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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 Clothes Dryers, Eligibility Criteria, Draft 1, Version 1.0

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 Clothes Dryers, Eligibility Criteria, Draft 1, Version 1.0.

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 the Department of Energy (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. EPA must, however, base its proposals on sound data and reasoning rather than on assumptions. Furthermore, it is not EPA's role to set design requirements, even in a "voluntary" program.

## **I. Definitions**

EPA stated that it is harmonizing the definitions in Section 1 with the definitions in 10 C.F.R. Part 430. AHAM agrees that EPA's definitions should be identical to those in DOE's regulations. But EPA should simply cite those definitions instead of copying and pasting it into the specification. Citation to definitions is the best way to ensure consistency and harmonization

with DOE definitions at all times—it ensures that as DOE definitions change, ENERGY STAR definitions also change to mirror them. 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. Furthermore, it is illegal for manufacturers to make energy representations based on anything other than DOE’s applicable test procedures and regulations. For these reasons, EPA should simply cite to these definitions rather than attempt to restate them in the specification. Stating anything in addition to or different from DOE’s regulations may, intentionally or unintentionally, change the meaning of those regulations, which are the foundation of the ENERGY STAR specifications.

AHAM notes that the definition for “Combined Energy Factor” attempts to describe the calculation in Appendix D1. Instead, EPA should cite to the calculation. For example, EPA could state, “Combined Energy Factor shall have the same meaning as in Appendix D1 to Subpart B of Part 430, section 4.8.”

## **II. Qualification Criteria**

### **A. Combined Energy Factor**

#### *i. Early Use of CEF and Appendix D1*

EPA proposed that the metric for qualification be the combined energy factor (CEF). EPA also proposed that the test procedure in 10 C.F.R. 430, Subpart B, Appendix D1 be used to determine ENERGY STAR qualification. The CEF metric is based on the amended DOE clothes dryer standards, with which compliance is required on January 1, 2015. Appendix D1 is mandatory for certifying compliance with the amended standards as of the same date. Prior to that date, the DOE standard is based on energy factor (EF) and certification of compliance must be based on Appendix D. According to EPA’s proposed schedule, the final Version 1.0 clothes dryer specification will be published in April 2013 and, because clothes dryers are a new ENERGY STAR product category, will be effective at that time as well.

AHAM requested that DOE permit early compliance with amended standards and early use of new test procedures to ease the transition to the new standards and test procedure. DOE responded with guidance that permits early use of a new test procedure and early compliance with an amended standard. Under the guidance, manufacturers must meet the amended standard in order to use the new test procedure early. AHAM recognizes that the guidance does not provide a time limit on how early a company could use the new test procedure and comply with the new standard. But April 2013, almost two years prior to January 1, 2015, is too early to require, for ENERGY STAR qualification, early use of the test procedure and early compliance with the amended standards.

When DOE promulgates an amended standard, it provides, per statute, a three-year lead-in for mandatory compliance. Manufacturers use that time to design products to meet the new standards. Thus, AHAM’s request for early compliance was not open-ended. Instead, AHAM suggested that early compliance begin on April 1, 2014, which is only nine months prior to the compliance date of the amended standard. And we note that such early compliance is voluntary.

EPA's early use of CEF and the new test procedure, on the other hand, will force manufacturers to comply, almost two years early, with the new standards. Furthermore, we note that the proposed levels for ENERGY STAR qualification are significantly more stringent than the 2015 DOE standards, which will make it even harder for companies to achieve those levels so far in advance of the DOE standards becoming mandatory.

The requirement to use CEF and the new test procedure so early will also create significant confusion. For example, how will consumers compare ENERGY STAR qualified units with other units on the market during the time between April 2013 and January 2015? The other products are likely to overwhelmingly be measured under the current test procedure. And their energy use will be reported using the current metric, energy factor (EF). Thus, consumers could be confused because they will, unknowingly, be comparing apples to oranges. In addition, there will be confusion and uncertainty for manufacturers during this period. Because EPA has proposed to use the current test procedure and metrics for clothes washers, it will be difficult for manufacturers to design clothes washers and clothes dryers together as is currently the common practice industry-wide. This could impact the selection of matching units available to consumers. The two products are inherently linked, and EPA has de-linked them by placing different test procedure and metric requirements on each one (as well as different effective dates). Furthermore, there will be a lack of clarity for stakeholders because, under EPA's proposal, manufacturers would be required to use two different test procedures for a period of almost two years, instead of for just a brief transitional period. This increases the likelihood of error.

Furthermore, there is currently a significant amount of regulatory burden on clothes washers and clothes dryers, which makes complying with an amended standard using a new test procedure so far ahead of the mandatory compliance date set by DOE even more difficult. In particular, clothes dryers are facing a new UL safety standard, amended energy conservation standards, and a new ENERGY STAR program, all within three years of each other. (We recognize that, technically, the ENERGY STAR program is a voluntary program. But its success in the marketplace has made it mandatory in practice.) Accordingly, AHAM proposes that EPA align the specification effective date for both the clothes dryer and clothes washer specifications with the DOE effective dates—i.e., 2015. Should EPA continue to propose a clothes dryer specification effective date in 2013, it should use the current test procedure and metric (EF) instead of CEF and Appendix D1. Both of these options would better align clothes washers and clothes dryers, provide clarity and consistency to consumers and regulated parties, and ease the regulatory burden placed on manufacturers. Consistent with our comments on the clothes washer specification draft, AHAM would prefer the former option which would harmonize with DOE's 2015 effective dates.

## ii. *Underlying Data and Assumptions*

EPA stated that to “meet the proposed Version 1.0 levels, EPA anticipates manufacturers will mainly employ efficiency options such as modulation technology, heat recovery and recirculation, fan and motor efficiency improvements, and certain dryer control or drum upgrades (e.g., improved air circulation and modified operating conditions). Information available suggests that heat pump and hybrid heat pump technology holds greater savings

potential but in the near term is expected to have a higher cost premium for consumers; EPA is assuming this technology is not necessary to meet Draft 1 levels.” (emphasis added).

EPA should not base its selection of levels on assumptions. EPA must instead base its decisions on data. DOE did extensive analysis as part of its rulemaking and EPA should consider that data in determining the reasonableness of its Version 1.0 levels. DOE analyzed a number of trial standard levels (TSL) in selecting its amended standard. DOE’s selected standard was equivalent to TSL 4. DOE also analyzed more stringent levels at TSL 5 and TSL 6. As shown below in Table A, with the exception of gas vented dryers, EPA’s proposed criteria fall between DOE’s TSL 5 and TSL 6. EPA’s proposal for gas dryers **exceeds TSL 6** and is discussed further below.

**Table A**

Product Class	2015 Standard (TSL 4)	TSL 5	ENERGY STAR Draft 1 Proposal	TSL 6
<b>Vented</b>				
<b>Electric Standard</b>	3.73	4.08	4.29	5.42
<b>Electric Compact (120 V)</b>	3.61	4.08	4.15	5.41
<b>Electric Compact (240 V)</b>	3.27	3.60	3.76	4.89
<b>Gas</b>	3.30	3.61	3.67	3.61
<b>Ventless</b>				
<b>Electric Compact (240 V)</b>	2.55	2.80	2.93	4.03

EPA should rely on DOE’s analysis regarding the technologies required to meet TSLs 5 and 6. DOE concluded that design options for reaching TSL 5 included those required to meet less stringent TSLs such as airflow improvements, a dedicated heater duct, and an open cylinder drum, in addition to other changes such as modulating heat, inlet air preheating, and a more efficient fan motor. DOE also concluded that inlet air preheating would require the most substantial changes to existing products because it would change the ducting system. “This change would impact drum stamping equipment and, possibly, the fabrication of the cabinets for some product lines. . . The large incremental costs result in lower shipments due to the price elasticity.” (Residential Clothes Dryers and Room Air Conditioners Direct Final Rule Technical Support Document at 12-60 [hereinafter TSD]). TSL 6, which represents the maximum technologically feasible level (max-tech), according to DOE, would effectively require a heat pump clothes dryer. Thus, the analysis shows that EPA’s proposed levels would require significant product design changes. And, given that the proposed levels are below TSL 6, and thus may not require heat pump technology, by being above the TSL 5 levels, the proposed ENERGY STAR levels are pushing the limits of non heat pump design. It is, therefore, likely that the proposed levels will all but require heat pump technology.

EPA should also rely on DOE’s conclusions regarding the benefits to consumers and the costs to industry of those levels. According to DOE, “TSL 5 consists of non heat pump design efficiency levels with the highest energy savings and a positive [net present value] (at a 7-percent discount

rate).” (TSD at 12-22). DOE concluded, however, that the additional design options beyond those needed to reach TSL 4 would add significant cost for manufacturers: “The impacts also increase dramatically at TSL 5 due to the large increase in production costs for the additional design options beyond those needed to reach the required efficiencies at TSL 4. The large incremental costs result in lower shipments due to the price elasticity. These additional costs also cause a greater impact on [industry net present value (INPV)] if manufacturers are unable to earn additional profit on these added costs.” (TSD at 12-60–12-61). In fact, DOE concluded that TSL 5 would result in a change in INPV of -17.6 percent to -39.6 percent (compared to -6.4 percent to -8.0 percent for TSL 4). And TSL 6’s impacts would be even more significant—DOE’s analysis predicted a change in INPV of -30.3 percent to -72.7 percent. DOE also noted that “the cost of a heat pump clothes dryer is more than double a minimally compliant clothes dryer in the market today.” (TSD at 12-61). EPA did not address these potential losses.

In addition, EPA should rely on DOE’s analysis when determining the benefit to consumers of its proposed eligibility criteria. DOE’s conclusions regarding the life cycle cost (LCC) impact are summarized in Table B, below. Although EPA analyzed energy savings for consumers, it did not compare those energy savings to the cost increase—EPA should do so given that DOE’s analysis provides the necessary information. We would also point out that the payback period for TSL 5 and 6 are longer than the expected life of a clothes dryer, which highlights that there is no economic benefit to the consumer for products at those levels. EPA should recognize that saving money for the consumer is not a benefit that will occur at these levels.

**Table B**

<b>Product Class</b>	<b>TSL 5—LCC Increase (\$)</b>	<b>TSL 5—Median Payback Period (Years)</b>	<b>TSL 6—LCC Cost Increase (\$)</b>	<b>TSL 6—Median Payback Period (Years)</b>
<b>Vented</b>				
<b>Electric Standard</b>	30	19.1	146	22.1
<b>Electric Compact (120 V)</b>	99	36.1	264	40.1
<b>Electric Compact (240 V)</b>	99	45.1	246	38.2
<b>Gas</b>	100	49.5	100	49.5
<b>Ventless</b>				
<b>Electric Compact (240 V)</b>	42	25.3	177	26.9

Finally, EPA relied on data from the 2011 Natural Resources Defense Council (NRDC) report which concludes that loads intended to reflect real-world consumer loads require about 35% more energy to dry than DOE test cloths. That report shows that NRDC designed its own “real-world” consumer load. But the report does not indicate exactly of what that load consisted. Nor does it indicate that any consumer use study was done to determine what a “real-world” load is. Accordingly, there is no way to know if that 35% correlates to “real-world” dryer energy use.

AHAM is not commenting on the stringency of EPA’s proposed levels. We simply comment that EPA should use the data available to it to more thoroughly assess the impact of its proposed levels. In addition, the aggressiveness of these levels will make it even more difficult to qualify clothes dryers based on CEF and measured per Appendix D1 under the proposed timeline. It is also unclear why EPA is proposing a qualification level for gas vented dryers that is **more stringent than the max-tech level DOE identified.** Although AHAM does not support applying different percentages to product classes, it does not make sense to set a requirement that DOE has determined is impossible to achieve.

## B. Drying Time

EPA proposed that to qualify, dryers must complete the drying cycle in less than or equal to 50 minutes. EPA based the drying time requirement on the following information:

1. NRDC Report—average drying time for standard electric and gas dryers is around 30 minutes under Appendix D1, but drying times are “somewhat longer with a real load of 50% synthetic – 50% cotton clothing, and significantly longer with a cotton only load.”
2. European heat pump unit as tested by NRDC—60 minutes
3. Manufacturer indication of the importance of matching clothes washer and clothes dryer cycle time.
4. Consumer Reports—high efficiency clothes washers on the market have a cycle length of 45-85 minutes under the Consumer Reports test.

AHAM does not oppose a drying cycle time requirement.<sup>1</sup> But none of the data upon which EPA relied clearly indicate that a 50 minute drying cycle time is an appropriate limit. EPA stated that manufacturers indicated the importance of matching clothes washer and clothes dryer cycle time and stated that, according to Consumer Reports, some clothes washers have a cycle length of 45-85 minutes. Fifty minutes does not even fall in the middle of that range, meaning that, according to the data upon which EPA relied, cycle times may not match. Furthermore, the NRDC Report EPA cites shows that cycle times for all product classes of clothes dryers exceeded 60 minutes when tested with what NRDC determined to be a “real-world” load.

It is also unclear if EPA did any work to determine what the correlation between the “real-world”/Consumer Reports times and the Appendix D1 drying times is. NRDC’s report does not seem to quantify what “somewhat longer” and “significantly longer” mean. Even if it did, we note that the report does not specify exactly of what that “real-world” load consisted and not all loads appear to have been tested on the same cycle, so it is unknown how the results can compare to each other, let alone to Appendix D1. EPA needs to ensure that it is comparing apples to apples—in other words, the drying time limit will be as measured under Appendix D1 and so, EPA needs to ensure that that time limit will still produce acceptable results to consumers consistent with consumer use data. (Note that AHAM is not commenting on whether the drying

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<sup>1</sup> AHAM notes, however, that the TSLs did not take into account a drying requirement. It is possible that the drying time requirement could further restrict the technologies DOE identified as available to meet TSL 5 and TSL 6. The result could be that, combined with the Draft 1 levels, the drying time requirement could prescribe certain design requirements (and, had DOE considered it, could have resulted in consideration of less stringent TSLs).

time should be shorter or longer than 50 minutes. We are simply commenting that the process by which EPA selected the 50 minutes is incomplete. We suggest that EPA speak to individual manufacturers to seek their opinion on what proper drying time limits might be.)

EPA also proposed that drying time would be measured according to ENERGY STAR guidance for measuring drying time during the energy test (Appendix D1) and that DOE would provide that guidance. We note that should DOE provide such guidance, it can be only for purposes of qualification for ENERGY STAR, and not an official interpretation of Appendix D1 that would be required when conducting the test procedure to determine compliance with energy conservation standards. Furthermore, any guidance cannot alter rated energy performance or change how the test is conducted. This does not seem to be the intent, but the process by which DOE plans to issue such guidance should be clear. Draft 1 states that Draft 2 will include this guidance—it is important that the guidance be provided with Draft 2 because it is challenging to effectively comment on the drying time requirement without knowing how it will be measured.

### C. Automatic Termination

EPA proposed that in “order to encourage the use of energy saving, automatically terminated drying cycles, the product shall” 1) be equipped with automatic termination controls that utilize both moisture and temperature sensing controls; and that 2) timed drying cycles, if used, shall be limited to a maximum cycle time of 15 minutes and allow mid-cycle adjustment, such that total cycle time exceeds 15 minutes. EPA referenced the open DOE rulemaking to further investigate automatic termination controls and stated that, in an interim step towards recognizing products with improved auto termination controls, EPA is proposing that ENERGY STAR qualified dryers also use moisture sensing controls.

EPA’s proposal and the reasoning supporting it are fatally flawed. Even were the proposal supported by data, it does nothing to advance DOE’s efforts regarding automatic termination controls. DOE’s rulemaking was initiated largely in response to concerns raised and a petition filed by joint stakeholders including energy efficiency advocates and AHAM. That petition requested that DOE amend Appendix D1 to better account for the effectiveness of automatic termination controls. Thus, were DOE to act, the test procedure would incentivize effective automatic termination controls. All EPA’s proposal in Draft 1 does is require automatic termination controls. It does nothing to measure the effectiveness of those controls, and thus, does nothing to ensure greater energy savings or consumer satisfaction. Without measuring effectiveness of controls, it is possible that the required controls could either 1) over-dry the load, thus using more energy than necessary; or 2) under-dry the clothes such that a consumer would initiate a timed dry feature or would run another drying cycle.

EPA’s way around this seems to be by requiring both temperature and moisture sensors based on vague data suggesting that moisture sensors “tend to do a better job at sensing when a load is dry (to avoid over-drying a load), than dryers with only a temperature sensor.” But the requirement to have both types of controls is a prescriptive design requirement that does not allow manufacturers to innovate. EPA even stated during the webinar on September 12, 2012, that it hopes to nudge consumers toward using clothes dryers with a moisture sensor. As AHAM has commented numerous times, the ENERGY STAR program should remain squarely focused on

encouraging private-sector innovation for energy efficiency. It is not EPA's role, even in a "voluntary" program, to set design requirements for products. This requirement does just that. And it is based on inadequate data to even demonstrate that the requirement would accomplish the goal EPA is trying to achieve.

Instead of doing an end-run around DOE's thorough rulemaking process, EPA should wait for DOE to finish its rulemaking regarding automatic termination controls. Should DOE determine that the test procedure should be amended to account for the effectiveness of automatic termination controls, EPA can then appropriately consider it as well. And, should DOE include such amendments, those amendments will likely be designed to measure effectiveness and encourage effective controls (and penalize poor ones), a result EPA cannot achieve with a prescriptive design requirement. If EPA does not wait for DOE to determine how to proceed, and DOE later releases a test procedure that measures the actual effectiveness of automatic termination controls, the result will be that manufacturers could have to re-design their products yet again.

AHAM also questions EPA's data supporting the automatic termination control requirement. EPA stated that it did not do its own analysis to determine energy savings that would result from its proposed automatic termination controls requirements. Instead, it "leveraged" data presented in the joint petition energy efficiency advocates and AHAM filed with DOE. But the energy savings projected in that petition were calculated in the context of test procedure amendments that would account for the effectiveness of automatic termination controls. As explained above, EPA's proposal does not do that. Thus, the data cannot be used to support EPA's proposal. EPA must not act without assessing the potential benefit to consumers of its proposal. With its automatic termination controls proposal, EPA is prescribing a design requirement without any quantifiable supporting data. Should EPA move forward with its proposal, which AHAM opposes, it must present data to show what energy savings will result. Otherwise it is a requirement without a purpose.

EPA's proposal to limit timed dry is similarly flawed. The goal of the limitation is to discourage consumers from using the timed dry feature which can over-dry clothes. But EPA has allowed for mid-cycle adjustment of that time limit such that the cycle time can exceed 15 minutes. EPA must provide for that allowance so that manufacturers can test under Appendix D1. But the outcome is that the requirement's goal cannot be satisfied. Furthermore, the timed dry is a feature that consumers demand, and thus, EPA should not place a restrictive requirement on it per its own Vision and Guiding Principles.

#### D. Warranty Requirements

EPA proposed that to qualify for ENERGY STAR, the product must have a three year parts warranty on any control board (microprocessor), and a five year parts warranty on any sealed system. AHAM opposes these warranty requirements.

EPA stated that in determining whether to include a warranty requirement, EPA considers factors such as whether there are known performance/quality issues that the Agency needs to consider and address in order to help ensure products meet consumers' expectation for efficiency with no

sacrifice in performance or quality. EPA also considers whether there are new/emerging technologies involved, where the inclusion of a warranty requirement can help to increase consumer confidence and adoption of a new energy-saving technology. Neither of those criteria are met here. EPA has shown no known performance or quality issues with clothes dryers. Nor has it shown why clothes dryer control boards require a warranty, when other products have control boards and EPA has not instituted similar requirements for those products. A warranty requirement for clothes dryer control boards simply does not make sense. Furthermore, to our knowledge, this would be the first warranty requirement for appliances since the inception of the ENERGY STAR program. Every change to improve efficiency in twenty years has increased the complexity of the product at issue, and this is no different. Accordingly, EPA should not include warranty requirements in the clothes dryer specification.

### **III. Effective Date**

Under EPA's anticipated schedule, the clothes dryer specification Version 1.0 would be published in April 2013, and it would be effective as of that date as well because it is a new specification. Notably, under EPA's anticipated revision schedule for clothes washers, the revised clothes washer specification would become effective several months later, in November 2013. These two product lines are inherently linked. And thus, it makes sense that they should also be connected on an ENERGY STAR timeframe. Such a schedule would better match with manufacturers' design schedules for the products. Accordingly, AHAM proposes that EPA link the clothes dryer effective date to the clothes washer effective date. We provide more detail on what that date should be in our written comments on the proposed clothes washer specification.

### **IV. Future Specification Revisions**

EPA identified a list of topics and questions for consideration as the ENERGY STAR clothes dryer program evolves in the future, one of which was "eco mode." EPA stated that such a mode could potentially offer significant savings opportunities for clothes dryers. AHAM notes that should EPA wish to address eco mode or energy saver mode in a future specification, it would need a test procedure to do so.

### **V. Connected Product Criteria**

EPA has identified its intent to propose specific connected criteria in the Draft 2 Version 1.0 Clothes Dryer specification which will enable both near-term consumer benefits associated with energy management and added convenience features as well as longer term, societal benefits associated with smart grid interconnection. EPA also identifies its intent to leverage the latest R/F connected language which has not yet been completed and is currently in the comment period for Draft 3 Version 5.0. Therefore, AHAM will limit its comments on Draft 1 to the following comments and provide additional detail upon the release of the Draft 2 Clothes Dryer specification.

AHAM strongly supports EPA's decision to incorporate smart grid functionality and to provide a 5% allowance consistent with the *Joint Petition to ENERGY STAR to Adopt Joint Stakeholder Agreement as it Relates to Smart Appliances* from industry, efficiency advocates and

environmental groups. The allowance is intended to serve as an incentive to help jump start the market for clothes dryers with smart grid functionality.

A “smart grid” capable clothes dryer must have the following minimum capabilities to earn a 5 percent allowance toward the energy performance level required to meet the ENERGY STAR specification. A smart clothes dryer needs to have the capability to meet both of these requirements, but not simultaneously.

- i. Delay Appliance Load capability - upon receipt of a signal requesting a delay of load for a time duration not exceeding 3 hours, the product must automatically delay the start of the operating cycle beyond the delay period, and
- ii. Temporary Appliance Load Reduction capability - upon receipt of a signal requesting the start of a reduced load period for a time duration not exceeding 10 minutes, the product must automatically reduce its energy by at least 80 percent.

In addition, AHAM strongly supports EPA’s statement that clothes dryers can offer additional savings and grid benefits through the ability to receive price signals and provide customers with feedback that encourages operation during favorable pricing periods. According to the National Energy Technology Laboratory Report “Smart Grid Principal Characteristics – Enable Active Participation by Consumers”, this describes how to enable active participation by consumers—and states “Innovative rate structures that provide economic benefits to both the consumer and the utility are integral to these systems.”

As the price changes, the appliance will decide whether or not usage should be adjusted. With pricing signals to drive actions, the consumer can reduce costs and manage energy without significant behavior changes. Pricing signals and consumer feedback combined with smart clothes dryers will not require large changes in consumer behavior to realize a reduction in peak load.

AHAM appreciates the opportunity to submit comments on the ENERGY STAR Clothes Dryer Draft 1.0 Version 1.0 Specification and would be glad to further discuss these matters.

Best Regards,



Jennifer Cleary  
Director, Regulatory Affairs