Appliance Standards Awareness Project
Alliance to Save Energy
Natural Resources Defense Council

March 2, 2015

Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
Mailstop EE-5B
1000 Independence Avenue, SW
Washington, DC 20585

RE: Docket Number EERE–2012–BT–STD–0041/RIN 1904–AC85: **Notice of Proposed Rulemaking for Single Package Vertical Air Conditioners and Heat Pumps**

Dear Ms. Edwards:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), Alliance to Save Energy (ASE), and Natural Resources Defense Council (NRDC) on the notice of proposed rulemaking (NOPR) for single package vertical air conditioners and heat pumps. 79 Fed. Reg. 78614 (December 30, 2014). We appreciate the opportunity to provide input to the Department.

We support the proposed standards for single package vertical air conditioners and heat pumps (SPVUs). DOE estimates that the proposed standards would save 0.23 quads of energy over 30 years of sales,[1] and yield net savings for customers of $0.11-0.44 billion.[2] DOE's analysis for the NOPR, which is based on currently-available models, found that to increase efficiency from the baseline (10 EER) to the proposed standard level (11 EER), manufacturers typically add another tube row to each of the heat exchanger coils and that this change usually does not require an increase in cabinet size.[3]

We believe that DOE may have found higher efficiency levels to be cost-effective if microchannel heat exchangers had been incorporated in the analysis. The Technical Support Document (TSD) states that DOE did not incorporate microchannel heat exchangers in the engineering analysis due to a lack of data documenting the effect of microchannel heat exchangers on the efficiency of SPVUs.[4] However, even though SPVU models with microchannel heat exchangers may not be currently available, DOE's engineering analysis could have incorporated microchannel heat exchangers using a modeling approach. For example, for the recently issued NOPR on commercial package air conditioners and heat pumps, DOE used a

[1] Using ASHRAE 90.1-2013 as the baseline.
[2] 79 Fed. Reg. 78617.
[3] NOPR TSD. p. 5-20.
[4] NOPR TSD. p. 4-4.

heat exchanger modeling tool that has the capability to model a variety of heat exchangers including microchannel heat exchangers.[5]

At the public meeting on February 6, DOE also stated that there may be reliability issues associated with microchannel heat exchangers, although these issues were not described. We are unaware of any reliability issues associated with microchannel heat exchangers, and microchannel heat exchangers are now used in a variety of air conditioning and refrigeration applications including residential central air conditioners and commercial rooftop units. Alcoil states that the all-aluminum construction of microchannel heat exchangers "means they are smaller, lighter and less expensive while being more robust and easier to maintain." Alcoil further states that the all-aluminum construction means that unlike copper/aluminum coils, microchannel heat exchangers are not subject to galvanic corrosion and that "the mechanically bonded tubes and fins of micro-channel coils make them less susceptible to damage during handling, cleaning, and normal installation and maintenance."[6] Carrier states that microchannel technology "provides many performance and reliability benefits" including no traditional wear points and no fin combing.[7] And Danfoss notes that microchannel heat exchangers are "very easy to clean, unlike F&T coils from which dust and dirt are difficult to remove."[8]

DOE also states in the TSD that microchannel heat exchangers may have "difficulty in evaporator applications, because their geometry is less amenable to condensate removal than conventional heat exchangers."[9] While we understand that there are challenges associated with applying microchannel heat exchangers in evaporator applications that are not present in condenser applications, manufacturers have found ways to address these challenges and multiple manufacturers now offer microchannel heat exchangers for evaporator and heat pump applications.[10] Therefore, microchannel heat exchangers could potentially provide improved performance of both the indoor and outdoor coils of SPVUs.

In sum, we support the proposed standard levels for SPVUs, although we note that DOE may have found higher efficiency levels to be cost-effective if microchannel heat exchangers had been incorporated in the engineering analysis using a modeling approach.

Thank you for considering these comments.

Sincerely,

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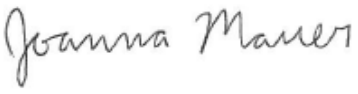
[5] Commercial Package Air Conditioners and Heat Pumps NOPR TSD. p. 5-29. http://www.regulations.gov/#!documentDetail;D=EERE-2013-BT-STD-0007-0027.
[6] http://www.alcoil.net/pdf/Alcoil_Mailer.pdf.
[7] http://www.commercial.carrier.com/commercial/hvac/general/0,3055,CLI1_DIV12_ETI12211_MID6127,00.html.
[8] http://www.ra.danfoss.com/TechnicalInfo/Literature/Manuals/24/DKQBPB400A402_Sep2014_LR.pdf.
[9] NOPR TSD. p. 3-19.
[10] See, for example: http://www.delphi.com/docs/default-source/old-delphi-files/d2132d9c-715e-46ab-b9c0-291ee4238804-pdf; http://www.delphi.com/docs/default-source/old-delphi-files/4ecc223d-b013-4aa5-a8e0-90c07ddd3b7f-pdf; http://alcoil.net/applications.htm.



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