

Appliance Standards Awareness Project  
American Council for an Energy-Efficient Economy  
Natural Resources Defense Council

November 15, 2021

Mr. Jeremy Dommu  
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-0018: Request for Information for Energy Conservation Standards for Commercial and Industrial Pumps**

Dear Mr. Dommu:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), American Council for an Energy-Efficient Economy (ACEEE), and Natural Resources Defense Council (NRDC) on the request for information (RFI) for test procedures for fans and blowers. 86 Fed. Reg. 54412 (September 30, 2021). We appreciate the opportunity to provide input to the Department.

In the RFI, DOE seeks comment on issues related to potential test procedures for air circulating fan heads (ACFHs), a subset of fans and blowers. We support DOE establishing test procedures for ACFHs as well as additional categories of air circulating fans (ACFs). We encourage DOE to use Fan Energy Index (FEI) as a representative and straightforward energy use metric for all fans and blowers including ACFs. Finally, we believe that limiting the definition of ACFs to input powers of 125W and above is a reasonable way to distinguish industrial and commercial ACFHs.

**We encourage DOE to establish test procedures for ACFHs as well as additional categories of ACFs.**

Generally, ACFs are fans used to circulate air within a confined space for use in agriculture, manufacturing, etc. The total global market for all fans and blowers is approximately 20 billion USD,<sup>1</sup> while agricultural ventilation, a major market for ACFs, is expected to reach 1.3 billion USD by 2027.<sup>2</sup> Establishing standardized DOE test procedures and efficiency ratings for ACFs will ensure that purchasers have access to comparable information about efficiency, enabling informed purchasing decisions.

While the RFI specifically addresses ACFHs, we believe other air circulating fan types such as personnel coolers, box fans, and table fans meet the definition of “fan and blower” and thus should be included in the test procedures. These additional ACF categories are also covered in the existing AMCA 230-15 test procedure for air circulating fans, so it is feasible to include them within the scope of the DOE test procedures.

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<sup>1</sup> <https://www.mordorintelligence.com/industry-reports/fans-and-blowers-market>

<sup>2</sup> <https://www.researchandmarkets.com/reports/5230451/agricultural-ventilation-fans-market-size-share>

**We support using Fan Energy Index (FEI) as the efficiency metric for air circulating fans.** FEI is both representative of energy usage and straightforward for purchasers to interpret. A fan's FEI at a given operating point is a dimensionless number expressed as the fan electrical input power (FEP) of a reference fan (e.g., representing a minimally compliant model) divided by the actual FEP of a given fan at the same operating point.<sup>3</sup> Importantly, FEI accounts for inherent efficiency differences between fans of the same diameter that deliver different airflows. Using FEI for air circulating fans would also provide consistency with other commercial and industrial fan types subject to any future DOE standards. Moreover, FEI is intuitive and easy to understand for informing purchase decisions. For example, a FEI of 1.1 represents 10% energy savings over a FEI of 1. We also note that FEI is similar to the Pump Energy Index (PEI) for pumps.<sup>4</sup>

**We support limiting the definition of ACFs to input powers of 125W and above.** This would be consistent with IEC 60879:2019<sup>5</sup> and EU fan standards.<sup>6</sup> We understand that this input power cut-off is sufficient to reasonably distinguish ACFs that are to any significant extent distributed in commerce for industrial or commercial use.

Thank you for considering these comments.

Sincerely,



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Technical Advocacy Associate  
Appliance Standards Awareness Project



Amber Wood  
Director, Buildings Program  
American Council for an Energy-Efficient Economy



David Goldstein  
Energy Co-Director, Climate and Clean Energy Program  
Natural Resources Defense Council

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<sup>3</sup>M. Ivanovich, M. Stevens, & M. Wolf. Two New Metrics for Fan System Efficiency: Fan Energy Index and Fan Electrical Power <https://www.amca.org/assets/resources/public/pdf/EEMODS-2017-Paper.pdf>

<sup>4</sup>PEI equals a given pump's pump energy rating (PER) divided by a minimally compliant reference pump's PER.

<sup>5</sup><https://webstore.iec.ch/publication/26458>

<sup>6</sup>Commission Regulation 327/2011 applies to a broader scope of fans, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:090:0008:0021:en:PDF>