[6450-01-P]

DEPARTMENT OF ENERGY

[Case Number 2020-024; EERE-2020-BT-WAV-0040]

Energy Conservation Program: Notification of Petition for Waiver of LRC Coil from the Department of Energy Walk-in Coolers and Walk-in Freezers Test Procedure and Notification of Grant of Interim Waiver

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notification of petition for waiver and grant of an interim waiver; request for comments.

SUMMARY: This document announces receipt of and publishes a petition for waiver and interim waiver from LRC Coil Company ("LRC Coil"), which seeks a waiver for specified walk-in unit cooler basic models from the U.S. Department of Energy ("DOE") test procedure used to determine the efficiency and energy consumption of walk-in coolers and walk-in freezers. DOE also gives notice of an Interim Waiver Order that requires LRC Coil to test and rate the specified walk-in unit cooler basic models in accordance with the alternate test procedure set forth in the Interim Waiver Order. DOE solicits comments, data, and information concerning LRC Coil's petition and the alternate test procedure specified in the Interim Waiver Order so as to inform DOE's final decision on LRC Coil's waiver request.

DATES: The Interim Waiver Order is effective on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. Written comments and information are requested and will be accepted on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *www.regulations.gov*. Alternatively, interested persons may submit comments, identified by docket number EERE-2020-BT-WAV-0040, by any of the following methods:

1. *Federal eRulemaking Portal*: *www.regulations.gov*. Follow the instructions for submitting comments.
2. *E-mail*: to *LRCWICF2020WAV0040@ee.doe.gov*. Include docket number EERE-2020-BT-WAV-0040 in the subject line of the message.

No telefacsimiles ("faxes") will be accepted. For detailed instructions on submitting comments and additional information on this process, see the "**SUPPLEMENTARY INFORMATION**" section of this document.

Although DOE has routinely accepted public comment submissions through a variety of mechanisms, including postal mail and hand delivery/courier, the Department has found it necessary to make temporary modifications to the comment submission process in light of the ongoing Covid-19 pandemic. DOE is currently suspending receipt of public comments via postal mail and hand delivery/courier. If a commenter finds that this change poses an undue hardship, please contact Appliance Standards Program staff at (202) 586-1445 to discuss the need for alternative arrangements. Once the Covid-19 pandemic health emergency is resolved, DOE anticipates resuming all of its regular options for public comment submission, including postal mail and hand delivery/courier.

Docket: The docket, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at *www.regulations.gov*. All documents in the docket are listed in the *www.regulations.gov* index. However, some documents listed in

the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket web page can be found at *www.regulations.gov/docket/EERE-2020-BT-WAV-0040*. The docket web page contains instruction on how to access all documents, including public comments, in the docket. See the "**SUPPLEMENTARY INFORMATION**" section for information on how to submit comments through *www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT:

Ms. Lucy deButts, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC 20585-0121. E-mail: *AS_Waiver_Request@ee.doe.gov*.

Mr. Michael Kido, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC-33, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0103. Telephone: (202) 586-8145. E-mail: *Michael.Kido@hq.doe.gov*.

SUPPLEMENTARY INFORMATION: DOE is publishing LRC Coil's petition for waiver in its entirety,[1] pursuant to 10 CFR 431.401(b)(1)(iv).[2] DOE invites all interested parties to submit in writing by [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER***], comments and information on all aspects of the petition, including the alternate test procedure. Pursuant to 10 CFR 431.401(d), any person submitting written

[1] On December 11, 2020, DOE published an amendment to 10 CFR 431.401 regarding the processing of petitions for an interim waiver, which became effective beginning January 11, 2021. 85 FR 79802. The subject petition was received prior to the effective date of that amendment and therefore is being processed pursuant to the regulation in effect at the time of receipt, *i.e.*, the disposition of the petition for an interim waiver is pursuant to 10 CFR 431.401(e) and (h) in the 10 CFR parts 200 to 499 edition revised as of January 1, 2021.

[2] The petition did not identify any of the information contained therein as confidential business information.

comments to DOE must also send a copy of such comments to the petitioner. The contact information for the petitioner is: Mike Williams, *mwilliams@lrccoil.com*, 3861 E. 42nd Place, Yuma, AZ 85365.

Submitting comments via www.regulations.gov. The *www.regulations.gov* web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. If this instruction is followed, persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *www.regulations.gov* information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information ("CBI")). Comments submitted through *www.regulations.gov* cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through *www.regulations.gov* before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that *www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email. Comments and documents submitted via email also will be posted to *www.regulations.gov*. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. Faxes will not be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a

list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

Case Number 2020-024

Interim Waiver Order

I. Background and Authority

The Energy Policy and Conservation Act, as amended ("EPCA"),[3] authorizes the U.S. Department of Energy ("DOE") to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part C[4] of EPCA, added by the National Energy Conservation Policy Act, Public Law 95-619, sec. 441 (Nov. 9, 1978), established the Energy Conservation Program for Certain Industrial Equipment, which sets forth a variety of provisions designed to improve energy efficiency for certain types of industrial equipment. Through amendments brought about by the Energy Independence and Security Act of 2007, Pub. L. 110-140, sec. 312 (Dec. 19, 2007), this equipment includes walk-in coolers and walk-in freezers**,** the focus of this document. (42 U.S.C. 6311(1)(G))

The energy conservation program under EPCA consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA include definitions (42 U.S.C. 6311), energy conservation standards (42 U.S.C. 6313), test procedures (42 U.S.C. 6314), labeling provisions (42 U.S.C. 6315), and the authority to require information and reports from manufacturers (42 U.S.C. 6316(a); 42 U.S.C. 6299).

The Federal testing requirements consist of test procedures that manufacturers of covered equipment must use as the basis for: (1) certifying to DOE that their equipment complies with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6316(a); 42

[3] All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116-260 (Dec. 27, 2020).
[4] For editorial reasons, upon codification in the U.S. Code, Part C was redesignated as Part A-1.

U.S.C. 6295(s)), and (2) making representations about the efficiency of that equipment (42 U.S.C. 6314(d)). Similarly, DOE must use these test procedures to determine whether the equipment complies with relevant standards promulgated under EPCA. (42 U.S.C. 6316(a); 42 U.S.C. 6295(s))

Under 42 U.S.C. 6314, EPCA sets forth the criteria and procedures DOE is required to follow when prescribing or amending test procedures for covered equipment. EPCA requires that any test procedures prescribed or amended under this section must be reasonably designed to produce test results which reflect the energy efficiency, energy use or estimated annual operating cost of covered products and equipment during a representative average use cycle and requires that test procedures not be unduly burdensome to conduct. (42 U.S.C.6314(a)(2)) The test procedure used to determine the net capacity and annual walk-in energy factor ("AWEF") of walk-in cooler and walk-in freezer refrigeration systems is contained in the Code of Federal Regulations ("CFR") at 10 CFR part 431, subpart R, appendix C, *Uniform Test Method for the Measurement of Net Capacity and AWEF of Walk-in Cooler and Walk-in Freezer Refrigeration Systems* ("Appendix C").

Under 10 CFR 431.401,[5] any interested person may submit a petition for waiver from DOE's test procedure requirements. DOE will grant a waiver from the test procedure requirements if DOE determines either that the basic model for which the waiver was requested contains a design characteristic that prevents testing of the basic model according to the prescribed test procedures, or that the prescribed test procedures evaluate the basic model in a

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[5] On December 11, 2020, DOE amended 10 CFR 431.401 regarding the processing of petitions for an interim waiver that became effective on January 11, 2021. The subject petition was received prior to the effective date of that amendment and therefore is being processed pursuant to the regulation in effect at the time of receipt. Accordingly, all references to 10 CFR 431.401 refer to the version in place as of the date of LRC Coil's December 1, 2020 petition for interim waiver and waiver.

manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 431.401(f)(2). A petitioner must include in its petition any alternate test procedures known to the petitioner to evaluate the performance of the product type in a manner representative of the energy consumption characteristics of the basic model. 10 CFR 431.401(b)(1)(iii). DOE may grant the waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 431.401(f)(2).

As soon as practicable after the granting of any waiver, DOE will publish in the *Federal Register* a notice of proposed rulemaking to amend its regulations so as to eliminate any need for the continuation of such waiver. 10 CFR 431.401(l) As soon thereafter as practicable, DOE will publish in the *Federal Register* a final rule to that effect. *Id*.

The waiver process also provides that DOE may grant an interim waiver if it appears likely that the underlying petition for waiver will be granted and/or if DOE determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the underlying petition for waiver. 10 CFR 431.401(e)(2) (10 CFR parts 200 to 499 edition revised as of January 1, 2021). Within one year of issuance of an interim waiver, DOE will either: (i) publish in the *Federal Register* a determination on the petition for waiver; or (ii) publish in the *Federal Register* a new or amended test procedure that addresses the issues presented in the waiver. 10 CFR 431.401(h)(1) (10 CFR parts 200 to 499 edition revised as of January 1, 2021).

If DOE ultimately denies the petition for waiver, or if the alternate test procedure specified in the interim waiver differs from the alternate test procedure specified by DOE in a subsequent decision and order, DOE will provide a period of 180 days before the manufacturer is required to use the DOE test procedure or the alternate test procedure specified in the decision

and order to make representations of energy efficiency. 10 CFR 431.401(i).[6] When DOE amends the test procedure to address the issues presented in a waiver, the waiver will automatically terminate on the date on which use of that test procedure is required to demonstrate compliance. 10 CFR 431.401(h)(2) (10 CFR parts 200 to 499 edition revised as of January 1, 2021).

II. LRC Coil's Petition for Waiver and Interim Waiver

In a letter docketed on December 1, 2020, LRC Coil filed a petition for waiver and interim waiver from the test procedure for walk-in cooler and walk-in freezer refrigeration systems set forth at Appendix C. (LRC Coil, No. 1 at pp. 1-4[7]) In response to questions from DOE, LRC submitted an updated petition for waiver and interim waiver, docketed on August 6, 2021. (LRC Coil, No. 11 at pp. 1-3)

The primary assertion in the petition is that absent an interim waiver the prescribed test procedure would evaluate the specified basic models in a manner so unrepresentative of their true energy consumption as to provide materially inaccurate comparative data. As presented in LRC Coil's petition, the specified basic models of walk-in unit coolers operate at a temperature range of 45 °F to 65 °F; higher than that of a typical walk-in cooler refrigeration system. Thus, the 35 °F temperature specified in the DOE test procedure for medium-temperature walk-in refrigeration systems would result in the prescribed test procedures evaluating the specified basic

[6] In proposing an amendment to 10 CFR 431.401(i), DOE stated that - "The 180-day duration was proposed because that time frame is consistent with the EPCA provision that provides manufacturers 180 days from issuance of a new or amended test procedure to begin using that test procedure for representation of energy efficiency." 84 FR 18414, 18416 (May 1, 2019); (*See* 42 U.S.C. 6293(c)(2)). In the final rule published December 11, 2020, stated that it was maintaining the 180-day grace period as proposed. 85 FR 79802, 79813. As such, were a Decision and Order issued with an alternate test procedure that differed from that required under this interim waiver, beginning 180 days following publication of the Decision and Order any representations made by the petitioner must fairly disclose the results of testing in accordance with the alternate test procedure specified by the final Order and the applicable requirements of 10 CFR part 429.

[7] A notation in this form provides a reference for information that is in the docket for this test procedure waiver (Docket No. EERE-2020-BT-WAV-0040) (available at *www.regulations.gov/docket/EERE-2020-BT-WAV-0040*). This notation indicates that the statement preceding the reference is document number 1 in the docket and appears at pages 1-4 of that document.

models in a manner so unrepresentative of their true energy consumption characteristics as to provide materially inaccurate comparative data. LRC Coil also states that the specified basic models are "split cooling systems for walk-in wine cellars" that operate at temperature and relative humidity ranges optimized for the long-term storage of wine and are usually located in air-conditioned spaces. LRC Coil contends that because of these characteristics, wine cellar walk-in unit cooler systems differ from other walk-in cooler refrigeration systems in their walk-in box temperature setpoint, walk-in box relative humidity, low/high load split,[8] and compressor efficiency.

LRC Coil states that the specified basic models are designed to provide a cold environment at a temperature range between 45 °F to 65 °F with 50-70 percent relative humidity ("RH"), and typically are kept at 55 °F and 55 percent RH rather than the 35 °F and < 50 percent RH test condition prescribed by the DOE test procedure. LRC Coil states that the refrigeration systems are designed solely for the purpose of long-term wine storage to mimic the temperature and humidity of natural caves. LRC Coil also asserts that wine cellars optimally operate between 45 °F to 65 °F, and notes that the design of their units prohibits their operation at room/entering air temperatures of less than 45 °F. Although not specifically addressed in LRC Coil's request for waiver, DOE understands that operating the subject walk-in cooler refrigeration systems at the 35 °F condition would adversely mechanically alter the intended performance of the system, which would include icing of the evaporator coil that could potentially damage the compressor, and would not result in an accurate representation of the performance of the cooling unit.

[8] The DOE test procedure incorporates by reference Air-Conditioning, Heating, and Refrigeration Institute ("AHRI") Test Standard 1250-2009, "Standard for Performance Rating of Walk-in Coolers and Freezers" (including Errata sheet dated December 2015) ("AHRI 1250-2009"). Section 6 of that standard defines walk-in box thermal loads as a function of refrigeration system net capacity for both high-load and low-load periods. The waiver petition asserts that wine cellars do not have distinct high and low load periods, and that the box load levels in the test standard are not representative for wine cellar refrigeration systems.

The basic models listed in LRC Coil's petition include "Evaporator Only Models" which are not sold with a matched condensing unit (*i.e.*, the unit cooler and condensing unit are not sold together as a pair). Although not explicitly identified by LRC in its petition, DOE notes that unit coolers that are not part of a matched pair must be tested according to the provisions in AHRI 1250-2020 for unit coolers tested alone.

DOE has received multiple requests from wine cellar manufacturers for waiver and interim waiver from Appendix C. In light of these requests, DOE met with both AHRI and wine cellar walk-in cooler refrigeration system manufacturers to develop a consistent and representative alternate test procedure that would be relevant to each waiver request. Ultimately, AHRI sent a letter to DOE on August 18, 2020, summarizing the industry's position on several issues ("AHRI August 2020 Letter").[9] This letter documents industry support for specific wine cellar walk-in cooler refrigeration system test procedure requirements, allowing the provisions to apply only to refrigeration systems with a minimum operating temperature of 45 °F, since wine cellar system controls and unit design specifications prevent these walk-ins from reaching a temperature below 45 °F. A provision for testing wine cellar walk-in cooler refrigeration systems at an external static pressure ("ESP")[10] of 50 percent of the maximum ESP to be specified by manufacturers for each basic model (AHRI August 2020 Letter) is also included. LRC Coil's petition states that all basic models listed in the petition for waiver and interim waiver cannot be operated at a temperature less than 45 °F and provides DOE with maximum ESP values for all ducted basic models specified in its petition.

[9] DOE's meetings with wine cellar refrigeration systems manufacturers were conducted consistent with the Department's *ex parte* meeting guidance (74 FR 52795; October 14, 2009). The AHRI August 2020 letter memorializes this communication and is provided in Docket No. EERE- 2020-BT-WAV-0040-0010.

[10] External static pressure is the sum of all the pressure resisting the fans. In this case, this is chiefly the resistance generated by the air moving through ductwork.

LRC Coil also requests an interim waiver from the existing DOE test procedure. DOE will grant an interim waiver if it appears likely that the petition for waiver will be granted, and/or if DOE determines that it would be desirable for public policy reasons to grant immediate relief pending a determination of the petition for waiver. 10 CFR 431.401(e)(2).

III. Requested Alternate Test Procedure

EPCA requires that manufacturers use DOE test procedures when making representations about the energy consumption and energy consumption costs of covered equipment. (42 U.S.C. 6314(d)) Consistency is important when making representations about the energy efficiency of covered products and equipment, including when demonstrating compliance with applicable DOE energy conservation standards. Pursuant to 10 CFR 431.401, and after consideration of public comments on the petition, DOE may establish in a subsequent Decision and Order an alternate test procedure for the basic models addressed by the Interim Waiver Order.

LRC Coil seeks to use an approach that would test and rate specific wine cellar walk-in unit cooler basic models. The company's suggested approach specifies using an air-return temperature of 55 °F, as opposed to the 35 °F requirement prescribed in the current DOE test procedure. LRC Coil also suggests using an air-return relative humidity of 55 percent, as opposed to < 50 percent RH as prescribed in the current DOE test procedure. LRC Coil stated that wine cellar walk-in cooler refrigeration systems do not experience high- and low-temperature conditions, but rather operate at steady state in a predominantly air-conditioned environment, supporting the use of the correction factor to adjust for average usage. LRC Coil requested that a correction factor of 0.55 be applied to the final AWEF calculation to adjust for

average usage.[11] Finally, LRC Coil states that the external static pressure for testing systems with ducted evaporator air would be set to half of the reported maximum external static pressure.

IV. Interim Waiver Order

DOE has reviewed LRC Coil's application, its suggested testing approach, representations of the specified basic models on the website for the LRC Coil brand, related product catalogs, and information provided by LRC Coil and other wine cellar walk-in cooler refrigeration system manufacturers as discussed. Based on the assertions in the petition, absent an interim waiver, the DOE test procedure for walk-in cooler refrigeration systems would evaluate the subject basic models in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. Therefore, based on its review, DOE is granting an interim waiver that requires testing with a modified version of the testing approach suggested by LRC Coil.

The modified testing approach would apply to unit cooler (evaporator) only models specified in LRC Coil's waiver petition Specified ducted basic models (RMD and VAH) and specified ductless basic models (SLA, SLPA, DQ, LPAQ, Q, CE, HS, RM, VRM, BK, CTIH, CTE, and WM) are unit coolers (evaporator units) designed to be paired with a remote condensing unit that is provided by a different manufacturer, in which refrigerant circulates between the "evaporator unit" (unit cooler) portion of the system and the "remote condensing unit". The refrigerant cools the wine cellar air in the evaporator unit, while the condensing unit rejects heat from the refrigeration system in a remote location, often outside. The evaporator unit of the ducted unit cooler system circulates air through ducts from the wine cellar to the

[11] DOE notes that in petitions for waiver received from other manufacturers, petitioners suggested that the correction factor would account for the different use and load patterns of the specified basic models as compared to walk-in cooler refrigeration systems generally. See Notifications of Petition for Waiver and Grant of Interim Waiver for Air Innovations (86 FR 2403, 2407; Jan. 12, 2021), CellarPro (86 FR 11972, 11976; Mar. 1, 2021), and Vinotheque (86 FR 11961, 11964; Mar. 1, 2021).

evaporator unit and back to provide cooling, while the evaporator unit of the ductless unit cooler system may be ceiling-mounted, installed through-the-wall, or installed inside of the wine cellar for direct cooling. The capacity range of the specified basic models is from 1,500 Btu/h to 36,000 Btu/h for the specified operating conditions for each of the models.[12]

DOE considers the operating temperature range of the specified basic models to be integral to its analysis of whether such models require a test procedure waiver. Grant of the interim waiver and its alternative test procedure to the specified basic models listed in the petition is based upon the representation by LRC Coil that the operating range for the basic models listed in the interim waiver does not extend below 45 °F.

The alternate test procedure specified in the Interim Waiver Order requires testing the specified basic models according to Appendix C with the following changes. The required alternate test procedure specifies an air entering dry-bulb temperature of 55 °F and a relative humidity of 55 percent.

Although not addressed by LRC Coil in its petition, the DOE test procedure for unit coolers tested alone requires use of an energy efficiency ratio ("EER") value,[13] which is necessary to calculate the compressor energy use that would be expended to handle the walk-in unit cooler load. Appendix C, Section 3.3.1. AHRI 1250-2020 section 7.8 provides an EER table to calculate AWEF for low- and medium-temperature unit coolers tested alone—the table

[12] The specified operating conditions are 55 °F room temperature (cold-side air entering), 38 °F suction temperature (refrigerant saturation temperature), and 17 °F TD (difference between the saturation temperature of the refrigerant inside the coil and the cold-side air entering temperature). The relative humidity of the cold-side air entering is not specified. An example series of specified models with capacity and condition information can be found at Docket No. EERE- 2020-BT-WAV-0040-0007.

[13] EER in this case represents the refrigeration load (in British thermal units ("Btu")/hour ("h")) required by the unit cooler divided by the compressor power (in watts ("W")) required to provide that load.

provides varying EER values, dependent on the adjusted dew point[14] condition at the compressor inlet. However, LRC indicated that its walk-in unit coolers operate with a 38 ºF evaporating temperature, which exceeds the maximum temperature in the AHRI 1250-2020 table. Furthermore, the EER table represents efficiency of parallel rack systems (see the title of section 7.9 of AHRI 1250-2009, "Walk-in Unit Cooler Match to Parallel Rack System"), which are typically used in supermarket refrigeration systems.[15] The EER values for parallel rack systems are not expected to be representative of the compressors used in the condensing units paired with wine cellar walk-in unit coolers.

Therefore, DOE developed EER values appropriate to wine cellar walk-in cooler refrigeration systems. DOE obtained compressor performance data from Emerson and Tecumseh product websites (EERE-2020-BT-WAV-0040, No. 0002 and No. 0008, respectively) for high-temperature refrigeration compressor models within the applicable capacity range (2,900 Btu/h to 36,000 Btu/h). DOE expects that the condensing units paired with wine cellar walk-in unit coolers will use either hermetic reciprocating or hermetic scroll compressors designed for use with HFC-134a, R404A, or R407C refrigerants. Based on the compressor performance data, DOE calculated representative compressor EER levels for wine cellar walk-in unit coolers using the following parameters:

- 38º F unit cooler exit dew point condition, as suggested by LRC (LRC Coil, No. 1 at pp. 3).
- 2º F equivalent suction line dew point pressure drop, consistent with AHRI 1250-2009 section 7.9.1.

[14] Adjusted dew point represents the pressure level at the unit cooler exit converted to its corresponding dew point temperature and adjusted for pressure loss in the suction line returning the refrigerant to the compressor. Dew point is the warmest temperature at which a refrigerant can exist in equilibrium in a two-phase liquid-vapor state at a given pressure—the dew point represents the two-phase evaporating refrigerant temperature in the unit cooler.
[15] See for example, "Hussmann Parallel Rack Systems", *www.hussmann.com/ns/Technical-Documents/0427598_D_Rack_IO_EN.pdf*.

- 7º F evaporator exit superheat, rounding to whole number values of the 6.5 ºF superheat test condition prescribed in the footnote to Table 15 of Appendix C in case a value is not provided in an installation manual.
- 55º F refrigerant temperature entering the compressor, representing a 10º F refrigerant vapor temperature rise in the suction line, consistent with the temperature rise implied for medium-temperature refrigeration system test conditions.[16]
- 90º F annual average condensing temperature. This assumes that the condensing unit serving the unit cooler would be located outdoors and that head pressure control would prevent excessively cold condensing operation at cold outdoor temperatures.[17]

DOE plotted the calculated compressor EER values versus calculated unit cooler capacity and noted that the EER can significantly vary with capacity (EERE-2020-BT-WAV-0040, No. 0009). EER is generally low for low-capacity compressors and high for high-capacity compressors, with a transition region in between. Based on the plotted calculations, DOE determined for the purpose of the interim waiver that a representative value for EER should depend on capacity. As such, DOE developed different functions of EER for three distinct capacity ranges. Table 1 summarizes these capacity ranges and EER functions for high-temperature compressors.

[16] AHRI 1250-2009 Table 11 prescribes a return gas temperature (measured at the condensing unit inlet location) equal to 41 ºF for testing medium temperature condensing units. Also, Table 15 and Section 3.3.1 of Appendix C prescribe testing medium-temperature unit coolers using 25 ºF saturated suction temperature (this is the same as unit cooler exit dew point temperature), and 6.5 ºF superheat (in case the installation manual doesn't provide superheat requirements). Thus, the unit cooler exit temperature would be 25 ºF + 6.5 ºF = 31.5 ºF, and the implied suction line temperature rise is 41 ºF – 31.5 ºF = 9.5 ºF. The analysis conducted for wine cellars rounds this to 10 ºF.

[17] Head pressure control refers to reduction of condenser heat transfer performance using fan cycling or other means when it is cold outside in order to avoid unusually low condensing temperature. Such low condensing temperatures are undesirable because they can reduce refrigeration system performance and/or increase risk of compressor damage. A typical minimum condensing temperature is 70 ºF, which may apply whenever outdoor temperature is lower than 50 ºF. DOE selected the 90 ºF annual average to be representative of operation that would involve condensing temperature ranging from 70 ºF to 120 ºF, since outdoor temperature varies.

Table 1. EER Values for High Temperature Compressors as a Function of Capacity for Wine Cellar Walk-in Cooler Refrigeration Systems.

Capacity (Btu/hr)	**EER (Btu/Wh)**
< 10,000	11
10,000 - 19,999	(0.0007 x Capacity) + 4
20,000 - 36,000	18

Section 3.3.7 of Appendix C specifies section 7.9 of AHRI 1250-2009 for calculation of AWEF and net capacity for unit coolers tested alone. The alternate test procedure required under this interim waiver modifies section 3.3.7 of Appendix C to use the EER values provided in Table 1 for determining AWEF.

The alternate test procedure required under the interim waiver also includes the following modifications to LRC Coil's suggested approach: For systems that can be installed with ducted evaporator air or without ducted evaporator air, testing would be conducted at 50 percent of the maximum ESP, consistent with the AHRI August 2020 Letter recommendations, subject to a tolerance of -0.00/+0.05 in. wc.[18] DOE understands that maximum ESP is generally not published in available literature such as installation instructions, but manufacturers do generally specify the size and maximum length of ductwork that is acceptable for any given unit in such literature. The duct specifications determine the ESP that the unit would experience in the field.[19] The provision of allowable duct dimensions is more convenient for installers than maximum ESP, since it relieves the installer from having to perform duct pressure drop

[18] Inches of water column ("in. wc") is a unit of pressure conventionally used for measurement of pressure differentials.

[19] The duct material, length, diameter, shape, and configuration are used to calculate the ESP generated in the duct, along with the temperature and flow rate of the air passing through the duct. The conditions during normal operation that result in a maximum ESP are used to calculate the reported maximum ESP values, which are dependent on individual unit design and represent manufacturer-recommended installation and use.

calculations to determine ESP. DOE independently calculated the maximum pressure drop over a range of common duct roughness values[20] using duct lengths and diameters published in LRC Coil's installation manuals.[21] DOE's calculations show reasonable agreement with the maximum ESP values provided by LRC Coil for the specified basic models. Given that the number and degree of duct bends and duct type will vary by installation, DOE found the maximum ESP values provided by LRC Coil to be sufficiently representative.

Selection of a representative ESP equal to half the maximum ESP is based on the expectation that most installations will require less than the maximum allowable duct length. In the absence of field data, DOE expects that a range of duct lengths from the minimal length to the maximum allowable length would be used; thus, DOE believes that half of the maximum ESP would be representative of most installations. For unit cooler basic models that are not designed for the ducting of air, this design characteristic must be clearly stated.

Additionally, if there are multiple evaporator fan speed settings, the speed setting in the unit's installation instructions would be used for testing. However, if the installation instructions do not specify a fan speed setting for ducted installation, systems that can be installed with ducts would be tested with the highest available fan speed. The ESP would be set for testing by symmetrically restricting the outlet duct.[22]

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[20] Calculations were conducted over an absolute roughness range of 1.0-4.6 mm for flexible duct as defined in pages 1-2 of an OSTI Journal Article on pressure loss in flexible HVAC ducts at *www.osti.gov/servlets/purl/836654* (Docket No. EERE-2020-BT-WAV-0040-0006) and available at *www.regulations.gov*.

[21] Duct lengths and diameters can be found in LRC Coil's installation manuals at *www.regulations.gov* Docket No. EERE-2020-BT-WAV-0040-0005, and EERE-2020-BT-WAV-0040-0004.

[22] This approach is used for testing of furnace fans, as described in section 8.6.1.1 of 10 CFR part 430, appendix AA to subpart B.

The alternate test procedure also describes the requirements for measurement of ESP consistent with provisions provided in section C9.1.1.2 of AHRI 1250-2020 when using the indoor air enthalpy method with unit coolers.

DOE notes that, despite the request from LRC Coil, it is not including a 0.55 correction factor in the alternate test procedure required by the Interim Waiver Order. The company sought to include a 0.55 correction factor to adjust for average use, stating that wine cellars do not experience high- and low-load conditions, but rather operate at steady state conditions in a predominately air-conditioned environment, but did not provide any additional support for this recommendation. While not specifically addressed in the request for waiver submitted by LRC Coil, waivers submitted by other manufacturers have stated that the suggested 0.55 correction factor addresses the differences in run time and compressor inefficiency of wine cellar walk-in cooler refrigeration systems as compared to walk-in cooler refrigeration systems more generally and have suggested that the run time for wine cellar walk-in cooler refrigeration systems ranges from 50 to 75 percent.[23] AHRI 1250-2009 accounts for percent run time in the AWEF calculation by setting walk-in box load equal to specific fractions of refrigeration system net capacity—the fractions are defined based on whether the refrigeration system is for cooler or freezer applications, and whether it is designed for indoor or outdoor installation (see sections 6.2 (applicable to coolers) and 6.3 (applicable to freezers) of AHRI 1250-2009). The alternate test procedure provided by this interim waiver requires calculating AWEF based on setting the walk-in box load equal to half of the refrigeration system net capacity, without variation according to high- and low-load periods and without variation with outdoor air temperature for outdoor refrigeration systems. Setting the walk-in box load equal to half the refrigeration system

[23] This runtime range was suggested by two other wine cellar walk-in refrigeration system manufacturers: Air Innovations and CellarPro. See 86 FR 2403, 2408 (Jan. 12, 2021) and 86 FR 11972, 11977 (Mar. 1, 2021), respectively.

net capacity results in a refrigeration system run time fraction slightly above 50 percent, which is within the range suggested by other manufacturers of wine cellar walk-in cooler refrigeration systems as being representative for the specified basic models. As previously discussed, DOE regulates walk-in energy consumption at the component level, with separate test procedures for walk-in refrigeration systems, doors, and panels. Section 6 of AHRI 1250-2009 provides equations for determining refrigeration box load as a function of refrigeration system capacity. Using these equations with an assumed load factor of 50 percent maintains consistency with Appendix C while providing an appropriate load fraction for wine cellar walk-in cooler refrigeration systems. Accordingly, DOE has declined to adopt a correction factor for the equipment at issue.

Based on DOE's review of LRC Coil's petition, the required alternate test procedure specified in the Interim Waiver Order appears to allow for the accurate measurement of energy efficiency of the specified basic models, while alleviating the testing issues associated with LRC Coil's implementation of wine cellar walk-in unit cooler testing for these basic models. Consequently, DOE has determined that LRC Coil's petition for waiver will likely be granted. Furthermore, DOE has determined that it is desirable for public policy reasons to grant LRC Coil immediate relief pending a determination of the petition for waiver.

For the reasons stated, it is **ORDERED** that:

LRC Coil must test and rate the following LRC branded wine cellar walk-in unit cooler basic models with the alternate test procedure set forth in paragraph (2).

	Basic Models			**Basic Models**			**Basic Models**
	SLA18-54Q SLA28-108Q SLA38-163Q SLA48-217Q SLA58-270Q			SLPA-26-62Q SLPA36-95Q SLPA46-128Q SLPA56-162Q			DQ-207 DQ-207C DQ-275 DQ-275C DQ-345

	SLA68-322Q			SLPA66-200Q			DQ-345C DQ-432 DQ-541 DQ-650
	LPA17-10Q LPA17-13Q LPA27-18Q LPA27-23Q LPA37-32Q LPA47-42Q LPA57-55Q			Q-500W Q-750W Q-1000W Q-1350W Q-1640W Q-2000W Q-2600W			CE1-28Q CE2-89Q CD3-129Q
	HS-25CLEC HS-31CLEC HS-47CLEC HS-66CLEC HS-87CLEC HS-120CLEC HS-25EC HS-31EC HS-47EC HS-66EC HS-87EC HS-120EC HS-180EC			RM-25EC RM-35EC RM-50EC RM-65EC RM-80EC			RMD-25EC RMD-35EC RMD-50EC RMD-65EC RMD-80EC
	VAH-25EC VAH-31EC VAH-47EC VAH-66EC VAH-87EC VAH-120EC VAH-180EC			VRM-25EC VRM-35EC VRM-50EC VRM-65EC[24] VRM-80EC			BK17-40 BK27-60
	CTIH-15 CTIH-25 CTIH-35 CTIH-50 CTIH-70			CTE-15EC CTE-25EC CTE-35EC CTE-50EC			WM-15 WM-25 WM-35 WM-50

(2) The alternate test procedure for the LRC Coil basic models identified in paragraph (1) of this Interim Waiver Order is the test procedure for Walk-in Cooler Refrigeration Systems prescribed

[24] LRC Coil lists VRM-65 in their petition for waiver and interim waiver (EERE-2020-BT-WAV-0040-0011). The basic model number has been modified since LRC Coil's product literature lists 'VRM-65EC' and all other VRM models have an 'EC' appended to the end of the model number. Additionally, in a July 27, 2021 email, LRC Coil confirmed that all VAH series models should in in 'EC'.

by DOE at 10 CFR part 431, subpart R, appendix C ("Appendix C to Subpart R"), except as detailed below. All other requirements of Appendix C and DOE's regulations remain applicable.

In Appendix C to Subpart R, revise section 3.1.1 (which specifies modifications to AHRI 1250-2009 (incorporated by reference; see §431.303)) to read:

3.1.1. In Table 1, Instrumentation Accuracy, refrigerant temperature measurements shall have an accuracy of ±0.5 °F for unit cooler in/out. Measurements used to determine temperature or water vapor content of the air (*i.e.* wet bulb or dew point) shall be accurate to within ±0.25 °F; all other temperature measurements shall be accurate to within ±1.0 °F.

In Appendix C to Subpart R, revise section 3.1.5 (which specifies modifications to AHRI 1250-2009) and revise modifications to AHRI 1250-2009 Table 15:

3.1.5. Table 15 shall be modified to read:

	Table 15. Refrigerator Unit Cooler						
Test Description	**Unit Cooler Air Entering Dry-Bulb Temp-erature, °F**	**Unit Cooler Air Entering Relative Humidity, %**	**Saturation Temp-erature, °F**	**Liquid Inlet Saturation Temp-erature, ºF**	**Liquid Inlet Subcooling Temp-erature, °F**	**Compressor Capacity**	**Test Objective**
Off Cycle Fan Power	55	55	-	-	-	Compressor Off	Measure fan input power during compressor off cycle
Refrigeration Capacity Suction A	55	55	38	105	9	Compressor On	Determine Net Refrigeration Capacity of Unit Cooler

	Notes: Superheat to be set according to equipment specification in equipment or installation manual. If no superheat specification is given, a default superheat value of 6.5 °F is shall be used. The superheat setting used in the test shall be reported as part of the standard rating.

In Appendix C to Subpart R, revise section 3.3.1 (which specifies modifications to AHRI 1250-2009) to read:

3.3.1. For unit coolers tested alone, use test procedures described in AHRI 1250-2009 (incorporated by reference; see §431.303) for testing unit coolers for use in mix-match system ratings, except that for the test conditions in Tables 15 and 16, use the Suction A saturation condition test points only. Determine AWEF as described in section 3.3.7.

In Appendix C to Subpart R, revise section 3.3.3, and add sections 3.3.3.1 and 3.3.3.2 to read:

3.3.3 *Evaporator fan power*.

3.3.3.1 The unit cooler fan power consumption shall be measured in accordance with the requirements in Section C3.5 of AHRI 1250-2009. This measurement shall be made with the fan operating at full speed, either measuring unit cooler or total system power input upon the completion of the steady state test when the compressor and the condenser fan of the walk-in system are turned off, or by submetered measurement of the evaporator fan power during the steady state test.

Section C3.5 of AHRI 1250-2009 is revised to read:

Unit Cooler Fan Power Measurement. The following shall be measured and recorded during a fan power test.

$EF_{comp,on}$	Total electrical power input to fan motor(s) of Unit Cooler, W
FS	Fan speed (s), rpm
N	Number of motors
P_b	Barometric pressure, in. Hg
T_{db}	Dry-bulb temperature of air at inlet, °F
T_{wb}	Wet-bulb temperature of air at inlet, °F
V	Voltage of each phase, V

For a given motor winding configuration, the total power input shall be measured at the highest nameplated voltage. For three-phase power, voltage imbalance shall be no more than 2 %.

3.3.3.2 Evaporator fan power for the off cycle is equal to the on-cycle evaporator fan power with a run time of ten percent of the off-cycle time.

$$EF_{comp,off} = 0.1 \times EF_{comp,on}$$

In Appendix C to Subpart R, add new section 3.3.11 to read:

3.3.11. For unit cooler systems tested alone with ducted evaporator air, or that can be installed with or without ducted evaporator air: Connect ductwork on both the inlet and outlet connections and determine external static pressure as described in ASHRAE 37-2009, sections 6.4 and 6.5. Use pressure measurement instrumentation as described in ASHRAE 37-2009 section 5.3.2. Test at the fan speed specified in manufacturer installation instructions—if there is more than one fan speed setting and the installation instructions do not specify which speed to use, test at the highest speed. Conduct tests

with the external static pressure equal to 50 percent of the maximum external static pressure allowed by the manufacturer for system installation within a tolerance of -0.00/+0.05 in. wc. Set the external static pressure by symmetrically restricting the outlet of the test duct. In case of conflict, these requirements for setting evaporator airflow take precedence over airflow values specified in manufacturer installation instructions or product literature.

In Appendix C to Subpart R, revise section 3.3.7 (which specifies modifications to AHRI 1250-2009) to read:

3.3.7. For unit coolers tested alone, calculate AWEF on the basis that walk-in box load is equal to half of the system net capacity, without variation according to high and low load periods, and with EER set according to tested evaporator capacity, as follows:

For Unit Coolers Tested Alone:

The net capacity, $\dot{q}_{mix,evap}$, is determined from the test data for the unit cooler at the 38 ºF suction dewpoint.

$$\dot{BL} = 0.5 \times \dot{q}_{mix,evap}$$

$$\dot{E}_{mix,rack} = \frac{\left(\dot{q}_{mix,evap} + 3.412 \times \dot{EF}_{comp,on}\right)}{EER} + \dot{EF}_{comp,on}$$

Where:

$$EER = \begin{cases} 11 & \text{if } \dot{q}_{mix,evap} < 10{,}000 \text{ Btu/h} \\ 0.0007 \cdot \dot{q}_{mix,evap} + 4 & \text{if } 10{,}000 \leq \dot{q}_{mix,evap} < 20{,}000 \text{ Btu/h} \\ 18 & \text{if } 20{,}000 \leq \dot{q}_{mix,evap} < 36{,}000 \text{ Btu/h} \end{cases}$$

$$LF = \frac{\dot{BL} + 3.412 \times \dot{EF}_{comp,off}}{\dot{q}_{mix,evap} + 3.412 \times \dot{EF}_{comp,off}}$$

$$AWEF = \frac{\dot{BL}}{\dot{E}_{mix,rack} \times LF + \dot{EF}_{comp,off} \times (1 - LF)}$$

Where: $\dot{BL}$ is the non-equipment-related box load
LF is the load factor
And other symbols are as defined in Section 8 of AHRI 1250-2009.

(3) Representations. LRC Coil may not make representations about the efficiency of a basic model listed in paragraph (1) for compliance, marketing, or other purposes unless that basic model has been tested in accordance with the provisions set forth in this alternate test procedure and such representations fairly disclose the results of such testing.

(4) This Interim Waiver Order shall remain in effect according to the provisions of 10 CFR 431.401.

(5) This Interim Waiver Order is issued on the condition that the statements and representations provided by LRC Coil are valid. If LRC Coil makes any modifications to the controls or configurations of a basic model subject to this Interim Waiver Order, such modifications will render the waiver invalid with respect to that basic model, and LRC Coil will either be required to use the current Federal test method or submit a new application for a test procedure waiver. DOE may rescind or modify this waiver at any time if it determines the factual basis underlying the petition for the Interim Waiver Order is incorrect, or the results from the alternate test procedure are unrepresentative of a basic model's true energy consumption characteristics. 10 CFR 431.401(k)(1). Likewise, LRC Coil may request that DOE rescind or modify the Interim Waiver Order if LRC Coil discovers an error in the information provided to DOE as part of its petition, determines that the interim waiver is no longer needed, or for other appropriate reasons. 10 CFR 431.401(k)(2).

(6) Issuance of this Interim Waiver Order does not release LRC Coil from the applicable requirements set forth at 10 CFR part 429.

DOE makes decisions on waivers and interim waivers for only those basic models specifically set out in the petition, not future models that may be manufactured by the petitioner. LRC Coil may submit a new or amended petition for waiver and request for grant of interim waiver, as appropriate, for additional basic models of Walk-in Cooler Refrigeration Systems. Alternatively, if appropriate, LRC Coil may request that DOE extend the scope of a waiver or an interim waiver to include additional basic models employing the same technology as the basic model(s) set forth in the original petition consistent with 10 CFR 431.401(g).

Signing Authority

This document of the Department of Energy was signed on August 20, 2021, by Kelly Speakes-Backman, Principal Deputy Assistant Secretary and Acting Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on August 20, 2021.

Treena V. Garrett,
Federal Register Liaison Officer,
U.S. Department of Energy.

APPLICATION FOR WAIVER PER 10 CFR 431.401
WINE CELLAR COOLING EQUPIMENT

LRC coil is requesting an interim and a permanent waiver from a DOE test procedure pursuant to provisions described in 10 CFR 431.401 for the following products on the grounds that either the basic model contains one or more design characteristics that prevent testing of the basic model according to the prescribed test procerus or the prescribed test procedures evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics has to provide materially inaccurate comparative data. DOE uniform test method for the measurement of energy consumption of walk-in coolers and walk-in freezer described in 10 CFR 431.304 adopts the test standard set forth an AHRI 1250-2020. Our walk-in wine cellar cooling systems meet the definition of Walkin Cooler Refrigeration Systems.

The design characteristics constituting the ground for the interim waiver application:

Split cooling systems for walk-in wine cellars. Split cooling systems are designed to provide cold environments between 45 and 65 degrees Fahrenheit and maintain a relative humidity range within 50 to 7-% for properly insulated wine cellars.

- These temperature and relative humidity ranges are optimized for long-term storage of wine mimicking that of natural caves.
- Cooling systems consist of a remote condensing unit and an evaporator unit which are connected by liquid line and an insulated suction line.
- These systems must be charged properly with refrigerant in the field by a licensed contractor.
- These systems are available as indoor or outdoor uses with automatic off-cycle air defrost.
- Wine cellars are usually located in air conditioned environments so the load is predominately steady state with out high and low load conditions.
- Wine cellar cooling systems typically employ fractional compressors and automatic expansion valves to maintain the desired relative humidity in comparison to larger systems used in commercial WICF's.

AHRI 1250-2019 defines the test conditions of walkin cooler refrigeration systems at 35 degree Fahrenheit air temperature with less than 50% relative humidity. However wine cellar cooling systems are designed to maintain environments of 55°-65 degree and maintain 50 to 70% relative humidity. Wine cellar can cooling systems are optimized to operate within such temperature and relative humidity ranges that they can't operate at a 35 degree air temperature with a less than freezing suction temperature.

Wine Cellars don't have high and low load conditions and operate at steady state conditions during operation in a predominately air conditioned environment. So the AWEF calculation described in 10 CFR 431.304 and AHRI 1250-2019 does not match the application of the such a system.

Due to the design of the coils used in the units they cannot be operated at room/entering air temperatures of less than 45 deg F.

The compressors used in wine cellar cooling systems are predominantly fractional horsepower which are inherently less efficient than larger compressors used in walkin cooler refrigeration systems. Therefore we do not believe there is technology on the market that will provide the

needed energy efficiency and wine cellar cooling system to meet the minimum AWEF value for commercial walk-in cooler refrigeration systems set forth and 10 CFR 431.306.

LRC brand basic models on which the waiver is being requested:

Evaporator Only Models:

- LRC brand SLA series – (consisting of SLA18-54Q, SLA28-108Q, SLA38-163Q, SLA48-217Q, SLA58-270Q, SLA68-322Q)
- LRC brand SLPA – (consisting of SLPA-26-62Q, SLPA36-95Q, SLPA46-128Q, SLPA56-162Q, SLPA-66-200Q)
- LRC brand DQ – (consisting of DQ-207, DQ-207C, DQ-275, DQ-275C, DQ-345, DQ-345C, DQ-432, DQ-541, DQ-650)
- LRC brand LPAQ – (consisting of LPA17-10Q, LPA17-13Q, LPA27-18Q, LPA27-23Q, LPA37-32Q, LPA47-42Q, LPA57-55Q)
- LRC brand Q – (consisting of Q-500W, Q-750W, Q-1000W, Q-1350W, Q-1640W, Q-2000W, Q-2600W)
- LRC brand CE – (consisting of CE1-28Q, CE2-89Q, CE3-129Q)
- LRC brand HS – (consisting of HS-25CLEC, HS-31CLEC, HS-47CLEC, HS-66CLEC, HS-87CLEC, HS-120CLEC, HS-25EC, HS-31EC, HS-47EC, HS-66EC, HS-87EC, HS-120EC, HS-180EC)
- LRC brand RM – (consisting of RM-25EC, RM-35EC, RM-50EC, RM-65EC, RM-80EC)
- LRC brand RMD – (consisting of RMD-25EC, RMD-35EC, RMD-50EC, RMD-65EC, RMD-80EC) – Ducted (max .1 in H2O external static)
- LRC brand VAH – (consisting of VAH-25EC, VAH-31EC, VAH-47EC, VAH-66EC, VAH-87EC, VAH-120EC, VAH-180EC) – Ducted (max .25 in H2O external static)
- LRC brand VRM – (consisting of VRM-25EC, VRM-35EC, VRM-50EC, VRM-65, VRM-80EC) – not ducted, located in room.
- LRC brand BK – (consisting of BK17-40, BK27-60)
- LRC brand CTIH – (consisting of CTIH-15, CTIH-25, CTIH-35, CTIH-50, CTIH-70)
- LRC brand CTE – (consisting of cTE-15EC, CTE-25EC, CTE-35EC, CTE-50 EC)
- LRC brand WM – (consisting of WM-15, WM-25, WM-35, WM-50)

Specific requirements sought to be waived: LRC Coil is petitioning for a waiver to exempt split walk-in wine cellar cooling systems from being tested to the current test procedure. The prescribed test procedure is not appropriate for these products for the reasons stated previously.

List of manufacturers of all other basic models marketing in the United States and known to the petitioner to incorporate similar design characteristics.

- Air Innovations
- CellarPro
- Whisperkool
- Vinotemp/Winemate

Proposed alternate test procedure:

- Use a correction factor of 0.55 to calculate the AWEF to adjust for average usage.
- One load used to calculate AWEF.
- Evaporator air entering temperature dry bulb of 55° f for split cooling systems.
- Evaporator air entering relative humidity 55% for split systems.
- Setting airflow and static pressure for systems with ducted evaporator. Fan speed would be in accordance with manufacturers specifications. The external static pressure for

testing would be set to ½ of the rated maximum external static with a tolerance of -0/+.05 in H2O.

- For unit cooler style units for wine use above 45 degree F the same SST of 38 deg F coil temperature, entering air temperature of 55 deg F and relative humidity of 55% will be used. Duty cycle and operating characteristics are the same as the other wine units.

Success of the application for interim waiver and waiver:
It will ensure that manufacturers of wine cellar cooling systems can continue to participate in the market.

What economic hardship and/or competitive disadvantage are likely to absent a favorable determination on the application for interim waiver.
Economic hardship will be loss of sales due to not meeting the DOE energy conservation standards set forth and 10 CFR 431.306 if the existing products were altered in order to test for current requirements set forth in 10 CFR 431.204 and AHRI 1250-2020, would add significant costs and increase energy consumption.

Conclusion:
LRC Coil requests an interim waiver and waiver from DOE's current test method for the measurement of energy consumption of walk-in wine cellar split cooling systems.

Respectfully submitted,

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