



May 16, 2024

Abigail Daken and Holly Tapani
Product Manager
ENERGY STAR Product Labeling
Office of Air and Radiation
United States Environmental Protection Agency
Washington, D.C. 20460

RE: ENERGY STAR Residential Central Air Conditioners Sunset Proposal Update

Dear Ms. Daken and Ms. Tapani,

Restating support for the central air conditioner (CAC) sunset

The undersigned represent organizations that are members of the Hybrid Heat Coordination group, focused on cost-effectively accelerating the adoption of heat pumps through a focus on AC-to-heat pump replacement. We are therefore excited to see an update on the CAC sunset proposal and wholeheartedly encourage EPA to implement the proposal without further delay.

We hope that the greater than 1 year delay between when the sunset was originally proposed to take place and the current proposed effective date will address some stakeholders' request for a delay. However, we understand that some stakeholders had further concerns beyond the lead time and are therefore providing new inputs that will hopefully assuage those concerns.

Desire for Efficient CACs

Some stakeholders noted that without an ENERGY STAR program for CACs, installers and customers are likely to default to minimum-standard installations, thereby foregoing the energy, financial, and environmental benefits of efficiency. Also, utility program administrators will lack a reference for setting program requirements. Finally, there is the question of what requirements states will use when implementing HOMES programs, which the Inflation Reduction Act requires to reference ENERGY STAR

First, we would like to note the alternatives to ENERGY STAR for program administrators: Consortium for Energy Efficiency, specifying higher SEER2 requirements for CACs directly, or referencing archived specifications or product lists. However, we agree with stakeholders that the ENERGY STAR program for CACs has its own unique benefits and that sunsetting that program will have a downside. There will surely be customers who end up installing lower-efficiency CACs than they did before the program. However, we believe that the benefits of encouraging heat pump installations will be far greater.

Heat Pump Operating Cost Savings

The reason for this optimism is a range of recent analyses that show that heat pumps installed as a CAC replacement in a hybrid/dual-fuel installation result in heating bill savings in most states. These savings often do not even include the cooling bill savings that occur because the minimum-standard SEER2 requirement is higher for heat pumps than for CACs. For example, CLASP's latest hourly analysis of the contiguous US at the census tract level finds

that minimum-standard heat pumps set to run above 40 °F with furnace backup will reduce heating bills in all but three states. This is consistent with CLASP analyses from past years using slightly different electric and gas rates,¹ which also showed that hybrid heat pumps will generally provide operating cost savings for households around the country.

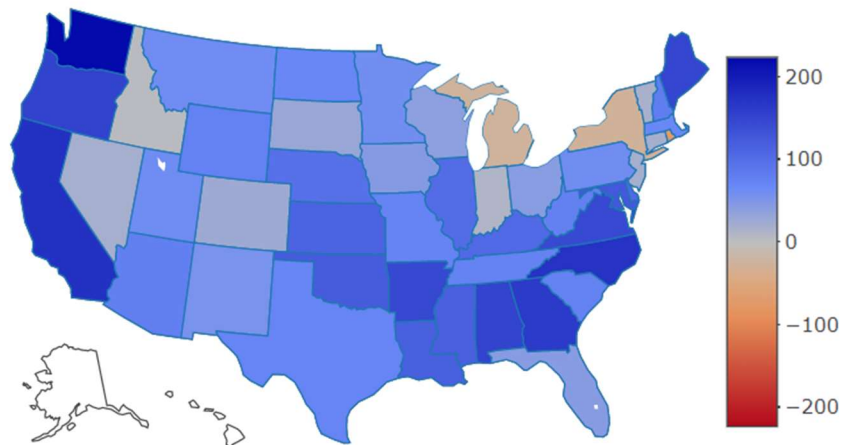


Figure 1. Annual heating bill savings for a DOE-minimum heat pump paired and 85 AFUE furnace. Estimated using CLASP model with December 2022 state average marginal electricity and gas rates from DOE and census-level hourly temperature data; Hawaii and Alaska not analyzed.

Other analyses tend to concur. For example, the table below shows modeling by several additional groups of non-cold climate heat pumps in hybrid applications with existing 80 AFUE furnaces, finding them to generally produce savings, when operated above 40 °F:

Source (presented at the ACEEE Hot Air & Hot Water Forums, Atlanta, GA, March 12-13, 2024, unless otherwise indicated)	Location	Operating Cost Savings (\$/yr)
James Milford. “Tools for Navigating the Building Electrification Landscape: Helping Consumers, Utilities and Cities Affordably Decarbonize,” p. 7. https://drive.google.com/file/d/1QzITpqRdjj4m9l2G5V4NKRF55RPBArj/view .	Fort Collins, CO	~ \$40–75*
Saurabh Shekhar and Nicholas Fette. “Energy Modeling and Analysis of Dual-Fuel Heating Systems in Single-Family Homes,” p. 9. https://drive.google.com/file/d/1RQEyywN6lo1_tgklkZImVR44tpqVXhvy/view .	Southern California	~ -\$5

¹ “3H Hybrid Heat Homes: An Incentive Program to Electrify Space Heating and Reduce Energy Bills in American Homes,” CLASP, accessed September 14, 2023, <https://www.clasp.ngo/research/all/3h-hybrid-heat-homes-an-incentive-program-to-electrify-space-heating-and-reduce-energy-bills-in-american-homes/>; 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, <https://www.clasp.ngo/research/all/ac-to-heat-pumps/>.

Navin Kumar, “Hybrid (Dual-Fuel) Systems Control Optimization for Annual Operating Cost and Emission,” pp. 14, 18. https://drive.google.com/file/d/1CKpXqUiiNkYdj3yfuuRTxtpY4a-8CMc8/view .	Pocatello, ID	~ \$220
	Raleigh, NC	~ \$175
ComEd, “Savings Calculator,” default settings except window AC switched to central AC, accessed May 13, 2024. https://goelectric.comed.com/calculator/index.html	Chicago, IL	~ -\$100**
Minnesota Air Source Heat Pump Collaborative, “Cost of Heat Comparison,” default settings, accessed May 13, 2024. https://www.mnashp.org/cost-heat-comparison	Minneapolis, MN	~ -\$5***

* Heat pump operated above 35 °F.

** Weighted average of operating heat pump above 30 °F (1/3 weight) and 45 °F (2/3 weight).

*** Simple average of operating heat pump above 35°F and 40 °F

While these savings are only indicative of the general benefits of hybrid heat pumps, individual household savings will vary. The switchover temperature, heat pump sizing and installation quality, future gas and electric rates (including rate structures), existing furnace and CAC efficiency, among other factors, will all influence the results at the household level. We acknowledge that these issues need to be addressed and believe that the ENERGY STAR program can help.

Information about Up-front Costs

We also acknowledge the high up-front cost of heat pumps. Presenters at the recent ACEEE Hot Air & Hot Water Forum cited a variety of up-front costs reflecting capacity, cold-climate performance, installation challenges, and local labor rates. For example, in a recent pilot, heat pump replacements around Chicago generally cost between \$24,000 and \$40,000,² though analysis of data from larger programs in Massachusetts, New York, California, and Maine, finds a median cost of \$13,000, with adjustment factors for climate and other factors.³ Members of the hybrid heat coordination group confirm costs between \$12,000 and \$27,000 as typical in cold climates.

It is important to note that these costs should be compared to the cost of potentially replacing a furnace and air conditioner, and deduct any local, state, utility, and Federal incentives. For example, the Nonbusiness Energy Property Tax Credit (25C) may become more accessible in the near future as the Consortium for Energy Efficiency is proposing to loosen their non-advanced tier requirements for heat pumps.

Beyond Costs: Air Quality and Climate Change Impacts

² Pauravi Shah. “At What Cost? A Study of the Real Costs of Whole Home and Heating, Ventilation, and Air Conditioning (HVAC) Electrification in the Midwest.” Presented at the 2024 Hot Air & Hot Water Forums, Atlanta, GA, March 12, 2024.
https://drive.google.com/file/d/12bN2dDI405qhlxNhPjN1_DMi5g7sS-Rr/view.

³ Rewiring America. “Upfront Cost of Home Electrification.” Accessed February 9, 2024.
<https://www.rewiringamerica.org/electrification-costs-estimates>.

While discussion of the cost of heat pumps is crucial at the customer level, we would like to conclude with an analysis of the pollution and climate change benefits, in line with the mission of the Office of Air and Radiation.

CLASP's 2021 analysis of hybrid heating found that replacing 45 million air conditioners with heat pumps would reduce fossil fuel emissions by 39%, resulting in 888 fewer premature deaths annually. Over a 15 year lifetime of those heat pumps, that would result in 13,320 lives saved, which can be quantified at \$133 billion (\$10 million per statistical life). Dividing this benefit by the stock results in \$2,956 in benefit per hybrid heat pump installed. Heat pumps wholly replacing fossil fuel heating would provide an even greater benefit.

That same analysis found 49 million tons of CO_{2e} reductions in 2032. Multiplying this reduction by the 15 year lifetime and the social cost of CO₂ in 2030 and 2040,⁴ results in \$103–\$316 billion of benefit from avoided climate change impacts, or \$2,289–\$7,023 per hybrid heat pump installed.

This is just a rough calculation, and we encourage EPA to perform more detailed modeling, as well as work with partners in state and Federal government as well as utilities to recognize these benefits with appropriate incentives that would equalize the cost of heat pumps compared to fossil fuel alternatives and spur further electrification.

Interest in Working with EPA on Dual-fuel Recognition

Finally, we were heartened to read in the Comment-response Matrix about EPA's interest in developing an ENERGY STAR recognition program for dual-fuel systems with a heat pump and furnace. We look forward to being involved and lending our expertise to further drive heat pump adoption.

Respectfully,



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⁴ US Environmental Protection Agency, "EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances", November 2023, p. 4.
https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf