Appliance Standards Awareness Project
Alliance to Save Energy
Consumer Federation of America
Natural Resources Defense Council
Northwest Energy Efficiency Alliance
Northwest Power and Conservation Council

March 2, 2015

Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
Mailstop EE-5B
1000 Independence Avenue, SW
Washington, DC 20585

RE: Docket Number EERE–2013–BT–TP–0029/RIN 1904–AD44: Notice of Proposed Rulemaking for Test Procedures for Miscellaneous Refrigeration Products

Dear Ms. Edwards:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), Alliance to Save Energy (ASE), Consumer Federation of America (CFA), Natural Resources Defense Council (NRDC), Northwest Energy Efficiency Alliance (NEEA), and Northwest Power and Conservation Council (NPCC) on the notice of proposed rulemaking (NOPR) for test procedures for miscellaneous refrigeration products. 79 Fed. Reg. 74894 (December 16, 2014). We appreciate the opportunity to provide input to the Department.

We encourage DOE to attempt to ensure that the definition for "ice maker" does not create a loophole. In the NOPR, DOE proposes a definition for "ice maker" that would exclude products that are certified under NSF/ANSI Standard 12-2012. DOE states in the NOPR that the proposed definition would distinguish ice makers from automatic commercial ice makers as NSF/ANSI 12-2012 is used to certify commercial ice makers.[1] At the public meeting on January 8, True Manufacturing raised the concern that a manufacturer could certify an ice maker to NSF/ANSI 12-2012 as a way of circumventing the ice maker standards. We encourage DOE to attempt to ensure that the definition for "ice maker" does not create a loophole. We also encourage DOE to consider whether it may be appropriate to define residential ice makers as ice makers with ice production rates of less than 50 pounds/day since the current standards for commercial ice makers apply to products with ice production rates of 50 pounds/day and above.

We encourage DOE to consider a calculation-based approach for capturing lighting energy use of cooled cabinets with light switches. In the NOPR, DOE proposes to require that cooled cabinets be tested only with the light switches in their "lowest energy use position."[2] We recognize that requiring two tests as specified in the CSA C300-08 test procedure—one with the

[1] 79 Fed. Reg. 74904.
[2] 79 Fed. Reg. 74912.

lights turned on and one with the lights turned off—would significantly increase test burden. However, testing cooled cabinets only with their lights turned off would not capture lighting energy use and therefore would not encourage improved lighting efficacy. We encourage DOE to consider a calculation-based approach for capturing lighting energy use similar to the approach for capturing savings from lighting controls in the test procedures for commercial refrigeration equipment. The test procedures for commercial refrigeration equipment include an option for using a calculation-based approach to calculate energy savings from scheduled lighting controls and/or occupancy sensors based on the power of the lights when fully on and dimmed, assumptions about the time period during which the lights are off or dimmed, and assumed EER values for the refrigeration system.[3] A calculation-based approach for cooled cabinets would provide a way to capture any energy use associated with lighting and encourage more-efficient lighting technologies while minimizing additional test burden.

We encourage DOE to consider testing all cooled cabinets, non-compressor refrigerators, and hybrid products at an ambient temperature of 72ºF. In the NOPR, DOE proposes to test cooled cabinets, non-compressor refrigerators, and hybrid products at an ambient temperature of 90ºF, except non-vapor-compression cooled cabinets which would be tested at 72ºF.[4] DOE proposes to use a 90ºF ambient condition for products other than non-vapor-compression cooled cabinets because of the precedent for using 90ºF in the current test procedures for residential refrigerators and freezers and in the CEC and AHAM test procedures for wine chillers.[5]

As DOE describes in the NOPR, residential refrigerators and freezers subject to current standards are tested with closed doors at an ambient temperature of 90ºF to simulate the added thermal loads associated with door openings and food loading.[6] However, in the case of cooled cabinets and hybrid products, DOE found that testing with doors closed at an ambient temperature of 90ºF would likely overestimate field energy use, and therefore is proposing to apply usage adjustment factors of 0.55 and 0.85 to the measured energy use of cooled cabinets and hybrid products, respectively. Since testing refrigerators and freezers at 90ºF is in effect already incorporating a usage adjustment factor, we do not believe that it makes sense to test cooled cabinets and hybrid products at 90ºF and subsequently apply an additional usage adjustment factor.

We are particularly concerned with the proposal to use different ambient temperature conditions for testing cooled cabinets depending on the refrigeration technology, where vapor compression cooled cabinets would be tested at 90ºF and non-vapor-compression cooled cabinets would be tested at 72ºF. We believe that it is important to test all cooled cabinets using the same test procedure so that the energy use measurements of vapor-compression and non-vapor-compression cooled cabinets are directly comparable. We recognize DOE's concern that testing non-vapor-compression cooled cabinets at 90ºF would not provide a representative indication of energy use in typical field use conditions.[7] However, we do not believe that it makes sense to test any type of cooled cabinets at 90ºF. Instead, we encourage DOE to require testing of all cooled cabinets at 72ºF since 72ºF would be more representative of field conditions. An appropriate

---

[3] 10 CFR 431.66. Appendix B.
[4] 79 Fed. Reg. 74897.
[5] 79 Fed. Reg. 74911-14.
[6] 79 Fed. Reg. 74902.
[7] 79 Fed. Reg. 74912.

usage adjustment factor could be applied to the test results at 72°F to account for door openings and any additional heat loads.

Table 1 below shows test results for DOE's testing of eight vapor-compression wine chillers at two ambient temperatures—72°F and 90°F. The ratio of measured energy use at 72°F compared to energy use at 90°F ranges from 0.40 to 0.56 for the eight wine chillers. These differences in energy use at 72°F relative to energy use at 90°F among different models suggest that performance at 90°F may not provide an accurate indication of performance at 72°F, which is much more representative of typical ambient temperatures in the field.

Table 1. DOE test data for vapor-compression wine chillers.[8]

DOE Sample Number	72°F Ambient Energy Use (kWh/year)	90°F Ambient Energy Use (kWh/year)	Ratio of 72°F and 90°F Energy Tests
1	120	238	0.50
2	165	375	0.43
3	225	564	0.40
4	106	268	0.40
5	134	315	0.42
6	85	189	0.45
7	238	423	0.56
8	224	430	0.53

Test results of non-compressor refrigerators and hybrid products at both 72°F and 90°F would likely reveal similar differences in the ratio of energy use at 72°F compared to energy use at 90°F among different models.

We are also concerned that testing cooled cabinets, non-compressor refrigerators, and hybrid products at 90°F may not adequately capture the benefits of certain technology options in typical field conditions. For example, we understand that the benefits of variable-speed compressors would be more accurately captured at an ambient temperature of 72°F than at 90°F. Variable-speed compressors provide energy savings during part-load operation by reducing cycling and allowing the heat exchangers to operate with lower mass flow, improving heat exchanger effectiveness. We understand that at an ambient temperature of 90°F, refrigeration products will be operating much closer to full capacity than at 72°F, which means that a test procedure using an ambient temperature of 72°F should better capture actual energy savings in the field from variable-speed compressors.

In sum, we encourage DOE to consider testing all cooled cabinets, non-compressor refrigerators, and hybrid products at 72°F (with any appropriate usage adjustment factors applied) since testing at 72°F will better reflect typical field conditions and may better capture actual energy savings in the field from certain technology options.

[8] 79 Fed. Reg. 74910-11. Table III-4.

Sincerely,

Joanna Mauer
Technical Advocacy Manager
Appliance Standards Awareness Project

Rodney Sobin
Director of Research and Regulatory Affairs
Alliance to Save Energy

Mel Hall-Crawford
Energy Projects Director
Consumer Federation of America

Elizabeth Noll
Energy Efficiency Advocate
Natural Resources Defense Council

Charlie Stephens
Sr. Energy Codes & Standards Engineer
Northwest Energy Efficiency Alliance

Tom Eckman
Manager, Conservation Resources
Northwest Power and Conservation Council