroups Analysis, Table 11.4.1* <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch11\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch11_rev.pdf)>

The expected payback period for low-income households is 13.6 years, well beyond the average expected lifetime of the dishwasher.<sup>14</sup> Note that for both low-income and elderly Americans the proposed efficiency standards are more likely to be a net cost than a net benefit (16 percent versus 13 percent).

This rule requires consumers to make an additional upfront investment of \$44 dollars that will not show returns for almost 12 years, longer than the life expectancy of most dishwashers. Additionally, low-income households and senior-only households will not recover these costs for more than 13 years and, for low-income households, close to 14 years, much longer than the average 9 – 12 year lifespan of dishwashers. Not only will most Americans pay the costs without receiving the long-term efficiency benefits of this rule, the poor and the elderly are disproportionately disadvantaged by the Department’s final rule, and are saddled with costs they are less able to bear without being able to receive the benefits.

- **Foregone Appliance Purchases**

All households will not adjust to the Department’s standards equally. “For standard-sized dishwashers, shipments are forecasted to slightly decrease under each TSL; that is, the effect of increased purchase price offsets the effect of decreased operating costs, resulting in a net decrease in shipments.”<sup>15</sup> According to the Department’s analysis, implementing this direct final rule will result in 176,000 fewer dishwasher shipments as some consumers opt to wash their dishes by hand rather than to buy a more expensive and more efficient dishwasher.<sup>16</sup>

DOE forecasted a drop in dishwasher shipments due to the increase in purchase price due to standards-related efficiency increases. DOE assumed that the consumers who forgo the purchase of a dishwasher due to the higher purchase price would then hand wash their dishes. To properly account for the energy and water use impacts of dishwasher standards, DOE included the energy and water use of hand washing dishes. Several studies have compared the energy and water use of both hand washing dishes to using a dishwasher. All the studies state that the energy and water use impacts of moving from machine washing to hand washing dishes vary widely based on consumer habits.<sup>17</sup>

Middle-income and upper-income Americans will be much more able to absorb the price increase of higher efficiency dishwashers than lower-income Americans, for whom higher upfront costs will be much more prohibitive. Those who forego purchasing a dishwasher due to the increased dishwasher costs are more likely to be low-income Americans and elderly

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<sup>14</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 11: Consumer Subgroups Analysis, Table 11.4.1* <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch11\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch11_rev.pdf)>

<sup>15</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 9: Shipments Analysis*, §9.6 <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch9\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch9_rev.pdf)>

<sup>16</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 9: Shipments Analysis, Table 9.6.1* <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch9\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch9_rev.pdf)>

<sup>17</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 10: National Impact Analysis*, §10.3.2.3 <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch10\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch10_rev.pdf)>

Americans with fixed incomes, individuals who are less able to allocate resources away from basic necessities to afford a more expensive appliance.

This will have a number of effects on these population subgroups including higher energy costs, reduced efficiency (which the Department accounted for), and incurred time costs, which will also play a role in the Department’s broader goals for energy and water efficiency.

- **Reduced Efficiency, Higher Costs**

Individuals in these population subgroups will incur higher energy and water costs as a result of hand washing dishes, which was not taken into account by in the DOE’s analysis. While this direct final rule is intended to save consumers money on energy and water bills, individuals who forego purchasing a dishwasher because of higher upfront costs will use between 67 and 210 percent more energy and between 250 and 450 percent more water. In the technical support document, the Department illustrates separate estimates of these increased costs with a table.<sup>18</sup>

**Table 10.3.2 Energy and Water Use Impacts of Hand Washing compared to Dishwashing**

Study	Percent Increase for Hand Washing Relative to Dishwashing %	
	Energy Use	Water Use
Bonn University*	67	450
UK**	210	250
DOE estimate	140	350

Sources: \*Bonn University, 2005. \*\*UK, Market Transformation Programme, 2006.

These individuals will suffer energy efficiency losses, incur significantly higher energy and water costs, and spend additional time washing dishes by hand. While the Department provides some useful ranges for the estimated increases in energy and water use under these circumstances, there is another useful measure that the Department does not tally: the increased time spent washing dishes, and the opportunity cost associated with that increased time spent.

- **Opportunity Cost**

Time is a valuable resource, and does not come without a cost. This cost can be thought of as the *opportunity cost*, which is the value of the next best alternative that is forgone in order to spend more time washing dishes. According to the OMB Circular A-4: ““Opportunity cost" is the appropriate concept for valuing both benefits and costs... The opportunity cost of an alternative includes the value of the benefits forgone as a result of choosing that alternative.”<sup>19</sup>

<sup>18</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 10: National Impact Analysis, Table 10.3.2* <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch10\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch10_rev.pdf)>

<sup>19</sup> Circular A-4, *Office of Management and Budget*. September 17, 2003. <[http://www.whitehouse.gov/omb/circulars\\_a004\\_a-4](http://www.whitehouse.gov/omb/circulars_a004_a-4)>

If we estimate conservatively that American households that wash dishes by hand can be estimated to spend between 30 minutes and 1.5 hours daily washing dishes, this adds up to between 182.5 and 547.5 hours spent annually washing dishes by hand instead of using a dishwasher. Multiplied by the number of foregone dishwasher purchases estimated by the Department, this totals to between 32.1 million and 96.36 million additional hours spent washing dishes by hand. Multiplied by \$7.52, the averaged minimum wage,<sup>20</sup> the value of time reallocated to washing dishes by hand totals between *\$241.4 million and \$724.6 million*. If the hours spent washing dishes is instead multiplied by \$10 to provide a higher (but still conservative) estimate, the value of time reallocated to wash dishes by hand totals between *\$321 million and \$963.6 million*, or almost \$1 billion. The cost of this time, which will most likely be borne by low-income and elderly Americans on fixed incomes, was not taken into account in the Department's analysis of the direct final rule.

### **Consumer Preferences**

The Department's calculation of consumer savings assumes that consumers are not currently making the best available decisions for their households, and that consumers are accidentally foregoing reduced energy costs in favor of reduced appliance costs. Consumers currently face a set of tradeoffs between lower price and higher energy bills and higher price and lower energy bills. Typically, consumers opt for lower-priced appliances, rather than longer-term reductions in energy costs.

DOE also notes that the economics literature provides a wide-ranging discussion of how consumers trade off upfront costs and energy savings in the absence of government intervention. Much of this literature attempts to explain why consumers appear to undervalue energy efficiency improvements... There is evidence that consumers undervalue future energy savings as a result of (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 (for example, an inefficient ventilation fan in a new building or the delayed replacement of a water pump); (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 (that is, renter versus owner; builder versus purchaser).<sup>21</sup>

The Department is insistent that a discrepancy between DOE's valuation of current versus future savings and consumers' valuation of current versus future savings exists because consumers are incorrect in their preferences; however, given that few consumers will be able to see the benefits

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<sup>20</sup> The averaged minimum wage was calculated by summing the existing minimum wages in the 45 states with a minimum wage (excluding TN, MS, LA, SC, and AL) and dividing by 45. A list of minimum wages by state can be found here: <<http://www.dol.gov/whd/minwage/america.htm>>

<sup>21</sup> Proposed Rule: *Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers* <<https://www.federalregister.gov/articles/2012/05/30/2012-12340/energy-conservation-program-energy-conservation-standards-for-residential-dishwashers#p-466>>

that DOE intends through this rule, it appears that consumers know their own preferences better than the Department does.

From the Department's direct final rule:

Based on the analyses culminating in this final rule, DOE found the benefits to the nation of the standards (energy savings, water savings, favorable consumer LCC savings and payback period, positive NPV of consumer benefit, and emission reductions) outweigh the burdens (profit margin impacts that could result in a reduction in INPV and increased operational risk for manufacturers). DOE has concluded that the standards in today's final rule represent the maximum improvement in energy efficiency that is technologically feasible and economically justified, and would result in significant conservation of energy. *DOE further notes that residential dishwashers achieving these standard levels are already commercially available.*<sup>22</sup>

That is, consumers already have the option to purchase higher-priced, more energy efficient dishwashers. And yet, consumer revealed preference shows that consumers do *not* value long-term energy efficiency savings more than one-time, short-term cost savings when purchasing appliances. Considering consumers' clear preferences for less-efficient, cheaper appliances, it is not likely that restricting consumer choice will create net benefits for consumers who no longer have the option to buy their preferred product.

The Department's own technical support document admits that, when faced with the choice between long-term energy savings and shorter-term, lower-priced appliances, consumers opt for inexpensive appliances that may have higher long-term operating costs. The Department writes in chapter 9 of the technical support document that a review of the literature on consumer appliance purchases "suggests that consumers exhibit relatively high implicit discount rates when comparing the price of an appliance to its operating costs," further explaining in a footnote:

A high implicit discount rate with regard to operating costs suggests that *consumers do not put high economic value on the operating cost savings expected from more-efficient appliances*. In other words, *consumers are much more concerned with higher purchase prices than with lower operating costs.*<sup>23</sup> [Emphasis added]

Given consumers' revealed preferences for lower-priced, less-efficient appliance models, many of the extensive benefits to consumers stated by the Department in support of this direct final rule cannot be anticipated to materialize.

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<sup>22</sup> Proposed Rule: *Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers* <<https://www.federalregister.gov/articles/2012/05/30/2012-12340/energy-conservation-program-energy-conservation-standards-for-residential-dishwashers#h-12>>

<sup>23</sup> Dishwashers Direct Final Rule Technical Support Document, *Chapter 9: Shipments Analysis*, §9.4 <[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/dw\\_dfr\\_tsd\\_ch9\\_rev.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/dw_dfr_tsd_ch9_rev.pdf)>

## Executive Order 13563

On January 18, 2011, President Barack Obama issued Executive Order 13563 on Improving Regulation and Regulatory Review. This executive order, which reaffirmed the principles of Executive Order 12866, also encouraged Agencies to consider other qualitative values, such as distributive impacts, fairness, and equity.

This order is supplemental to and reaffirms the principles, structures, and definitions governing contemporary regulatory review that were established in Executive Order 12866 of September 30, 1993. As stated in that Executive Order and to the extent permitted by law, each agency must, among other things: (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor its regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; *distributive impacts; and equity*)...and (5) *identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public...* Where appropriate and permitted by law, each agency may consider (and discuss qualitatively) values that are difficult or impossible to quantify, *including equity, human dignity, fairness, and distributive impacts.*<sup>24</sup> [Emphasis added]

Some of the distributive impacts of this rule have already been explored in some detail elsewhere in this comment. However, it is worth considering the effects of the Department's efficiency standard on fairness and human dignity.

Human dignity means many things to many people. Seeing as this term was not defined in the President's executive order, it is open to interpretation in this setting: it can be claimed that humans derive some dignity from being able to make their own choices, and by being autonomously in control of their own decisions. If the Department proceeds with this direct final rule, all consumers will lose some options when selecting the appliances that best fit their needs, and many consumers will lose autonomous control of their decision-making. When DOE selects the desired consumer preferences for appliances, consumers lose the ability to make their own purchase decisions based on their specific preferences.

Consumers lose choices, and are forced to make decisions that are suboptimal; for some consumers, such as the poor and the elderly, this may take the form of opting to wash dishes less

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<sup>24</sup> Executive Order 13563, *Improving Regulation and Regulatory Review* §1(b) - (c): *General Principles of Regulation*. <<http://www.gpo.gov/fdsys/pkg/FR-2011-01-21/pdf/2011-1385.pdf>>

efficiently by hand instead of using an expensive dishwasher. All of these may have additional effects on human dignity which should be taken into account by the Department.

## **Conclusion**

Examination of the analysis supporting the Department's direct final rule *Energy Conservation Standards for Residential Dishwashers* shows that the rule is not economically justified as required by statute in the Energy Conservation and Policy Act. Although the Department claims the rule will result in significant net benefits, several considerations argue against this conclusion.

The Department expects these standards to result in two primary benefits: consumer savings from reduced appliance operating costs, and global benefits from reduced U.S. carbon emissions. The Department monetizes the combination of these benefits at between \$683 million and \$1.4 billion, with cost estimates ranging from \$522 million to \$881 million. However, these ranges (both for costs and for benefits) require correcting.

The Department monetizes the global benefit of reductions in emissions at anywhere between \$16 million and \$242 million; however, using the domestic benefit of these reductions—as instructed in the OMB Circular A-4 and the Regulatory Impact Analysis Primer—reduces this range to anywhere between \$1 million and \$56 million as shown by the Department's analysis.

On the consumer savings side, many of the benefits claimed by the Department will not materialize. Given that the average lifespan of a dishwasher (9 – 12 years) is shorter than the consumer payback period (11.8 years), most consumers will pay higher upfront costs for these appliances without reaping any of the benefits in energy efficiency savings. Additionally, low-income Americans and the elderly have an even lower chance of gaining any of the benefits of energy efficient dishwashers, with payback periods that will outlast the lifetime of the appliance. Considering these distributive impacts, as instructed in President Obama's Executive Order 13563, the Department should be wary of regulating an energy standard that not only does not benefit the average consumer, but disproportionately disadvantages the poor and the elderly.

Additionally, thousands of Americans will spend time washing dishes by hand as the price of dishwashers increases: the value of time reallocated to washing dishes by hand totals between \$241.4 million and \$963.6 million, or almost \$1 billion, even at a very conservative estimate. The cost of this time, which will most likely be borne by low-income and elderly Americans on fixed incomes, was not taken into account in the Department's analysis of the direct final rule.

All of these considerations seriously affect the economic justifiability of this rule, and make a strong argument against promulgating a regulation that will bring few benefits to American consumers while actually harming the poor and the elderly and restricting choices for all consumers.

Thank you for the opportunity to comment on the Department's direct final rule *Energy Conservation Standards for Residential Dishwashers*.