

Appliance Standards Awareness Project
American Council for an Energy-Efficient Economy
National Consumer Law Center
Natural Resources Defense Council
New York State Energy Research and Development Authority

December 5, 2023

Ms. Julia Hegarty
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Building Technologies Office, EE-5B
1000 Independence Avenue SW
Washington, DC 20585

RE: Docket Number EERE-2021-BT-STD-0029: Energy Conservation Standards for Consumer Furnace Fans

Dear Ms. Hegarty:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), American Council for an Energy-Efficient Economy (ACEEE), National Consumer Law Center (NCLC) on behalf of its low-income clients, Natural Resources Defense Council (NRDC), and the New York State Energy Research and Development Authority (NYSERDA) on the notice of proposed determination (NOPD) for consumer furnace fans. 88 Fed. Reg. 69826 (October 6, 2023). We appreciate the opportunity to provide input to the Department.

DOE's analysis for the NOPD shows that amended efficiency standards for furnace fans could provide about 1.4 quads of full-fuel-cycle (FFC) energy savings and up to \$1.8 billion in consumer net present value.¹ However, DOE has made a preliminary determination that new standards are not warranted for furnace fans, including for certain product classes with less stringent current standards, despite DOE's analysis showing cost-effectiveness for these classes. Additionally, DOE considered only one efficiency level for the major furnace fan classes, a 10% reduction in fan energy rating (FER) associated with use of a backward-inclined impeller. However, there are furnace fan models on the market today exceeding this efficiency level across a range of furnace fan airflows. We understand that improved brushless permanent magnet (BPM) motors are one potential route to improving efficiency beyond what is considered in DOE's analysis. Each of these considerations is discussed in more detail below.

We encourage DOE to adopt standards effectively requiring BPM motors for additional product classes. In the previous Final Rule, DOE opted to set standards at a level effectively allowing use of less efficient PSC motors for the oil furnace and mobile home gas furnace product classes.² As part of the

¹Tables V. 20, V.22. 88 Fed. Reg. 69865, 69866.

²Non-weatherized non-condensing oil, mobile home non-weatherized non-condensing gas, and mobile home non-weatherized condensing gas product classes.

NOPD, DOE evaluated an intermediate efficiency level (EL) 1 that assumes use of a BPM motor with a forward-inclined impeller (i.e., analogous to the current standards for the other product classes); DOE's analysis shows that this intermediate EL 1 would provide meaningful cost savings for consumers. For example, the average LCC savings for the mobile home, non-weatherized condensing gas (MH-NWG-C) product class are \$292, with only 1.5% of consumers experiencing a net cost.³ Despite these significant consumer benefits, DOE has proposed not to amend the standards for these classes, citing concerns that manufacturers could exit the market for these products since they are relatively low-volume products.⁴ However, for the mobile home gas furnace fan classes, DOE's analysis shows that about 90% of the market is already at EL 1.⁵ This suggests a low likelihood that availability of these products would be significantly affected as a result of a more stringent standard. Thus, we encourage DOE at a minimum to adopt higher standard levels for mobile home gas furnace fans.

We continue to encourage DOE to investigate furnace fans currently available that exceed DOE's max-tech level. For the major furnace fan product classes,⁶ DOE analyzed only one EL above the baseline (EL 1), which represents a 10% reduction in FER and assumes use of a backward-inclined impeller.⁷ However, as highlighted in DOE's 2022 preliminary technical support document (PTSD)⁸ and our prior PTSD comments,⁹ there are many furnace fan models across a range of airflows in the major product classes that are more efficient (i.e., lower FER) than EL 1. For example, Figure 1 shows all non-weatherized, condensing gas (NWG-C) furnace fan products currently found in DOE's Compliance Certification Database (CCD).¹⁰ It is apparent that many NWG-C furnace fans exceed DOE's maximum technologically-feasible (max-tech) level (i.e., EL 1) by more than 10% and we note many of these models do not appear to use backward-inclined impellers. Further, DOE notes in the NOPD that manufacturers often rate their furnace fans conservatively,¹¹ so it is likely that the CCD understates the number of higher efficiency furnace fans available on the market. Thus, we continue to encourage DOE to further investigate the most efficient furnace fans available on the market.

³Table V.8. 88 Fed. Reg. 69863.

⁴88 Fed. Reg. 69867.

⁵Table IV.21. 88 Fed. Reg. 69857.

⁶Non-weatherized non-condensing gas, Non-weatherized condensing gas, weatherized non-condensing gas, non-weatherized electric furnace/modular blower product classes.

⁷DOE previously concluded that other design options considered in the previous rulemaking, such as constant-airflow BPM motors and multi-staging, do not significantly reduce furnace fan energy usage.

⁸PTSD, pp. 3-15 to 3-21. www.regulations.gov/document/EERE-2021-BT-STD-0029-0014

⁹EERE-2021-BT-STD-0029-0020, pp. 1-3. www.regulations.gov/comment/EERE-2021-BT-STD-0029-0020

¹⁰Accessed on November 20, 2023. www.regulations.doe.gov/certification-data/CCMS-4-Furnace_Fans.html#q=Product_Group_s%3A%22Furnace%20Fans%22

¹¹88 Fed. Reg. 69838.

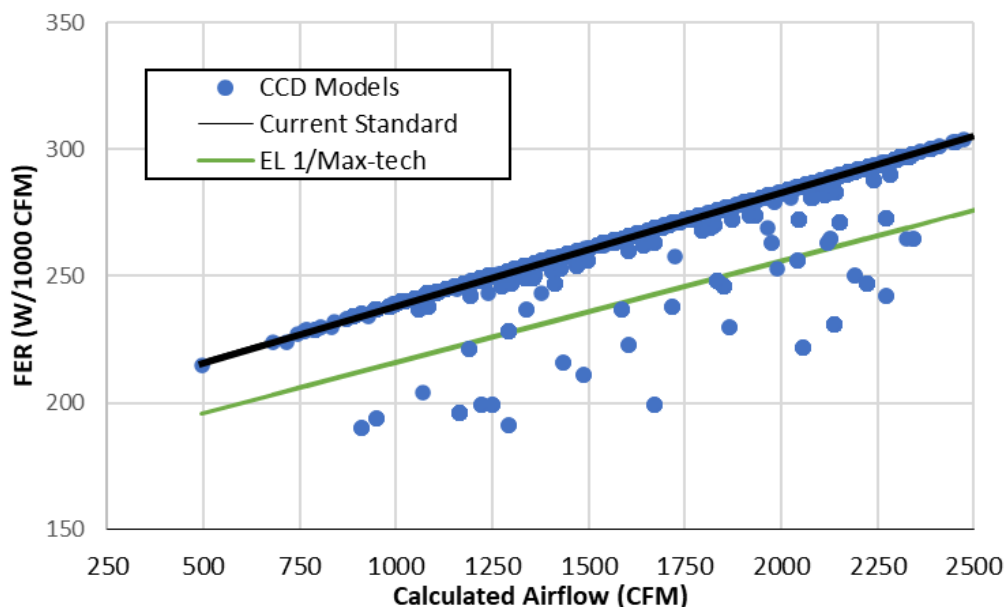


Figure 1: Furnace fan FER (W/1000 CFM) vs. calculated maximum airflow (CFM) for non-weatherized, condensing gas furnace fans (NWG-C). Black and green lines represent the current standard and the EL 1/Max-tech level, respectively.

We continue to encourage DOE to analyze an efficiency level associated with improved BPM motors. While DOE stated in the PTSD that there may be a range of BPM motor efficiencies available,¹² the Department did not analyze improved BPM motor efficiency as a potential design option as part of the NOPD analysis.¹³ Based on conversations with motor manufacturers, we understand that there is a range of BPM motor efficiencies used in furnace fan models available on the market today and that the most efficient BPMs would reduce furnace fan FER. Thus, we encourage DOE to gather additional information about BPM motor efficiency and to analyze an EL associated with these higher efficiency BPM motors that are currently available on the market.

Thank you for considering these comments.

Sincerely,

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 American Council for an Energy-Efficient Economy

¹²PTSD, pp. 2-12, 5-5. www.regulations.gov/document/EERE-2021-BT-STD-0029-0014

¹³88 Fed. Reg. 69840.



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