August 15, 2022

Ann Bailey
Director
ENERGY STAR Product Labeling
Office of Air and Radiation
United States Environmental Protection Agency
Washington, D.C. 20460

RE: ENERGY STAR Most Efficient 2023 Criteria for Central Air Conditioners and Heat Pumps

Dear Director Bailey,

Thank you for the opportunity to comment on the proposed ENERGY STAR Most Efficient criteria for 2023. The Most Efficient designation has long recognized best available technologies for consumers who want to cut energy bills, improve air quality, and reduce planet-warming CO_2 emissions. However, the 2023 draft criteria do customers a disservice by continuing to recognize central air conditioners (CACs) while a better alternative exists in the form of heat pumps. In setting the mark for the top tier of available products, we encourage EPA to exclude cooling-only heat pumps (i.e., air conditioners) and include only heat pumps that provide heating and cooling.

Over 17 million households (14%) across all parts of the US use heat pumps[1] and 4 million heat pumps were sold last year. However, another six million CACs were also sold, or approximately one every 5 seconds.[2] Shifting the sales of these air conditioners to heat pumps presents a huge opportunity to rapidly electrify household heating. A recent study by the American Council for an Energy-Efficient Economy (ACEEE) found that heat pumps are the least cost option to decarbonize heating in most of the US.[3] This suggests that the imperative to dramatically and rapidly reduce greenhouse gas emissions will move homes away from cooling-only heat pumps. By withdrawing Most Efficient designation for central air conditioners and recognizing heat pumps that provide both heating and cooling as the leading edge products, EPA can set a mark that advances this shift and reduces air pollution and CO_2 emissions at low cost.

Heat Pumps as a Beneficial Replacement for Air Conditioners

Heat pumps provide the same cooling function as CACs, but can also run in reverse,

[1] US EIA, Residential Energy Consumption Survey (RECS), Table HC6.1 Space heating in U.S. homes, by housing unit type, 2020.
[2] Air-conditioning, Heating, & Refrigeration Institute (AHRI), "AHRI Releases December 2021 US Heating and Cooling Equipment Shipment Data", February 11, 2022, p. 4.
[3] Nadel, S., and L. Fadali. 2022. *Analysis of Electric and Gas Decarbonization Options for Homes and Apartments*. Washington, DC: ACEEE. www.aceee.org/research-report/b2205.

providing heat in the colder months. The incremental cost for reversible functionality is small.[4] This small upfront cost provides enormous benefits because the heat pump can displace a significant portion of the legacy heat generated by inefficient heat sources such as boilers, furnaces, or electric resistance, or replace them entirely given sufficient capacity and cold-temperature performance.

CLASP's 2021 hourly, census-tract level modeling[5] found that households that replace their CACs with a heat pump but continue to use a legacy fossil fuel furnace or boiler as backup, would displace 39% of their fossil fuel use on average, resulting in 11% reduction in CO_2 emissions and costs. Total reductions of switching all central ACs to heat pumps were 49 Mt CO_2 over 10 years, along with $27 billion in heating bill savings, and an additional $80 billion in societal benefits due to the following improvements in health from cleaner air:

- 1000 fewer premature deaths,
- 1000 fewer emergency room visits,
- 1000 fewer nonfatal heart attacks,
- 25,000 fewer asthma exacerbations,
- 37,000 fewer respiratory and acute bronchitis incidents,
- 571,000 fewer minor restricted activity days, and
- 98,000 fewer lost workdays.

CLASP estimated this under conservative assumptions of:

- 15 SEER/9 HSPF heat pump, which will be the minimum standard in 2023,
- Standard temperature performance (not a cold climate heat pump), and
- Switchover to fossil fuel backup below 41° F/5°C.
- (ENERGY STAR most efficient heat pumps will likely generate even greater impacts)

A recent analysis that CLASP conducted with the Regulatory Assistance Project (RAP)[6] confirmed these findings in the face of higher fuel prices, finding that oil, propane, and electric resistance households would see average annual cost reductions of $400 or more, on average from using the heat pump at or above 41° F/5°C.

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[4] DOE estimated it at $131 in parts costs in 2015 for a 3-ton 15 SEER unit. U.S. Department of Energy, "Technical Support Document: Energy Efficiency Program for Consumer Products: Residential Central Air Conditioners and Heat Pumps", December 2016, pp. 5-21, 5-23.

[5] Stephen Pantano, Matt Malinowski, Alexander Gard-Murray, and Nate Adams, *3H 'Hybrid Heat Homes' An Incentive Program to Electrify Space Heating and Reduce Energy Bills in American Homes,* CLASP, 2021, https://www.clasp.ngo/research/all/3h-hybrid-heat-homes-an-incentive-program-to-electrify-space-heating-and-reduce-energy-bills-in-american-homes/

[6] Matt Malinowski, Max Dupuy, David Farnsworth, Dara Torre, Combating High Fuel Prices with Hybrid Heating: The Case for Swapping Air Conditioners for Heat Pumps, CLASP, 2022, https://www.clasp.ngo/research/all/ac-to-heat-pumps/

Even greater benefits result when the heat pump used is cold-climate capable. Completely replacing oil, propane, or electric resistance with the median heat pump from the Northeast Energy Efficiency Partnerships (NEEP) Cold Climate Air Source Heat Pump Product List[7] would result in average annual cost reductions of $750 or more. We would therefore expect the additional cost to be returned quickly for the customers who use these expensive fuels, including low-income households who are more likely to use electric resistance.[8]

Withdrawing Most Efficient for Central Air Conditioners Is Consistent with Past EPA Action and Helpful to CO_2 Reduction

By removing the Most Efficient designation for central air conditioners, EPA would make clear to households that heat pumps are the true efficient choice, and shift heating from fossil fuel furnaces and boilers to this clean and efficient electric alternative. EPA has already started this shift by withdrawing the Most Efficient designation for furnaces and boilers in 2021 and ENERGY STAR recognition for electric water heaters in 2014. Removing one-way air conditioners when cleaner alternatives are readily available would be the next and necessary step.

Conclusion

While not a complete electrification solution, shifting air conditioners to heat pumps can significantly increase the sales of heat pumps, familiarizing consumers and installers and reducing costs, thereby enabling full electrification. It does so at a reasonable incremental cost.

Completely shifting the housing stock from air conditioners to heat pumps would reduce US CO_2 emissions by 67 Mt/yr with hybrid heating and by 223 Mt/yr with full electrification using cold-climate heat pumps. Even a portion of this, motivated by the Most Efficient designation and a shift in utility incentives, would be a win for the climate, air quality, and household budgets.

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[7] https://ashp.neep.org/#!/

[8] Rachel Cluett, Jennifer Amann, Sodavy Ou, “Building Better Energy Efficiency Programs for Low-Income Households”, ACEEE Report A1601, March 2016, p. 4.

For all the above reasons, we urge you to withdraw the Most Efficient designation for central air conditioners and unequivocally support heat pumps.

Respectfully,

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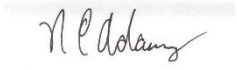

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