This is a draft document and does not represent a definitive view of the agency on the questions addressed.

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Guidance Type: Test Procedures
Category: Residential Products
Product: Central air conditioners and heat pumps
Product Sub-type: Split and package systems
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Q: How should split-system central air conditioners and heat pumps utilizing R-22 be tested and rated?

A: The following is a draft U.S. Department of Energy (DOE) guidance document regarding residential central air conditioning systems and air conditioning heat pump systems that are designed to use HCFC-22 (R-22) refrigerant. This draft guidance document represents the Department's interpretation of its existing regulations and is exempt from the notice and comment requirements of the Administrative Procedure Act. *See* 5 U.S.C. § 553(b)(A). The Department previously issued draft guidance on October 22, 2010, and received comments on this document from the Heating, Air Conditioning and Refrigeration Distributors International (HARDI), Rheem, Nordyne, Lennox, and one private citizen. More recently, DOE received a joint comment from Lennox, Johnson Controls, Ingersoll Rand, Carrier and Daikin, which strongly urged DOE to address a loophole regarding these systems which hindered the implementation of more efficient systems. Based on this feedback, the Department has developed this revised guidance and is interested in receiving further feedback from the public on these revisions. Therefore, the Department is accepting comments and suggestions from the public until **February 10, 2012**. Comments and suggestions should be provided in WordPerfect, Microsoft Word, PDF, or text file format by sending an email to **CACHP-R22-Guidance-2010-TP-0038@ee.doe.gov**. Please also include the docket number: EERE-2010-BT-TP-0038. At the end of the comment period, this draft guidance document may be adopted, revised or withdrawn.

DOE regulations require that residential split system central air conditioners and heat pumps be tested using the "the evaporator coil that is likely to have the largest volume of retail sales with the particular model of condensing unit." 10 C.F.R. § 430.24(m)(2). Effective January 1, 2010, the U.S. Environmental Protection Agency (EPA) banned the sale and distribution of those central air conditioning systems and heat pump systems manufactured after January 1, 2010, that are designed to use R-22 refrigerant. 74 Fed. Reg. 66450 (Dec. 15, 2009). EPA's rulemaking included an exception for the manufacture and importation of replacement components, as long as those components are not pre-charged with R-22. Id. at 66459-66460. In light of EPA's rulemaking, DOE received numerous inquiries regarding the sale of R-22 systems and the applicability of our regulations with respect to these types of systems.

TESTING OF R-22 SYSTEMS

Because complete R-22 systems can no longer be distributed, manufacturers inquired how to test and rate components. In its October 2010 draft guidance, DOE proposed a method for the matching of R-22 systems with the appropriate coil when there was no clear choice for the highest sales volume combination to ensure that the energy efficiency was not overstated. DOE stated that a manufacturer should test and rate a system using any R-22 evaporator coil with a capacity of ½ ton less than the condensing unit in lieu of the coil that is likely to have the largest volume of retail sales. DOE stated that it believed this approach would allow manufacturers to continue to rate and distribute new R-22 components with little risk of overstating the efficiency.

In response to the October 2010 draft guidance, HARDI referenced studies from Bristol Compressor and Alabama Power, which concluded that reductions for a three ton system could exceed a ton of capacity (EERE-2010-BT-TP-0038, HARDI, No. 3 at p. 2). Rheem, Nordyne, Lennox and the joint comment all expressed opposition to this proposed method, while Lennox and the joint commenters agreed with HARDI that the capacity reduction should be greater than ½ ton, but did not advocate this approach (EERE-2010-BT-TP-0038, Rheem, No. 3 at p. 1; Nordyne, No. 4 at p. 1; Lennox, No. 5 at p. 2; Joint Comment, No. 7 at p. 2). After evaluating the potential for overrating, DOE agrees with these comments.

Because the U.S. Environmental Protection Agency (EPA) prohibits distribution of new R-22 systems, DOE will not allow for the certification of new R-22 systems. Additionally, DOE is clarifying its classification of new and existing R-22 systems below to address the stakeholder's concerns.

CLASSIFICATION OF R-22 SYSTEMS

The joint letter noted that the EPA decision allowed for the installation of new R-22 condensing units as a replacement component in an unmatched system (EERE-2010-BT-TP-0038, Joint Comment, No. 7 at p. 2). According to the joint letter, the energy efficiency of these unmatched systems is 37-38 percent lower than the stated efficiency of the condensing unit. The joint letter also asserted that this practice also prevents the installation of new higher efficiency systems because consumers choose to install the R-22 condenser thinking that it will achieve higher efficiencies than it actually does (EERE-2010-BT-TP-0038, Joint Comment, No. 7 at p. 2). Lennox and HARDI both agreed with these statements (EERE-2010-BT-TP-0038, Lennox, No. 5 at p. 2; HARDI, No. 3 at p. 2) HARDI suggested three options for addressing the failure of an existing system: replace the broken component while maintaining the factory recommended combination, replace the entire system with a new matched system, or replace the condensing unit with one that is a certified match with the existing indoor coil (EERE-2010-BT-TP-0038, HARDI, No. 3 at p. 4).

DOE recognizes that many of the R-22 systems and components are part of legacy offerings that have been available over the past five years. As such, many of these R-22 systems were in production before the EPA regulations became effective on January 1, 2010. EPA's rulemaking has no effect on the efficiency rating of these systems. These ratings continue to be valid and already should have been certified as compliant to DOE.[1] However, while EPA's rulemaking made clear that after January 1, 2010,

[1] DOE is aware that the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) initially dropped systems utilizing R-22 refrigerant from its certification programs. Because there was a time period that AHRI was no longer including R-22 systems in its certification program, manufacturers, including AHRI members participating in the AHRI certification program, should ensure that their R-22 systems have been certified to DOE as compliant in accordance with 10 C.F.R. §429.12.

no new R-22 systems can be manufactured, EPA's rulemaking allows for the manufacturer of R-22 components because of the existence of already installed R-22 systems.

As the intent of the regulations is to ensure compliance with the energy efficiency standard using an allowable refrigerant, replacement components should be made only for existing matched systems that were designed, certified, and compliant with energy conservation standards in effect on January 1, 2010. Newly designed R-22 condensing units should not be manufactured.