

February 18, 2015

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

Dear Ms. Fiffer:

The Consortium for Energy Efficiency (CEE) respectfully submits the following comments in response to the *ENERGY STAR® Draft 1 and Final Draft Version 4.0 Criteria for Room Air Conditioners*, released by the US Environmental Protection Agency (EPA) on October 24, 2014 and January 15, 2015. We note that our comments include careful consideration of the current market conditions for room air conditioners, as they present unique circumstances for the ENERGY STAR program and CEE members who wish to continue supporting ENERGY STAR qualified products. In particular, it is unusual for ENERGY STAR products in the market to be performing so close to pending minimum efficiency standards with little differentiation in energy consumption. As such, CEE is responding to EPA's plan to introduce a specification that appears to appropriately differentiate the market, but where no qualifying products are currently available. While CEE appreciates the intent of the Draft 1 Criteria, we also perceive a need to manage certain potential risks of this approach, as discussed further below.

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, the District of Columbia, and seven Canadian provinces. In 2012, CEE members directed nearly \$6.6 billion of the \$8 billion in energy efficiency and demand response program expenditures in the two countries. These comments are offered in support of the local activities CEE members carry out to actively leverage the ENERGY STAR brand. CEE consensus comments are offered in the spirit of strengthening ENERGY STAR so it may continue to serve as the national marketing platform for energy efficiency.

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.

Consistent with the ENERGY STAR Guiding Principles, CEE Recommends Steps to Ensure Product Availability

After reviewing the data analysis provided by EPA, CEE notes that there are currently no models at any size or configuration that can meet the proposed efficiency criteria. A key brand promise of the program is that it identifies approximately the top 25% of available products. A lack of available products can frustrate stakeholders and consumers alike, and such a decision represents a notable change in program principles. The two principles at issue here are: 1) that energy efficiency can be achieved through one or more technologies such that qualifying products are broadly available and offered by more than one manufacturer, and 2) that ENERGY STAR labeling effectively differentiates products and in a way that is visible to purchasers. In effect, these principles support the idea that in order for ENERGY STAR and CEE member programs to be successful, qualifying products must be broadly available and visible to consumers.

Accordingly, CEE requests assurance as to known and valid product announcements that such products will be available in sufficient quantity to avoid harm to the reputation and value of the brand. To maintain consistency with the ENERGY STAR guiding principles, CEE recommends that EPA confirm a sufficient presence of qualifying products in the market before placing Version 4 into effect.

CEE Requests Additional Information from Manufacturers to Address Product Availability Concerns

We are encouraged by the results of EPA's research efforts to date and appreciate EPA's insights that efficiency improvements are technologically feasible through incorporation of enhanced heat exchangers, more efficient motors, and new refrigerants, however we lack sufficient data to understand how these specific opportunities will translate to product performance improvements. Similarly, while manufacturers have shared with EPA the associated costs and evidence as to their intention to invest in bringing these improvements to market, efficiency program interests would benefit from greater assurance regarding product availability. In order to enable successful product promotion by CEE members during the 2016 cooling season, full scale market presence of ENERGY STAR room air conditioners would be required across the US and Canada. In light of the risk to programs identified above, CEE requests that EPA provide additional information from manufacturers or others as to the applicable product development cycles, anticipated time to market, and anticipated introduction dates of qualifying products. CEE members intend to use these insights to inform their program planning and to support individual determinations as to whether they can promote ENERGY STAR room air conditioners in the

future. Lastly, based on the higher combined energy efficiency ratio (CEER) requirements for large sized room air conditioners, CEE also requests that EPA share what if any technological barriers exist that may prevent smaller room air conditioners from achieving comparable efficiencies.

Pending an assessment of the effect of Size on Run Hours, CEE defers judgment on support for the Proposed Performance Level

Given that the 2014 minimum efficiency requirements for room air conditioners are roughly equivalent to current ENERGY STAR requirements, CEE supports EPA's plans to increase the efficiency criteria. We agree that in order for the ENERGY STAR brand to remain relevant and provide significant differentiation in the market, that it is appropriate for the ENERGY STAR criteria to reflect a meaningful improvement (e.g., 10 percent or better) over the relevant federal standard.

Based on our review, the energy savings resulting from the proposed requirements would appear to enable cost effective programs. However, we note that EPA's assumption of consistent annual operating hours across all product types may not appropriately reflect patterns of operation found in the field. In particular, anecdotal evidence from at least one CEE member indicates that longer run hours are assumed for smaller units versus larger units. We therefore encourage EPA to consider and report on whether any adjustment to run hour assumptions may be appropriate based on the nominal capacity of units.

CEE Supports New Installation Requirements

Given the potential for improved installation practices to result in energy savings, CEE supports EPA's efforts to improve the materials and instructions provided to consumers related to proper installation of room air conditioning units.

CEE Supports additional Research and Testing to Evaluate the Benefit of a future Sound Requirement

CEE appreciates EPA's notice that more efficient motors capable of running at higher speeds may yield noisier operation. In order to maintain a positive consumer experience with ENERGY STAR room air conditioners, we agree with the principle that the potential for increased noise and its impact on a consumer's experience should be evaluated. We have also learned, through EPA's stakeholder process, that there is a lack of test chambers available in the US to evaluate the operational noise levels of these units. Accordingly, at such point in time as test chambers that can support the evaluation of room air conditioners become available in the US and the noise levels of these units can be evaluated, CEE withholds its judgment on an ENERGY STAR sound requirement.

CEE Supports Exploration of Potential Benefits of Connected Room Air Conditioners and Developing Specification Requirements that Will Enable Realization of Those Benefits

CEE supports ENERGY STAR's efforts to specify room air conditioners with connected functionality. Since 2011, CEE has been actively engaged with EPA and manufacturers to assess the market conditions and specification requirements that would be necessary for the ENERGY STAR Program to successfully address "connected" (i.e. interactive communications with energy consuming devices for energy and non-energy related purposes). Below please find our comments on "connected", which are consistent with previous comments submitted in reference to other recent ENERGY STAR Appliance Specification revisions.

We also note that CEE plans to revise its room air conditioner specification in 2015, which may include separate requirements for connected functionality. These connected requirements will incorporate the elements described below.

Potential Benefits of Connected Products

Through a collaborative process that examined the universe of potential benefits from connected products, CEE has categorized certain of the benefits of connectivity into "utility benefits" and "customer benefits", outlined below, which may provide useful context in the course EPA's specification development process.

Utility-side Benefits

- **Grid balancing and Load Management:** Connectivity has the potential to enhance a product's ability to contribute to a smarter grid, and offset or postpone the need for new supply side resources. A connected product with a dispatchable load that can predictably both shed or absorb capacity could intelligently avoid peak periods, respond to a utility demand response signal, or smooth out the impact of intermittent renewable generation resources.
- **Program EM&V data:** Connected products have the ability to provide program administrators with specific data to measure the impact of their energy efficiency and demand response programs. Members are particularly interested in leveraging connected products to measure the persistence of savings in behavior change programs; however, many widget based programs could benefit from in-field data collection. Performance data collected on a frequent basis (e.g. 15 minute intervals) can also provide important information about energy savings opportunities within the home that can inform program design and targeted program offerings.
- **Ancillary Services:** Interest in using demand response and energy efficiency resources to supply low cost reliability products to the bulk electricity system is of increasing interest due to the anticipated impacts of large scale intermittent generation and the ongoing need to address unexpected changes in energy demand or supply. Connected products can enable the higher levels of accuracy and precision that are required when measuring program impacts intended for use in these markets.

- **Enhanced Customer Engagement:** Connected products that offer predictable energy information via open communication pathways have the potential to contribute to CEE member efforts to better understand and serve particular customer market segments through the development of targeted DSM programs.
- **Integrated DSM Program Offerings:** Many CEE members continue to face regulatory and organizational silos when it comes to efficiency, demand response, rates and tariffs, and renewables. Connected products that help meet critical objectives for each of these organizational silos offer an opportunity to bridge these regulatory divides and invite coordinated promotion to the benefit of customers and society.

Customer-side Benefits

- **Financial Savings Through New Energy Efficiency and Demand Response Opportunities:** Connected products can provide actionable information that will compel energy saving behaviors and empower customers to more wisely manage their energy use. The ability to capitalize on time of use rates and participate in DSM programs may be enhanced in a connected world if products meet the consensus needs of program administrators.
- **New Non-energy Benefits:** CEE members have the opportunity to better serve their customers by identifying connected products that will provide new amenity in a consistent, credible manner. Carefully screened connected products can provide remote control, enhanced comfort and convenience, data security, and enhanced customer engagement.

We ask that the ENERGY STAR criteria for connected room air conditioners be designed to enable benefits such as these, and that in general all connected requirements specified by EPA have a clear link to an intended benefit.

Continue to Deliver Cost-Effective Energy Savings to Consumers

CEE stands committed to assist in supporting the incorporation of “connected” functionality into the ENERGY STAR Program while working to ensure that the Program continues to represent the core tenet of cost-effective energy savings to consumers. We have previously requested a basis to justify a 5% credit for “connected” appliances and expressed concern about compromising measurable energy efficiency benefits. As EPA moves forward with a temporary credit (pending completion of a suitable DOE test procedure), we believe that ENERGY STAR products must continue to represent cost-effective energy savings independent of the potential benefits of connectivity, and are pleased to see EPA’s affirmation of this point.

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 fail to provide an open, non-proprietary means of achieving grid connectedness with the appliance via interoperability with

open standard peripherals and applications within the bounds of the customer's premises. 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 multiple 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 customer needs, however we are concerned that as a critical mass of DSM administrators seek to connect with an appliance, additional requirements will prove necessary. This is particularly true for the more traditional direct load control programs, where regulators have come to expect that the DSM administrator has established a long-term, reliable connection with customers that isn't reliant on customer broadband, or the long-term maintenance of a cloud-based network by a product manufacturer. While we believe that an open, non-proprietary means for achieving two-way connectedness 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 ENERGY STAR supporting compatibility across multiple products and manufacturers so that customers continue to retain flexibility for future product choice across manufacturers.

Specifically, we note the following observations:

- **Information-based "behavior change" demand response programs are emerging, and merit the support of ENERGY STAR.** In several states, demand response portfolios are increasingly adding new programs that communicate information (e.g. a peak price or reliability challenge) via a compelling consumer engagement technology (e.g. an in-home display). These types of programs commonly "ride the coattails" of an engaging technology that provides non-energy benefits, and often communicate via an internet or cellular connection. This program approach, which is distinctly different from direct load

control, is designed to share the responsibility of program implementation with 3rd-parties, and may not face the challenges we highlight in our argument for EPA to require connectivity within the physical premises of the home. However, these programs remain in the minority, and CEE members report that direct load control programs are expected to remain common in many states for the foreseeable future. We recommend that the ENERGY STAR Program require communication pathways that will support both direct load control programs and these emerging information based “behavior change” programs.

- **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 their utility for demand response purposes. 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
- **Regulators in some states may determine that cloud-based solutions would compromise customer data privacy and security due to the introduction of a third party into the flow of customer data and appliance control.** We recommend EPA carefully address how its connectivity requirements will safeguard customer data.
- **Requiring that appliances communicate in an open, non proprietary manner from within the customer’s premises (in addition to any cloud-based connectivity) optimizes the customer’s ability to choose who “manages” their appliance 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 appliance consumes 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’s energy consumption along with their security settings and lighting to maximize savings and comfort. Open access within the physical premises of the home would help ensure that the customer is afforded the ability to choose which offer to participate in based on individualized needs and wants.

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. Some CEE members are moving toward 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. 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.

Additional Measures are Likely 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 IDSM (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. As this new element of the Program is introduced, one risk mitigation approach to protect the integrity of ENERGY STAR 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 impact of this program element is fully understood. Any assertion by manufacturers or retailers that 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 action 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 the manufacturers alone who stand behind claims of “connected” functionality.

Lastly, CEE would also like to request that EPA provide public data it may have that identifies the incremental cost of the different connected functionalities specified, to assist in the evaluation of these functionalities relative to the potential benefits they provide.

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