



August 21, 2023

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 2024 Proposed Criteria

Dear Director Bailey,

Thank you for the opportunity to comment **in support of ENERGY STAR Most Efficient 2024 Proposed Criteria for air-source heat pumps and removal of one-way central air conditioners (CACs) from the criteria.** The undersigned participate in a Hybrid Heat Coordination Group, which advocates for decarbonizing heat, cost effectively, by replacing one-way CACs with air source heat pumps. The proposal will advance heat decarbonization by clearly preferencing heat pumps, which are superior to CACs across the vast majority of climates and installation scenarios.

Members of our group had previously commented on August 15, 2022, requesting that EPA withdraw the ENERGY STAR Most Efficient designation from CACs, so we are gratified to see EPA proposing this change for 2024. Most of our previous comments outlining the benefits of heat pumps over CACs apply here. We will briefly summarize these benefits, while also addressing how the CAC-to-heat pump switch meets the goals of the broader ENERGY STAR program, and dispel some potential concerns that may be raised by other stakeholders.

Benefits of Switching from CACs to Heat Pumps

Heat pumps provide the same cooling function as CACs, but can also run in reverse, providing heat in the colder months. The incremental cost for reversible functionality is small.¹ 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 modeling² found that households that replace

¹ 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.

² Stephen Pantano, Matt Malinowski, Alexander Gard-Murray, and Nate Adams, *3H 'Hybrid Heat Homes'*



their CACs with a heat pump but continue to use a legacy fossil fuel furnace or boiler as backup below 41 °F, would displace 39% of their fossil fuel use on average, resulting in 11% reduction in CO₂ emissions and costs. Total reductions of requiring heat pumps instead of CACs were 49 million tons of CO₂ 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, equivalent to the 14.3 SEER2/7.5 HSPF2 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.

CAC-to-Heat Pump Switch Is a Natural Fit for ENERGY STAR Program

Furthermore, as we mentioned in our June 22, 2023, comments in response to EPA’s proposal to sunset one-way ACs from the main ENERGY STAR Program, the CAC-to-Heat Pump Switch is a natural fit for ENERGY STAR. By removing one-way ACs from Most Efficient, EPA can help clarify that two-way heat pumps are the true efficient choice, helping motivate early adopters to install heat pumps. EPA can also address barriers to adoption such as insufficient information, insufficient financial incentive, concerns with

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/>



quality, and an established status quo.

In our June 22 comments, we also dispelled some concerns relating to heat pump benefits in various contexts:

- 98% of US homes require heating and so would benefit from a heat pump over an air conditioner³ and states that do not experience extreme cold see the greatest benefit. For example, heat pump penetration in the Southeast is 19–41%,⁴
- However, experience from recent winters in the North has been positive, with positive news stories from Oregon⁵ and New England⁶ and a survey of heat pump owners in New York and Massachusetts finding an average 8.5/10 satisfaction;⁷
- Utilities have used heat pumps in demand reduction programs, even in states with fuel-switching prohibitions;⁸
- Heat pump dehumidification performance (necessary for healthy buildings) can be promoted through product information and sizing and installation guidance;
- Heat pumps will provide operating cost savings when replacing or displacing electric resistance, propane, and oil. While several field studies have found negative savings compared to methane,⁹ CLASP’s modeling of hybrid

³ Data includes all US states, plus Puerto Rico and District of Columbia. U.S Census Bureau, “Home Heating Fuel”, *American Community Survey*, 2020. As reported by Atlas Public Policy, “Market Factors: Demographics”, *Buildings Policy Hub*, accessed June 6, 2023. <https://atlasbuildingshub.com/market-data/market-factors/>

⁴ US Energy Information Administration, “2020 Residential Energy Consumption Survey” as reported in Kim Latham, “Residential Building Characteristics,” Atlas Buildings Hub, accessed June 6, 2023, <https://atlasbuildingshub.com/market-data/residential-building-characteristics/>.

⁵ Gosia Wozniacka | The Oregonian/OregonLive, “Oregonians’ Experiences with Heat Pump Installations,” oregonlive, May 28, 2023, <https://www.oregonlive.com/environment/2023/05/oregonians-experiences-with-heat-pump-installations.html>.

⁶ “Heat Pumps Had Their First Major Local Test Last Weekend. Here’s How It Went. - The Boston Globe,” accessed June 7, 2023, <https://www.bostonglobe.com/2023/02/08/science/heat-pumps-had-their-first-major-test-last-weekend-heres-how-it-went/>.

⁷ Cadmus, “Residential CcASHP Building Electrification Study: Final Report,” 12–13, https://cadmusgroup.com/wp-content/uploads/2022/06/Residential-ccASHP-Building-Electrification-Study_Cadmus_Final_060322_Public.pdf.

⁸ CenterPoint Energy. Austin Pooley and Steve Wiese, “Achieving High Impacts in Low-Income Multifamily Housing” (ACEEE Hot Water and Hot Air Forum, San Diego, CA, USA, March 7, 2023).

⁹ Cadmus, 30; James Williamson and Robb Aldrich, “Field Performance of Inverter-Driven Heat Pumps in Cold Climates,” August 2015, tbl. 13, https://www1.eere.energy.gov/buildings/publications/pdfs/building_america/inverter-driven-heat-pumps-cold.pdf; RDH Building Science, “BC Cold Climate Heat Pump Field Study,” November 9, 2020, tbl. 12, <https://www.rdh.com/wp-content/uploads/2021/01/BC-Cold-Climate-Heat-Pump-Study-Final-Report.pdf>.



configurations found comparable utility bills in the six states with negative savings (only \$9–66 more per year).¹⁰

- While heat pumps cost more up-front than comparable CAC’s, Inflation Reduction Act tax credits and forthcoming rebates should help defray that cost.
- Hybrid heat pumps would result in 6–35% lower emissions compared to a standalone methane furnace. These reductions were even greater with a full cold-climate replacement, at 18–80%.¹¹
- Finally, replacing CACs with heat pumps adds consumer choice, by providing heating in addition to cooling. In a hybrid installation, the heat pump can provide resilience in case of furnace failure and flexibility in the face of rising fuel prices.

In short, while there are some unique cases, the vast majority of users would benefit from heat pumps over ACs. What is more, purchasers of ENERGY STAR Most Efficient heat pumps would benefit even more, as the heat pumps’ higher efficiency will reduce operating costs and emissions, and qualify for IRA tax rebates. Most Efficient products appeal to users despite their costs. Meanwhile, CLASP and others have demonstrated that heat pumps reduce energy and CO₂ across the country.

Conclusion

While not a complete electrification solution, shifting central air conditioners to heat pumps can take advantage of a low-barrier path to emissions and cost reductions that can run in parallel to fossil fuel heating replacements. It can also significantly increase the sales of heat pumps, familiarizing consumers and installers, thereby enabling full electrification.

Completely shifting the housing stock from central air conditioners to heat pumps would reduce US CO₂ emissions by 67 million tons/year with hybrid heating and by 223 million tons/year with full electrification using cold-climate heat pumps. Even a portion of this, motivated by the ENERGY STAR Most Efficient designation and a shift in utility incentives, would be a win for the climate, air quality, and household budgets.

¹⁰ Matt Malinowski, Dave Farnsworth, and Max Dupuy, “Combating High Fuel Prices with Hybrid Heating: The Case for Swapping Air Conditioners for Heat Pumps,” CLASP, July 2022, 40, <https://www.clasp.ngo/research/all/ac-to-heat-pumps/>.

¹¹ Matt Malinowski, Dave Farnsworth, and Max Dupuy, “Combating High Fuel Prices with Hybrid Heating: The Case for Swapping Air Conditioners for Heat Pumps,” CLASP, July 2022, 40, <https://www.clasp.ngo/research/all/ac-to-heat-pumps/>.



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For all the above reasons, we urge you to remove one-way CACs from ENERGY STAR Most Efficient and unequivocally support heat pumps.

Respectfully,

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CLASP

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