



NRDC Comments on EPA ENERGY STAR's Framework Document for Room Air Conditioners

December 9, 2013

On behalf of the Natural Resources Defense Council (NRDC) and its more than 1.3 million members and online activists we respectfully submit the following comments on the EPA ENERGY STAR's Framework Document for Room Air Conditioners.

NRDC supports updating the room air conditioner specification. As EPA notes, the new federal standards for room air conditioners go into effect in 2014 which are equal to and in some cases exceed the Energy Star specification. This necessitates an update to the Energy Star specification if Energy Star is going to maintain a product category for room air conditioners.

NRDC believes an updated specification is warranted for several reasons. First, room air conditioners are a growing market, both in the US and globally, indicating significant potential energy savings. While sales of room air conditioners dropped in 2009 due to the recession, they have been growing since. Furthermore, global markets for room air conditioners are also growing quickly. For instance, a recent LBNL study found that annual sales of room air conditioners (including split systems) in India were increasing by 17 percent per year.¹ An updated Energy Star specification would lead to energy savings both in the US and most likely internationally as the specification would influence global markets for room air conditioners.

Furthermore, there are likely cost effective energy efficiency improvements available in room air conditioners. While EPA notes that the DOE analysis did not find additional cost-effective energy savings beyond the levels set in the updated standards, this analysis is a few years old and projected costs have likely come down as manufacturers have begun to prepare for the effective date of the updated standard. As EPA notes and DOE documents in the final rule technical support document, there are many options for increasing the component efficiency of room air conditioners, such as increasing the efficiency of heat transfer², improved fan design, reducing air recirculation, higher efficiency compressors, reduced standby power and improved part load efficiency.

¹ http://www.superefficient.org/Resources/~media/Files/EEDAL%20Papers%20-%202013/031_Shah_finalpaper_EEDAL13.pdf

² DOE is currently conducting research on heat exchangers that has potential implications for room air conditioners: http://www1.eere.energy.gov/buildings/technologies/m/proj_hvac_radial_research.html

Finally, EPA should update the specification for room air conditioners because higher efficiency room air conditioners will not only lead to overall energy savings, but also have the added benefit of reducing peak demand on hot summer days. These additional benefits, the increasing global market for room air conditioners, and the likely existence of cost-effective energy savings all support the fact that EPA should update the Energy Star specification for room air conditioners.

EPA should consider technology options that improve efficiency even if they are not captured by the existing test procedure. EPA states that it is considering potential requirements on installation measures for room air conditioners that would not be captured by the test procedure but would likely lead to in field savings. NRDC would support such a requirement and recommends that EPA consider developing an additional performance specification with respect to these features, such as a requirement for maximum total leakage and/or heat transfer across the air conditioner when installed as sold and directed.

NRDC also recommends that EPA consider whether there are other technology options that would improve in field energy savings but are not captured by the current test procedure. For instance, the NREL report cited by EPA in the Framework Document includes recommendations for measures that would reduce barriers to maintenance, leading to higher persistence of energy savings.³ Another technology option that may reduce energy use but is not captured by the test procedure is the use of variable speed compressors.

NRDC supports the inclusion of connected functionality as a part of the room air conditioner specification. Smart, automated, demand-responsive appliances have the potential to provide at least two essential, non-polluting services to the power grid⁴:

- (1) Shift operation from on-peak hours to off-peak hours, thereby reducing the need for often expensive and more polluting peak-power producing generators.
- (2) Temporarily curtail operation (partially or fully depending on the appliance controls and functional abilities) for up to several minutes at a time to provide an alternative “fast grid response”, i.e. ancillary service.

Deploying these devices with enhanced demand response and grid communication technologies, however, will require that consumers are aware of these enhanced capabilities in the product they may purchase. Furthermore, after the consumer plugs in their new equipment, energy providers and their customers should be in full agreement on the expectations of grid “calls” that will have the ability to manage the operation of the

³ <http://www.nrel.gov/docs/fy13osti/57617.pdf>, page iv

⁴ Sastry, C., et al. (2010) Use of Residential Smart Appliances for Peak-Load Shifting and Spinning Reserves; Cost/Benefit Analysis. U.S. DOE Pacific Northwest National Laboratory. Available at <http://www.aham.org/ht/a/GetDocumentAction/i/51596>

appliance, the sharing of consumer usage data of the appliance, provide an accurate number of potential usage curtailments as well as how to potential shift operation to off-peak hours, and finally the option for consumer over-ride (trumping all grid-connected controls) if the appliance end-user chooses non-participation.

Room air conditioners were among the appliances analyzed by PNNL⁵ that exhibited highest net benefits in providing both hourly operational shifts and temporary “fast response” demand response in benefiting the utility grid.

Thank you for the opportunity to submit these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Meg Waltner", with a long horizontal flourish extending to the right.

Meg Waltner
Manager, Building Energy Policy

⁵ Ibid.