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November 10, 2010

Via E-Mail

Amanda Stevens  
U.S. Environmental Protection Agency  
ENERGY STAR Appliance Program  
appliances@energystar.gov

Re: ENERGY STAR Program Requirements Product Specification  
For Residential Dishwashers, Eligibility Criteria, Draft 1, Version 5.0

Dear Ms. Stevens:

On behalf of the Association of Home Appliance Manufacturers (AHAM), I would like to provide our comments on the ENERGY STAR Program Requirements Product Specification For Residential Dishwashers, Eligibility Criteria, Draft 1, Version 5.0.

The Association of Home Appliance Manufacturers (AHAM) represents manufacturers of major, portable and floor care home appliances, and suppliers to the industry. AHAM's membership includes over 150 companies throughout the world. In the U.S., AHAM members employ tens of thousands of people and produce more than 95% of the household appliances shipped for sale. The factory shipment value of these products is more than \$30 billion annually. The home appliance industry, through its products and innovation, is essential to U.S. consumer lifestyle, health, safety and convenience. Through its technology, employees and productivity, the industry contributes significantly to U.S. jobs and economic security. Home appliances also are a success story in terms of energy efficiency and environmental protection. New appliances often represent the most effective choice a consumer can make to reduce home energy use and costs.

AHAM supports EPA and DOE in their efforts to provide incentives to manufacturers, retailers, and consumers for continual energy efficiency improvement, as long as product performance can be maintained for the consumer. AHAM does not believe that the ENERGY STAR criteria for dishwashers should be changed at this time—instead EPA should retain the previously set increase for 2011. In addition, a performance metric should not be adopted hastily before there is an adequate test procedure that is accurate, repeatable, and reproducible.

## I. Definitions

EPA initially proposed definitions for “residential dishwasher,” “compact dishwasher,” “standard dishwasher,” and “product family” that differed from those in the Department of Energy’s energy efficiency regulations. AHAM previously commented that those definitions should be harmonized where a DOE definition exists. After releasing Draft 1, Version 5.0 of the dishwasher specification, ENERGY STAR released the final revisions to its product specifications to incorporate the enhanced testing and verification testing requirements. The final dishwasher specification (Version 4.1) attempts to harmonize ENERGY STAR’s definitions with DOE. EPA stated at the stakeholder meeting on October 26, its intent to retain those definitions in future revisions, such as Draft 1, Version 5.0 of the dishwasher specification.

AHAM appreciates EPA’s attempt to harmonize its definitions with DOE’s in Version 4.1 of the residential dishwasher eligibility criteria. But the harmonization is incomplete. The definition of “residential dishwasher,” for example, adds the phrase “used in a residential setting” to DOE’s definition. That addition is minor, but AHAM still suggests that the definitions be identical to DOE’s definitions.

Similarly, ENERGY STAR’s Version 4.1 definitions for “compact dishwasher” and “standard dishwasher” are harmonized substantively with DOE’s definitions, but miss some important details. Specifically, to properly harmonize, the definitions should read:

Compact Dishwasher: A dishwasher that has a capacity of less than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 (as incorporated by reference in 10 C.F.R. § 430.22), using the test load specified in section 2.7 of 10 C.F.R. 430, Subpart B, Appendix C.

Standard Dishwasher: A dishwasher that has a capacity equal to or greater than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 (as incorporated by reference in 10 C.F.R. § 430.22), using the test load specified in section 2.7 of 10 C.F.R. 430, Subpart B, Appendix C.

In addition, the ENERGY STAR definition of “basic model” varies slightly from DOE’s definition, as shown in redline (the redline showing the changes ENERGY STAR made to the DOE definition):

Basic Model: ~~all~~-units of a given type of covered product (or class thereof) manufactured by one manufacturer ~~and which~~that have electrical characteristics which are essentially identical and which do not have any differing physical or functional characteristics which affect energy ~~and water~~ consumption.

These changes could change the meaning of the definition. It is critical that this definition be identical to DOE’s definition so that manufacturers are not required to have varying basic model groups.

In Version 4.1, ENERGY STAR also added definitions for standby power and energy factor. Standby power is a complex concept, and there are several definitions required to make the concept meaningful, many of which are based on an international standard, IEC Standard 62301 Second Edition (which is currently being finalized). The ENERGY STAR definition does not take any of the complexities into account. AHAM suggests that that definition be removed from Version 5.0 (and Version 4.1) as it does not add anything beneficial to the ENERGY STAR criteria, but may result in substantial confusion. It is sufficiently defined in the DOE test procedure cited by ENERGY STAR. The same is true for the energy factor.

AHAM also wishes to reiterate the importance of maintaining harmonization with DOE at all times. In other words, as DOE definitions change, ENERGY STAR definitions must also change to mirror them. It is critical that EPA's requirements are consistent with DOE regulations and test procedures. To achieve consistency, the relevant definitions must be identical to each other at all times. Without such consistency and uniformity there will be significant confusion for manufacturers and for consumers. EPA must have substantial reasons for varying from DOE regulations, and if EPA varies from any DOE requirement, AHAM requests that it provide its reasons for doing so and give stakeholders the opportunity to comment.

## **II. Qualification Criteria**

### **A. The Energy And Water Consumption Levels Should Not Be Increased At This Time.**

The energy and water consumption requirement levels should not be increased at this time. Instead ENERGY STAR should maintain the previously set increase for 2011.

AHAM, energy efficiency advocates, and consumer groups recently held successful negotiations which resulted in a major agreement on federal minimum energy conservations for five products, and related test procedures, ENERGY STAR, and financial incentive provisions. The description of this package can be found at Attachment A. The agreement consists of recommendations for updates and extensions of the manufacturer tax credit for the production of super-efficient appliances. These incentives encourage manufacturers to develop, commercialize, and sell very high efficiency products, helping to transform markets faster than with standards alone. The lower tiers of the current federal incentives are phased-out under the new agreement and new, higher tiers are added. Lawrence Berkeley National Laboratory has estimated the tax credits for residential dishwashers would save an additional 0.07 quads of primary energy and 0.03 billion gallons of water over 30 years, for a total energy savings of 0.84 quads and a total water savings of 0.47 trillion gallons.

The agreement in Attachment A does not include ENERGY STAR levels, but it does include aspects that relate to ENERGY STAR including the July 1, 2011 specification and the proposed new EPA specification

The ENERGY STAR levels that are now scheduled to take effect on July 1, 2011 are the basis for new minimum efficiency standards that the agreement recommends take effect January 1, 2013. In developing this recommendation for new standards, the parties to the agreement

recognized the value of using the ENERGY STAR specification to help with the transition to the new standard. EPA's proposal to drop the July 1, 2011 specification and further increase the eligibility criteria will make the transition to the 2013 energy efficiency standard much more difficult. Thus, it is not something AHAM can support.

Furthermore, the ENERGY STAR levels EPA proposes for late 2011 (draft Version 5.0) are the same as the third tier of agreed to tax credit levels, which are proposed to apply to dishwashers manufactured in 2011, 2012, and 2013. Those levels, and the associated timeframes for tax credits, were agreed to by all parties (manufacturers, energy efficiency advocates, and consumer groups) with an understanding that it will take time for manufacturers to develop and widely market equipment at this new level, and that initially such levels are only suitable for a small portion of models. We are very concerned that EPA's proposal to make these levels ENERGY STAR levels in about a year is overly speeding up this process and could cause problems for manufacturers, and potentially for consumers, if too many products are rushed to market too quickly. Furthermore, the number of products currently meeting the new proposed level is a small fraction of the market, which is in conflict with ENERGY STAR's goal of achieving approximately 25% of the market. In addition, manufacturers have been planning and investing resources in designs that would be consistent with the agreement on the agreed-to timeline and that would meet the ENERGY STAR levels currently set to increase in 2011. If ENERGY STAR changes the specification at this late date, it will result in market disruption and the potential for stranded investments. Instead, ENERGY STAR should maintain the previously set increase for July 1, 2011.

#### B. Introduction Of A Performance Metric

EPA has recognized that as the ENERGY STAR standards become more stringent, dishwasher cleaning performance could suffer. But, at this time, there is no test procedure that is precise enough to adequately serve as the basis for an ENERGY STAR performance metric, especially as we enter a regime of enhanced verification testing. And, in any case, as stated in the Memorandum of Understanding between EPA and DOE, DOE is the body with the responsibility for developing Federal test procedures and metrics. Accordingly, DOE, which has considerable knowledge and experience with test procedures, is the proper agency to decide whether and how to incorporate performance into the test procedure for residential dishwashers, and EPA should not circumvent DOE's expertise by deciding what test procedure should measure performance.

Should EPA nevertheless move forward with selecting a test procedure for measuring residential dishwasher performance without DOE's assistance, AHAM urges EPA to wait until there is a test procedure robust enough to provide a solid foundation. EPA has stated that its preference is "to cite a test method that will yield accurate, representative, and repeatable results." At this time, though both the AHAM DW-1 standard and IEC 60436, third edition are good test procedures, neither of them have been validated as precise enough to be used to qualify for ENERGY STAR or to be subjected to the rigorous enforcement associated with the enhanced testing and verification program.

Although the necessary revisions that will improve accuracy, representativeness, repeatability, and reproducibility are underway for both the AHAM DW-1 test procedure and the IEC test

procedure, both will take a significant amount of time to be completed. AHAM is working to harmonize with the IEC procedure, where appropriate for the U.S. market, and also to do round robin testing. Those revisions require a large amount of time consuming work, such as the identification of similarities and differences between test procedures, deciding how and where to harmonize with IEC, revising the IEC standard where appropriate to apply to the U.S. market, and testing in a number of laboratories under the revised test procedure. Thus, the AHAM revisions are not likely to be completed for some time. Even were AHAM to put this effort on an incredibly fast-track, it could not be completed in a way that yields accurate, repeatable, reproducible, or enforceable results on the timeline EPA currently proposes. The same is true of the IEC standards revision process which is typically long due to the international consensus and voting processes. Recognizing the importance of incorporating a performance metric as ENERGY STAR eligibility levels continue to increase, however, AHAM commits to having its revisions of AHAM DW-1 complete by 2013, in time for the next change in energy efficiency standards levels, which is also when we would expect ENERGY STAR would review its eligibility levels again as well. And should EPA move forward with an eligibility increase and performance metric now, AHAM will work with EPA on how best to incorporate AHAM DW-1.

In addition, AHAM is currently developing, on a fast-track and in consultation with ENERGY STAR, an energy and water consumption verification program for residential dishwashers. Should ENERGY STAR change the specification to include performance at this time, it could disrupt the work that AHAM is doing to expedite a robust verification program. Accordingly, it is premature to include performance in the specification.

### C. Strengths And Weaknesses Of Proposed Performance Test Procedures

EPA requested comments about the strengths and weaknesses of the test procedures it proposed for measuring cleaning performance.

AHAM believes that the only two potentially viable test procedures for measuring residential dishwasher performance are AHAM DW-1 2009 and IEC 60436, third edition. As discussed above, however, both of these test procedures are undergoing revisions that will make them more suitable for use in the ENERGY STAR eligibility criteria. Should EPA move forward with increasing energy and water levels beyond those set forth in Version 4.1 and including a performance metric, given a choice between AHAM DW-1 and IEC 60436, AHAM would support using AHAM DW-1 for the reasons stated below.

AHAM DW-1 is an excellent test to measure the ability of the dishwasher to remove large amounts of food and to reduce re-deposition of soil. Typically, good performance on the AHAM DW-1 test correlates to customer satisfaction. AHAM DW-1 was developed in a transparent, open, consensus process—input was received not just from industry, but also from detergent manufacturers and other groups. In addition, it is a practical test that allows high output for laboratories, which is important as we enter a world in which substantially more testing is required. Laboratories also have a large experience base for conducting the test, which is helpful in yielding more accurate results. Finally, the 1992 version of the test is currently referenced in the DOE test procedure, though not for purposes of performance. This is a strength because

manufacturers are already required to apply the AHAM DW-1 food load during testing, and thus, using it as the performance test would minimize the test burden.

AHAM DW-1 is not without some weakness though. For example, the food load consists of a large amount of loosely attached food soil which may not be representative of current consumer use, and may result in overrepresented energy measurements. This amount of food load is, however, important to allow comparisons from machine to machine. Although AHAM DW-1 seems to provide good results, it has not undergone a full-scale round robin test, which, in order for it to be the basis of ENERGY STAR qualification and enforcement, must be done. That process could take up to a year. Note that though DOE references AHAM DW-1, it is not used for performance—it is used to identify food loads for testing the turbidity sensor. Thus, full-scale round robin testing was not necessary for DOE to cite the test procedure in its energy efficiency test procedure. As stated above, AHAM is working to improve on all of these areas.

IEC 60436, third edition is a recognized international procedure that has undergone round robin testing, and it may, thus be the more refined test procedure when compared to AHAM DW-1. It also uses a standardized detergent and rinse aid as opposed to requiring a special test market detergent. On the other hand, the dishwasher cycle program structure in the United States does not correspond in all respects with the IEC test procedure, and use of the procedure in the U.S. is not mature (especially as compared to AHAM DW-1). This is a significant weakness, and one of the main reasons AHAM supports use of AHAM DW-1 over IEC 60436 should EPA decide to move forward with a performance metric. To use the IEC test procedure, U.S. labs would be required to purchase new equipment for implementation in 2011: soil drying cabinet, specified reference machine, specified microwave oven, specified dishware, and specified food soils for which substitutions will likely be necessary and will need to be proven to be equivalent. Laboratories would also need heightened environmental controls for ambient conditions (humidity and temperature). Thus, using IEC 60436 within the timeframe proposed by EPA would represent a significant cost to manufacturers and laboratories. Finally, a fourth edition is in process to enhance reproducibility and be more representative of consumer food loads.

The remaining test procedures are too problematic to be considered. NSF International 184 2003 (Issue 8 Revision 1) is a test for sanitization efficacy, not wash performance. The Consumers' Union and Good Housekeeping tests are both proprietary, which means that the public would not have access to them, and manufacturers may not always be aware of the most current version of the tests. Moreover, and most importantly, neither test has been peer reviewed or undergone an open, transparent, consensus standards development process.

#### D. EPA Should Not Consider Allowing Multiple Performance Tests.

EPA asked whether it should consider allowing more than one cleaning performance test, and if so, how could it assure comparable cleaning performance is achieved. EPA should not, under any circumstance, consider allowing multiple cleaning performance tests. The nature of the test procedures, in that they require a lab technician to apply a food load, for example, makes repeatability and reproducibility difficult to achieve. Trying to correlate results between more than one test procedure would be difficult, if not impossible, and would result in substantial administrative burden for EPA and confusion to EPA, manufacturers, and consumers.

Furthermore, EPA should always use a test procedure based on a standard that has been developed in an open and consensus standards development process to ensure its integrity.

E. The Appropriate Metric Is Cleanability.

EPA asked what metric for cleaning performance it should use. Should EPA move forward with selecting a test procedure, cleanability should be the metric. The alternative statistical approach needs to be clarified, choosing between the traditional Analysis of Variance used in the DOE energy test procedure and the IEC test procedure.

F. Test Scores.

EPA asked what cleaning performance score dishwashers should receive to be eligible for ENERGY STAR. EPA also asked whether there is data available that shows that certain test scores accurately predict consumer satisfaction with product cleaning performance.

Any cleaning performance score would need to be established through market research, correlation of existing data, and round robin testing. AHAM may be able to collect data regarding the correlation between scores and consumer satisfaction, though it does not have it available at this time.

G. Tolerances

EPA also asked if there is a certain tolerance it should consider establishing to account for qualitative differences in cleaning performance scoring that impact the final, quantitative score. Round robin testing is the only way to determine a tolerance. If EPA develops a tolerance, it needs to be constrained by a confidence level.

AHAM appreciates the opportunity to submit these comments on ENERGY STAR's proposal regarding Advancing ENERGY STAR Program Requirements Product Specification For Residential Dishwashers, Eligibility Criteria, Draft 1, Version 5.0. We would be glad to discuss this matter further should you request.

Best Regards,

A handwritten signature in cursive script that reads "Jennifer Cleary".

Jennifer Cleary  
Director, Regulatory Affairs

# **ATTACHMENT A**

**Agreement on Minimum Federal Efficiency Standards,  
Smart Appliances, Federal Incentives and  
Related Matters for Specified Appliances**

**July 30, 2010**

**THIS AGREEMENT** memorializes the commitments made by the undersigned representatives of the organizations (the “Joint Stakeholders”) regarding joint recommendations for new energy and water conservation standards, test procedures, tax incentives and Energy Star criteria for specified major home appliances. The Joint Stakeholders will jointly submit to the United States Congress and the Administration (including, but not limited to the Department of Energy (DOE) and the Environmental Protection Agency (EPA)) this Agreement and the specific recommendations herein in such form as will facilitate their adoption. The Joint Stakeholders agree to pursue a multi-pronged approach designed to achieve Congressional and regulatory implementation of all the elements contained in the agreement. Any changes to this agreement must be mutually agreed to by the joint Stakeholders.

1. The Joint Stakeholders will jointly submit to Congress and, in good faith, proactively seek enactment of the energy and water conservation standards contained in Attachment I. The Joint Stakeholders will submit to Congress recommended amendments to the Energy Policy and Conservation Act enacting these standards (Attachment II). These amendments include revised standards for refrigerator/freezers, clothes washers, clothes dryers, room air conditioners and dishwashers.
2. Not later than August 1, 2010, the Joint Stakeholders shall submit this agreement to DOE. The Joint Stakeholders shall jointly propose that DOE issue final rules adopting each of the energy conservation standards contained in Attachment I and the amendments presented to Congress and will proactively advocate for DOE adoption of these standards. The Joint Stakeholders agree that the recommended standards address all of the statutory criteria that the Department is required to take into account in promulgating new energy and water conservation standards for the affected products with respect to the specified efficiency criteria.
3. For refrigerators/freezers, clothes washers, room air conditioners and clothes dryers, the Joint Stakeholders shall submit comments to each product’s DOE docket supporting the recommendations. For refrigerator/freezers, such comment shall be filed not later than August 10, 2010; for clothes dryers and room air conditioners, not later than September 10, 2010 and for clothes washers not later than October 31, 2010. In the case of dishwashers (for which no rulemaking is currently underway) not later than September 15, 2010, the Joint Stakeholders shall petition DOE to initiate a rulemaking and to publish a final rule by September 2011.
4. The Joint Stakeholders have made no agreement concerning the appropriate levels for standby or off mode energy consumption and agree that stakeholders will comment to

DOE as they view appropriate during DOE's rulemaking process for each of the affected products, as applicable.

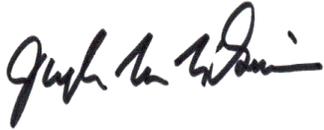
5. The Joint Stakeholders agree that pending amendments to test procedures for the affected products should be completed by DOE, subject to input from all stakeholders and agree to recommend that DOE translate the standards contained in this agreement to equivalent levels specified under revised test procedures.
6. The Joint Stakeholders agree to jointly petition DOE to initiate a rulemaking by January 1, 2012 to be completed by December 31, 2012 to revise the test procedure for refrigerators/freezers to incorporate measured ice maker energy use. The Joint Stakeholders will make good faith efforts to work collaboratively through AHAM's HRF-1 task force to arrive at a joint test procedure recommendation. AHAM will invite the non-manufacturer signers to this agreement to designate a participant for the task force only for the development of this initial test procedure for refrigerators/freezers to incorporate measured ice maker energy use. As part of the petition to be filed, the Joint Stakeholders further agree to petition DOE for rulemaking to incorporate measured ice maker energy use into an amended refrigerator standard to be completed within six months of a revised test procedure incorporating measured ice maker energy use based on the procedure recommended by AHAM's HRF-1 task force and to recommend that this amended standard take effect three years after a final rule is published. This commitment to petition for rulemaking and standards revisions applies whether a specific consensus test procedure is developed by AHAM's HRF-1 task force or not.
7. The Joint Stakeholders agree to submit the letters and attachments recommending certain modifications to the test procedures for refrigerator/freezers, clothes washers and clothes dryers contained in Attachment III, IV and V not later than August 1, 2010. The Joint Stakeholders agree that each party may advocate for any other modifications to the test procedures, provided such modification is not in direct contradiction to the attached recommendations.
8. The Joint Stakeholders will jointly submit to Congress recommendations for extending the existing federal manufacturer tax credits for specified appliances as described in Attachment VI.
9. The Joint Stakeholders will in good faith jointly develop and proactively support the adoption of federal tax credits or other incentives for widespread deployment and effective integration of smart-grid enabled versions of appliances subject to this agreement across the United States.
10. The Joint Stakeholders will jointly petition EPA and DOE no later than September 30, 2010 to provide a 5% credit to the energy performance level required to meet ENERGY STAR eligibility criteria for smart-grid enabled appliances that are subject to this agreement.

11. Any filings, proposals or responses to DOE notices shall be consistent with this Agreement and the parties shall file rulemaking petitions, file comments or take other actions with respect to DOE or other regulatory agencies consistent with this Agreement.
12. The Joint Stakeholders agree to cooperate with each other in the preparation of press releases and public statements in support of this Agreement.
13. The Joint Stakeholders agree to support and cooperate with each other to obtain passage of the legislation described in the Agreement, including advocacy in Congress and to the Administration. The Joint Stakeholders agree to develop and jointly recommend legislative history concerning the recommended amendments.
14. The Joint Stakeholders agree to consult with and obtain consent from all parties before supporting, advocating or agreeing to changes in the legislation. Such consent will not unreasonably be withheld.
15. The Joint Stakeholders agree not to attempt to overturn or revise, or to file or support any legal or legislative challenge to, the recommendations once adopted, whether by Act of Congress or by rule. The Stakeholders agree to support DOE in a manner as each one deems to be reasonable and appropriate in defending any legal, legislative, or administrative challenge to a final rule that adopts the proposed standards. This provision will still apply if DOE, on its own volition, adopts a rule that includes minor deviations from Attachment I. The Joint Stakeholders agree to consult with respect to their responses to any deviation from the recommendations and to make good faith efforts to respond jointly.
16. The Joint Stakeholders agree to implement the commitments made in this Agreement individually or in groups. Each Joint Stakeholder will respond in good faith to reasonable requests by other Joint Stakeholders for joint implementation of any of these commitments.
17. Any additional mutually agreed to changes to this agreement will be provided to Congress and the Administration as necessitated.
18. Nothing in this Agreement is intended to inhibit in any way efforts by individual stakeholders to research, develop, or market products to standards that differ from those contemplated by this Agreement, provided such products are in compliance with applicable laws and regulations.
19. Nothing in this Agreement is intended to direct any technical or product design approach to achieving efficiency standards and the parties shall not take any act to establish any such common approach.
20. This Agreement is hereby agreed to, in counterparts, by the undersigned Joint Stakeholders. This Agreement binds the undersigned Joint Stakeholders, their

employees, their agents, and any successors and will take effect when all signatures are affixed. This agreement applies until December 31, 2012, except clause 15 which applies until December 31, 2013.

Joint Stakeholders

Manufacturers



Joseph McGuire  
President  
Association of Home Appliance  
Manufacturers

Advocates



Steven Nadel  
Executive Director  
American Council for an Energy  
Efficient Economy

*On Behalf of –*

*Members of Major Appliance Division:*

*Whirlpool  
General Electric  
Electrolux  
LG Electronics  
BSH  
Alliance Laundry  
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  
DeLonghi*

*Appliance Standards Awareness Project  
Natural Resources Defense Council  
Alliance to Save Energy  
Alliance for Water Efficiency  
Northwest Power and Conservation Council  
Northeast Energy Efficiency Partnerships  
Consumer Federation of America  
National Consumer Law Center*

Attachments

- (I) Recommended energy and water conservation standards
- (II) Recommended legislative amendments
- (III) Recommendations concerning refrigerator test procedures
- (IV) Recommendations concerning clothes washer test procedures
- (V) Recommendations concerning clothes dryer test procedures
- (VI) Recommended legislative amendment for tax incentives

**AHAM-ACEEE Multi-Product Standards Agreement**

**Attachment I**

**AHAM-ACEEE Multi-Product Standards Agreement  
Refrigerator/Freezer**

Product Class	Product Description	January 1, 2014		
		Change in Standard	Revised Standard Equation	
			Slope	Intercept
<b>Standard size</b>				
<b>Automatic Defrost Refrigerator-Freezers</b>				
3	Top Freezer w/o TTD ice	25%	7.35	207.0
6	Top Freezer w/ TTD ice	25%	7.65	267.0
4	Side Freezer w/o TTD ice	25%	3.68	380.6
7	Side Freezer w/ TTD ice	25%	7.58	304.5
5	Bottom Freezer w/o TTD ice	20%	3.68	367.2
5a/19	Bottom Freezer w/ TTD ice	20%	4.00	431.2
<b>Manual &amp; Partial Automatic Refrigerator-Freezers</b>				
1	Manual Defrost	20%	7.06	198.7
2	Partial Automatic	20%	7.06	198.7
<b>All Refrigerators</b>				
1a	Manual Defrost	20%	7.06	198.7
3a	Automatic Defrost	25%	7.35	207.0
<b>All Freezers</b>				
8	Upright with manual defrost	25%	5.66	193.7
9	Upright with automatic defrost	30%	8.70	228.3
10	Chest with manual defrost	25%	7.41	107.8
10a/20	Chest with automatic defrost	30%	10.33	148.1
<b>Compact Size</b>				
<b>Automatic Defrost Refrigerator-Freezers</b>				
13/15	Top Freezer and Bottom Freezer	15%	10.80	301.8
14	Side Freezer	20%	6.08	400.8
<b>Manual &amp; Partial Automatic Refrigerator-Freezers</b>				
11	Manual Defrost	25%	8.03	224.3
12	Partial Automatic	25%	5.25	298.5
<b>All Refrigerators</b>				
11a	Manual defrost	25%	8.03	224.3
13a	Automatic defrost	25%	9.53	266.3
<b>All Freezers</b>				
16	Upright with manual defrost	10%	8.80	225.7
17	Upright with automatic defrost	10%	10.26	351.9
18	Chest	10%	9.41	136.8
<b>Built-ins</b>				
<b>Automatic Defrost Refrigerator-Freezers</b>				
3B	Top Freezer w/o TTD ice	20%	7.84	220.8
4B	Side Freezer w/o TTD ice	20%	3.93	406.0
7B	Side Freezer w/ TTD ice	20%	8.08	324.8
5B	Bottom Freezer w/o TTD ice	15%	3.91	390.2
5aB	Bottom Freezer w// TTD ice	15%	4.25	458.2
<b>All Refrigerators</b>				
3aB	Automatic Defrost	20%	7.84	220.8
<b>All Freezers</b>				
9B	Upright with automatic defrost	25%	9.32	244.6

**AHAM-ACEEE Multi-Product Standards Agreement  
Clothes Washers**

<b>Product Description</b>	<b>Product Class</b>	<b>New Standard Jan. 1, 2015 (MEF/WF)</b>	<b>New Standard Jan. 1, 2018 (MEF/WF)</b>
Top-Loading, Compact (less than 1.6 cubic feet capacity)	1	1.26/14.0	1.81/11.6
Top-Loading, Standard	2	1.72/8.0	2.0/6.0
Front-Loading, Standard	4	2.2/4.5	
Front-Loading, Compact (less than 1.6 cubic feet capacity)	6	1.72/8.0	

**AHAM-ACEEE Multi-Product Standards Agreement  
Dryers**

<b>Product Description</b>	<b>Product Class</b>	<b>January 1, 2015</b>	
		<b>Change in Standard</b>	<b>New Standard (EF)</b>
Vented Electric Standard	1	5%	3.17
Vented Electric Compact 120V	2	5%	3.29
Vented Electric Compact 240V	3	5%	3.05
Vented Gas	4	5%	2.81
Vent-less Electric Compact 240V	5	new	2.37
Vent-less Electric Combination Washer/Dryer	6	new	1.95

**AHAM-ACEEE Multi-Product Standards Agreement  
Room Air Conditioners**

Product Class	Product Description	June 1, 2014	
		Change in Standard	New Standard (EER)
<b><i>Without Reverse Cycle w/Louvers</i></b>			
1	<6,000	15%	11.2
2	6,000 to 7,999	15%	11.2
3	8,000-13,999	12%	11.0
4	14,000 to 19,999	11%	10.8
5	20,000-27,999	11%	9.4
5a	≥28,000	6%	9.0
<b><i>Without Reverse Cycle w/o Louvers</i></b>			
6	< 6,000	13%	10.2
7	6,000 to 7,999	13%	10.2
8	8,000-10,999	14%	9.7
8a	11,000-13,999	13%	9.6
9	14,000-19,999	11%	9.4
10	≥20,000	11%	9.4
<b><i>With Reverse Cycle</i></b>			
11	< 20,000 w/Louvers	10%	9.9
12	≥ 20,000 w/Louvers	11%	9.4
13	< 14,000 w/o Louvers	11%	9.4
14	≥ 14,000 w/o Louvers	10%	8.8
<b>Casement</b>			
15	Casement Only	10%	9.6
16	Casement-Slider	11%	10.5

**AHAM-ACEEE Multi-Product Standards Agreement**  
**Dishwashers**

<b>Product Description</b>	<b>New Standard Jan. 1, 2013</b>
Standard ( $\geq$ 8 place settings plus 6 serving pieces)	307 kWh/year & 5.0 gallons/cycle
Compact ( $<$ 8 place settings plus 6 serving pieces)	222 kWh/year & 3.5 gallons/cycle

**AHAM-ACEEE Agreement**  
**Attachment II**

AHAM Products Statutory Provisions  
Resulting from Negotiation  
(to be inserted into Energy bill)

Section \_\_\_\_\_

Measuring Icemaker Energy

Section 323(b) of the Energy Policy and Conservation Act (42 U.S.C. 6293) is amended by adding after the end of paragraph (23) the following:

“(24) Refrigerator/Freezer Test Procedure.—

(A) By January 1, 2011, the Secretary shall finalize the test procedure proposed on May 27, 2010 with such modifications as the Secretary deems appropriate consistent with this Part.

(B) The Secretary shall initiate a rulemaking no later than January 1, 2012 to amend the test procedure only to incorporate measured automatic icemaker energy use and shall publish a final rule by December 31, 2012.

(25) Additional home appliance test procedures. --

(A) By October 1, 2011, the Secretary shall publish a final rule amending the residential clothes washer test procedure.

(B) By April 1, 2011, the Secretary shall finalize the test procedure for clothes dryers proposed on June 29, 2010 with such modifications as the Secretary deems appropriate consistent with this Part.

(C) By April 1, 2011, the Secretary shall finalize the test procedure for room air conditioners proposed on June 29, 2010 with such modifications as the Secretary deems appropriate consistent with this Part.

Section \_\_\_\_\_

Refrigerator/Freezer Standards

Section 6295(b) of the Energy Policy and Conservation Act (42 U.S.C. 6295) is amended by striking subsection (b)(4) and inserting the following:

“(4) Refrigerators, refrigerator-freezers and freezers manufactured on or after January 1, 2014.

(A)(i) In General – Based on the test procedure in effect on July 9, 2010, the following is the maximum energy use allowed in kilowatt hours per year for the following products (other than refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 cubic feet

and freezers with total refrigerated volume exceeding 30 cubic feet) manufactured on or after January 1, 2014:

<b>Refrigerator/Freezer Standards Equation</b>	
<b>Product Description</b>	
<b>Automatic Defrost Refrigerator-Freezers</b>	<b>Revised Standard Effective January 1, 2014</b>
Top Freezer w/o TTD ice	7.35 AV+ 207.0
Top Freezer w/ TTD ice	7.65 AV+ 267.0
Side Freezer w/o TTD ice	3.68 AV+ 380.6
Side Freezer w/ TTD ice	7.58 AV+304.5
Bottom Freezer w/o TTD ice	3.68 AV+ 367.2
Bottom Freezer w/ TTD ice	4.0 AV+ 431.2
<b>Manual &amp; Partial Automatic Refrigerator-Freezers</b>	
Manual Defrost	7.06 AV+ 198.7
Partial Automatic	7.06 AV+198.7
<b>All Refrigerators</b>	
Manual Defrost	7.06AV+198.7
Automatic Defrost	7.35 AV+ 207.0
<b>All Freezers</b>	
Upright with manual defrost	5.66 AV+ 193.7
Upright with automatic defrost	8.70 AV+ 228.3
Chest with manual defrost	7.41 AV+ 107.8
Chest with automatic defrost	10.33 AV+ 148.1
<b>Compact Size</b>	
<b>Automatic Defrost Refrigerator-Freezers</b>	
Top Freezer and Bottom Freezer	10.80 AV+ 301.8
Side Freezer	6.08 AV+ 400.8
<b>Manual &amp; Partial Automatic Refrigerator-Freezers</b>	
Manual Defrost	8.03 AV+ 224.3
Partial Automatic	5.25 AV+ 298.5
<b>All Refrigerators</b>	
Manual defrost	8.03 AV+ 224.3
Automatic defrost	9.53 AV+ 266.3
<b>All Freezers</b>	
Upright with manual defrost	8.80 AV+ 225.7
Upright with automatic defrost	10.26 AV+ 351.9
Chest	9.41AV+ 136.8
<b>Built-ins</b>	
<b>Automatic Defrost Refrigerator-Freezers</b>	
Top Freezer w/o TTD ice	7.84 AV+ 220.8
Side Freezer w/o TTD ice	3.93 AV+ 406.0
Side Freezer w/ TTD ice	8.08 AV+ 324.8
Bottom Freezer w/o TTD ice	3.91 AV+ 390.2
Bottom Freezer w// TTD ice	4.25 AV+ 458.2
<b>All Refrigerators</b>	
Automatic Defrost	7.84 AV+ 220.8
<b>All Freezers</b>	
Upright with automatic defrost	9.32 AV+ 244.6

(ii) After publication of each test procedure change pursuant to Section 323(b)(24), the Secretary shall publish final rules amending the standards contained in clause (i) according to the procedures in section 323(e)(2), except that the standards amendment pursuant to the test procedure change required by 323(b)(24)(B) shall be based on the difference between the average measured automatic ice maker energy use of a representative sample for each product class and the value assumed by DOE for ice maker energy use in the test procedure published pursuant to Section 323(b)(24)(A). Section 323(e)(3) shall not apply.

(iii) The Secretary shall publish any final rule required by clause (ii) within six months of enactment of this paragraph or within six months of publication of a final rule amending the test procedure, whichever is later.

(iv) The Secretary may establish new product classes as part of the final amended standard adopted pursuant to the test procedure change required by 323(b)(24)(B) if needed to distinguish among products with automatic icemakers.

(v) An amendment adopted pursuant to a test procedure change required by 323(b)(24)(A) shall apply to products manufactured on or after January 1, 2014. An amendment adopted pursuant to a test procedure change required by 323(b)(24)(B) shall apply to products manufactured on or after a date three years from publication of the final rule amending the standards.

(vi) For refrigerators, freezers and refrigerator-freezers, the Secretary may adjust in a rulemaking the slope and intercept of the equation in clause (i), based on the energy use of typical products of various sizes in a product class, provided that the average energy use for each of these classes is the same under the new equations as under the equations in clause (i). Any final rule with such revisions shall be published no later than July 1, 2011.

(vii) A final rule published under clause (ii) pursuant to the test procedure change required by 323(b)(24)(B) or pursuant to clause (iv) shall not be considered an amendment to the standard for purposes of Section 325(m).

(B) Definition of 'Built-in' product class – refrigerators, freezers and refrigerators with freezer units that are 7.75 cubic feet or greater in total volume and 24 inches or less cabinet depth not including doors, handles and custom front panels; are designed to be totally encased by cabinetry or panels attached during installation; are designed to accept a custom front panel or equipped with an integral factory-finished face; are designed to be securely fastened to adjacent cabinetry, walls or floor; and have sides which are not fully finished and are not intended to be visible after installation.

Section \_\_\_\_\_

Standards for Clothes Washers

Section 325(g) of the Energy Policy and Conservation Act, (42 U.S.C. 6295(g)) is amended by striking subsection (g)(9)(B) and inserting the following:

(B)(i) Amendment of Standards.

Based on the test procedure in effect on July 9, 2010, clothes washers manufactured on or after January 1, 2015 shall comply with the following minimum modified energy factors (MEF) and maximum water factors (WF):

	For Products Manufactured on and after January 1, 2015	
	MEF	WF
Top Loading-Standard	1.72	8.0
Top Loading – Compact	1.26	14.0
Front Loading-Standard	2.2	4.5
Front Loading-Compact (less than 1.6 cu. ft. capacity)	1.72	8.0

(ii) Based on the test procedure in effect on July 9, 2010, clothes washers manufactured on or after January 1, 2018 shall comply with the following minimum modified energy factors (MEF) and maximum water factors (WF):

	For Products Manufactured on and after January 1, 2018	
	MEF	WF
Top Loading -- Standard	2.0	6.0
Top Loading – Compact	1.81	11.6

(iii) The final rule amending the clothes washer test procedure adopted pursuant to Section 323(b)(25)(A) shall also amend the standards contained in clauses (i) and (ii) according to the procedures in section 323(e)(2). Section 323(e)(3) shall not apply to these amended standards. Amended standards based on clause (i) shall apply to products manufactured on or after January 1, 2015 and amended standards based on clause (ii) shall apply to products manufactured on or after January 1, 2018.

(iv) The Secretary shall integrate standby and off mode energy consumption into the amended MEF standards required pursuant to clause (iii). These amended MEF standards shall reflect levels of standby and off mode energy consumption that meet the criteria under section 325(o).

Section \_\_\_\_\_ Clothes Dryers

Section 325(g) of the Energy Policy and Conservation Act, (42 U.S.C. 6295(g)) is amended by adding a subsection (g)(4)(D) as follows:

“(D)(i) Based on the test procedure in effect on July 9, 2010 as applicable, clothes dryers manufactured on and after January 1, 2015 shall meet the following minimum energy factors (EF):

Product Description	New Standard (EF)
Vented Electric Standard	3.17
Vented Electric Compact 120V	3.29
Vented Electric Compact 240V	3.05
Vented Gas	2.81
Vent-Less Electric Compact 240V	2.37
Vent-Less Electric Combination Washer/Dryer	1.95

(ii) The final rule amending the clothes dryer test procedure adopted pursuant to Section 323(b)(25)(B) shall also amend the standards contained in clause (i) according to the procedures in section 323(e)(2), except that for the purposes of establishing a representative sample of products, DOE shall choose a sample of minimally compliant dryers which automatically terminate the drying cycle at no less than 4% remaining moisture content. Section 323(e)(3) shall not apply to these amended standards. The amended standards shall apply to products manufactured on or after January 1, 2015.

(iii) The Secretary shall integrate standby and off mode energy consumption into the amended EF standards required pursuant to clause (ii). These amended EF standards shall reflect levels of standby and off mode energy consumption that meet the criteria under section 325(o).

Section \_\_\_\_\_

Room Air Conditioner Standards - Section 325(c) of the Energy Policy and Conservation Act, (42 U.S.C. 6295(c)) is amended by adding subsection (c)(3) as follows:

“(3) (A)(i) Based on the test procedure in effect on July 9, 2010 as applicable, the minimum energy efficiency ratio of room air conditioners manufactured on and after June 1, 2014 shall be as follows:

Product Description	PROPOSAL (June 1, 2014) New Standard EER
<b>Without Reverse Cycle w/Louvers</b>	
<6,000	11.2
6,000 to 7,999	11.2
8,000-13,999	11.0
14,000 to 19,999	10.8
20,000-27,999	9.4
≥28,000	9.0
<b>Without Reverse Cycle w/o Louvers</b>	
<6,000	10.2
6,000 to 7,999	10.2
8,000-10,999	9.7
11,000-13,999	9.6
14,000 to 19,999	9.4
≥20,000	9.4
<b>With Reverse Cycle</b>	
<20,000 w/Louvers	9.9
≥ 20,000 w/Louvers	9.4
<14,000 w/o Louvers	9.4
≥ 14,000 w/o Louvers	8.8

<b>Casement</b>	
Casement Only	9.6
Casement-Slider	10.5

(ii) The final rule amending the room air conditioner test procedure adopted pursuant to Section 323(b)(25)(C) shall also amend the standards contained in clause (i) according to the procedures in section 323(e)(2). Section 323(e)(3) shall not apply to these amended standards. The amended standards shall apply to products manufactured on or after June 1, 2014.

(iii) The Secretary shall integrate standby and off mode energy consumption into the amended EER standards required pursuant to clause (ii). These amended EER standards shall reflect levels of standby and off mode energy consumption that meet the criteria under section 325(o).

#### Section\_ Dishwashers

Section 325(g)(10) of The Energy Policy and Conservation Act (42 U.S.C. 6295(g)(10)) is amended by striking subparagraph (A), by redesignating subparagraph (B) as subparagraph (D), and by inserting the following before redesignated subparagraph (D):

(A) A dishwasher manufactured on or after January 1, 2010 shall—  
 (i) for a standard size dishwasher not exceed 355 kWh/year and 6.5 gallons per cycle; and  
 (ii) for a compact size dishwasher not exceed 260 kWh/year and 4.5 gallons per cycle.

(B) a dishwasher manufactured on or after January 1, 2013 shall—  
 (i) for a standard size dishwasher not exceed 307 kwh/year and 5.0 gallons per cycle; and  
 (ii) for a compact size dishwasher not exceed 222 kwh/year and 3.5 gallons per cycle.

(C) Any final rule amending the dishwasher test procedure after July 9, 2010, and before January 1, 2013 shall also amend the standards contained in subparagraph (B) according to the procedures in section 323(e)(2). Section 323(e)(3) shall not apply to these amended standards. The amended standards shall apply to products manufactured on and after January 1, 2013.

#### Section\_\_. Energy Star

Section 324a of the Energy Policy and Conservation Act (42 USC 6294a) is amended by adding a new subsection \_ as follows:

“ ( ) Credit for Smart Appliances

Not later than 180 days after enactment, the Administrator and the Secretary shall determine whether to update the Energy Star criteria for residential refrigerators/freezers, dishwashers, clothes washers, clothes dryers, and room air conditioners in order to incorporate smart grid and demand response features, after soliciting comments under paragraph (c)(5)." [of EPCA 324A]



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July 20, 2010

The Honorable Catherine R. Zoi  
Assistant Secretary  
Office of Energy Efficiency and Renewable Energy  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585

Dear Assistant Secretary Zoi:

The Association of Home Appliance Manufacturers (AHAM) and efficiency organizations, which are being coordinated by the American Council for an Energy-Efficient Economy (ACEEE), have agreed to a set of recommendations that should be addressed as the Department of Energy modifies the test procedure for refrigerator/freezers.

Please find these recommendations attached, and we look forward to working with your office as the test procedure rulemaking progresses.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kevin Messner".

Kevin Messner  
Vice President, Government Relations  
AHAM

A handwritten signature in blue ink, appearing to read "Steven M. Nadel".

Steven Nadel  
Executive Director  
ACEEE

cc: Kathleen Hogan, Deputy Assistant Secretary for Energy Efficiency  
Roland Risser, Program Manager for Building Technologies

## Refrigerator/Freezer Test Procedure Changes

### Recommendations

1. We are committed to working with DOE to develop a test procedure for icemaker energy use.
2. DOE should include a placeholder value for icemaker energy use as proposed (75 FR 29847) until a test procedure for icemaker energy use is established, but this placeholder should only be an interim step.
3. DOE should initiate a rulemaking no later than January 1, 2012 (and preferably earlier) to amend the test procedures to incorporate measured icemaker energy use. DOE should publish a final rule for amended test procedures by December 31, 2012 (and preferably earlier). By July 1, 2013, DOE should publish a final rule amending energy conservation standards to adjust the standard levels for any difference between the placeholder value as proposed (75 FR 29847) and the average energy use of a representative sample of icemakers by product class as measured under the amended test procedure and in accordance with the new compartment temperatures that will become effective on January 1, 2014. The effective date of the amended standards would be three years after publication of the final rule. (Note: We have also included this recommendation in proposed legislative language.)
4. As part of the icemaker test procedure development, DOE should collect field data on energy use and ice production for different types of icemakers (e.g., automatic and manual), assuring a nationally representative sampling.
5. DOE should join, and fund NIST's participation in, the task force set up by AHAM and other interested parties to incorporate automatic icemaker energy use into the refrigerator/freezer test procedure.



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U.S. Department of Energy  
1000 Independence Avenue, SW  
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Dear Assistant Secretary Zoi:

The Association of Home Appliance Manufacturers (AHAM) and efficiency organizations, which are being coordinated by the American Council for an Energy-Efficient Economy (ACEEE), have agreed to a set of recommendations that should be addressed as the Department of Energy modifies the test procedure for clothes washers.

Please find these recommendations attached, and we look forward to working with your office as the test procedure rulemaking progresses.

Sincerely,

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Kevin Messner  
Vice President, Government Relations  
AHAM

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Steven Nadel  
Executive Director  
ACEEE

cc: Kathleen Hogan, Deputy Assistant Secretary for Energy Efficiency  
Roland Risser, Program Manager for Building Technologies

## Clothes Washer Test Procedure Changes

### Principles

Before finalizing a revised test procedure for residential clothes washers, the Department should:

- Gather or develop information on contemporary laundry practices in the US, including temperature settings, average cycles per year, special purpose machine cycles\*, the size of a minimum laundry load, the size of an average load, and the frequency distribution of various laundry loads (load adjustment factor) for incorporation into the test procedure.
- Ensure that the test procedure does not contain any unwarranted bias in favor of large capacity washers.
- Extend Table 5.1 (Test Load Sizes) to a basket size of 6.0 ft<sup>3</sup> (specific edits will be provided).
- Incorporate AHAM test cloth changes to improve the reproducibility (specific edits will be provided).

All of the above mentioned items shall be developed through DOE's current residential clothes washer test procedure rulemaking, to be completed by October 1, 2011, and applicable to the 2015 standard.

\*Special purpose machine cycles include so-called "steam" cycles and periodic manufacturer-recommended non-laundry cycles for cleaning or deodorizing the laundry drum.



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July 20, 2010

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U.S. Department of Energy  
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Dear Assistant Secretary Zoi:

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Please find these recommendations attached, and we look forward to working with your office as the test procedure rulemaking progresses.

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Steven Nadel  
Executive Director  
ACEEE

cc: Kathleen Hogan, Deputy Assistant Secretary for Energy Efficiency  
Roland Risser, Program Manager for Building Technologies

## Clothes Dryer Test Procedure Changes Recommendations

1. DOE should update the initial RMC, from the current assumption of 70%, based on the best available data (ideally based on a nationally representative sample).
2. DOE should update the number of dryer cycles/year, from the current assumption of 416 cycles/year, based on the best available data (ideally based on a nationally representative sample).
3. DOE should update the size of the dryer test load, from the current test load of 7 lbs, based on best available data (ideally based on a nationally representative sample).
4. DOE should modify the test procedure to address the effectiveness of automatic termination controls (e.g. moisture sensor and temperature sensor controls).
5. DOE should create a ventless dryer (including ventless combination washer/dryer) test procedure to inform a baseline energy consumption level for this new product category.
6. Revise Section 1.11 of 10 CFR 430 Subpart B, Appendix D to more clearly account for electronic controls. “. . . mark, **visual indicator** or detent which indicates a preferred...”
7. Correct Section 3.1 of 10 CFR 430 Subpart B, Appendix D to “. . . prevent deflection of the ~~dryer drum surface~~ . . .”

Schedule: All of the above-mentioned items shall be developed through DOE's current clothes dryers test procedure rulemaking, to be completed by April 1, 2011, and applicable to the 2015 standard.

**AHAM-ACEEE Agreement**  
**Attachment VI**

H.R. xxxx

A bill to modify and extend the tax credit applicable to energy efficient appliances and other matters

Sec. 1. Modify and extend the energy efficient appliance credit.

(a) Modification and extension of rules applicable to dishwashers.-- Paragraph (b)(1) of section 45M is amended by striking “and” at the end of subparagraph (A); by striking “.” and inserting “;” in subparagraph (B); and adding the following subparagraphs:

“(C) \$25 in the case of a dishwasher which is manufactured in calendar year 2011 and which uses no more than 307 kilowatt hours per year and 5.0 gallons per cycle (5.5 gallons per cycle for dishwashers designed for greater than 12 place settings),

“(D) \$50 in the case of a dishwasher which is manufactured in calendar year 2011, 2012, or 2013 and which uses no more than 295 kilowatt hours per year and 4.25 gallons per cycle (4.75 gallons per cycle for dishwashers designed for greater than 12 place settings), and

“(E) \$75 in the case of a dishwasher which is manufactured in calendar year 2011, 2012, or 2013 and which uses no more than 280 kilowatt hours per year and 4.0 gallons per cycle (4.5 gallons per cycle for dishwashers designed for greater than 12 place settings).”

(b) Modification and extension of rules applicable to clothes washers.--Paragraph (b)(2) of section 45M is amended striking “and” at the end of subparagraph (C); by striking “.” and inserting “;” in subparagraph (D); and by adding the following subparagraphs:

“(E) \$175 in the case of a top-loading clothes washer manufactured in calendar year 2011 and which meets or exceeds a 2.2 modified energy factor and does not exceed a 4.5 water consumption factor,

“(F) \$200 in the case of a top-loading clothes washer manufactured in calendar year 2011, 2012, or 2013 and which meets or exceeds a 2.4 modified energy factor and does not exceed a 4.2 water consumption factor, and

“(G) \$250 in the case of a residential or commercial clothes washer manufactured in calendar year 2011, 2012, or 2013 which meets or exceeds a 2.8 modified energy factor and does not exceed a 3.5 water consumption factor.”

(c) Modification and extension of rules applicable to refrigerators.--Paragraph (b)(3) of section 45M is amended by striking “and” at the end of subparagraph (C); by striking “.” and inserting “;” in subparagraph (D); and by adding the following subparagraphs:

“(E) \$150 in the case of a refrigerator manufactured in calendar year 2011, 2012, or 2013 and which consumes at least 30 percent less energy than the 2001 energy conservation standards, and

“(F) \$200 in the case of a refrigerator manufactured in calendar year 2011, 2012, or 2013 and which consumes at least 35 percent less energy than the 2001 energy conservation standards.”

(d) Modification of rules to include freezers.

(1) In general.--Subsection (b) of section 45M is amended by adding the following paragraph:

“(4) Freezers. The applicable amount is--

“(A)(i) \$150 in the case of an automatic defrost freezer manufactured in calendar year 2011 or 2012 (other than a freezer described in subparagraph (B)) and which consumes at least 30 percent less energy than the 2001 energy conservation standards,

(ii) \$150 in the case of a manual defrost freezer manufactured in calendar year 2011 or 2012 (other than a freezer described in subparagraph (B)) and which consumes at least 25 percent less energy than the 2001 energy conservation standards, and

“(B)(i) \$200 in the case of an automatic defrost freezer manufactured in calendar year 2011, 2012, or 2013 and which consumes at least 40 percent less energy than the 2001 energy conservation standards.

(ii) \$200 in the case of a manual defrost freezer manufactured in calendar year 2011, 2012, or 2013 and which consumes at least 35 percent less energy than the 2001 energy conservation standards”

(2) Definition.-- Subsection (f) of section 45M is amended by adding the following paragraphs:

“(11) Freezer. The term “freezer” means a residential model freezer which has an internal volume of at least 16.5 cubic feet.”

(e) Aggregate credit amount allowed.

(1) In general.-- Paragraph (e)(1) of section 45M is amended by striking “\$75,000,000” and inserting “\$100,000,000” and by adding “For the period of all prior taxable years beginning after December 31, 2007 and ending before January

1, 2011, the preceding sentence shall be applied by substituting ‘\$75,000,000’ for ‘\$100,000,000’.”

(2) Exclusion of certain appliances.--Paragraph (e)(2) of section 45M is amended to read as follows:

“(2) Amount allowed for certain refrigerators and clothes washers. Refrigerators described in subsection (b)(3)(D) and clothes washers described in subsection (b)(2)(D) shall not be taken into account with respect to the \$75,000,000 limitation described in paragraph (1). Dishwashers described in subsection (b)(1)(E), clothes washers described in subsection (b)(2)(F) and (b)(2)(G), refrigerators described in subsection (b)(3)(F), and freezers described in subsection (b)(4)(B), shall not be taken into account with respect to the \$100,000,000 limitation described in paragraph (1).”

(3) Gross receipts limitation.—Paragraph (e)(3) of section 45M is amended by adding at the end the following sentence: “For taxable years beginning after December 31, 2010, the preceding sentence shall be applied by substituting ‘4 percent’ for ‘2 percent’.”

Sec. 2. Direct payment of energy efficient appliances tax credit.--In the case of any taxable year which includes the last day of calendar year 2011 or calendar year 2012, a taxpayer who elects to waive the credit which would otherwise be determined with respect to the taxpayer under section 45M of the Internal Revenue Code of 1986 for such taxable year shall be treated as making a payment against the tax imposed under subtitle A of such Code for such taxable year in an amount equal to 85 percent of the amount of the credit which would otherwise be so determined. Such payment shall be treated as made on the later of the due date of the return of such tax or the date on which such return is filed. Elections under this section may be made separately for 2011 and 2012, but once made shall be irrevocable. No amount shall be includible in gross income or alternative minimum taxable income by reason of this section.

Sec. 3. Effective date.--The provisions of this section shall apply to qualified energy efficient appliances produced after December 31, 2010.