[6450-01-P]

DEPARTMENT OF ENERGY

[Case Number CAC-050]

Energy Conservation Program: Decision and Order Granting a Waiver to Johnson Controls, Inc. from the Department of Energy Central Air Conditioners and Heat Pumps Test Procedure

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

ACTION: Notice of decision and order.

SUMMARY: The U.S. Department of Energy ("DOE") gives notice of a Decision and Order granting Johnson Controls, Inc. ("JCI") a waiver from specified portions of the DOE test procedure for determining the efficiency of specified central air conditioners ("CAC") and heat pump ("HP") basic models. JCI is required to test and rate specified basic models of its central air conditioners and heat pumps in accordance with the alternate test procedure specified in the Decision and Order.

DATES: The Decision and Order is effective on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. The Decision and Order will terminate upon the compliance date of any future amendment to the test procedure for central air conditioners and heat pumps located at 10 CFR part 430, subpart B, appendix M that addresses the issues presented in this

waiver. At such time, JCI must use the relevant test procedure for this product for any testing to demonstrate compliance with the applicable standards, and any other representations of energy use.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

In accordance with Title 10 of the Code of Federal Regulations (10 CFR 430.27(f)(2)), DOE gives notice of the issuance of its Decision and Order as set forth below. The Decision and Order grants JCI a waiver from the applicable test procedure at 10 CFR part 430, subpart B, appendix M for specified basic models of central air conditioners and heat pumps, provided that JCI tests and rates such products using the alternate test procedure specified in the Decision and Order. JCI's representations concerning the energy efficiency of the specified basic models must be based on testing according to the provisions and restrictions in the alternate test procedure set forth in the Decision and Order, and the representations must fairly disclose the test results. Distributors, retailers, and private labelers are held to the same requirements when making representations regarding the energy efficiency of these products. (42 U.S.C. 6293(c))

Consistent with 10 CFR 430.27(j), not later than [**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER***], any manufacturer currently

distributing in commerce in the United States products employing a technology or characteristic that results in the same need for a waiver from the applicable test procedure must submit a petition for waiver. Manufacturers not currently distributing such products in commerce in the United States must petition for and be granted a waiver prior to the distribution in commerce of those products in the United States. Manufacturers may also submit a request for interim waiver pursuant to the requirements of 10 CFR 430.27.

Signed in Washington, DC, on September 27, 2019.

Alexander Fitzsimmons
Acting Deputy Assistant Secretary
for Energy Efficiency

Case Number CAC-050
Decision and Order

I. Background and Authority

The Energy Policy and Conservation Act of 1975, as amended ("EPCA"),[1] among other things, authorizes the U.S. Department of Energy ("DOE") to regulate the energy efficiency of a number of consumer products and industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B[2] of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles, which sets forth a variety of provisions designed to improve energy efficiency for certain types of consumer products. These products include central air conditioners (CACs) and heat pumps (HPs), the focus of this document. (42 U.S.C. 6292(a)(3))

Under EPCA, DOE's energy conservation program 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. 6291), energy conservation standards (42 U.S.C. 6295), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

The Federal testing requirements consist of test procedures that manufacturers of covered products must use as the basis for: (1) certifying to DOE that their products comply with the

[1] All references to EPCA in this document refer to the statute as amended through America's Water Infrastructure Act of 2018, Public Law 115-270 (October 23, 2018).
[2] For editorial reasons, upon codification in the U.S. Code, Part B was redesignated as Part A.

applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6295(s)), and (2) making representations about the efficiency of that product (42 U.S.C. 6293(c)). Similarly, DOE must use these test procedures to determine whether the product complies with relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE is required to follow when prescribing or amending test procedures for covered products. EPCA requires that any test procedures prescribed or amended under this section must be reasonably designed to produce test results which reflect energy efficiency, energy use or estimated annual operating cost of a covered product during a representative average use cycle or period of use and requires that test procedures not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The test procedure for central air conditioners and heat pumps is contained in the Code of Federal Regulations ("CFR") at 10 CFR part 430, subpart B, appendix M, *Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps* ("Appendix M").

Under 10 CFR 430.27, 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 manner so unrepresentative of its true energy consumption characteristics as to provide

materially inaccurate comparative data. 10 CFR 430.27(f)(2). DOE may grant the waiver subject to conditions, including adherence to alternate test procedures. *Id.*

II. Petition for Waiver

A. JCI's Assertions

On April 6, 2017, JCI filed a petition for waiver and an application for interim waiver from certain testing requirements of Appendix M. Subsequently, JCI filed an amended petition for waiver and application for interim waiver on June 5, 2018. The amended petition serves as the basis for this Decision and Order. On August 13, 2018, DOE published a notice announcing its receipt of the petition for waiver, granting JCI an interim waiver, and requesting public comment on the waiver ("Notice of Petition for Waiver"). 83 FR 40011.

According to JCI, the basic models listed in its petition, which use R-407C as the refrigerant, are offered as new, matched systems and testing them as outdoor units with no match (as required by the DOE test procedure) will overstate their energy usage, resulting in materially inaccurate comparative data. JCI states that it has certified more than 1,100 unique CAC combinations that use R-407C as a refrigerant. The certified ratings range from 14 to 16 SEER (Seasonal Energy Efficiency Ratio) when tested as new, matched systems, but would fall below the minimum standard of 13 SEER in 10 CFR 430.32(c) if tested as outdoor units with no match. Further, JCI contends that many CAC components, including outdoor units, regardless of refrigerant type, are also used to replace failed components of previously-installed systems. For

example, an outdoor unit that uses R-410A as a refrigerant can be used to replace a failed outdoor unit in a previously-installed system. But, as opposed to one of the R-407C outdoor units listed in JCI's petition, the R-410A outdoor unit is rated based on testing as a new, matched system; it is not rated based on an approximation of its efficiency performance when matched with older, less-efficient indoor units. As a result, in addition to providing materially inaccurate data regarding energy usage when installed as new, matched systems, JCI also contends that the outdoor unit with no match test procedure provisions provide materially inaccurate data in outdoor unit only replacement scenarios when comparing the performance of R-407C outdoor units and outdoor units that use other refrigerants, such as R-410A. (JCI, No. 7, pp. 4-5)[3]

B. Comments Received in Response to the Notice of Petition for Waiver

In response to the Notice of Petition for Waiver, DOE received substantive comments[4] from the nine stakeholders listed in the table below:

Table of Commenters

Commenter(s)	Affiliation	Identifier
Appliance Standards Awareness Project	Advocacy Group	ASAP
California Energy Commission	State	CEC
California Investor-Owned Utilities	Utilities	CA-IOUs

[3] DOE will cite to information in the waiver petition docket as follows: (commenter name, comment docket ID number, page of that document). The docket is available at *https://www.regulations.gov/docket?D=EERE-2017-BT-WAV-0039*.

[4] DOE received one comment that simply stated "I object to the waiver," and three other comments that did not discuss the waiver at all.

Commenter(s)	Affiliation	Identifier
Carrier Corporation	Manufacturer	Carrier
Goodman Global, Inc.	Manufacturer	Goodman
Lennox International Inc.	Manufacturer	Lennox
Natural Resources Defense Council	Advocacy Group	NRDC
Nortek Global HVAC	Manufacturer	Nortek
Rheem Manufacturing Company	Manufacturer	Rheem

All of the commenters, with the exception of Rheem,[5] oppose JCI's petition for waiver. In general, commenters state that the basic models listed in JCI's petition are primarily installed as replacement outdoor units, and not as new, matched systems. For example, Goodman states that "JCI's R407C equipment is predominantly distributed, sold and installed as an outdoor-only unit replacement for an existing R22 system, and in such circumstances it is matched with an existing smaller R22 indoor coil. JCI's R407C outdoor units are not typically distributed, sold and installed as part of a matched R407C system (that is, matched with a new R407C indoor coil) because contractors are highly unlikely to install the much larger R407C indoor coils." (Goodman, No. 30, p. 2) (emphasis in original) Similarly, ASAP states that "JCI's R-407C products are marketed and sold to replace outdoor units on legacy systems that use R-22 refrigerant," and are "rarely, if ever, installed" as new, matched systems. (ASAP, No. 27, pp. 1-2)

[5] Rheem submitted a comment to clarify that it has not certified any product that uses R-407C as a refrigerant since the latest revision to the test procedure in 2017.

As a result, these commenters believe that the current test procedure, which requires the basic models listed in the petition to be tested as outdoor units with no match, measures the energy efficiency of these models during a representative average use cycle. Thus, if the petition is granted, consumers and other entities, such as utilities, will not be able to rely on JCI's certified efficiency ratings when making decisions based on the energy consumption of the basic models. For instance, Lennox states that "JCI provided no evidence that 407C condensers are predominantly installed in consumers' homes matched with 407C coils. Therefore, DOE's applying the No Match Requirements to JCI's 407C condensers will yield representative test results of average consumer use, as required by statute." (Lennox, No. 26, p. 9) The CA-IOUs state that "[s]hould this waiver be granted, it will not be possible to know the energy usage of JCI's affected units when paired with existing installed indoor coils." (CA-IOUs, No. 25, p. 2)

Some commenters also state that granting the waiver would have the effect of lowering the energy conservation standard for the basic models listed in JCI's petition. For example, ASAP states that "[g]ranting this waiver would be tantamount to a lowering of the standard for products that use a particular refrigerant" and would "circumvent the anti-backsliding clause" of EPCA. (ASAP, No. 27, p. 2)

C. DOE's Determination

As discussed above, JCI asserts that the basic models listed in the petition, which use R-407C as the refrigerant, are installed as both replacement outdoor units in existing installations and as new, matched systems. As such, testing JCI's R-407C units under the outdoor unit with

no match provisions results in materially inaccurate comparative data for both outdoor unit only replacement installations and new, matched system installations. In order to evaluate JCI's claim that these basic models are installed as both replacement outdoor units and as new, matched systems, DOE reviewed JCI's public-facing materials, including marketing materials and technical guides for the basic models listed in the petition, comments received in response to the Notice of Petition for Waiver, and other information submitted by JCI.[6] These materials support JCI's assertion that these models are offered as both replacement outdoor units in existing installations and as new, matched systems. Further, while JCI states that it principally sells these basic models through independent distributors and has limited information about how these models are installed in the field, warranty registrations for these models indicate some consumers are installing these products as matched systems. (JCI, No. 33, p. 6) Additionally, while commenters claim that these models are "highly unlikely" to be or "rarely, if ever," installed as new, matched systems, they do not claim, or provide evidence, that these systems are never installed as new, matched systems. As a result, DOE has determined that the basic models listed in JCI's petition are installed as replacement outdoor units with existing indoor units and as new, matched systems.

Under 10 CFR 430.27(f)(2), DOE will grant a waiver for one of two reasons: (1) 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 (2) the prescribed test procedures evaluate the basic model in a manner so unrepresentative of its true energy

[6] These materials are all available in the docket at *https://www.regulations.gov/docket?D=EERE-2017-BT-WAV-0039.*

consumption characteristics as to provide materially inaccurate comparative data. JCI asserts that application of the outdoor unit with no match testing provisions in Appendix M to the basic models listed in its petition would evaluate these models in a manner so unrepresentative of their true energy consumption characteristics as to provide material inaccurate comparative data. To illustrate its claim of materially inaccurate comparative data, JCI refers to the difference in how energy consumption is determined under DOE's current test procedure between the basic models listed in the petition, which use R-407C as a refrigerant, and other CAC and HP systems that use R-410A as the refrigerant. Under DOE's current test procedure, the energy efficiency rating of an R-407C unit is calculated as an outdoor unit with no match, regardless of whether it may actually be installed as a new, matched system, while the energy efficiency rating of an R-410A unit is calculated as a new, matched system, regardless of whether it may actually be installed as an outdoor unit only replacement. There is a significant difference in calculated energy efficiency between these two approaches. JCI states that the certified ratings for its R-407C units range from 14 to 16 SEER when tested as new, matched systems, but would fall below the minimum standard of 13 SEER if tested as outdoor units with no match.

DOE acknowledged this disparate treatment in response to a comment submitted by JCI during the last test procedure rulemaking. "[I]t has always been the case that some outdoor units are installed as replacements for failed outdoor units. However, in most cases an outdoor unit model would also be sold in substantial numbers as a combination with indoor units. This is in contrast to R-407C units, which are predominantly sold in scenarios in which the outdoor unit is replaced, and the indoor unit is not replaced. Hence the test procedure is representative of an

average use cycle for R-410A units without requiring that it be tested as a unit with no match." 82 FR 1426, 1434 (Jan. 5, 2017).

Having reexamined this issue in light of JCI's petition for waiver, DOE has determined that such disparate treatment between systems that use R-407C as a refrigerant and systems that use other refrigerants, such as R-410A, is unwarranted and results in materially inaccurate comparative data. Testing R-407C units differently from other units prevents consumers from making apples-to-apples comparisons about energy consumption and operating costs. Consumers cannot make informed decisions when, unbeknownst to them, they may be comparing the cost and performance of CAC and HP systems based on different installation scenarios. Furthermore, even if it is assumed that a representative average use cycle for CACs and HPs should account for outdoor unit only replacement scenarios, there is no reason to exclude certain outdoor units from such treatment simply because these units are also sold in "substantial" numbers as new, matched systems. Being sold in "substantial" numbers as new, matched systems does not preclude these units from also being sold in significant numbers as replacements for failed outdoor units. In fact, according to information provided by the Air-conditioning, Heating and Refrigeration Institute (AHRI) during the last energy conservation standards rulemaking for CACs and HPs, approximately 25 percent of all replacement installations, regardless of refrigerant used, are outdoor unit only replacements. 82 FR 1786, 1815 (Jan. 6, 2017). This percentage was significant enough for DOE to adjust its energy use analysis in the energy conservation standards rulemaking to account for the increased energy consumption of outdoor unit only replacement installations. *Id.* Thus, DOE has determined that accounting for outdoor unit only replacement installations in the average use cycle for CAC and

HP systems that use R-407C, but not in systems that are sold in "substantial" numbers as new, matched systems is inconsistent and results in materially inaccurate comparative data.

Finally, with respect to ASAP's comment that granting JCI's waiver request would circumvent the anti-backsliding provision in EPCA, DOE notes that the anti-backsliding provision prohibits DOE from issuing any amended standards that would increase the maximum allowable energy use or decrease the minimum required energy efficiency of a covered product. (42 U.S.C. 6295(o)(1)) Even if it is assumed that this provision applies to test procedure waivers, ASAP's argument that granting JCI's waiver request would result in backsliding is disingenuous. Under 42 U.S.C. 6293(e), if an amended test procedure alters the measured energy efficiency of a covered product, DOE is required to make a corresponding adjustment to the energy conservation standard to ensure that a previously compliant covered product would remain compliant and a previously non-compliant covered product would remain non-compliant. When DOE issued the current test procedure for CACs and HPs on January 5, 2017, DOE made a determination that the amended test procedure provisions from which JCI is seeking a waiver would not alter the measured energy efficiency of these covered products, and, as a result, did not adjust the energy conservation standard for CACs and HPs. 82 FR 1426, 1428. If this determination was correct, granting JCI's petition for waiver would have no effect on the measured energy efficiency of the basic models listed in the petition and, therefore, backsliding of the standard would not be possible. As a result, ASAP's argument is that DOE's determination in the test procedure rulemaking was incorrect and these test procedure provisions do alter the measured energy efficiency of the basic models listed in JCI's petition. This argument, concerning the difference in measured energy efficiency between DOE's prior and

current test procedures, has no bearing on whether the current test procedure evaluates the basic models listed in the petition in a manner so unrepresentative of their true energy consumption characteristics as to provide materially inaccurate comparative data.

For the reasons explained here and in the Notice of Petition for Waiver, DOE understands that absent a waiver, the basic models identified by JCI in its petition will be evaluated in a manner so unrepresentative of their true energy consumption characteristics when installed as new, matched systems as to provide materially inaccurate comparative data. DOE has reviewed the alternate test procedure suggested by JCI and concludes that it is representative of the energy consumption of these basic models when installed as new, matched systems, and will allow for accurate comparisons of energy use between CAC and HP systems that use different refrigerants. Thus, DOE grants JCI's petition for waiver and requires that JCI test and rate the CAC and HP basic models listed in its petition according to the alternate test procedure specified in the Decision and Order, which is identical to the alternate test procedure provided in the interim waiver.

This Decision and Order is applicable only to the basic models listed and does not extend to any other basic models. DOE evaluates and grants waivers for only those basic models specifically set out in the petition, not future models that may be manufactured by the petitioner.

JCI may request that the scope of this waiver be extended to include additional basic models that employ the same technology as those listed in this waiver. 10 CFR 430.27(g). JCI may also submit another petition for waiver from the test procedure for additional basic models

that employ a different technology and meet the criteria for test procedure waivers. 10 CFR 430.27(a)(1).

DOE notes that it may modify or rescind the waiver at any time upon DOE's determination that the factual basis underlying the petition for waiver is incorrect, or upon a determination that the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics. 10 CFR 430.27(k)(1). Likewise, JCI may request that DOE rescind or modify the waiver if the company discovers an error in the information provided to DOE as part of its petition, determines that the waiver is no longer needed, or for other appropriate reasons. 10 CFR 430.27(k)(2).

DOE recognizes that commenters have raised valid concerns about the need to provide information regarding the energy consumption of CACs and HPs when a new outdoor unit is paired with an existing, older indoor unit. DOE is mindful that consumers need accurate comparative data in order to make informed purchasing decisions. Under DOE's waiver regulations, DOE is required to revise the CAC and HP test procedure so as to eliminate the need for this waiver. 10 CFR 430.27(l). During this process, DOE will explore all options within its statutory authority to provide energy consumption information to consumers that accounts for these replacement scenarios for all CAC and HP systems in the market, regardless of refrigerant.

III. Consultations with Other Agencies

In accordance with 10 CFR 430.27(f)(2), DOE consulted with the Federal Trade Commission ("FTC") staff concerning JCI's petition for waiver.

IV. Order

After careful consideration of all the material that was submitted by JCI for the models identified in the petition and the comments received, in this matter, it is **ORDERED** that:

(1) JCI must, as of the date of publication of this Order in the *Federal Register*, test and rate the CAC and HP basic models listed in paragraph (A) with the alternate test procedure set forth in paragraph (2):

(A) GAW14L18C2*S, GAW14L24C2*S, GAW14L30C2*S, GAW14L36C2*S, GAW14L42C2*S, GAW14L48C2*S, GAW14L60C2*S

(2) The applicable method of test for the JCI basic models listed in paragraph (1)(A) is the test procedure for CACs and HPs prescribed by DOE at 10 CFR part 430, subpart B, appendix M, except that 10 CFR 429.16(a)(3)(i) shall be as detailed below. All other requirements of 10 CFR 429.16 remain applicable.

In §429.16(a), *Determination of Represented Value*:

(3) *Refrigerants.* (i) If a model of outdoor unit (used in a single-split, multi-split, multi-circuit, multi-head mini-split, and/or outdoor unit with no match system) is distributed in commerce and approved for use with multiple refrigerants, a manufacturer must determine all represented values for that model using each refrigerant that can be used in an individual combination of the basic model (including outdoor units with no match or "tested combinations"). This requirement may apply across the listed categories in the

table in paragraph (a)(1) of this section. A refrigerant is considered approved for use if it is listed on the nameplate of the outdoor unit. If any of the refrigerants approved for use is HCFC-22 or if there are no refrigerants designated as approved for use, a manufacturer must determine represented values (including SEER, EER, HSPF, SEER2, EER2, HSPF2, $P_{W,OFF}$, cooling capacity, and heating capacity, as applicable) for, at a minimum, an outdoor unit with no match. If a model of outdoor unit is not charged with a specified refrigerant from the point of manufacture (unless either (a) the factory charge is equal to or greater than 70% of the outdoor unit internal volume times the liquid density of refrigerant at 95 °F or (b) an A2L refrigerant is approved for use and listed in the certification report), a manufacturer must determine represented values (including SEER, EER, HSPF, SEER2, EER2, HSPF2, $P_{W,OFF}$, cooling capacity, and heating capacity, as applicable) for, at a minimum, an outdoor unit with no match.

(3) *Representations*. JCI may not make representations about the efficiency of the basic models identified in paragraph (1) of this Order for compliance, marketing, or other purposes unless the basic model has been tested in accordance with the provisions set forth above and such representations fairly disclose the results of such testing.

(4) This waiver shall remain in effect consistent with the provisions of 10 CFR 430.27.

(5) This waiver is issued on the condition that the statements, representations, and documentation provided by JCI are valid. DOE may rescind or modify this waiver at any time if it determines

the factual basis underlying the petition for waiver is incorrect, or the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics. 10 CFR 430.27(k)(1). Likewise, JCI may request that DOE rescind or modify the waiver if JCI discovers an error in the information provided to DOE as part of its petition, determines that the waiver is no longer needed, or for other appropriate reasons. 10 CFR 430.27(k)(2).

(6) Granting of this waiver does not release JCI from the certification requirements set forth at 10 CFR part 429.

Signed in Washington, DC, on September 27, 2019.

Alexander Fitzsimmons
Acting Deputy Assistant Secretary
For Energy Efficiency