

Appliance Standards Awareness Project  
American Council for an Energy-Efficient Economy  
Northwest Energy Efficiency Alliance  
National Consumer Law Center

July 12, 2022

Ms. Catherine Rivest  
U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
Building Technologies Office, EE-2J  
1000 Independence Avenue SW  
Washington, DC 20585

**RE: Docket Number EERE-2020-BT-TP-0041: Test Procedures for Consumer Furnace Fans**

Dear Ms. Rivest:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), American Council for an Energy-Efficient Economy (ACEEE), Northwest Energy Efficiency Alliance (NEEA), and the National Consumer Law Center (NCLC) on behalf of its low-income clients on the notice of proposed rulemaking (NOPR) for consumer furnace fans. 87 Fed. Reg. 29576 (May 13, 2022). We appreciate the opportunity to provide input to the Department.

**We agree with DOE that furnace fans in single-packaged AC units with gas heat must remain in the scope of the test procedure.** Carrier commented in response to the request for information (RFI) that coverage of furnace fans in single-packaged AC units with gas heat is no longer needed with the transition to Appendix M1 for central ACs and heat pumps;<sup>1</sup> DOE disagreed in the NOPR, citing potential backsliding concerns. For example, DOE stated that they would be unable to separate the furnace fan's energy consumption from other system components that affect SEER2 and HSPF2 ratings; thus, the Department could not ensure that the energy consumption of covered furnace fans would not decrease under these combined ratings.<sup>2</sup> We share DOE's concern about potential backsliding of furnace fan energy use and support continued inclusion of single-packaged AC units with gas heat within the scope of the furnace fans test procedure.

**We encourage DOE to clarify their exclusion of dual-fuel furnace fans from the test procedure scope and to consider adding provisions for testing these products.** In the NOPR, DOE is proposing to specifically exclude dual-fuel furnace fans from the test procedure. However, we understand that the gas furnaces that are part of dual-fuel units are weatherized, non-condensing gas furnaces, which are currently covered by the test procedure. Furthermore, the gas furnaces that are part of dual-fuel units are essentially identical to those that are part of currently-covered single-packaged AC units with a gas furnace. In the NOPR, DOE states that dual-fuel models were not subject to Appendix AA prior to the NOPR and were not part of the previous standards analysis.<sup>3</sup> However, it is unclear how DOE has made

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<sup>1</sup>EERE-2020-BT-TP-0041-0002. [www.regulations.gov/comment/EERE-2020-BT-TP-0041-0002](http://www.regulations.gov/comment/EERE-2020-BT-TP-0041-0002)

<sup>2</sup>87 Fed. Reg. 29580.

<sup>3</sup>87 Fed. Reg. 29581.

the determination that dual-fuel models are presently excluded from the current test procedure. DOE's consultant at the public meeting stated that this determination was related to the prior standards analysis that did not consider dual-fuel units.<sup>4</sup> While we understand these products were not analyzed as part of the prior standards rulemaking, it is unclear how this suggests these products are excluded from the scope of the furnace fans test procedure. Thus, we encourage DOE to both clarify their determination that dual-fuel fans are excluded from the scope of the current test procedure and to consider adding provisions for testing these furnace fans.

**We are concerned with DOE's proposed alternative test procedure for "heating-only" furnace fans.** DOE's proposal, based on a previous test waiver, states that models unable to complete testing at the specified external static pressure (ESP) levels in Appendix AA shall decrease the test ESP until the test can be completed. We are concerned that this approach could allow these "heating-only" furnace fans to meet the standard more easily. In the NOPR, DOE downplays the idea that this proposed test procedure would create an advantage for these "heating-only" furnace fans, stating that these units are not manufactured for the same applications as other covered furnace fans (e.g., in a system with cooling).<sup>5</sup> However, these "heating-only" waiver models are repeatedly discussed with joint cooling usage in manufacturer literature.<sup>6</sup> Thus, we encourage DOE to further consider appropriate test provisions for "heating-only" furnace fans that cannot reach the ESPs specified in Appendix AA.

**We support the proposed changes to improve repeatability and reproducibility.** In the July 2021 RFI, DOE requested comment on whether stakeholders have encountered difficulty obtaining repeatable and reproducible FER results using Appendix AA. According to the NOPR, both public comments and private interviews conducted by DOE suggested there is generally a high degree of uncertainty in FER results. For example, AHRI's RFI comments suggest there is a potential 11-percent error in FER due solely to the tolerances of the FER equation inputs.<sup>7</sup> Thus, DOE is proposing additional restrictions on test conditions to improve repeatability and reproducibility,<sup>8</sup> including narrowing the ambient temperature range for all tests and specifying an allowable range of relative humidity for the first time.

DOE is also proposing to require direct measurement of airflow. In the January 2014 Final Rule, DOE adopted a method of calculating airflow based on temperature rise rather than direct measurement.<sup>9</sup> This calculation method of airflow was implemented based on feedback from stakeholders as well as DOE's desire to harmonize test setups between furnaces and furnace fans. However, DOE states in the NOPR that some of the repeatability issues likely stem from calculating airflow indirectly from other parameters. We agree that DOE's proposed changes regarding ambient temperature and relative humidity as well as the requirement for direct measurement of airflow should improve repeatability and reproducibility.

**We encourage DOE to consider requiring test variables to be recorded as an average.** Once steady-state operation is achieved, Appendix AA requires measurement of furnace fan electrical input power, heat kit input energy, ESP, steady-state efficiency, outlet air temperature, and/or temperature rise. DOE

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<sup>4</sup>EERE-2020-BT-TP-0041-0009, p. 9. [www.regulations.gov/document/EERE-2020-BT-TP-0041-0009](http://www.regulations.gov/document/EERE-2020-BT-TP-0041-0009)

<sup>5</sup>87 Fed. Reg. 29583.

<sup>6</sup>See, for example pp. 5, 10, 17-18. [aircofurnaces.com/sites/default/files/28141%20OLSEN%20AIRCO%20BCL%20BFL%20IOM%20REV%20M%20WEB.pdf](http://aircofurnaces.com/sites/default/files/28141%20OLSEN%20AIRCO%20BCL%20BFL%20IOM%20REV%20M%20WEB.pdf)

<sup>7</sup>EERE-2020-BT-TP-0041-0005, p. 12. [www.regulations.gov/comment/EERE-2020-BT-TP-0041-0005](http://www.regulations.gov/comment/EERE-2020-BT-TP-0041-0005)

<sup>8</sup>87 Fed. Reg. 29583-29585.

<sup>9</sup>79 Fed. Reg. 499, 508-510 (January 3, 2014).

states in the NOPR that the Department believes that some test facilities take a single reading for these test parameters.<sup>10</sup> Further, in DOE testing where these parameters were measured in one second intervals throughout the steady-state period, the data, particularly for power measurements, showed that the values sometimes fluctuate significantly between readings; taking a single point measurement of these fluctuating readings likely contributes to test repeatability issues. This concern was re-iterated by a manufacturer representative at the DOE public meeting who suggested using time-averaged values.<sup>11</sup> Thus, we encourage DOE to require time-averaged values for power measurements, and to consider requiring time-averaged values for other test variable measurements.

Thank you for considering these comments.

Sincerely,



Jeremy Dunklin, PhD  
Technical Advocacy Associate  
Appliance Standards Awareness Project



Michael Waite, Ph.D., P.E.  
Senior Manager, Buildings Program  
American Council for an Energy-Efficient Economy



Nicole Dunbar  
Product Manager  
Northwest Energy Efficiency Alliance



Berneta Haynes  
National Consumer Law Center  
(On behalf of its low-income clients)

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<sup>10</sup>87 Fed. Reg. 29588.

<sup>11</sup>EERE-2020-BT-TP-0041-0009, pp. 21-22. [www.regulations.gov/document/EERE-2020-BT-TP-0041-0009](http://www.regulations.gov/document/EERE-2020-BT-TP-0041-0009)