

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

February 7, 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-2017-BT-TP-0031: Proposed Rule for Test Procedures for Air-Cooled, Three-Phase, Small Commercial Package Air Conditioning and Heating Equipment With a Cooling Capacity of Less Than 65,000 Btu/h and Air-Cooled, Three-Phase, Variable Refrigerant Flow Air Conditioners and Heat Pumps With a Cooling Capacity of Less Than 65,000 Btu/h

Dear Ms. Rivest:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), the American Council for an Energy-Efficient Economy (ACEEE), and the Natural Resources Defense Council (NRDC) on the notice of proposed rule for test procedures for air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h. 86 Fed. Reg. 70316 (December 9, 2021). We appreciate the opportunity to provide input to the Department.

We generally support DOE's proposal to harmonize the test procedures for small three-phase equipment with single-phase equipment. However, we have concerns regarding the proposed provisions related to the use of Alternative Efficiency Determination Methods (AEDMs). We also urge DOE to investigate a load-based test procedure for both single- and three-phase equipment.

We support prohibiting the use of AEDMs for outdoor units with no match (OUWNM), multi-split, multi-circuit, and multi-head mini-split systems to align with the single-phase requirements. Since AEDMs are not currently permitted for single-phase equipment with these configurations, validated AEDMs do not exist. We therefore support DOE's proposal to prohibit the use of AEDMs for these configurations of three-phase equipment.

We support DOE's proposal that every individual combination distributed in commerce must be rated as a coil-only combination to align with the single-phase requirements. Specifically, DOE's proposal would require that for each outdoor unit, representations include a coil-only rating that is representative of the least efficient combination with that particular outdoor unit, with additional blower-coil ratings permitted. This proposal aligns with the representation requirements for single-phase equipment and will ensure that ratings are representative.

We urge DOE to require some validation of AEDMs after they are modified. In the NOPR, DOE states in a footnote¹ that an AEDM used to certify three-phase equipment would need to reflect the difference in performance between single- and three-phase equipment. We understand this to mean that DOE will permit changes to existing AEDMs that were validated based on the tested performance of single-phase equipment. However, in the proposed regulatory text, DOE does not address modification of an existing AEDM at all, effectively leaving the modifications solely up to the discretion of the manufacturer. While manufacturers have discretion on how they develop AEDMs, DOE has always required that the results of an AEDM be validated by testing basic models. As proposed, DOE would permit the use of AEDMs that are modified in some manner without validating the results.

DOE requests comment on whether the proposed AEDM requirements should include a provision to “validate the correlation” between single-phase and three-phase performance as determined using an AEDM. While in the NOPR DOE does not provide any explanation of what it means by “validate the correlation”, during the public meeting webinar, DOE indicated that validation could include testing². We support validating an AEDM based on the tested performance of a three-phase basic model. We understand that this validation would not be equivalent to developing and validating a new AEDM.

Alternatively, DOE could determine a cross-walk to develop ratings for three-phase equipment based on the output of a validated AEDM for otherwise identical single-phase equipment. In the NOPR, DOE states that the slight differences in performance between single- and three-phase equipment are “well understood and can be accounted for within an AEDM.” DOE provides the example that different compressor coefficients can be used to model performance for single versus three-phase compressors. We understand that manufacturers of small HVAC equipment rely on data from manufacturers of compressors to determine the differences in performance of single- and three-phase equipment³. DOE could evaluate this same compressor performance data to determine a cross-walk between ratings for single-phase equipment and those for otherwise identical three-phase equipment.

We encourage DOE to investigate a load-based test procedure for both single- and three-phase equipment. The current test procedure is a steady-state test method, where variable speed compressors operate at fixed speeds for the duration of the test. This type of test does not reflect the typical operation of variable speed units that operate under their own controls in the field. A load-based test procedure would be more representative of actual energy use, and in turn would provide more accurate information about efficiency to purchasers.

Thank you for considering these comments.

Sincerely,



Rachel Margolis
Technical Advocacy Associate
Appliance Standards Awareness Project



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

¹ <https://www.regulations.gov/document/EERE-2017-BT-TP-0031-0009> p. 70327

² <https://www.regulations.gov/document/EERE-2017-BT-TP-0031-0012> p. 14

³ <https://www.regulations.gov/document/EERE-2017-BT-TP-0031-0012> p. 18

A handwritten signature in black ink, appearing to read "Joe Vukovich". The signature is fluid and cursive, with the first name "Joe" and last name "Vukovich" clearly distinguishable.

Joe Vukovich
Energy Efficiency Advocate
Natural Resources Defense Council