

**Steering Committee for Water Efficient Products
1001 Connecticut Avenue, NW Suite 801
Washington, DC 20036**

January 17, 2006

Richard H. Karney
Energy Star Program Manager
U. S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Re: Comments on Proposed Energy Star Criteria for Residential Dishwashers

Dear Mr. Karney:

These comments are submitted in response to your notice proposing new Energy Star criteria for residential dishwashers, dated December 20, 2005. We co-chair a steering committee formed from over one hundred organizations, companies, water utilities, and public agencies that support a national voluntary water-efficient product labeling program modeled after Energy Star. We also believe that both water efficiency and energy efficiency should be encouraged by the efficiency specifications set for Energy Star products that use both water and energy.

Support for Specific Elements of the Proposal

The Steering Committee is pleased to offer support for the following elements of the residential dishwasher proposal:

Energy Star Criteria

- An energy factor of 0.65 effective January 1, 2007;
- Extension of the Energy Star program to compact dishwashers, with an energy factor of 0.88 effective January 1, 2007.

Other Energy Star program activities

- DOE's establishment of a working group to discuss new research and analyses;
- DOE's commitment to facilitate pre-rinse and hand-wash water use research;
- DOE's commitment to launch a consumer education campaign on pre-rinse in 2006-07.

Needed Revisions, Additions, and Clarifications

Steering Committee members believe the proposal is deficient in a number of key respects, and could be improved with certain additions and clarifications:

Energy Star Criteria

- Specify a water factor in the current revision of Energy Star criteria for dishwashers. We previously suggested a maximum water consumption of 6.25 gallons per cycle for consideration as a starting point for DOE analysis. We continue to believe that such a level would have little marginal impact on product availability and customer choice, while giving appropriate attention to water efficiency and encouraging greater participation by water and wastewater utilities as Energy Star partners.
- Incorporate submission of water consumption data (gallons per cycle) into the revised program eligibility criteria for Energy Star dishwashers – whether or not a water factor is included in the criteria at this time. Manufacturers can readily provide water consumption information for dishwashers, since the measurement of water consumption per cycle is a requirement of DOE's current *Uniform Test Method for Measuring the Energy Consumption of Dishwashers* (See section 4.3 of Appendix C.) Experience with Energy Star clothes washers also supports this view.
- Begin to address consumer pre-rinse water use in the 2007 Energy Star program eligibility criteria, in the interest of reducing the total energy and water consumption attributable to washing dishes. Specifically, DOE should identify more effective options for customer orientation regarding pre-rinse water use, and incorporate such options into Energy Star program eligibility criteria where practical. Such requirements could include –
 - repositioning guidance on pre-rinse in new Energy Star dishwasher users' manuals and in point-of-purchase materials;
 - inclusion of a DVD with each new machine addressing the pre-rinse issue;
 - revision of *Partner Commitments* for Energy Star dishwashers to incorporate references to water efficiency as well as energy efficiency, and to include commitments to address the pre-rinse issue in future advertising for Energy Star dishwashers.
- Performance testing should be added to the 2007 Energy Star criteria. Maytag has recommended the use of an existing AHAM cleaning test (DW-1 2005) and a specific minimum score (85). DOE should review this test and incorporate it into the Energy Star criteria, or identify a comparable or superior alternative. As machine efficiency targets increase and as education efforts ramp up to discourage unnecessary

consumer pre-rinse, it is imperative that consumers should have no reason to doubt the cleaning ability of an Energy Star dishwasher.

- Criteria revision should begin immediately upon publication of the 2007 criteria, with a target effective date of January 2009. The energy factor proposed for standard dishwashers for 2007 represents a modest 12% increase over current Energy Star, a level that had been reached by over 90% of the models on the market. DOE appears intent on deferring important energy and water saving proposals to a future revision. As these options for premium machine performance and more constructive customer interaction become identified, DOE should move promptly to revise the 2007 criteria.

Other Energy Star program activities

- Dishwasher data collection should be expanded immediately. As discussed during the Energy Star dishwasher stakeholder meeting on July 13, 2005, and in our follow-up letter to DOE on July 20, additional data is needed to evaluate key options for revised Energy Star criteria for these products. In light of the various options raised at the stakeholder meeting, we recommend that DOE seek the following data on each Energy Star-qualified standard and compact dishwasher from Energy Star Partner manufacturers, in spreadsheet format –
 - brand and model (can be masked, as "Brand A", "Model 1", etc.)
 - standard or compact
 - capacity, in place settings (at a minimum for standard models, distinguish between '12 settings or above' and 'less than 12 settings')
 - soil-sensing or non-soil-sensing
 - energy factor as per the DOE test procedure
 - water consumption as per the DOE test procedure (i.e., as measured pursuant to section 4.3 of Appendix C)
 - maximum water use per cycle (i.e., the setting that yields the greatest water use, usually the "heavy" or "pots & pans" cycle)
 - pre-rinse cycle water consumption (using a "rinse & hold" cycle; N/A if no pre-rinse option is present)

These data undoubtedly already exist, and should be easily assembled in spreadsheet format. The universe of dishwashers covered by this request could be each model meeting the proposed 2007 Energy Star criteria. The data set, stripped of brand names if the manufacturers so desire, should be made public, so that Steering Committee members, the Dishwasher Working Group, other public stakeholders, and individual manufacturers themselves can undertake their own analyses, along with the Department.

- The Energy Star Dishwasher Working Group should be retitled the Dishwashing Working Group. This will help clarify at the outset that both consumer hand-wash and pre-rinse activities, as well as machine pre-rinse savings potential, and the interaction among them all, will be fully explored prior to the next Energy Star criteria revision.
 - DOE should document pre-rinse water use and quantify the relative energy and water consumption of machine pre-rinse vs. manual pre-rinse.
 - DOE should subsequently consider steps to improve the efficiency and utility of machine pre-rinse to further obviate the perceived need or value of manual pre-rinse. Such steps might include the application of a performance test to machine pre-rinse, and/or incorporation of pre-rinse energy and water use into the DOE dishwasher test procedure, thereby directing manufacturers' attention to improving the efficacy and efficiency of the pre-rinse cycle.

See Attachment 3 for additional documentation in support of these recommendations.

Finally, we urge the Department to remain open to consideration of an appropriate mark or extension of the existing Energy Star mark that will help convey the water efficiency of Energy Star dishwashers to consumers in the marketplace.

Thank you for your attention to these views.

Sincerely,



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cc: James A. Hanlon
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Steering Committee for Water Efficient Products

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American Rivers	Maytag Corporation
American Standard, Inc.	Natural Resources Defense Council
Association of Metropolitan Water Agencies	City of Phoenix AZ
City of Austin TX	Rain Bird Corporation
California Urban Water Conservation Council	San Diego County Water Authority
East Bay Municipal Utility District (CA)	Seattle Public Utilities
Eugene (OR) Water & Electric Board	Sloan Flushmate
Friends of the Earth	Southern Nevada Water Authority
Harris-Galveston Subsidence District (TX)	Tacoma (WA) Public Utilities
Irrrometer Co., Inc.	TOTO USA, Inc.
Kohler Company	Vitra USA
	State of Washington
	Waterless Co. LLC

Attachment 2

General Points regarding Energy Star Designations for any Water-Using Products

- Improving the efficiency of water use is an essential component of the national effort to close the water and wastewater infrastructure investment gap, which according to EPA, may grow to levels of \$102 billion for water and \$122 billion for wastewater within 15 years.¹
- The water supply and wastewater treatment industry is a major user of *energy*, with municipal water and wastewater systems and associated conveyance facilities accounting for over 4% of all electricity consumption by the industrial sector. EPA has recently initiated an Energy Star Focus to help improve energy efficiency in this industry. Reducing the water consumption of Energy Star products that use both energy and water will achieve additional energy savings for public water and wastewater systems.
- Both water efficiency and energy efficiency should be encouraged by the efficiency specifications set for Energy Star products that use both water and energy. Designation of Energy Star criteria for such products should be done in consultation with EPA's Water Office and its new water efficiency market enhancement program.
- Energy Star criteria for products that use both energy and water should include efficiency metrics for both energy and water, unless a single metric can capture all design options that save both energy and water. If maintenance of customer satisfaction is in doubt, a performance test should be considered.
- The Energy Star logo for such products should include an extender that conveys water efficiency.
- Potential energy and water savings should be a major factor in prioritizing products for labeling/listing.

¹ See US Environmental Protection Agency, Office of Water, *The Clean Water and Drinking Water Infrastructure Gap Analysis*, September 2002, available for download through <www.epa.gov>. See also the testimony of EPA Administrator Stephen Johnson, "New E.P.A. Chief Says Budget is Sufficient," *New York Times*, May 20, 2005, p. A19.

Background Regarding Residential Dishwashing and Water Use

1. Residential dishwashers are responsible for comparable shares of total residential energy use and residential indoor water use, respectively.
 - Dishwashers account for 1.4 percent of total residential energy use.²
 - Dishwashers account for 1.4 percent of indoor per capita water use.³
2. Recent data suggest that water consumption and energy consumption in efficient dishwashers may not be as tightly correlated as previously thought.
 - The Oregon Department of Energy has posted the energy factors (EFs) and annual water consumption for over 200 models of dishwashers that meet Oregon's requirements for energy tax credits, namely a minimum energy factor of 0.61 and a maximum water consumption of 6.5 gallons per cycle.⁴
 - Among the 99 models listed with an EF of 0.62, the water consumption of the models that use the most water (1,355 gals./yr) is 75% higher than that of the models that use the least water (769 gals./yr).
 - Several manufacturers offer a selection of dishwasher models in which water efficiency does not improve with greater energy efficiency. In some cases, water efficiency decreases in more energy-efficient models.
3. Manufacturers can readily provide water consumption information for dishwashers, since the measurement of water consumption per cycle is a requirement of DOE's current *Uniform Test Method for Measuring the Energy Consumption of Dishwashers* (See section 4.3 of Appendix C.)
4. A substantial amount of water is used by consumers for pre-rinse activity that manufacturers believe to be unnecessary.
 - More than 70% of households pre-rinse their dishes with water before placing them in the dishwasher.⁵
 - Most water used for pre-rinse is either warm or hot.⁶
 - Manufacturers do not recommend pre-rinsing of dishware.⁷

² Consortium for Energy Efficiency, Super-Efficient Home Appliances Initiative, *Dishwashers* fact sheet.

³ Mayer et al, *Residential End Uses of Water*, AWWA Research Foundation, 1999. Note: This is the share of indoor use for all homes studied, including homes *without* dishwashers (25% of total). The share of per capita indoor water use in homes *with* dishwashers would likely approach 2%.

⁴ See <<http://egov.oregon.gov/ENERGY/CONS/RES/RETC.shtml>>

⁵ Arthur D. Little, Inc., *Review of Survey Data to Support Revisions to DOE's Dishwasher Test Procedure*, 2001.

⁶ Dethman & Associates, *Dishwasher Survey Report*, submitted to Northwest Energy Efficiency Alliance and the Consortium for Energy Efficiency, 1999.

⁷ For example, Whirlpool's dishwasher use & care guides indicate: "It is not necessary to rinse the dishes before putting them into the dishwasher." Whirlpool use & care guides are available on-line at www.whirlpool.com. Go to Dishwashers, select a model, then select 'guides & literature'.

- One major dishwasher detergent brand is now advertising that there is no need for pre-rinsing dishes with the use of *its* product.

5. Kitchen sink faucets are responsible for about 10% of residential indoor water use, underscoring the importance of dishwashing as a contributor to total household energy and water consumption.

- Total faucet use (all faucets) averages 10.9 gallons per capita per day.⁸
- Of this, kitchen faucet use comprises about 7 gallons per capita per day,⁹ or about 19 gallons per household per day.
- A reduction of even 1 gallon per day (i.e., less than ½ gallon per meal) in pre-rinse water use would be comparable to reducing the water used by an efficient dishwasher by 20 to 25%.

6. Several local utilities have offered customer incentives for high-efficiency dishwashers. More water utilities are likely to promote Energy Star dishwashers if the revised Energy Star criteria result in meaningful improvements in dishwashing water consumption without sacrificing cleaning quality.¹⁰

7. Manufacturers are divided on the establishment of a water factor for residential dishwashers, and those objecting to it have failed to make their case. On August 15, 2005, both Whirlpool and Maytag provided some additional data for the public record. Maytag submitted a graph of data from the State of Oregon's published database. This graphic depicts the energy and water efficiency relationship for dishwasher models with an EF of .61 and above (which we believe is an appropriate focus for Energy Star deliberations at this time). Maytag concludes that the correlation is rather weak for this group of machines. Note also that the Oregon database does not include Energy Star models that do not meet Oregon's water factor requirement, the inclusion of which would demonstrate an even weaker correlation. Maytag views the data as *supportive* of its previous recommendation that Energy Star should incorporate a water factor in the revised criteria for dishwashers. We concur with this view.

The submission from Whirlpool included a plot of the energy and water consumption of thirty 2004 dishwashers (manufacturers and models unspecified). Whirlpool views the data as supportive of its previous contention that a water factor should not be added to new Energy Star criteria. However, the opposite inference could easily be drawn from these data. The data show clearly that current Energy Star qualified machines show no significant improvement in water efficiency as energy efficiency improves. Water consumption for a full range of machines with EF's from 0.59 to 0.63 are virtually unchanged, with a one gallon variation appearing throughout as a result of "feature differences," according to Whirlpool. Also, the single machine with an exceptionally high EF (38% more energy efficient than the next most efficient machine) showed a

⁸ Mayer et al, *op. cit.*

⁹ Mayer, Peter, private communication, 2005. Derived by the subtraction of lavatory faucets (3.4 gpcd) and seldom-used utility sink faucets.

¹⁰ City of Albuquerque, Eugene (OR) Water and Electric Board, Los Angeles Department of Water and Power, City of Rochester (MN), among others.

much smaller reduction in water use (about 12%) than its peers. This outlier may well have been a compact dishwasher, which further obscures the comparison.

Whirlpool also resubmitted an AHAM graphic (the same one AHAM presented at the July 2005 stakeholders meeting) showing the shipment-weighted average values for energy and water consumption per cycle, for all machines, not just Energy Star, for selected years between 1993 and 2004. These shipment-weighted data show reductions in both energy and water consumption, but say nothing about the performance of individual models, which is the basis for Energy Star eligibility.