Natural Resources Defense Council
American Council for an Energy-Efficient Economy
Appliance Standards Awareness Project

September 8, 2011

Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
1000 Independence Avenue, SW
Mailstop EE-2J
Washington, DC 20585

RE: Docket Number EERE-2010-BT-TP-0021 / RIN 1904-AC08: Test Procedure for Residential Clothes Washers

Dear Ms. Edwards,

This letter constitutes the comments of the Natural Resources Defense Council (NRDC), American Council for an Energy-Efficient Economy (ACEEE), and Appliance Standards Awareness Project (ASAP) in response to the Department of Energy (DOE) request for comments on the supplemental notice of proposed rulemaking (SNOPR) for residential clothes washer test procedures. 76 Fed. Reg. 49238. We appreciate the opportunity to provide input into this important process once again.

In July 2010, our organizations were parties to a major agreement with the Association of Home Appliance Manufacturers (AHAM) regarding, among other matters, joint recommendations on revised test procedures and efficiency standards for residential clothes washers. One element of this agreement is a letter from AHAM and ACEEE dated July 20, 2010 (attached). The letter states –

> Before finalizing a revised test procedure for residential clothes washers, the Department should . . . ensure that the test procedure does not contain any unwarranted bias in favor of large capacity washers.

Pursuing this point in further detail, our three organizations filed comments on the test procedures NOPR on December 6, 2010, explaining our concern regarding a potential bias in favor of large capacity washers. After discussing potential sources of bias, we suggested three alternatives to the current test load size specifications.[1] We are disappointed that DOE has proposed a SNOPR without any response whatsoever to the concern jointly expressed by AHAM and efficiency advocates on this key issue. Once again, we urge the Department to give careful attention to the potential for unwarranted bias in the test procedure in favor of large capacity washers and to document its findings on the matter.

We offer the following additional comments pertaining to the SNOPR.

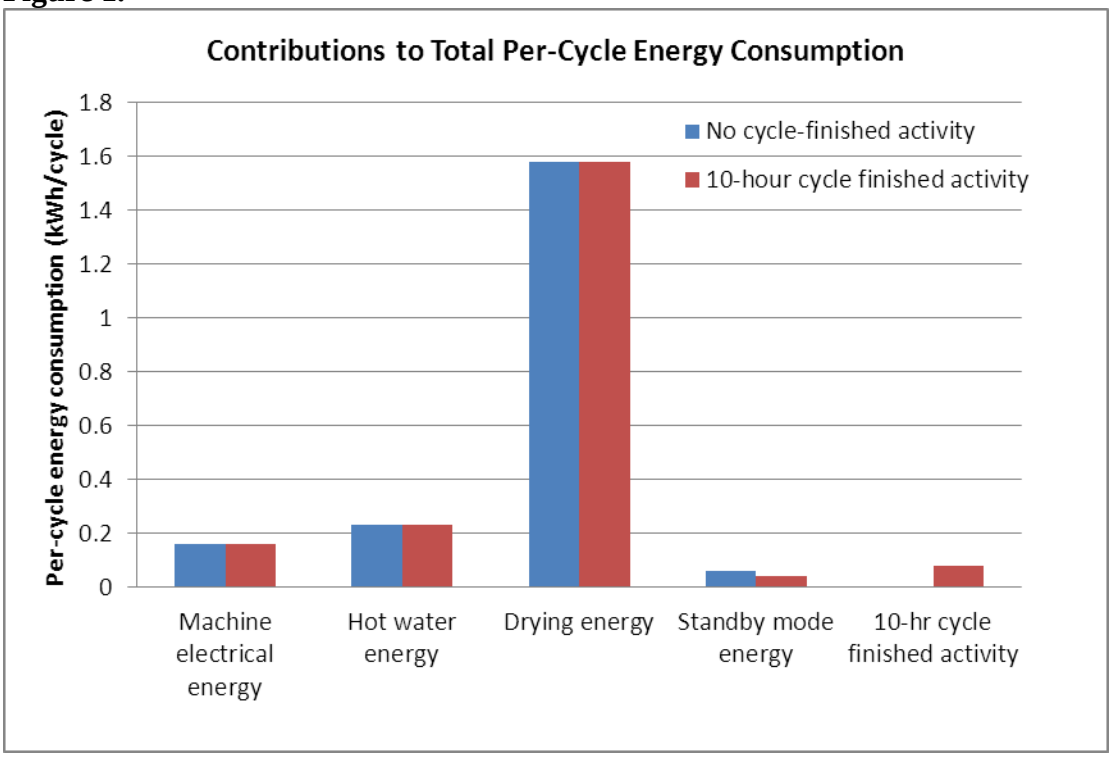
[1] Comment ID: EERE-2010-BT-TP-0021-0016.

Treatment of Cycle-Finished Mode

In the SNOPR, DOE proposes to exclude cycle-finished mode from testing and to instead include cycle-finished mode as part of the inactive- and off-modes. The reasons cited for this proposal are 1) little additional energy consumption in cycle-finished mode, 2) uncertainty regarding consumer usage patterns, and 3) additional test burden. We believe that the demonstrated potential energy consumption of cycle-finished mode provides a strong argument FOR testing cycle-finished mode as part of the test procedure, and that the uncertainty of consumer usage patterns and the additional test burden are not convincing arguments against this inclusion.

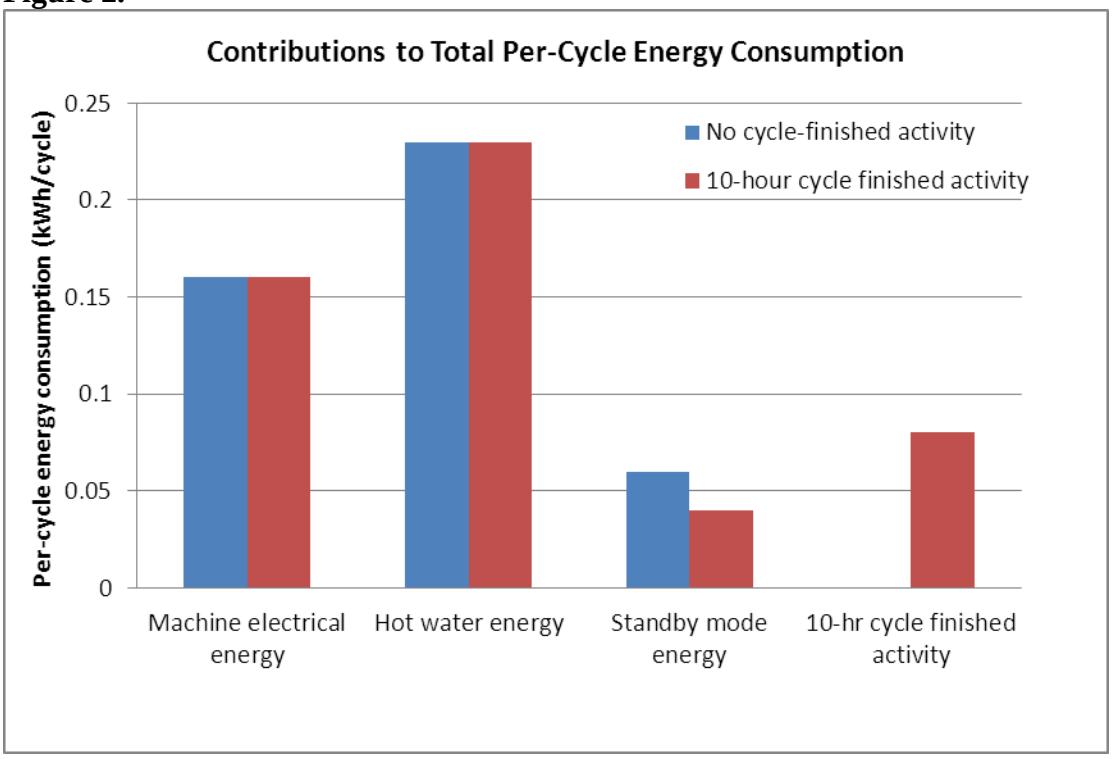
In the SNOPR, DOE tested one model of washer which included periodic tumbling and air circulation in the cycle finished mode. The resulting energy use, as calculated with and without inclusion of the cycle-finished mode energy, is shown in Figure 1 (as reproduced from the SNOPR).

Figure 1.



DOE states that the inclusion of cycle-finished mode in this example adds a net 0.08 kWh per cycle – a 3% increase in energy use. While this is not a proportionally large energy increase, it is still a significant one. With drying energy consumption dominating the per-cycle energy consumption, significant changes in non-drying energy consumption are difficult to appreciate. Figure 2 shows more clearly how energy use changes in the non-drying portion of the cycle.

Figure 2.



In this example, inclusion of cycle-finished mode energy use doubles the amount of energy in the "low-power" modes, causing the energy consumption in these modes to approach the level of energy used by the machine during the active part of the cycle. While it is true that cycle-finished mode represents a small portion of overall energy use, the energy use is at a level that has qualified other modes for inclusion in the test procedure. Therefore we believe that cycle-finished mode represents energy use too large to be ignored.

Although fewer than 10% of clothes washers currently incorporate the energy-intensive cycle-finished features observed in DOE's example, we don't know how this trend might change in the future. As we noted in our NOPR comments, we believe it is likely that we'll see more features added to cycle-finished mode in a greater percentage of machines, further increasing the energy consumed in that mode.

We understand the difficulty in including a mode where little is known about consumer usage patterns. However, DOE made some reasonable assumptions in the SNOPR regarding potential allocation of hours to cycle-finished mode. DOE stated that for illustrative purposes the cycle could be assumed to be run on 50% of the cycles for 50% of the maximum allowable time. Lack of data shouldn't be an excuse for forgoing testing altogether when substituting reasonable estimates as proxies would suffice.

DOE received several comments in response to the NOPR on how cycle-finished mode could be tested, including folding cycle-finished mode into the existing active-mode test cycle. This could include letting the washer run through the completed cycle-finished mode, or alternatively to terminate the test an hour after the washer entered the cycle-finished mode. We do not believe

that this would significantly increase the test burden, as it would potentially lengthen the test by as little as an hour and would not require additional setup or test preparation.

Load Adjustment Factor and Test Load Size Specifications

We support the proposal in the SNOPR to replace the representative load size based on the load adjustment factor (LAF) with a weighted-average load size to calculate dryer energy use. 76 Fed. Reg. 49249. This change to the test procedure would align the load size used for calculating dryer energy use with the weighted-average load size used for determining machine and water heater energy consumption and machine water consumption. However, as explained below, we note that this proposed change would have a greater effect on the measured energy consumption of small capacity washers than that of large capacity washers.

As noted above, in our comments in response to the test procedures NOPR dated Dec. 6, 2010, we urged DOE to consider alternatives to the current test load size specifications to eliminate the potential bias in the test procedure due to large capacity washers being tested using a smaller percentage of their total capacity than that used for smaller washers.[2] In the current test procedure, the calculation of dryer energy use is based on a load size that is a constant percentage of capacity. Therefore, while the potential bias towards large capacity washers in the current test procedure is reflected in the machine and water heater energy consumption, it does not appear in the calculation of dryer energy consumption, which dominates total energy consumption as noted above. The proposed change to the load size used for the dryer energy use calculation would result in a greater increase in load size used to calculate dryer energy consumption for small capacity washers than for large capacity washers. This proposed test procedure change would therefore make the potential bias towards large capacity washers more significant.

We noted in our comments in response to the test procedures NOPR that a large capacity washer is able to consume more energy and water per pound of clothes than a small capacity washer with the same MEF and WF ratings.[3] We are not aware of any data indicating that consumers utilize a smaller percentage of the washer capacity when using large capacity machines compared to smaller machines. Perhaps more importantly, we are not aware of any information indicating that it is inherently more difficult for larger capacity machines to achieve high efficiency ratings. In the absence of information on consumer usage patterns and the efficiency potentials of washers of varying capacities, we encourage DOE to amend the test procedure such that the weighted-average load size as a percentage of total capacity is constant across washer capacities. This change would ensure that all washers with the same efficiency ratings consume the same amount of energy and water per pound of clothes as measured by the test procedure.

Steam Wash Cycles

We welcome DOE's recognition of so-called steam wash cycles and the attendant need for the test procedure to fully capture the energy and water consumption of this new feature. However, as noted in our previous comments on the test procedures NOPR, DOE should not define the

[2] Comment ID: EERE-2010-BT-TP-0021-0016.
[3] *Ibid*.

term too literally and potentially exclude this feature in practice on some machines. The definition of "steam cycle" at 76 Fed. Reg. 49261 remains unchanged from the definition in the NOPR. As we previously noted, this definition in section 1.28 of Appendix J2 should include not only the injection of "steam" (vaporized water) but also any superheated water injected in the form of mist (fine droplets).

Self-Clean Cycles

Again, we welcome DOE's recognition of the energy and water consumption resulting from manufacturers' recommendations for self-cleaning or deodorizing cycles, but find that comments previously submitted have gone unaddressed. We differ with the proposed language of the SNOPR in two respects. First, the definition of "self-clean mode" in section 1.24 of Appendix J2 at Fed. Reg. 49261 can be interpreted (and was so interpreted at the NOPR public meeting) as being applicable to washers that have a dedicated self-clean cycle, i.e., a cycle setting option that is explicitly dedicated to the self-clean function. However, because self-cleaning may be undertaken with an appropriate cleaning compound through the use of a standard cycle available for washing clothes, the definition should not be limited to machines equipped with an explicitly designated self-clean cycle. Any washer carrying a manufacturer's recommendation for periodic self-cleaning operations should be covered by the definition. Secondly, we agree with the recommendation made by General Electric at the NOPR public meeting that a usage factor of 12 cycles per year should not be uniformly applied to all washers. Rather, the usage factor contained in section 4.2.14 of Appendix J2 should be based on the level of usage recommended by the manufacturer, converted as necessary to the appropriate number of cycles per year for the test procedure. This will provide further encouragement for manufacturers to develop approaches to sanitizing and deodorizing issues that are less energy- and water-intensive than current practices.

Water Consumption Factor

The definition of "water consumption factor" in section 1.35 of Appendix J2 states that it is a measure of the clothes washer's total weighted per-cycle water consumption per unit of machine volume. However, the formula for calculating the water consumption factor in section 4.2.15 refers back to section 4.2.12, which is the calculation of total weighted per-cycle water consumption for cold wash. It would appear to be more appropriate for the overall water consumption factor to be built on total weighted water consumption for all cycles, which is presented in section 4.2.13.

Water Supply Test Pressure

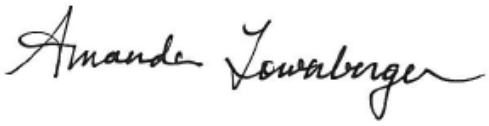
We agree that water supply test pressure is an important parameter for the test procedure, and that ambiguities in the specification of water supply test pressure should be resolved. As we noted in previous comments, the specification for water pressure at 76 Fed. Reg. 49262 contains both "static" and "flowing" in the same sentence. A test apparatus calibrated to maintain a static water pressure of 35 psi will yield a flowing water pressure that is less than 35 psi, and in some cases, significantly less. The word "static" should be removed from each sentence where it

occurs in section 2.4 of Appendix J2 to remove ambiguity and a potentially significant source of unintended variation in test results.

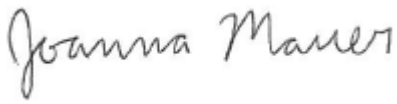
Thank you very much for considering these comments.

Sincerely,

Edward R. Osann
Senior Policy Analyst
Natural Resources Defense Council



Amanda Lowenberger
Research Staff, Buildings Program
American Council for an Energy-Efficient Economy



Joanna Mauer
Technical Advocacy Coordinator
Appliance Standards Awareness Project