

[6450 01-P]

**DEPARTMENT OF ENERGY**

**10 CFR Parts 429 and 430**

**[Docket Number EERE–2011–BT–STD–0060]**

**RIN: 1904-AC64**

**Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Proposed rule.

**SUMMARY:** The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including residential dishwashers. EPCA also requires the U.S. Department of Energy (DOE) to determine whether amended standards would be technologically feasible and economically justified, and would save a significant amount of energy. In this proposed rule, DOE proposes amended energy conservation standards for residential dishwashers identical to those set forth in a direct final rule published elsewhere in today’s Federal Register. If DOE receives adverse comment and determines that such comment may provide a reasonable basis for

withdrawing the direct final rule, DOE will publish a notice withdrawing the final rule and will proceed with this proposed rule.

**DATES:** DOE will accept comments, data, and information regarding the proposed standards no later than **[INSERT DATE 110 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**ADDRESSES:** See section III, “Public Participation,” for details.

Any comments submitted must identify the proposed rule for Energy Conservation Standards for Residential Dishwashers, and provide docket number EERE-2011–BT–STD–0060 and/or regulatory information number (RIN) number 1904-AC64. Comments may be submitted using any of the following methods:

1. Federal eRulemaking Portal: [www.regulations.gov](http://www.regulations.gov). Follow the instructions for submitting comments.
2. E-mail: [DW-2011-STD-0060@ee.doe.gov](mailto:DW-2011-STD-0060@ee.doe.gov). Include the docket number and/or RIN in the subject line of the message.
3. Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. If possible, please submit all items on a CD. It is not necessary to include printed copies.

4. Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 950 L'Enfant Plaza, SW., Suite 600, Washington, DC, 20024. Telephone: (202) 586-2945. If possible, please submit all items on a CD. It is not necessary to include printed copies.

Docket: The docket is available for review at [regulations.gov](http://www.regulations.gov), including Federal Register notices, comments, and other supporting documents/materials.

A link to the docket web page can be found at:

[www.regulations.gov/#!docketDetail;D=EERE-2011-BT-STD-0060](http://www.regulations.gov/#!docketDetail;D=EERE-2011-BT-STD-0060).

For further information on how to submit or review public comments or view hard copies of the docket, contact Ms. Brenda Edwards at (202) 586-2945 or email: [Brenda.Edwards@ee.doe.gov](mailto:Brenda.Edwards@ee.doe.gov).

**FOR FURTHER INFORMATION CONTACT:**

Stephen L. Witkowski, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE-2J, 1000 Independence Avenue, SW., Washington, DC, 20585-0121, (202) 586-7463, e-mail: [Stephen.Witkowski@ee.doe.gov](mailto:Stephen.Witkowski@ee.doe.gov).

Ms. Elizabeth Kohl, U.S. Department of Energy, Office of General Counsel, GC-71, 1000 Independence Avenue, SW., Washington, DC, 20585-0121, (202) 586-7796, e-mail: [Elizabeth.Kohl@hq.doe.gov](mailto:Elizabeth.Kohl@hq.doe.gov).

## **SUPPLEMENTARY INFORMATION:**

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### **I. Introduction and Legal Authority**

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA or the Act), Pub. L. 94-163 (42 U.S.C. 6291–6309, as codified) established the Energy Conservation Program for Consumer Products Other Than Automobiles,<sup>1</sup> a program covering most major household appliances (collectively referred to as “covered products”), which includes the residential dishwashers that are the subject of this rulemaking. (42 U.S.C. 6292(a)(6)) EPCA, as amended by the Energy Information and Security Act of 2007 (EISA 2007; Pub. L. 110-140), prescribed the current energy conservation standards for residential dishwashers (42 U.S.C. 6295(g)(10), and directed DOE to publish a final rule no later than January 1, 2015, to determine whether to amend

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<sup>1</sup> For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

the standards in effect for dishwashers manufactured on or after January 1, 2018. (42 U.S.C. 6295(g)(10)(B)(i))

EISA 2007 also amended EPCA, in relevant part, to grant DOE authority DOE to issue a final rule (hereinafter referred to as a “direct final rule”) establishing an energy conservation standard for a covered product on receipt of a statement 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, that contains recommendations with respect to an energy conservation standard that are in accordance with the provisions of 42 U.S.C. 6295(o). EPCA also requires that a notice of proposed rulemaking (NOPR) that proposes an identical energy conservation standard be published simultaneously with the direct final rule, and DOE must provide a public comment period of at least 110 days. (42 U.S.C. 6295(p)(4)) Not later than 120 days after issuance of the direct final rule, if one or more adverse comments or an alternative joint recommendation are received relating to the direct final rule, the Secretary must determine whether the comments or alternative recommendation may provide a reasonable basis for withdrawal under 42 U.S.C. 6295(o) or other applicable law. If the Secretary makes such a determination, DOE must withdraw the direct final rule and proceed with the simultaneously published NOPR. DOE must also publish in the Federal Register the reason why the direct final rule was withdrawn. Id.

On July 30, 2010, DOE received the “Agreement on Minimum Federal Efficiency Standards, Smart Appliances, Federal Incentives and Related Matters for Specified Appliances” (hereinafter, the “Joint Petition”)<sup>2</sup>, a comment submitted by groups representing manufacturers (the Association of Home Appliance Manufacturers (AHAM), Whirlpool Corporation (Whirlpool), General Electric Company (GE), Electrolux, LG Electronics, Inc. (LG), BSH Home Appliances (BSH), Alliance Laundry Systems (ALS), Viking Range, Sub-Zero Wolf, Friedrich A/C, U-Line, Samsung, Sharp Electronics, Miele, Heat Controller, AGA Marvel, Brown Stove, Haier, Fagor America, Airwell Group, Arcelik, Fisher & Paykel, Scotsman Ice, Indesit, Kuppersbusch, Kelon, and DeLonghi); energy and environmental advocates (American Council for an Energy Efficient Economy (ACEEE), Appliance Standards Awareness Project (ASAP), Natural Resources Defense Council (NRDC), Alliance to Save Energy (ASE), Alliance for Water Efficiency (AWE), Northwest Power and Conservation Council (NPCC), and Northeast Energy Efficiency Partnerships (NEEP)); and consumer groups (Consumer Federation of America (CFA) and the National Consumer Law Center (NCLC)) (collectively, the “Joint Petitioners”). The Joint Petitioners recommended specific energy conservation standards for residential dishwashers that they believed would satisfy the EPCA requirements in 42 U.S.C. 6295(o). Earthjustice submitted a comment affirming its support for the Joint Petition.<sup>3</sup>

DOE has considered the recommended energy conservation standards and believes that they meet the EPCA requirements for issuance of a direct final rule. As a

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<sup>2</sup> DOE Docket No. EERE-2011-BT-STD-0060, Comment 1.

<sup>3</sup> DOE Docket No. EERE-2011-BT-STD-0060, Comment 2.

result, DOE has published a direct final rule establishing energy conservation standards for dishwashers elsewhere in today's Federal Register. If DOE receives adverse comments that may provide a reasonable basis for withdrawal and withdraws the direct final rule, DOE will consider those comments and any other comments received in determining how to proceed with today's proposed rule.

For further background information on these proposed standards and the supporting analyses, please see the direct final rule published elsewhere in today's Federal Register. That document includes additional discussion on the EPCA requirements for promulgation of energy conservation standards, the current standards for residential dishwashers, and the history of the standards rulemakings establishing such standards, as well as information on the test procedures used to measure the energy efficiency of dishwashers. The document also contains an in-depth discussion of the analyses conducted in support of this rulemaking, the methodologies DOE used in conducting those analyses, and the analytical results.

## **II. Proposed Standards**

When considering proposed standards, the new or amended energy conservation standard that DOE adopts for any type (or class) of covered product shall be designed to achieve the maximum improvement in energy efficiency that DOE determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) In determining whether a standard is economically justified, DOE must determine whether the benefits of the standard exceed its burdens, considering to the greatest extent practicable the seven statutory factors set forth in EPCA. (42 U.S.C. 6295(o)(2)(B)(i))

The new or amended standard must also result in a significant conservation of energy.

(42 U.S.C. 6295(o)(3)(B))

The Department considered the impacts of standards at each trial standard level (TSL) considered by DOE, beginning with maximum technologically feasible level, to determine whether that level was economically justified. Where the max-tech level was not economically justified, DOE then considered the next most efficient level and undertook the same evaluation until it reached the highest efficiency level that is both technologically feasible and economically justified and saves a significant amount of energy.

To aid the reader as DOE discusses the benefits and burdens of each TSL, DOE has included tables that present a summary of the results of DOE's quantitative analysis for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. These include the impacts on identifiable subgroups of consumers, such as low-income households and seniors, who may be disproportionately affected by a national standard. Section V.B.1.b of the direct final rule published elsewhere in today's Federal Register presents the estimated impacts of each TSL for these subgroups.

#### A. Benefits and Burdens of TSLs Considered for Dishwashers



Table II.1 and Table II.2 present a summary of the quantitative impacts estimated for each TSL for dishwashers. The efficiency levels contained in each TSL are described in section V.A of the direct final rule.

**Table II.1 Summary of Results for Residential Dishwasher Trial Standard Levels: National Impacts**

Category	TSL 1	TSL 2	TSL 3	TSL 4
National Energy Savings ( <u>quads</u> )	0.02	0.07	0.94	1.59
National Water Savings ( <u>trillion gal.</u> )	0.01	0.14	0.56	1.71
<b>Net Present Value (2010\$ billion)</b>				
3% discount rate	0.12	0.46	6.51	17.45
7% discount rate	0.03	0.08	1.96	5.88
<b>Cumulative Emissions Reduction</b>				
CO <sub>2</sub> ( <u>million metric tons</u> )	1.15	4.06	65.02	98.62
NO <sub>x</sub> ( <u>thousand tons</u> )	0.96	3.54	54.27	83.31
Hg ( <u>tons</u> )	0.004	0.000	0.274	0.304
<b>Value of Emissions Reduction</b>				
CO <sub>2</sub> ( <u>2010\$ million</u> )*	5 to 79	16 to 242	278 to 4515	427 to 6951
NO <sub>x</sub> – 3% discount rate ( <u>2010\$ million</u> )	0 to 3	1 to 10	14 to 148	22 to 230
NO <sub>x</sub> – 7% discount rate ( <u>2010\$ million</u> )	0 to 1	0 to 5	6 to 59	9 to 91

Parentheses indicate negative (-) values.

\* Range of the economic value of CO<sub>2</sub> reductions is based on estimates of the global benefit of reduced CO<sub>2</sub> emissions.

\*\* Values are for 2047.

**Table II.2 Summary of Results for Residential Dishwasher Trial Standard Levels: Consumer and Manufacturer Impacts**

Category	TSL 1	TSL 2	TSL 3	TSL 4
<b>Manufacturer Impacts</b>				
Impact to Industry NPV (2010\$ million, 8.5% discount rate)	(44.3) – (45.3)	(73.9) – (84.6)	(128.9) – (174.4)	(145.6) – (202.7)
Industry NPV (%) change)	(7.0) – (7.1)	(11.6) – (13.3)	(20.2) – (27.4)	(22.8) – (31.8)
<b>Consumer Mean LCC Savings (2010\$)</b>				
Standard Dishwasher	1	3	41	108
Compact Dishwasher	13	12	52	52
<b>Consumer Median PBP (years)</b>				
Standard Dishwasher	5.9	11.8	6.6	4.5
Compact Dishwasher	0.3	0.3	2.1	2.1
<b>Distribution of Consumer LCC Impacts</b>				
Standard Dishwasher				
Net Cost (%)	1.9	18.7	29.7	22.9
No Impact (%)	96.3	64.1	20.0	9.0
Net Benefit (%)	1.7	17.2	50.4	68.1
Compact Dishwasher				
Net Cost (%)	6.4	6.5	5.4	5.4
No Impact (%)	75.6	75.6	50.2	50.2
Net Benefit (%)	18.0	17.9	44.4	44.4

Parentheses indicate negative (-) values.

DOE first considered TSL 4, which represents the max-tech efficiency levels. TSL 4 would save 1.59 quads of energy and 1.71 trillion gallons of water, amounts DOE considers significant. Under TSL 4, the NPV of consumer benefit would be \$5.88 billion, using a discount rate of 7 percent, and \$17.45 billion, using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 4 are 99 Mt of CO<sub>2</sub>, 83 thousand tons of NO<sub>x</sub>, and 0.304 tons of Hg. The estimated monetary value of the CO<sub>2</sub> emissions reductions at TSL 4 ranges from \$427 million to \$6,951 million. Total generating capacity in 2047 is estimated to decrease by 0.800 GW under TSL 4.

At TSL 4, the average LCC impact is a savings of \$108 for standard dishwashers and a savings of \$52 for compact dishwashers. The median payback period is 4.5 years for standard dishwashers and 2.1 years for compact dishwashers. The fraction of consumers experiencing an LCC benefit is 68.1 percent for standard dishwashers and 44.4 percent for compact dishwashers. However, 22.9 percent of standard dishwasher consumers and 5.4 percent of compact dishwasher consumers experience an LCC net cost. In addition, DOE is concerned that reducing energy and water use at TSL 4 without implementing significantly higher-cost technologies could result in the loss of certain consumer utility. Specifically, a substantially longer cycle time could be required to maintain cleaning performance. Because it is uncertain how greatly consumers value short cycle times, DOE is concerned that TSL 4 may result in significant loss of consumer utility.

At TSL 4, the projected change in INPV ranges from a decrease of \$145.6 million to a decrease of \$202.7 million, equivalent to 22.8 percent and 31.8 percent, respectively. Current products that meet efficiency standards specified by this TSL represent less than 9 percent of shipments in the year leading up to amended standards; thus, manufacturers would have to redesign nearly all products by the 2018 compliance date to meet demand. Redesigning all units to meet the current max-tech efficiency levels would require considerable capital and product conversion expenditures. At TSL 4, the capital conversion costs total \$226.3 million, 2.23 times the industry annual capital expenditure in the year leading up to amended standards. DOE estimates that complete platform redesigns would cost the industry \$76.7 million in product conversion costs. These

conversion costs largely relate to the research programs required to develop products that meet the efficiency standards set forth by TSL 4, and represent 164.5 percent of the industry annual budget for research and development. As such, the conversion costs associated with the changes in products and manufacturing facilities required at TSL 4 would require significant use of manufacturers' financial reserves (manufacturer capital pools), impacting other areas of business that compete for these resources and significantly reducing INPV. In addition, manufacturers could face a substantial impact on profitability at TSL 4. Because manufacturers earn a premium for ENERGY STAR products and additional profit for products that exceed the ENERGY STAR level, collapsing the market to one commodity product makes it unlikely that manufacturers could maintain their base-case profitability on these products after compliance with the standards is required. As a result, DOE expects that TSL 4 would yield impacts closer to the high end of the range of INPV impacts. If the high end of the range of impacts is reached, as DOE expects, TSL 4 could result in a net loss of 31.8 percent in INPV to dishwasher manufacturers.

The Secretary concludes that at TSL 4 for residential dishwashers, the benefits of energy savings, water savings, positive NPV of consumer benefits, generating capacity reductions, emission reductions, and the estimated monetary value of the CO<sub>2</sub> emissions reductions would be outweighed by the economic burden on some consumers, the potential burden on all consumers from loss of product utility, and the impacts on manufacturers, including the conversion costs and profit margin impacts that could result

in a large reduction in INPV. Consequently, the Secretary has concluded that TSL 4 is not economically justified.

DOE then considered TSL 3. TSL 3 would save 0.94 quads of energy and 0.56 trillion gallons of water, amounts DOE considers significant. Under TSL 3, the NPV of consumer benefit would be \$1.96 billion, using a discount rate of 7 percent, and \$6.51 billion, using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 3 are 65 Mt of CO<sub>2</sub>, 54 thousand tons of NO<sub>x</sub>, and 0.274 ton of Hg. The estimated monetary value of the CO<sub>2</sub> emissions reductions at TSL 3 ranges from \$278 million to \$4,515 million. Total generating capacity in 2047 is estimated to decrease by 0.719 GW under TSL 3.

At TSL 3, the average LCC impact is a savings of \$41 for standard dishwashers and a savings of \$52 for compact dishwashers. The median payback period is 6.6 years for standard dishwashers and 2.1 years for compact dishwashers. The fraction of consumers experiencing an LCC benefit is 50.4 percent for standard dishwashers and 44.4 percent for compact dishwashers. However, 29.7 percent of standard dishwasher consumers and 5.4 percent of compact dishwasher consumers experience an LCC net cost. In addition, DOE is concerned that reducing energy and water use at TSL 3 without implementing significantly higher-cost technologies could result in the loss of certain consumer utility. Specifically, a substantially longer cycle time could be required to maintain cleaning performance. Because it is uncertain how greatly consumers value

short cycle times, DOE is concerned that TSL 3 may result in significant loss of consumer utility.

At TSL 3, the projected change in INPV ranges from a decrease of \$128.9 million to a decrease of \$174.4 million, decreases of 20.2 percent and 27.4 percent, respectively. Current products that meet efficiency standards specified by this TSL represent less than 20 percent of shipments in the year leading up to amended standards; thus, manufacturers would have to overhaul a significant fraction of products by the 2018 compliance date to meet demand. Redesigning significant component systems or developing new platforms entirely to meet the efficiency levels specified by this TSL would require considerable capital and product conversion expenditures. At TSL 3, the estimated capital conversion costs total \$195.4 million, which is 1.93 times the industry annual capital expenditure in the year leading up to amended standards. DOE estimates that the redesigns necessary to meet these standards would cost the industry \$66.5 million in product conversion costs. These conversion costs largely relate to the research programs required to develop products that meet the efficiency standards set forth by TSL 3, and represent 142.6 percent of the industry annual budget for research and development in the year leading up to amended standards. As such, the conversion costs associated with the changes in products and manufacturing facilities required at TSL 3 would require significant use of manufacturers' financial reserves (manufacturer capital pools), impacting other areas of business that compete for these resources and significantly reducing INPV. In addition, manufacturers could face a substantial impact on profitability at TSL 3. Because manufacturers earn a premium for ENERGY STAR products and additional profit for

products that exceed the ENERGY STAR level, collapsing the market to one commodity product makes it unlikely that manufacturers could maintain their base-case profitability on these products after compliance with the standards is required. As a result, DOE expects that TSL 3 would yield impacts closer to the high end of the range of INPV impacts. If the high end of the range of impacts is reached, as DOE expects, TSL 3 could result in a net loss of 27.4 percent in INPV to dishwasher manufacturers.

The Secretary concludes that at TSL 3 for residential dishwashers, the benefits of energy savings, water savings, positive NPV of consumer benefits, generating capacity reductions, emission reductions, and the estimated monetary value of the CO<sub>2</sub> emissions reductions would be outweighed by the economic burden on some consumers, the potential burden on all consumers from loss of product utility, and the impacts on manufacturers, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. Consequently, the Secretary has concluded that TSL 3 is not economically justified.

DOE then considered TSL 2. TSL 2 would save 0.07 quads of energy and 0.14 trillion gallons of water, amounts DOE considers significant. Under TSL 2, the NPV of consumer benefit would be \$0.08 billion, using a discount rate of 7 percent, and \$0.46 billion, using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 2 are 4.06 Mt of CO<sub>2</sub>, 3.54 thousand tons of NO<sub>x</sub>, and 0.000 ton of Hg. The estimated monetary value of the CO<sub>2</sub> emissions

reductions at TSL 2 ranges from \$16 million to \$242 million. Total generating capacity in 2047 is estimated to decrease by 0.001 GW under TSL 2.

At TSL 2, the average LCC impact is a savings of \$3 for standard dishwashers and a savings of \$12 for compact dishwashers. The median payback period is 11.8 years for standard dishwashers and 0.3 years for compact dishwashers. While some consumers experience an LCC increase, this increase is very small in most cases.

At TSL 2, the projected change in INPV ranges from a decrease of \$73.9 million to a decrease of \$84.6 million, decreases of 11.6 percent and 13.3 percent, respectively. All dishwasher manufacturers currently produce products that meet the efficiency levels specified at TSL 2. As such, this level corresponds more to incremental product conversions rather than the platform redesigns expected for TSL 3 and TSL 4. Products at or above the efficiency levels of TSL 2 represent over 63 percent of shipments in the year leading up to amended standards. As such, DOE believes that the scope of the redesigns necessary to meet TSL 2 by the 2013 compliance date greatly mitigates concerns over manufacturers' ability to redesign products and switch over the bulk of production in time to meet the amended standards by the compliance date (operational risk). DOE estimates that the improvements to manufacturing facilities necessary to meet these standards would cost the industry \$59.1 million in capital conversion costs, over \$130 million less than those incurred at TSL 3, and only 55.7 percent of the industry budget for capital expenditure in the year leading up to amended standards. TSL 2 will require an estimated 34.9 million in product conversion costs primarily relating to the research and



development programs needed to improve upon existing platforms to meet the specified efficiency levels. This represents 71.6 percent of the industry budget for research and development in the year leading up to amended standards. The substantial reduction in conversion costs over those incurred at higher TSLs, coupled with the fact that many products currently meet the efficiency standards set forth by TSL 2, greatly mitigate the operational risk and impact on INPV.

The Secretary concludes that at TSL 2 for residential dishwashers, the benefits of energy savings, water savings, positive NPV of consumer benefits, generating capacity reductions, emission reductions, and the estimated monetary value of the CO<sub>2</sub> emissions reductions would outweigh the impacts on manufacturers, including the conversion costs that could result in a reduction in INPV for manufacturers.

In addition, the efficiency levels in TSL 2 correspond to the recommended levels in the Joint Petition, which DOE believes sets forth a statement by interested persons that are fairly representative of relevant points of view (including representatives of manufacturers of covered products, States, and efficiency advocates) and contains recommendations with respect to an energy conservation standard that are in accordance with 42 U.S.C. 6295(o). Moreover, DOE has encouraged the submission of consensus agreements as a way for diverse interested parties to develop an independent and probative analysis useful in DOE standard setting and to expedite the rulemaking process. DOE also believes that the standard levels recommended in the consensus agreement may increase the likelihood for regulatory compliance, while decreasing the risk of litigation.

After considering the analysis and the benefits and burdens of TSL 2, the Secretary concludes that this TSL will offer the maximum improvement in efficiency that is technologically feasible and economically justified, and will result in the significant conservation of energy. Therefore, DOE proposes to adopt TSL 2 for residential dishwashers. The proposed amended energy conservation standards for residential dishwashers, which are a maximum allowable annual energy use and maximum allowable per-cycle water consumption, are shown in Table II.3.

**Table II.3 Amended Energy Conservation Standards for Residential Dishwashers**

<b>Product Class</b>	<b>Compliance Date:</b> <b>[INSERT DATE 1 YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].</b>	
	<b>Maximum Annual Energy Use*</b>	<b>Maximum Per-Cycle Water Consumption</b>
1. Standard ( $\geq 8$ place settings plus 6 serving pieces)	307 kWh/year	5.0 gallons/cycle
2. Compact ( $< 8$ place settings plus 6 serving pieces)	222 kWh/year	3.5 gallons/cycle

\* Annual energy use, expressed in kilowatt-hours (kWh) per year, is calculated as: the sum of the annual standby electrical energy in kWh and the product of (1) the representative average dishwasher use cycles per year and (2) the sum of machine electrical energy consumption per cycle in kWh, the total water energy consumption per cycle in kWh, and, for dishwashers having a truncated normal cycle, the drying energy consumption divided by 2 in kWh. A truncated normal cycle is defined as the normal cycle interrupted to eliminate the power-dry feature after the termination of the last rinse option,

#### B. Summary of Benefits and Costs (Annualized) of the Standards

The benefits and costs of today's standards can also be expressed in terms of annualized values. The annualized monetary values are the sum of (1) the annualized national economic value, expressed in 2010\$, of the benefits from operating products that meet the proposed standards (consisting primarily of operating cost savings from using less energy and water, minus increases in product purchase costs, which is another way of

representing consumer NPV), and (2) the monetary value of the benefits of emission reductions, including CO<sub>2</sub> emission reductions.<sup>4</sup> The value of the CO<sub>2</sub> reductions, otherwise known as the Social Cost of Carbon (SCC), is calculated using a range of values per metric ton of CO<sub>2</sub> developed by a recent interagency process.

Although combining the values of operating savings and CO<sub>2</sub> reductions provides a useful perspective, two issues should be considered. First, the national operating savings are domestic U.S. consumer monetary savings that occur as a result of market transactions while the value of CO<sub>2</sub> reductions is based on a global value. Second, the assessments of operating cost savings and SCC are performed with different methods that use quite different time frames for analysis. The national operating cost savings is measured for the lifetime of products shipped in 2013–2047. The SCC values, on the other hand, reflect the present value of all future climate-related impacts resulting from the emission of one ton of carbon dioxide in each year. These impacts continue well beyond 2100.

Table II.4 shows the annualized values for residential dishwashers under TSL 2, expressed in 2010\$. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than CO<sub>2</sub> reductions, for which DOE

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<sup>4</sup> DOE used a two-step calculation process to convert the time-series of costs and benefits into annualized values. First, DOE calculated a present value in 2011, the year used for discounting the NPV of total consumer costs and savings, for the time-series of costs and benefits using discount rates of 3 and 7 percent for all costs and benefits except for the value of CO<sub>2</sub> reductions. For the latter, DOE used a range of discount rates, as shown in Table II.4. From the present value, DOE then calculated the fixed annual payment over a 30-year period that yields the same present value. The fixed annual payment is the annualized value. Although DOE calculated annualized values, this does not imply that the time-series of cost and benefits from which the annualized values were determined would be a steady stream of payments.

used a 3-percent discount rate along with the SCC series corresponding to a value of \$22.3/ton in 2010 (in 2010\$), the cost of the standards for dishwashers in today's rule is \$46 million per year in increased equipment costs, while the annualized benefits are \$53 million per year in reduced equipment operating costs, \$3.9 million in CO<sub>2</sub> reductions, and \$0.24 million in reduced NO<sub>x</sub> emissions. In this case, the net benefit amounts to \$11 million per year. Using a 3-percent discount rate for all benefits and costs and the SCC series corresponding to a value of \$22.3/ton in 2010 (in 2010\$), the cost of the standards for dishwashers in today's rule is \$44 million per year in increased equipment costs, while the benefits are \$66 million per year in reduced operating costs, \$3.9 million in CO<sub>2</sub> reductions, and \$0.26 million in reduced NO<sub>x</sub> emissions. In this case, the net benefit amounts to \$27 million per year.

**Table II.4 Annualized Benefits and Costs of Amended Standards (TSL 2) for Residential Dishwashers Sold in 2013–2047**

	Discount Rate	Primary Estimate*	Low Net Benefits Estimate*	High Net Benefits Estimate*
		Monetized ( <u>million 2010\$/year</u> )		
Benefits				
Operating Cost Savings	7%	53	48	59
	3%	66	59	75
CO <sub>2</sub> Reduction at \$4.9/t**	5%	1.1	1.0	1.3
CO <sub>2</sub> Reduction at \$22.3/t**	3%	3.9	3.5	4.7
CO <sub>2</sub> Reduction at \$36.5/t**	2.5%	6.1	5.4	7.2
CO <sub>2</sub> Reduction at \$67.6/t**	3%	12.0	10.8	14.2
NO <sub>x</sub> Reduction at \$2,537/t**	7%	0.24	0.23	0.27
	3%	0.26	0.24	0.30
Total†	7% plus CO <sub>2</sub> range	54 to 65	49 to 59	60 to 73
	7%	57	52	64
	3% plus CO <sub>2</sub> range	68 to 78	60 to 70	76 to 89
	3%	70	63	80
Costs				
Incremental Product Costs	7%	46	44	43
	3%	44	41	40
Total Net Benefits				
Total†	7% plus CO <sub>2</sub> range	8 to 19	6 to 16	17 to 30
	7%	11	8	20
	3% plus CO <sub>2</sub> range	24 to 35	19 to 29	37 to 49
	3%	27	22	40

\* The results include benefits to consumers which accrue after 2047 from the dishwashers purchased from 2013 through 2047. Costs incurred by manufacturers, some of which may be incurred prior to 2013 in preparation for the rule, are not directly included, but are indirectly included as part of incremental equipment costs. The extent of the costs and benefits will depend on the projected price trends of dishwashers, as the consumer demand for dishwashers is a function of dishwasher prices. The Primary, Low Benefits, and High Benefits Estimates utilize forecasts of energy prices and housing starts from the [AEO2011](#) Reference case, Low Estimate, and High Estimate, respectively. In addition, incremental product costs reflect a medium decline rate for projected product price trends in the Primary Estimate, a low decline rate for projected product price trends in the Low Benefits Estimate, and a high decline rate for projected product price trends in the High Benefits Estimate. The methods used to derive projected price trends are explained in section IV.G.3 of the direct final rule.

\*\* The CO<sub>2</sub> values represent global values (in 2010\$) of the social cost of CO<sub>2</sub> emissions in 2010 under several scenarios. The values of \$4.9, \$22.3, and \$36.5 per ton are the averages of SCC distributions calculated using 5%, 3%, and 2.5% discount rates, respectively. The value of \$67.6 per ton represents the 95<sup>th</sup> percentile of the SCC distribution calculated using a 3% discount rate. The value for NO<sub>x</sub> (in 2010\$) is the average of the low and high values used in DOE's analysis.

† Total Benefits for both the 3% and 7% cases are derived using the SCC value calculated at a 3% discount rate, which is \$22.3/ton in 2010 (in 2010\$). In the rows labeled as “7% plus CO<sub>2</sub> range” and “3% plus CO<sub>2</sub> range,” the operating cost and NO<sub>x</sub> benefits are calculated using the labeled discount rate, and those values are added to the full range of CO<sub>2</sub> values.

### **III. Public Participation**

#### **A. Submission of Comments**

DOE will accept comments, data, and information regarding this proposed rule until the date provided in the **DATES** section at the beginning of this proposed rule.

Interested parties may submit comments, data, and other information using any of the methods described in the **ADDRESSES** section at the beginning of this notice.

Submitting comments via regulations.gov. The regulations.gov web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment itself or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Otherwise, persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to [regulations.gov](https://www.regulations.gov) information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (CBI)). Comments submitted through [regulations.gov](https://www.regulations.gov) cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section below.

DOE processes submissions made through [regulations.gov](https://www.regulations.gov) before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that [regulations.gov](https://www.regulations.gov) provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery/courier, or mail. Comments and documents submitted via email, hand delivery, or mail also will be posted to [regulations.gov](https://www.regulations.gov). If you do not want your personal contact information to be publicly

viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information in a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. Email submissions are preferred. If you submit via mail or hand delivery/courier, please provide all items on a CD, if feasible. It is not necessary to submit printed copies. No facsimiles (faxes) will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, that are written in English, and that are free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.



Confidential business information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery/courier two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked non-confidential with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Factors of interest to DOE when evaluating requests to treat submitted information as confidential include: (1) A description of the items; (2) whether and why such items are customarily treated as confidential within the industry; (3) whether the information is generally known by or available from other sources; (4) whether the information has previously been made available to others without obligation concerning its confidentiality; (5) an explanation of the competitive injury to the submitting person which would result from public disclosure; (6) when such information might lose its confidential character due to the passage of time; and (7) why disclosure of the information would be contrary to the public interest.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

### B. Public Meeting

If DOE withdraws the direct final rule published elsewhere in today's Federal Register pursuant to 42 U.S.C. 6295(p)(4)(C), DOE will hold a public meeting to allow for additional comment on this proposed rule. DOE will publish notice of any meeting in the Federal Register.

## **IV. Procedural Issues and Regulatory Review**

The regulatory reviews conducted for this proposed rule are identical to those conducted for the direct final rule published elsewhere in today's Federal Register. Please see the direct final rule for further details.

## **V. Approval of the Office of the Secretary**

The Secretary of Energy has approved publication of today's proposed rule.

### **List of Subjects**

#### **10 CFR Part 429**

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Reporting and recordkeeping requirements, Small businesses.

#### **10 CFR Part 430**

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, and Small businesses.

Issued in Washington, DC, on May 11, 2012.

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Dr. David Danielson  
Assistant Secretary  
Energy Efficiency and Renewable Energy

For the reasons set forth in the preamble, DOE proposes to amend parts 429 and 430 of title 10 of the Code of Federal Regulations, to read as set forth below:

**PART 429 - CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR  
CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL  
EQUIPMENT**

1. The authority citation for Part 429 continues to read as follows:

**Authority:** 42 U.S.C. 6291–6317.

2. In § 429.19 revise paragraph (b)(2) to read as follows:

**§ 429.19 Dishwashers.**

\* \* \* \* \*

(b) \* \* \*

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: The estimated annual energy use in kilowatt hours per year (kWh/yr) and the water consumption in gallons per cycle.

\* \* \* \* \*

**PART 430 - ENERGY CONSERVATION PROGRAM FOR CONSUMER  
PRODUCTS**

3. The authority citation for Part 430 continues to read as follows:

**Authority:** 42 U.S.C. 6291-6309; 28 U.S.C. 2461 note.

4. In §430.32 add paragraph (f)(3) to read as follows:

**§430.32 Energy and water conservation standards and their effective dates.**

\* \* \* \*

(f) \* \* \*

(3) All dishwashers manufactured on or after **[INSERT DATE 1 YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, shall meet the following standard—

(i) Standard size dishwashers shall not exceed 307 kwh/year and 5.0 gallons per cycle.

(ii) Compact size dishwashers shall not exceed 222 kwh/year and 3.5 gallons per cycle.

\* \* \* \*