

October 26, 2012

Christopher Kent  
US Environmental Protection Agency  
Ariel Rios Building 6202J  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Dear Mr. Kent:

The Consortium for Energy Efficiency (CEE) respectfully submits the following comments in response to the *ENERGY STAR® Pool Pumps Version 1.0 Draft 1 Specification*, *ENERGY STAR Pool Pumps Draft 2 Test Method*, and *ENERGY STAR Pool Pumps Connected Functionality Discussion Document* released by the Environmental Protection Agency (EPA) on August 30, 2012.

CEE is the binational organization of energy efficiency program administrators and a staunch supporter of the ENERGY STAR® Program. CEE members are responsible for ratepayer-funded efficiency programs in 45 US states and eight Canadian provinces. In 2011, CEE members directed over \$7.2 billion of energy efficiency program budgets in the two countries. In short, CEE's Members work to strengthen ENERGY STAR as a platform for energy efficiency across North America.

CEE highly values the role ENERGY STAR plays in differentiating energy efficient products and services that the CEE membership supports locally throughout the US and Canada. We appreciate the opportunity to provide these comments.

## Definition and Test Procedure Suggestions

CEE supports EPA's proposed definitions for residential swimming pool pumps. To our understanding, pumps are primarily identified by the application for which they are used, and less so by their features. For example, the identical pump could be installed in either a residential pool or a small commercial pool, meaning that what makes a pump "residential" is the fact that it is used in a residential application. Separately, given that EPA is considering increased technical specificity, one option would be to include a mention of single-phase motors or smaller horsepower motors within the residential definitions since these types of pumps wouldn't be found in larger commercial installations.

In response to the definition for standby mode, CEE notes that external pool controllers can consume power when the pump itself is not operating, similar to pool pumps equipped with integrated controllers. We believe this fact should also be taken into consideration when assessing standby power consumption within the test procedure but don't have a recommended value for maximum energy consumption is "stand by" mode at this time.

## **Expand Future Scope to Include Above-ground Pool Pumps and Pool Pump Motor Replacements**

The scope identified in the specification is consistent with CEE member programs, which primarily promote variable speed, inground pool motors with integrated controls. CEE notes that efficiency programs also do promote, to a lesser extent, the following; two speed pool pumps, above ground pool pumps, pool pump motor replacements, and pool pumps with external controls. While CEE agrees that the proposed scope is appropriate for the first version of an ENERGY STAR specification, we would like to see EPA evaluate future inclusion of aboveground pool pumps, as soon as data regarding their performance becomes available. Aboveground pools are particularly important as a source of energy savings for CEE member programs operating in cooler climates. Replacement pool motors also represent an energy savings opportunity that efficiency programs are interested in pursuing and, as such, CEE is interested in receiving the results of EPA's evaluation of pool replacement motors mentioned in the ENERGY STAR framework document for residential equipment.

## **Comments on the Performance Criteria**

With respect to identifying energy efficient products, CEE supports a technology neutral, energy factor metric. In addition, CEE supports the proposed energy factor level of 3.8 for pool pumps operating at low speed based on Curve A performance. However, we are interested in understanding the basis for specifically calling out single speed pumps in the proposed specification.

CEE is not currently aware of any programs promoting single speed pool motors or pumps. CEE members' lack of promotion of single speed equipment is due to several factors. First, many state codes (Arizona, California, Connecticut, Florida, New York, and Washington) require that pool motors with a total horsepower capacity of 1 or more have the capability of operating at two or more speeds. Second, single speed pumps generally don't provide the same opportunities for energy savings as two speed or variable speed pumps. A single speed pump must be sized so that it can provide the maximum flow rate required by the pool system and therefore typically isn't able to operate at the optimal speed for filtration. Since variable speed pumps can run at a variety of speeds, they can be programmed to operate at the lowest speed setting that delivers the flow rate required for the task. CEE therefore observes that the inclusion of single speed pumps would cause the ENERGY STAR specification to be less stringent than several established

state codes and could fail to highlight the savings available with two or variable speed equipment.

Lastly, CEE is concerned with a lack of clarity as relates to the definition of “low speed” relative to variable speed pumps. Based on the Draft 2 test method, “low speed” could mean either the minimum or most efficient speed of the pump. As a result, we recommend that EPA and DOE work to clearly define the term “low speed” in both the specification and test method. Ideally, “low speed” would be defined as the most likely operating speed so that the energy factor value reported to ENERGY STAR would provide the most accurate estimate of potential energy savings.

## **“Connected” Criteria Comment Process**

CEE has carefully considered the potential for “Connected” features (i.e. interactive communications with energy consumer devices for energy and non energy related purposes) to be incorporated within the ENERGY STAR program and has previously submitted comment letters on this topic related to refrigerators, room air conditioners, as well as pool pumps. Most recently, CEE has developed detailed feedback on the “Connected” requirements proposed in the *ENERGY STAR Draft 3.0 Version 5.0 Refrigerator Specification*, including those related to open, standardized, communication protocols. We believe these comments are relevant to the *ENERGY STAR Pool Pumps Connected Functionality Discussion Document* and have detailed them below. We also plan to provide additional comments on the “connected” criteria specific to pool pumps during the next comment period.

## **We Applaud EPA’s Commitment to Open, Non-Proprietary Communications and Seek Additional Specification of Pathways to Ensure Consumer Realization of Potential Benefit**

CEE applauds EPA’s proposal to disallow architectures that do not provide an open, non-proprietary means of achieving grid connectedness with the appliance within the bounds of the customer’s premises via interoperability with open standard peripherals and applications. A number of communication technologies and protocols are presently used by consumers depending on available infrastructure and regulatory environments. Maintaining an appropriate focus on openness, function, and communication technology neutrality will allow EPA to define the salient objectives of a “connected” architecture for appliance integration, while avoiding conflicts with the efforts of standards bodies to develop, validate and ratify the evolving portfolio of intelligent grid communications topologies. These bodies include the Institute of Electrical and Electronics Engineers, Society of Automobile Engineers, American Society of Heating, Refrigeration Air-Conditioning Engineers, Consumer Electronics Association, American Society for Testing and Materials, National Institute of Standards and Technology as well as others. We

encourage EPA to keep this high-level principle in mind as it develops tight language to ensure open non-proprietary communication.

Such an approach, coupled with the assurance that all communication pathways will be supported by a “connected” product, will ensure that the customer has the ability, and flexibility, to choose how their appliances are connected in the future, and will also avoid any onus on the customer to purchase ancillary devices to fully enable two-way connectedness. EPA’s proposal appears to provide the flexibility necessary to allow appliance manufacturers, utilities, and other efficiency and demand response program administrators to support customers’ needs. We note the following additional observations:

- While customer-supplied broadband may be a viable way to achieve connectedness within a customer’s home, we note that there remains a significant number of customers nationally who do not have broadband and/or wireless access. Furthermore, there are customers who may not be willing to support the use of their broadband connection by the utility or appliance manufacturers. Given that the ENERGY STAR Program is a mass market program, we recommend that a “connected” appliance be equipped to communicate via all major communication pathways so as not to inadvertently preclude or limit market development and participation in potential utility programs. Requiring a standardized modular port is another option that would address the fact that program administrators operating under diverse sets of conditions (regulatory, terrain, customer density, asset life cycle) are likely to use a variety of communication technologies to reach devices for demand response, energy efficiency, and other amenity afforded by “connected.” A modular approach that is based on an open standard is one option to address this diversity and provide consumers with flexibility
- If in the future, utilities and other third parties are required to interface with each manufacturer’s cloud-based solution, this requirement is likely to result in added cost and complexity. This, in turn, could impact the cost effectiveness of demand response and energy efficiency programs which would ultimately impact customers’ ability to take advantage of appliance “connectedness”.
- Cloud-based solutions could compromise customer data privacy and security due to the introduction of a third party into the flow of customer data and appliance control. Cloud based solutions that involve proprietary, non-open interfaces at the appliance are not necessarily the customers preference. Such an arrangement unnecessarily inserts a third-party into the demand-response/energy efficiency path, possibly adding cost that directly reduces the consumer’s incentive to participate.
- Requiring that the appliances communicate in an open, non proprietary manner from within the customer’s premises provides the customer with the ability to choose who “manages” their appliances in the future. For example, a customer may choose to pay

their local cable company to, in addition to managing cable broadcast recordings, manage when their appliances consume energy based on their current rate structure. However, a few months later, that same customer may decide to allow their security system provider to manage their appliance energy consumption along with their security settings and lighting to maximize savings and comfort. Open access would help ensure that the customer is afforded the ability to choose which offer to participate in based on her own needs and wants.

While we believe that an open, non-proprietary means for achieving two way connectedness with the appliances within the bounds of the customer's premises should be a base requirement for obtaining "connected" certification, CEE supports alternative means as long as these are supported in addition to those that ensure that the customer has the ultimate say and that emerging communication pathways are not squelched. Further, we note the importance of the program supporting compatibility across multiple products and manufacturers so that customers continue to retain flexibility for future product choice across manufacturers.

## Opportunity Exists to Clarify Language Related to Open Standards

Some specification language could be perceived as contradictory and merits clarification. Specifically Note 1 (line 187-89)<sup>1</sup> mentions the "internet/cloud" as an option to achieve open standards-based communication" This is inconsistent with line 230<sup>2</sup>. We recommend changing this language to ensure clarity about the need for translation to occur within the premises of the home. Further, in section 4C (line 313-15) EPA states that "...to enable interconnection with the product, an interface specification, API or similar documentation shall be made available to interested parties." We interpret this provision to apply only to aspects of "connected" for which no open standards currently exist. However, this language could be perceived by other readers as an alternative to open, standards-based communication since API's are often associated with

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<sup>1</sup> "Communication device(s), link(s) and/or processing that enables open standards-based communication between the Connected R/F System and Energy Management Device/Application(s). These elements could be within the base appliance, and/or an external communication module, a hub/gateway, or in the Internet/cloud.

<sup>2</sup> At a minimum, receive and directly respond to open standards-based signals from a utility or another 3rd party service provider, without having to depend on a service supplied by the product's manufacturer via the Internet/cloud

proprietary communication. CEE recommends that EPA clarify that a vendor-provided API is not a viable alternative to the use of open standards-based communication to achieve interoperability.

## Additional Measures are Necessary to Minimize Risk to the ENERGY STAR Brand

CEE members who promote ENERGY STAR are driven by a desire to ensure, to the best of their ability, that the customer has a positive experience following an investment in an ENERGY STAR appliance. If a customer chooses to purchase a “connected” appliance as specified by the trusted ENERGY STAR Program, but is ultimately disappointed with the “connected” functionality or experience, how will EPA mitigate the possibility that both ENERGY STAR and the organizations that promote ENERGY STAR would be subject to a negative backlash? This is particularly challenging given that much of the amenity that is expected to stem from “connected” is unproven. Significant areas of concern that we believe merit additional consideration and specification include: demarcation between the manufacturer and retailer claims regarding “connected” and the energy performance attributed to ENERGY STAR, the minimum testing for the energy and demand performance of “connected,” and expectations surrounding local utility DR program options (if any).

We support the use of a DOE test procedure (as the legal basis for making representations of energy performance) that includes all energy related aspects specified within “connected”. Further, we support having the minimum functionality that would enable the appliance to participate in a DR or IDS (integrated demand side management) program to be specified and then verified for inclusion in the ENERGY STAR Program.

EPA has indicated that it will rely on a review of product literature and physical equipment inspections for the required specifications for “connected” that are not related to demand response. Therefore, EPA will be relying on claims by manufacturers, as opposed to testing, for some aspects of what the consumer may associate with a “connected” product. We believe that this strategy may be inadequate but at a minimum, additional planning and safeguards could help mitigate potential negative consequences. One risk mitigation approach to protect the integrity of ENERGY STAR as this new element of the Program is introduced would be to expressly prohibit manufacturer and retailer statements of association between “connected” features and the ENERGY STAR program. Messaging could be limited to the ENERGY STAR Program through the website administered by EPA until the brand effect of this program element is fully understood. Any assertion by manufacturers or retailers that suggests the ENERGY STAR Program is responsible for product performance associated with “connected” features could be grounds for dismissal of the product from the Program. Consultation with FTC regarding the logic and possible expansion of their new *Green Guidelines* to cover “connected” may also prove useful.



To mitigate potential consumer confusion and/or dissatisfaction, we recommend that EPA develop a communications strategy to disclose particular actions taken — and when particular additional actions are planned to allow a product to be listed as “connected” on the ENERGY STAR website product list. CEE recommends that EPA be explicit on the website where “connected” products are identified regarding the requirements and the date that the requirements are effective. We further recommend that EPA note that until a final DOE test procedure is in effect, it is only the manufacturers who are standing behind claims of “connected” functionality.

## Consider How to Address Price Signals in Addition to Reliability-Based Signals

Some CEE members are moving towards offering time-based pricing in the residential market. A customer may enroll in a time-based rate to capture the financial benefits of their “connected” appliance. In this scenario, signals sent to an appliance would be price-based, as opposed to reliability-based (examples of reliability-based signals would include Delay Appliance Load [DAL] and Temporary Appliance Load Reduction [TALR]).

Our understanding is that the current US Department of Energy (DOE) draft test procedure for DR functionality only addresses reliability-based signals, though time-based pricing is mentioned as a possible signal type. While reliability will be an important consideration for DR events, the price of power will also be important and could more frequently determine DR events, particularly for purposes of delaying and shifting load. Consequently, a test method that can evaluate the appliance’s ability to respond to price signals will be necessary to verify that the consumer will capture the financial benefits of DR. This is especially true of cycle-based intermittent appliances. The consumer’s ability to shift load to lower price, off-peak periods would be greatly enhanced with price signal capabilities.

We suggest that the DOE and EPA take steps to ensure that “connected” appliances are capable of receiving and responding to price signals as well as reliability-based signals.

Thank you for your consideration of these comments. Please contact CEE Program Manager Eileen Eaton at (617) 337-9263 with any questions.

Sincerely,



Ed Wisniewski

Executive Director