American Council for an Energy-Efficient Economy
Natural Resources Defense Council
Appliance Standards Awareness Project
Alliance to Save Energy
Consumer Federation of America
Consumers Union
National Consumer Law Center
Northwest Energy Efficiency Alliance
Northwest Power and Conservation Council

August 5, 2013
Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
1000 Independence Avenue, SW
Mailstop EE-2J
Washington, DC 20585

RE: Docket Number EERE–2013–BT–STD–0033/ RIN 1904–AD02: Proposed Determination of Coverage for Portable Air Conditioners

Dear Ms. Edwards:

This letter constitutes the comments of the American Council for an Energy-Efficient Economy (ACEEE), Natural Resources Defense Council (NRDC), Appliance Standards Awareness Project (ASAP), Alliance to Save Energy, Consumer Federation of America (CFA), Consumers Union, National Consumer Law Center (NCLC), Northwest Energy Efficiency Alliance (NEEA), and Northwest Power and Conservation Council (NPCC) on the Department of Energy's (DOE) proposed determination of coverage for portable air conditioners. 78 Fed. Reg. 40403 (July 5, 2013). We appreciate the opportunity to provide input to the Department.

Portable Air Conditioners (PAC) are a fast-growing product class, with current shipments of about one million units per year, which are expected to almost double within 6 years.[1] PAC also use a significant amount of energy on a per-unit basis: DOE preliminarily estimates per-unit annual energy use ranging from 400-650 kWh. In general, these units both compete with and complement Room Air Conditioners (RAC), but with higher cost and lower efficiency. Like RAC, they serve single zones, and are single packages (unlike, for example, minisplits). In some cases, they may be serving uses where RAC are not viable (such as interior server closets or buildings where windows are not suited to RAC) and in other cases they may be directly competing with RAC.

[1] 78 Fed. Reg. 40404 (July 5, 2013)

Recommendation 1): Due to the significant and growing shipments of PAC, their high per-unit energy use, and the availability of competing products that are currently covered by DOE test procedures and standards, we recommend that DOE develop test procedures and consider establishing energy conservation standards for PAC. Although we have not undertaken significant analysis ourselves, we believe that some design features could improve efficiency cost-effectively relative to common products today. As DOE notes, PAC come in a wide range of advertised rated efficiencies, which further indicates the potential for efficiency improvements.

Both RAC and PAC pump heat from the warm interior to the generally warmer exterior, using vapor compression cycles. RAC are window-mounted. The 'outside' part of the assembly contains the condenser and the compressor. The heat of compression is dumped to the outdoor ambient, and the condenser is cooled by ambient air.

In contrast, PAC are floor-standing and use specialized flex ducts to exhaust condenser cooling air through a window. With single-duct units—apparently the most typical type—the source of condenser cooling air is the room being cooled. Exhausting this air *must* result in replacement from other zones of the building, and ultimately from hot, more humid, outdoor air. In addition, the heat of compression is in the room, adding something in the range of 30% to the heat load that must be met to adequately cool the room.

Thus, for more-or-less equivalent compressor designs, heat exchanger areas, and controls, a larger-capacity PAC would be required to meet the same cooling load as a smaller-capacity RAC.

Recommendation 2): For these reasons, the test procedures developed by DOE must be based on *net capacity*, with realistic reductions for the heat of compression dissipated by the indoor-mounted compressor.

Recommendation 3): To meet consumer needs, DOE's test procedures must facilitate realistic comparisons between PAC and RAC. That is, the energy efficiency metric should be a steady-state EER. Beyond that, the test procedures must assume that outdoor ambient is the ultimate condenser coolant, not indoor, and they must account for the heat of compression rejected to the indoor space.

Recommendation 4): Any potential energy conservation standards should *not* differentiate between single-duct (most common today) and dual-duct units, because both provide the same utility to consumers. Further, the engineering analysis should consider the feasibility of mounting the hermetic condenser in the condenser cooling airstream so its heat of compression is discharged outdoors, instead of adding to the load on the PAC.

In summary, we believe that PAC represent a significant opportunity for energy savings due to their high annual shipments, large per-unit energy use, and potential for energy efficiency

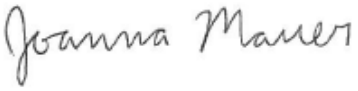
improvements. We recommend that DOE develop test procedures that provide for a realistic comparison between PAC and RAC and that DOE analyze the potential for standards for PAC.

Thank you for considering these comments.

Sincerely,

Harvey Sachs
Senior Fellow
American Council for an Energy-Efficient Economy

Meg Waltner
Manager, Building Energy Policy
Natural Resources Defense Council



Joanna Mauer
Technical Advocacy Coordinator
Appliance Standards Awareness Project

Rodney Sobin
Director of Research and Regulatory Affairs
Alliance to Save Energy

Mel Hall-Crawford
Energy Projects Director
Consumer Federation of America

Shannon Baker-Branstetter
Policy Counsel, Energy and Environment
Consumers Union

Charles Harak, Esq.
National Consumer Law Center
(On behalf of its low-income clients)

Charlie Stephens
Sr. Energy Codes & Standards Engineer
Northwest Energy Efficiency Alliance

Tom Eckman
Manager, Conservation Resources
Northwest Power and Conservation Council