

Appliance Standards Awareness Project
Alliance to Save Energy
California Energy Commission
Natural Resources Defense Council

June 24, 2019

Mr. Jeremy Dommu
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Building Technologies Program, EE-5B
1000 Independence Avenue SW
Washington, DC 20585

RE: Docket Number EERE–2017–BT–TP–0047: Notice of Proposed Rulemaking for Test Procedures for Small Electric Motors and Electric Motors

Dear Mr. Dommu:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), Alliance to Save Energy, California Energy Commission (CEC), and Natural Resources Defense Council (NRDC) on the notice of proposed rulemaking (NOPR) for test procedures for small electric motors and electric motors. 84 Fed. Reg. 17004 (April 23, 2019). We appreciate the opportunity to provide input to the Department.

DOE should expand the scope of motor test procedures to cover a broad range of motors. In the 2017 RFI, DOE noted that the Department may consider establishing test procedures for motors not covered by the current DOE test procedures. For example, while the current small electric motor test procedures apply to motors with horsepower between 0.25 HP and 3 HP, the RFI considered expanding the horsepower range to cover motors between 0.125 HP and 15 HP. DOE found that motors with the same characteristics as currently regulated small electric motors are widely available in that larger horsepower range.¹ Similarly, while the current test procedures for both small electric motors and electric motors apply to only a narrow range of motor topologies, the RFI identified 11 motor categories that may represent significant shipment volumes and energy consumption and that can be tested using existing test procedures.² These motor categories include both inefficient designs (e.g. shaded-pole) as well as high-efficiency topologies (e.g. permanent magnet and switched reluctance).

In the NOPR, DOE has abandoned the potential scope expansion of the motor test procedures described in the RFI with no explanation. The NOPR simply states that “this NOPR does not propose changes to the scope of the test procedure with respect to small electric motors and electric motors.”³ We strongly urge DOE to reconsider this decision. As we explained in our comments on the 2017 RFI,⁴ uniform test methods ensure that motor purchasers have access to comparable information across models, which enables informed decision making. Absent a DOE test procedure, purchasers cannot have confidence in ratings provided by manufacturers. DOE test procedures also help provide a level playing field by

¹ 82 Fed. Reg. 35470 (July 31, 2017).

² 82 Fed. Reg. 35471. Table II-3.

³ 84 Fed. Reg. 17007.

⁴ <https://www.regulations.gov/document?D=EERE-2017-BT-TP-0047-0027>.

ensuring that manufacturers that provide accurate, credible information about motor performance are not undercut by unscrupulous or careless competitors.

We support referencing the latest version of IEEE 112, but the DOE test procedure should not continue to reference the older version. In the NOPR, DOE proposes to incorporate by reference the latest version of the IEEE 112 test procedure—IEEE 112-2017—while continuing to reference the older version (IEEE 112-2004). We agree that it makes sense to reference the latest version. However, the test procedure should not continue to reference the older version. Referencing two different versions of the same test procedure would seem to only introduce additional variability into the DOE test procedure. While it is common for DOE to update test procedures to reference the latest version of an industry test procedure (or a test procedure developed by a professional association), we are not aware of other DOE test procedures that reference different versions of the same procedure.

The NOPR states that DOE is proposing to retain the 2004 version of IEEE 112 to avoid any potential re-testing.⁵ However, DOE’s investigation of the IEEE 112 procedure concluded that “IEEE 112–2017 will result in an accurate and similar measurement of efficiency as compared to IEEE 112–2004” and that “the variation in the calculated efficiency is not likely to result in any significant change in overall energy efficiency test results.”⁶ DOE further concluded that the proposed test procedure amendments “would not alter the measured efficiency of small electric motors or electric motors.”⁷ We therefore see no reason why replacing the reference to IEEE 112-2004 with the 2017 version would necessitate any re-testing.

We support DOE’s proposal to use breakdown torque to define rated output power for small electric motors. DOE explains in the NOPR that the current industry test standards do not provide a method to determine rated load for small electric motors.⁸ Since the energy conservation standards vary with horsepower, it is important that rated load is calculated in a consistent manner. Providing a standardized method for determining rated load will also ensure that purchasers can make fair comparisons among models. We support DOE’s proposal to use breakdown torque to define rated output power. DOE’s investigation found that the breakdown torque method in NEMA MG 1-2016 can apply to all small electric motors and that it appears that most manufacturers are already using this method as a standard practice.⁹

We support DOE’s proposal to specify that all small electric motor tests be performed using a rated frequency of 60 Hz. DOE notes in the NOPR that small electric motors could be designed to operate at frequencies in addition to 60 Hz (e.g. at either 60 or 50 Hz) and marketed as capable of operating at more than one frequency.¹⁰ In such a case, it could be unclear which frequency should be used for testing. We support DOE’s proposal to define “rated frequency” as “60 Hz” to remove any ambiguity in the test procedure and to ensure that the test procedure reflects the operating frequency in the U.S.

We support DOE’s proposal to define “rated load” as “the rated output power of a small electric motor.” DOE proposes that the rated output power, which would be determined using the breakdown

⁵ 84 Fed. Reg. 17012.

⁶ Ibid.

⁷ 84 Fed. Reg. 17007.

⁸ 84 Fed. Reg. 17014.

⁹ 84 Fed. Reg. 17016.

¹⁰ 84 Fed. Reg. 17017.

torque method, would be used for any reference to rated load, full rated load, rated-full load, or full-load in any industry test standard used for testing small electric motors. This specification will help clarify the meaning of “rated load” and ensure that test procedures are applied consistently.

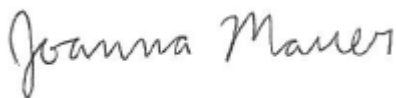
Small electric motors should be tested at all nameplate voltages. As described above, the proposals in the NOPR for defining “rated frequency” and “rated load” will remove ambiguity and ensure that the test procedures are being applied consistently. However, rather than taking a similar approach for “rated voltage,” DOE instead is proposing to leave the selection of input voltage for testing entirely up to the manufacturer. Specifically, the NOPR proposes that “rated voltage” would mean “the input voltage of a small electric motor selected by the motor’s manufacturer to be used for testing the motor’s efficiency.”¹¹

We understand that small electric motors often have more than one nameplate voltage. We are concerned that allowing the manufacturer to select the voltage for testing will result in inconsistent ratings across products and allow for gaming of the test procedure. As described in the NOPR, efficiency can vary with input voltage.¹² Allowing the manufacturer to select the voltage for testing would mean that efficiency ratings would not be comparable across products since different manufacturers may choose different voltages for testing. For example, one manufacturer could choose to test at the least-efficient voltage, while another could test at the most-efficient voltage. Yet purchasers would have no way of knowing that the two product ratings are not comparable. Furthermore, a manufacturer choosing to test at the most-efficient voltage would gain a market advantage over a manufacturer that provides a rating that reflects all the nameplate voltages (i.e. based on the least-efficient voltage).

We urge DOE to require that small electric motors be tested at all nameplate voltages and meet the minimum efficiency standards at all nameplate voltages.

Thank you for considering these comments.

Sincerely,



Joanna Mauer
Technical Advocacy Manager
Appliance Standards Awareness Project



Daniel Bresette
Vice President, Policy and Research
Alliance to Save Energy



David Hochschild
Chair
California Energy Commission



Lauren Urbanek
Senior Energy Policy Advocate
Natural Resources Defense Council

¹¹ 84 Fed. Reg. 17018.

¹² 84 Fed. Reg. 17017-18.