UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 29 2011

OFFICE OF
AIR AND RADIATION

Mr. Kevin Messner
Association of Home Appliance Manufacturers
1111 19th St, NW, Suite 402
Washington, D.C. 20036

Dear Mr. Messner:

The U.S. Environmental Protection Agency (EPA) would like to thank the Joint Petitioners for their petition submitted to the ENERGY STAR program regarding smart grid enabled appliances. As part of a consensus agreement on appliance standards, the Joint Petitioners request that EPA consider a five percent credit to the ENERGY STAR energy performance level for smart grid enabled appliances that can provide demand response.[1] EPA recognizes and appreciates the appliance industry's and efficiency community's long history of promoting energy efficiency and continued support for the ENERGY STAR program. This support has helped to secure American consumers more than $9.5 billion in savings from ENERGY STAR appliances since the start of the program.

Please note, that while your submission was labeled as a "petition," EPA does not consider it to be a formal petition for rulemaking under Section 307 of the Clean Air Act. (*See* 42 U.S.C. § 7607.) The submission does not ask EPA to undertake a notice-and-comment rulemaking to establish regulations, but instead requests that EPA consider a modification to the existing parameters of the voluntary ENERGY STAR program.

EPA recognizes that appliances with demand response functionality have the potential to provide important grid and societal benefits by increasing the efficiency and reliability of the power grid, mitigating peak electricity demand, and creating additional environmental benefits, as detailed in your request. Consumers may also directly benefit from having appliances that can respond to demand response requests in the future. However, for products where demand response participation would mainly shift energy use from one time of the day to another, the full scope of such benefits will be realized only when underlying policies and infrastructure are in place. For example, consumers can save money when time-of-use or real-time electricity prices and smart meters are in place and when grid savings are reflected through lower electricity rates for consumers. However, EPA also notes that demand response can also yield energy savings and near-term consumer benefit for certain products such as water heaters, HVAC equipment and lighting, and, potentially, for some home appliances such as clothes dryers and refrigerators.

[1] Petitioners describe a "smart grid enabled appliance" as product which has the capability to receive, interpret and act on a signal received from a utility, third party energy service provider or home energy management device, and automatically adjust its operation depending on both the signal's contents and settings from the consumer.

Smart grid enabled appliances could also provide new information and tools to help consumers understand and manage their energy use. In-home networks that interconnect appliances could provide new, both energy and non-energy related, functionality and services that have more immediate benefit to the consumer, such as energy use monitoring and reporting, fault detection, and integration with Home Energy Management Systems (HEMS).

The ENERGY STAR program has been successful because it delivers consumer value along with energy savings and corresponding greenhouse gas emission reductions. This concept is a dominant feature of the following principles that guide the process by which ENERGY STAR product specifications are established:

- *Significant Energy Savings Realized on a National Basis*
- *Product Performance Can be Maintained or Enhanced with Increased Energy Efficiency*
- *Purchaser Recovers Investment in Increased Energy Efficiency Within a Reasonable Time Period*
- *Energy Efficiency Can be Achieved With Several Technology Options, At Least One of Which is Non Proprietary*
- *Product Energy Consumption and Performance Can be Measured and Verified With Testing*
- *Labeling Would Effectively Differentiate Products and be Visible for Purchasers*

Consistent with these principles, EPA recognizes an opportunity for the ENERGY STAR program to apply its longstanding commitment to the consumer as different aspects of the smart grid are deployed.

From its inception, the ENERGY STAR program has encouraged the development of "intelligent" capabilities in products that enable them to deliver desired functionality to the user in an energy conscious manner. Examples of this intelligence include computers and monitors that transition to low power sleep states when not in use to reduce power consumption, dishwashers that adjust energy and water use based on soil load, and clothes washers that adjust the wash cycle parameters based on the size of the load. Similar intelligence is being integrated into a wide range of products, creating a foundation upon which to add smart grid functionality at minimum cost. EPA will work with appliance manufacturers and other technology experts to explore new opportunities for advancing intelligent product capabilities as we continue to update ENERGY STAR appliance specifications in the coming years.

In addition, consistent with the principle of enhanced customer value, EPA is currently evaluating elements of smart grid functionality for incorporation into ENERGY STAR specifications as a means to facilitate the deployment of such functionality. We note that a number of these elements are consistent with the appliance industry's stated principles for successful deployment of smart grid enabled appliances.[2] These elements are being vetted as part of the draft ENERGY STAR Residential Climate Controls specification, which is partly intended to differentiate products that can (1) be incorporated into smart grid deployments; (2) be integrated with a HEMS; and/or (3) enable remote user access through the Internet. The elements of smart grid functionality under evaluation include:

[2] AHAM. (2009). *Smart Grid White Paper: The Home Appliance Industry's Principles and Requirements for Achieving a Widely Accepted Smart Grid.* Accessible at: http://www.aham.org/ht/a/GetDocumentAction/i/44191

- Consumer Upgradeability: EPA believes that ENERGY STAR products should be future-oriented and flexible. More consumers are likely to face both higher electricity rates and time-of-use or real time pricing structures in the future. Smart grid enabled appliances could empower energy management tools that help consumers manage their energy use and costs in an automated way. To this end, EPA supports manufacturers' efforts to develop smart grid capable appliances, which would provide consumers with the option to upgrade (via an add-on, user-installable communication module), when appropriate, to realize full smart grid and HEMS functionality.

- Bi-directional Communications: Communication received by an appliance enables remote controllability, including load shifting and load reductions for spinning reserve services to the grid. However, for certain product categories, EPA favors bi-directional communications that will enable additional consumer benefits. By requiring smart appliances to have the capability to collect and communicate energy consumption and related data – as well as to receive, process, and act upon signals – a number of additional consumer benefits could be enabled, including:

    - Enhanced energy awareness by conveying disaggregated energy use and costs for HVAC, water heating, appliances and more, to identify savings opportunities;
    - Use of energy management applications that monitor product settings, current operational mode, grid signals and other relevant information, and take action to automatically generate savings for the consumer;
    - Self-diagnostics and reporting of fault conditions to expedite repairs, provide advanced notice of failures, and minimize periods of reduced operating efficiency; and
    - Remote management capability that may, for example, be used to place the home in an energy saving mode during an unplanned "away" period, or be used to check the status of an appliance.

- Consumer Control: Consumers should have ultimate control over their appliance's reactions to demand response requests. This may be in the form of a preprogrammed response to signals, or at minimum, an option to over-ride preset behavior.

- Open Protocols: EPA encourages the use of open protocols with minimal proprietary customization. Open standards are advantageous to consumers because they maximize interoperability. Smart grid and building networking standards are still in development, and EPA believes that it is important that ENERGY STAR products purchased today be fully functional in the networks of tomorrow. To this end, EPA continues to support efforts to develop open, interoperable standards.

As part of our ongoing work to maintain and update the program's appliance specifications, EPA has or will be launching revisions to ENERGY STAR product specifications for most of the appliances referenced in your request. As part of each revision effort, and working actively and closely with stakeholders, EPA will consider the opportunity and appropriate timing for ENERGY STAR product specifications to address smart grid functionality for product categories that show the greatest potential to generate additional energy savings while delivering demand response, to provide demand response services without sacrifice in performance, and to empower consumers

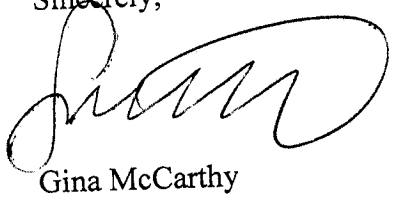
with information and tools to better manage energy use. With this in mind, EPA and US Department of Energy (DOE) representatives recently participated in a meeting led by AHAM focused on test procedure development for smart appliances, and will continue to work closely with stakeholders to develop a set of common definitions around smart grid functionality, building on definitions developed by the Joint Petitioners.

As the process unfolds, EPA will consider energy allowances associated with specific smart grid related features for particular product categories. While we are unable to grant the request for a five percent incentive across the board, there is precedence within the ENERGY STAR program for incorporating energy allowances (aka "adders") to accommodate features or functionality of key interest to consumers, as well as targeted incentives, to encourage the uptake of new energy savings features and standards that provide benefit to consumers. As EPA evaluates potential smart grid related incentives during our specification revision processes, we look forward to working with you to fully consider the functionalities of interest, the consumer benefit associated with each, how these savings should be measured and verified, and any price differential for a product with such functionalities.

EPA fully supports broader efforts already underway to build a modernized 21st century electricity grid and will apply the ENERGY STAR program's longstanding commitment to consumers as it continues to evaluate how the program can contribute to the deployment of smart grid functionality in appliances and other products. EPA also believes the ENERGY STAR program can play an important role in helping to educate consumers about both "intelligent" behaviors in their products and the benefits of smart grid technologies.

We look forward to working with you to advance the development and deployment of intelligent product capabilities and smart grid enabled appliances that offer consumer value and contribute to a cleaner environment.

Sincerely,



Gina McCarthy
Assistant Administrator

cc: Dr. Henry Kelly, Acting Assistant Secretary and
Principal Deputy Assistant Secretary
Office of Energy Efficiency and Renewable
Department of Energy