DEPARTMENT OF ENERGY

[Docket No. EERE–2007–BT–WAV–0004]

Energy Conservation Program for Consumer Products: Decision and Order Granting a Waiver to Cascade Group, LLC From the Department of Energy Residential Central Air Conditioner and Heat Pump Test Procedure [Case No. CAC–013]

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

ACTION: Decision and Order.

SUMMARY: This notice announces the Department of Energy's Decision and Order in Case No. CAC–013, which grants a waiver to Cascade Group, LLC (Cascade) from the existing Department of Energy (DOE) residential central air conditioner and heat pump test procedure for its product line of residential Cascade Energy Saver (CES) multi-blower air-conditioning and heating equipment. DOE is granting a waiver because the multi-blower feature of these products, which impacts the calculation of energy efficiency, is not accounted for in the DOE test procedure. As a condition of this waiver, Cascade must test and rate the energy consumption of specified CES products (indoor units combined with the listed outdoor units) according to the alternate test procedure set forth in this notice.

DATES: This Decision and Order is effective August 28, 2008, and will remain in effect until the effective date of a DOE final rule prescribing an amended test procedure appropriate for the model series of Cascade CES central air conditioners and heat pumps covered by this waiver.

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SUPPLEMENTARY INFORMATION: In accordance with 10 CFR 430.27(l), DOE gives notice of the issuance of its Decision and Order as set forth below. In the Decision and Order, DOE grants Cascade a waiver from the existing residential central air conditioner and heat pump test procedures under 10 CFR Part 430, Subpart B, Appendix M, for its CES multi-indoor blower-motor products, subject to a condition requiring Cascade to test and rate its CES products pursuant to the alternate test procedure provided in this notice. DOE is granting the waiver because the multi-blower feature of these products, which impacts the calculation of energy efficiency, is not accounted for in the DOE test procedure. Today's Decision and Order requires that Cascade may not make any representations concerning the energy efficiency of these products unless such product has been tested in accordance with the DOE test procedure, consistent with the provisions and restrictions in the alternate test procedure as set forth in the Decision and Order below, and such representations fairly disclose the results of such testing.[1] (42 U.S.C. 6293(c))

Issued in Washington, DC, on August 8, 2008.

Alexander A. Karsner,

Assistant Secretary, Energy Efficiency and Renewable Energy.

Decision and Order

In the Matter of: Cascade Group, LLC (Cascade) (Case No. CAC–013).

Background

Title III of the Energy Policy and Conservation Act (EPCA) sets forth a variety of provisions concerning energy efficiency, including Part A [2] of Title III which establishes the ''Energy Conservation Program for Consumer Products Other Than Automobiles.'' (42 U.S.C. 6291–6309) Part A includes definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require information and reports from manufacturers. Further, Part A authorizes the Secretary of Energy (the Secretary) to prescribe test procedures that are reasonably designed to produce results which measure energy efficiency, energy use, or estimated annual operating cost, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

Relevant to the current Petition for Waiver, the test procedures for residential central air conditioners and heat pumps are codified in 10 CFR part 430, Subpart B, Appendix M. On October 22, 2007, DOE amended the test procedures for residential central air conditioners and central air conditioning heat pumps to implement test procedure changes for small-duct, high-velocity systems, two-capacity units, and to update references to the current American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standards. 72 FR 59906. The October 22, 2007 final rule became effective on April 21, 2008. However, these amendments did not solve the problem raised by Cascade in its petition.

DOE regulations for covered products contain provisions allowing any interested person to seek a waiver from the test procedure requirements for covered consumer products when the petitioner's basic model contains one or more design characteristics that prevent testing according to the prescribed test procedures, or when the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption as to provide materially inaccurate comparative data. 10 CFR 430.27(a)(1). Petitioners must include in their petition any alternate test procedures known to evaluate the basic model in a manner representative of its energy consumption. (10 CFR 430.27(b)(1)(iii))

The Assistant Secretary for Energy Efficiency and Renewable Energy (the Assistant Secretary) may grant a waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(l). Waivers generally terminate on the effective date of a final rule which prescribes amended test procedures appropriate to the model series manufactured by the petitioner, thereby eliminating any need for the continuation of the waiver. 10 CFR 430.27(m).

The waiver process contained in DOE's regulations also allows any interested person who has submitted a Petition for Waiver to file an Application for Interim Waiver of the applicable test procedure requirements. 10 CFR 430.27(a)(2). The Assistant Secretary will grant an Interim Waiver request if it is determined that the applicant will experience economic hardship if the Interim Waiver is denied, if it appears likely that the Petition for Waiver will be granted, and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the Petition for Waiver. 10 CFR 430.27(g). An Interim Waiver remains in effect for a period of 180 days or until DOE issues a determination on the Petition for

[1] Consistent with the statute, distributors, retailers, and private labelers are held to the same standard when making representations regarding the energy efficiency of these products. (42 U.S.C. 6293(c))

[2] This part was originally titled Part B; however, it was redesignated Part A, after Part B of Title III was repealed by Public Law 109–58.

Waiver, whichever occurs first, and may be extended by DOE for 180 days, if necessary. 10 CFR 430.27(h).

On July 22, 2005, Cascade filed a Petition for Waiver and an Application for Interim Waiver from the test procedures applicable to its CES line of residential multi-blower air-conditioning and heating equipment. The DOE test procedures have provisions for central air conditioners with one blower and one indoor coil (the most common type), and for multi-splits, which have multiple refrigerant lines running to multiple indoor fan-coil units. The Cascade product line has one indoor coil with multiple blowers distributing air to a number of outlets. The DOE test procedure does not cover this situation, which, so far, is unique to Cascade's products.

Cascade's petition requested a waiver from ARI 210/240, but this is not the applicable test procedure; instead, as explained below, the applicable test procedures are those residential test procedures contained in 10 CFR part 430, Subpart B, Appendix M. For the CES multi-blower product line at issue here, all of the outdoor units involve single-phase equipment both for residential and commercial use. There is no prescribed test procedure in 10 CFR part 431, *Energy Efficiency Program for Certain Commercial and Industrial Equipment,* for single-phase, small commercial package air-conditioning and heating equipment. A waiver is nonetheless required for this single-phase equipment because Cascade's multi-blower products are properly classified as ''consumer products'' under 42 U.S.C. 6291(1). ''Consumer products'' are ones which, to a significant extent, are for personal use. Small commercial single-phase package air-conditioning and heating equipment meet this definition, given their frequent residential applications. (42 U.S.C. 6291(1)(B)) Thus, the Cascade CES products in question here require a waiver from DOE's test procedure for residential central air conditioners and heat pumps, under 10 CFR part 430, Subpart B, Appendix M.

Cascade seeks a waiver from the applicable test procedures because the multi-blower feature of Cascade's equipment prevents testing according to the currently prescribed test procedures under 10 CFR part 430. Consequently, Cascade has submitted an alternate test procedure to DOE for approval that can be used to determine the performance of its CES products. The alternate test procedure provides rules and algorithms so that, regardless of the actual number of blowers and heat pumps, the test procedure will model the CES system as a one-blower evaporator with a two-speed fan and one heat pump with one or more speeds.

On April 20, 2007, DOE published in the **Federal Register** Cascade's Petition for Waiver and solicited public comments. 72 FR 19891. Cascade's Application for Interim Waiver was denied because it did not provide sufficient information to evaluate economic impact or competitive disadvantage or to determine public policy reasons to grant immediate relief. Also, DOE has never granted a waiver for a similar product design, so the likelihood of granting the waiver was unclear.

DOE received one comment from Joseph A. Pietsch, P. E., which supported granting the waiver and Cascade's alternate test procedure ''as an acceptable approach for rating the performance of the subject heat pump.''

Assertions and Determinations

Cascade's Petition for Waiver

On July 22, 2005, Cascade submitted a Petition for Waiver and an Application for Interim Waiver from the test procedures applicable to residential and commercial air-conditioning and heating equipment, for its new line of CES models of central air conditioners and heat pumps. As explained above, only a waiver from the residential test procedure in 10 CFR part 430, Subpart B, Appendix M is needed.

Cascade claims that the energy consumption of its CES systems cannot be accurately measured using the existing test procedures for the following reasons: (1) the DOE test procedure stipulates that the unit meet the maximum standard airflow rate of 37.5 cubic feet per minute (CFM)/1000 British thermal units/hour (Btu/hr); [3] and (2) this CFM is applicable to an indoor unit that has only one blower-motor. The CES unit has from two to eight indoor blower-motors that are independently operating. The DOE test procedure has no guidance concerning the number of blowers that should be operating, the apportionment of the air flow among the multiple blowers, or the test set-up for a multi-blower system. Cascade seeks a waiver because, it asserts, the current procedures for testing do not apply. Therefore, the Cascade Petition requested that DOE grant a waiver from the existing test procedures until such time as a representative test procedure is developed and adopted for this class of products.

[3] 10 CFR part 430, Subpart B, Appendix M, section 3.1.4.1.1.

In support of its petition, Cascade also submitted an alternate test procedure that would be applicable to all of its configurations of CES models of air conditioners and heat pumps. Cascade modified its petition on May 26, 2006, and again on April 16, 2007, after consultation with the National Institute of Standards and Technology (NIST). NIST found that there had been limitations in the original modeling rules, and supplied more comprehensive rules for modeling the CES systems. On August 15, 2007, Cascade submitted to DOE a set of general rules and set-up procedures to be used when testing its CES models, but with slight variations in testing tailored to each different system.

Specifically, Cascade asserted that its alternate test procedure may be used for rating its CES multiple blower-coils in combination with specified condensing units from other manufacturers. In large part, the alternate test procedure is essentially the same as the current test procedure for central air conditioners and heat pumps in 10 CFR part 430, Subpart B, Appendix M. However, Cascade's alternate test procedure differs from the prescribed test procedure because it covers indoor blower coils that have more than one indoor blower and motor. Cascade's Petition for Waiver described Cascade's alternate test procedure for a particular configuration with two heat pumps and eight blowers, and Cascade subsequently supplied methodological rules and set-up procedures to describe how its alternate test procedure would be used to test other configurations.

DOE understands that, using the current central air conditioning and heat pump test procedure, the company cannot calculate the seasonal energy efficiency ratio (SEER) and the heating seasonal performance factor (HSPF) for its CES products. Based on the above, DOE believes that the identified problems would prevent testing of Cascade's CES basic models according to the existing test procedure. However, the alternate test procedures described in Cascade's Petition for Waiver will enable Cascade to calculate these energy efficiency measures. After careful consideration, DOE has decided to adopt the alternate test procedure suggested by Cascade to test its CES line of air conditioners and heat pumps, including the relevant rules and set-up requirements.

Consultations With Other Agencies

DOE consulted with Federal Trade Commission (FTC) staff and NIST concerning the Cascade Petition for Waiver. The FTC staff did not have any

objections to granting a waiver to Cascade. NIST provided a technical review of the alternate test procedure.

Conclusion

After careful consideration of all the materials submitted by Cascade, the comment received, the review by National Institute of Standards and Technology, and consultation with FTC staff, it is ordered that:

(1) The ''Petition for Waiver'' filed by Cascade Group, LLC (Cascade) (Case No. CAC–013) is hereby granted, subject to the provisions of paragraphs (2), (3), (4), and (5) of this Order.

(2) Cascade shall not be required to test or rate its Cascade Energy Saver (CES) line of central air conditioners and heat pumps, as listed below, on the basis of the test procedures specified in 10 CFR part 430, Subpart B, Appendix M, but shall be required to test and rate such products according to the alternate test procedure set forth in Appendix A (see Cascade's Petition for Waiver, which published in the **Federal Register** on April 20, 2007, 72 FR 19891), as well as the table of system configurations in paragraph (3)(B); the rules for generalizing the test procedure modifications in paragraph (3)(B); and the test procedure set-up requirements in paragraph (4).

This waiver applies to the following basic models:

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade Manufacturing, L.P. (Cascade).	CES–1–2–2	2	Amana	1	ASH130241A
Cascade	CES–1–2–2	2	Aire-Flo	1	2HP13(B,L)24P–1
Cascade	CES–1–2–2	2	AirPro	1	FRHS0241CD
Cascade	CES–1–2–2	2	American Standard	1	2A6B3024A1
Cascade	CES–1–2–2	2	Bryant	1	213ANA024–A
Cascade	CES–1–2–2	2	Carrier	1	25HBA324A30
Cascade	CES–1–2–2	2	Coleman	1	DRHS0241BD
Cascade	CES–1–2–2	2	Ducane	1	2HP13(B,L)24P–1
Cascade	CES–1–2–2	2	Fedders	1	CH24ABD1VF
Cascade	CES–1–2–2	2	Frigidaire	1	FT3BD–024K
Cascade	CES–1–2–2	2	Gibson	1	GT3BD–024K
Cascade	CES–1–2–2	2	Goodman	1	GSH130241A
Cascade	CES–1–2–2	2	Lennox	1	12HPB24–P
Cascade	CES–1–2–2	2	Luxaire	1	EABC–F024S
Cascade	CES–1–2–2	2	Maytag	1	PSH1BC024K
Cascade	CES–1–2–2	2	Rheem	1	13PJA24
Cascade	CES–1–2–2	2	Ruud	1	13PJA24
Cascade	CES–1–2–2	2	Tappan	1	FT3BD–024K
Cascade	CES–1–2–2	2	Trane	1	2TWB3024A1
Cascade	CES–1–2–2	2	York	1	E1RC024S06
Cascade	CES–1–2–2	2	Westinghouse	1	FT3BD–024K
Cascade	CES–1–2–2	2	Whirlpool	1	W2H324A–1A
Cascade	CES–1–2–3	2	Amana	1	ASH130241A
Cascade	CES–1–2–3	2	Aire-Flo	1	2HP13(B,L)24P–1
Cascade	CES–1–2–3	2	AirPro	1	FRHS0241CD
Cascade	CES–1–2–3	2	American Standard	1	2A6B3024A1
Cascade	CES–1–2–3	2	Bryant	1	213ANA024–A
Cascade	CES–1–2–3	2	Carrier	1	25HBA324A30
Cascade	CES–1–2–3	2	Coleman	1	DRHS0241BD
Cascade	CES–1–2–3	2	Ducane	1	2HP13(B,L)24P–1
Cascade	CES–1–2–3	2	Fedders	1	CH24ABD1VF
Cascade	CES–1–2–3	2	Frigidaire	1	FT3BD–024K
Cascade	CES–1–2–3	2	Gibson	1	GT3BD–024K
Cascade	CES–1–2–3	2	Goodman	1	GSH130241A
Cascade	CES–1–2–3	2	Lennox	1	12HPB24–P
Cascade	CES–1–2–3	2	Luxaire	1	EABC–F024S
Cascade	CES–1–2–3	2	Maytag	1	PSH1BC024K
Cascade	CES–1–2–3	2	Rheem	1	13PJA24
Cascade	CES–1–2–3	2	Ruud	1	13PJA24
Cascade	CES–1–2–3	2	Tappan	1	FT3BD–024K
Cascade	CES–1–2–3	2	Trane	1	2TWB3024A1
Cascade	CES–1–2–3	2	York	1	E1RC024S06
Cascade	CES–1–2–3	2	Westinghouse	1	FT3BD–024K
Cascade	CES–1–2–3	2	Whirlpool	1	W2H324A–1A
Cascade	CES–1–2–4	2	Amana	1	ASH130241A
Cascade	CES–1–2–4	2	Aire-Flo	1	2HP13(B,L)24P–1
Cascade	CES–1–2–4	2	AirPro	1	FRHS0241CD
Cascade	CES–1–2–4	2	American Standard	1	2A6B3024A1
Cascade	CES–1–2–4	2	Bryant	1	213ANA024–A
Cascade	CES–1–2–4	2	Carrier	1	25HBA324A30
Cascade	CES–1–2–4	2	Coleman	1	DRHS0241BD

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade	CES–1–2–4	2	Ducane	1	2HP13(B,L)24P–1
Cascade	CES–1–2–4	2	Fedders	1	CH24ABD1VF
Cascade	CES–1–2–4	2	Frigidaire	1	FT3BD–024K
Cascade	CES–1–2–4	2	Gibson	1	GT3BD–024K
Cascade	CES–1–2–4	2	Goodman	1	GSH130241A
Cascade	CES–1–2–4	2	Lennox	1	12HPB24–P
Cascade	CES–1–2–4	2	Luxaire	1	EABC–F024S
Cascade	CES–1–2–4	2	Maytag	1	PSH1BC024K
Cascade	CES–1–2–4	2	Rheem	1	13PJA24
Cascade	CES–1–2–4	2	Ruud	1	13PJA24
Cascade	CES–1–2–4	2	Tappan	1	FT3BD–024K
Cascade	CES–1–2–4	2	Trane	1	2TWB3024A1
Cascade	CES–1–2–4	2	York	1	E1RC024S06
Cascade	CES–1–2–4	2	Westinghouse	1	FT3BD–024K
Cascade	CES–1–2–4	2	Whirlpool	1	W2H324A–1A
Cascade	CES–1–2.5–2	2.5	Amana	1	ASH130301A
Cascade	CES–1–2.5–2	2.5	Aire-Flo	1	2HP13(B,L)30P–1
Cascade	CES–1–2.5–2	2.5	AirPro	1	FRHS0301CD
Cascade	CES–1–2.5–2	2.5	American Standard	1	2A6B3030A1
Cascade	CES–1–2.5–2	2.5	Bryant	1	213ANA030–A
Cascade	CES–1–2.5–2	2.5	Carrier	1	25HBA330A30
Cascade	CES–1–2.5–2	2.5	Coleman	1	DRHS0301BD
Cascade	CES–1–2.5–2	2.5	Ducane	1	2HP13(B,L)30P–1
Cascade	CES–1–2.5–2	2.5	Fedders	1	CH30ABD1VF
Cascade	CES–1–2.5–2	2.5	Frigidaire	1	FT3BD–030K
Cascade	CES–1–2.5–2	2.5	Gibson	1	GT3BD–030K
Cascade	CES–1–2.5–2	2.5	Goodman	1	CPLT30–1
Cascade	CES–1–2.5–2	2.5	Lennox	1	12HPB30–P
Cascade	CES–1–2.5–2	2.5	Luxaire	1	EABC–F030S
Cascade	CES–1–2.5–2	2.5	Maytag	1	DT3BD–030K
Cascade	CES–1–2.5–2	2.5	Rheem	1	13PJA30
Cascade	CES–1–2.5–2	2.5	Ruud	1	13PJA30
Cascade	CES–1–2.5–2	2.5	Tappan	1	FT3BD–030K
Cascade	CES–1–2.5–2	2.5	Trane	1	2TWB3030A1
Cascade	CES–1–2.5–2	2.5	York	1	E1RC030S06
Cascade	CES–1–2.5–2	2.5	Westinghouse	1	FT3BD–030K
Cascade	CES–1–2.5–2	2.5	Whirlpool	1	WGH430A
Cascade	CES–1–2.5–3	2.5	Amana	1	ASH130301A
Cascade	CES–1–2.5–3	2.5	Aire-Flo	1	2HP13(B,L)30P–1
Cascade	CES–1–2.5–3	2.5	AirPro	1	FRHS0301CD
Cascade	CES–1–2.5–3	2.5	American Standard	1	2A6B3030A1
Cascade	CES–1–2.5–3	2.5	Bryant	1	213ANA030–A
Cascade	CES–1–2.5–3	2.5	Carrier	1	25HBA330A30
Cascade	CES–1–2.5–3	2.5	Coleman	1	DRHS0301BD
Cascade	CES–1–2.5–3	2.5	Ducane	1	2HP13(B,L)30P–1
Cascade	CES–1–2.5–3	2.5	Fedders	1	CH30ABD1VF
Cascade	CES–1–2.5–3	2.5	Frigidaire	1	FT3BD–030K
Cascade	CES–1–2.5–3	2.5	Gibson	1	GT3BD–030K
Cascade	CES–1–2.5–3	2.5	Goodman	1	CPLT30–1
Cascade	CES–1–2.5–3	2.5	Lennox	1	12HPB30–P
Cascade	CES–1–2.5–3	2.5	Luxaire	1	EABC–F030S
Cascade	CES–1–2.5–3	2.5	Maytag	1	DT3BD–030K
Cascade	CES–1–2.5–3	2.5	Rheem	1	13PJA30
Cascade	CES–1–2.5–3	2.5	Ruud	1	13PJA30
Cascade	CES–1–2.5–3	2.5	Tappan	1	FT3BD–030K
Cascade	CES–1–2.5–3	2.5	Trane	1	2TWB3030A1
Cascade	CES–1–2.5–3	2.5	York	1	E1RC030S06
Cascade	CES–1–2.5–3	2.5	Westinghouse	1	FT3BD–030K
Cascade	CES–1–2.5–3	2.5	Whirlpool	1	WGH430A
Cascade	CES–1–2.5–4	2.5	Amana	1	ASH130301A
Cascade	CES–1–2.5–4	2.5	Aire-Flo	1	2HP13(B,L)30P–1
Cascade	CES–1–2.5–4	2.5	AirPro	1	FRHS0301CD
Cascade	CES–1–2.5–4	2.5	American Standard	1	2A6B3030A1
Cascade	CES–1–2.5–4	2.5	Bryant	1	213ANA030–A
Cascade	CES–1–2.5–4	2.5	Carrier	1	25HBA330A30
Cascade	CES–1–2.5–4	2.5	Coleman	1	DRHS0301BD
Cascade	CES–1–2.5–4	2.5	Ducane	1	2HP13(B,L)30P–1

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade	CES–1–2.5–4	2.5	Fedders	1	CH30ABD1VF
Cascade	CES–1–2.5–4	2.5	Frigidaire	1	FT3BD–030K
Cascade	CES–1–2.5–4	2.5	Gibson	1	GT3BD–030K
Cascade	CES–1–2.5–4	2.5	Goodman	1	CPLT30–1
Cascade	CES–1–2.5–4	2.5	Lennox	1	12HPB30–P
Cascade	CES–1–2.5–4	2.5	Luxaire	1	EABC–F030S
Cascade	CES–1–2.5–4	2.5	Maytag	1	DT3BD–030K
Cascade	CES–1–2.5–4	2.5	Rheem	1	13PJA30
Cascade	CES–1–2.5–4	2.5	Ruud	1	13PJA30
Cascade	CES–1–2.5–4	2.5	Tappan	1	FT3BD–030K
Cascade	CES–1–2.5–4	2.5	Trane	1	2TWB3030A1
Cascade	CES–1–2.5–4	2.5	York	1	E1RC030S06
Cascade	CES–1–2.5–4	2.5	Westinghouse	1	FT3BD–030K
Cascade	CES–1–2.5–4	2.5	Whirlpool	1	WGH430A
Cascade	CES–2–1.5–2	3	Amana	2	ASH130181A
Cascade	CES–2–1.5–2	3	Aire-Flo	2	2HP13(B,L)18P–1
Cascade	CES–2–1.5–2	3	AirPro	2	DRHS0181BD
Cascade	CES–2–1.5–2	3	American Standard	2	2A6B3018A1
Cascade	CES–2–1.5–2	3	Bryant	2	213ANA018–A
Cascade	CES–2–1.5–2	3	Carrier	2	25HBA318A30
Cascade	CES–2–1.5–2	3	Coleman	2	DRHS0181BD
Cascade	CES–2–1.5–2	3	Ducane	2	2HP13(B,L)18P–1
Cascade	CES–2–1.5–2	3	Fedders	2	CH18ABD1VF
Cascade	CES–2–1.5–2	3	Frigidaire	2	FT3BD–018K
Cascade	CES–2–1.5–2	3	Gibson	2	GT3BD–018K
Cascade	CES–2–1.5–2	3	Goodman	2	GSH130181A
Cascade	CES–2–1.5–2	3	Lennox	2	12HPB18–P
Cascade	CES–2–1.5–2	3	Luxaire	2	EABC–F018S
Cascade	CES–2–1.5–2	3	Maytag	2	DT5BD–018K
Cascade	CES–2–1.5–2	3	Rheem	2	13PJA18
Cascade	CES–2–1.5–2	3	Ruud	2	UPNE–018JZ
Cascade	CES–2–1.5–2	3	Tappan	2	FT3BD–018K
Cascade	CES–2–1.5–2	3	Trane	2	2TWB3018A1
Cascade	CES–2–1.5–2	3	York	2	E1RC018S06
Cascade	CES–2–1.5–2	3	Westinghouse	2	W2H318A–1A
Cascade	CES–2–1.5–2	3	Whirlpool	2	W2H318A–1A
Cascade	CES–2–1.5–3	3	Amana	2	ASH130181A
Cascade	CES–2–1.5–3	3	Aire-Flo	2	2HP13(B,L)18P–1
Cascade	CES–2–1.5–3	3	AirPro	2	DRHS0181BD
Cascade	CES–2–1.5–3	3	American Standard	2	2A6B3018A1
Cascade	CES–2–1.5–3	3	Bryant	2	213ANA018–A
Cascade	CES–2–1.5–3	3	Carrier	2	25HBA318A30
Cascade	CES–2–1.5–3	3	Coleman	2	DRHS0181BD
Cascade	CES–2–1.5–3	3	Ducane	2	2HP13(B,L)18P–1
Cascade	CES–2–1.5–3	3	Fedders	2	CH18ABD1VF
Cascade	CES–2–1.5–3	3	Frigidaire	2	FT3BD–018K
Cascade	CES–2–1.5–3	3	Gibson	2	GT3BD–018K
Cascade	CES–2–1.5–3	3	Goodman	2	GSH130181A
Cascade	CES–2–1.5–3	3	Lennox	2	12HPB18–P
Cascade	CES–2–1.5–3	3	Luxaire	2	EABC–F018S
Cascade	CES–2–1.5–3	3	Maytag	2	DT5BD–018K
Cascade	CES–2–1.5–3	3	Rheem	2	13PJA18
Cascade	CES–2–1.5–3	3	Ruud	2	UPNE–018JZ
Cascade	CES–2–1.5–3	3	Tappan	2	FT3BD–018K
Cascade	CES–2–1.5–3	3	Trane	2	2TWB3018A1
Cascade	CES–2–1.5–3	3	York	2	E1RC018S06
Cascade	CES–2–1.5–3	3	Westinghouse	2	W2H318A–1A
Cascade	CES–2–1.5–3	3	Whirlpool	2	W2H318A–1A
Cascade	CES–2–1.5–4	3	Amana	2	ASH130181A
Cascade	CES–2–1.5–4	3	Aire-Flo	2	2HP13(B,L)18P–1
Cascade	CES–2–1.5–4	3	AirPro	2	DRHS0181BD
Cascade	CES–2–1.5–4	3	American Standard	2	2A6B3018A1
Cascade	CES–2–1.5–4	3	Bryant	2	213ANA018–A
Cascade	CES–2–1.5–4	3	Carrier	2	25HBA318A30
Cascade	CES–2–1.5–4	3	Coleman	2	DRHS0181BD
Cascade	CES–2–1.5–4	3	Ducane	2	2HP13(B,L)18P–1
Cascade	CES–2–1.5–4	3	Fedders	2	CH18ABD1VF

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade	CES–2–1.5–4	3	Frigidaire	2	FT3BD–018K
Cascade	CES–2–1.5–4	3	Gibson	2	GT3BD–018K
Cascade	CES–2–1.5–4	3	Goodman	2	GSH130181A
Cascade	CES–2–1.5–4	3	Lennox	2	12HPB18–P
Cascade	CES–2–1.5–4	3	Luxaire	2	EABC–F018S
Cascade	CES–2–1.5–4	3	Maytag	2	DT5BD–018K
Cascade	CES–2–1.5–4	3	Rheem	2	13PJA18
Cascade	CES–2–1.5–4	3	Ruud	2	UPNE–018JZ
Cascade	CES–2–1.5–4	3	Tappan	2	FT3BD–018K
Cascade	CES–2–1.5–4	3	Trane	2	2TWB3018A1
Cascade	CES–2–1.5–4	3	York	2	E1RC018S06
Cascade	CES–2–1.5–4	3	Westinghouse	2	W2H318A–1A
Cascade	CES–2–1.5–4	3	Whirlpool	2	W2H318A–1A
Cascade	CES–2–2–2	4	Amana	2	ASH130241A
Cascade	CES–2–2–2	4	Aire-Flo	2	2HP13(B,L)24P–1
Cascade	CES–2–2–2	4	AirPro	2	DRHS0241BD
Cascade	CES–2–2–2	4	American Standard	2	2A6B3024A1
Cascade	CES–2–2–2	4	Bryant	2	213ANA024–A
Cascade	CES–2–2–2	4	Carrier	2	25HBA324A30
Cascade	CES–2–2–2	4	Coleman	2	DRHS0241BD
Cascade	CES–2–2–2	4	Ducane	2	2HP13(B,L)18P–1
Cascade	CES–2–2–2	4	Fedders	2	CH24ABD1VF
Cascade	CES–2–2–2	4	Frigidaire	2	FT3BD–024K
Cascade	CES–2–2–2	4	Gibson	2	GT3BD–024K
Cascade	CES–2–2–2	4	Goodman	2	GSH130241A
Cascade	CES–2–2–2	4	Lennox	2	12HPB24–P
Cascade	CES–2–2–2	4	Luxaire	2	EABC–F024S
Cascade	CES–2–2–2	4	Maytag	2	DT3BD–024K
Cascade	CES–2–2–2	4	Rheem	2	13PJA24
Cascade	CES–2–2–2	4	Ruud	2	13PJA24
Cascade	CES–2–2–2	4	Tappan	2	FT3BD–024K
Cascade	CES–2–2–2	4	Trane	2	2TWB3024A1
Cascade	CES–2–2–2	4	York	2	E1RC024S06
Cascade	CES–2–2–2	4	Westinghouse	2	FT3BD–024K
Cascade	CES–2–2–2	4	Whirlpool	2	W2H324A–1A
Cascade	CES–2–2–3	4	Amana	2	ASH130241A
Cascade	CES–2–2–3	4	Aire-Flo	2	2HP13(B,L)24P–1
Cascade	CES–2–2–3	4	AirPro	2	FRHS0241CD
Cascade	CES–2–2–3	4	American Standard	2	2A6B3024A1
Cascade	CES–2–2–3	4	Bryant	2	213ANA024–A
Cascade	CES–2–2–3	4	Carrier	2	25HBA324A30
Cascade	CES–2–2–3	4	Coleman	2	DRHS0241BD
Cascade	CES–2–2–3	4	Ducane	2	2HP13(B,L)18P–1
Cascade	CES–2–2–3	4	Fedders	2	CH24ABD1VF
Cascade	CES–2–2–3	4	Frigidaire	2	FT3BD–024K
Cascade	CES–2–2–3	4	Gibson	2	GT3BD–024K
Cascade	CES–2–2–3	4	Goodman	2	GSH130241A
Cascade	CES–2–2–3	4	Lennox	2	12HPB24–P
Cascade	CES–2–2–3	4	Luxaire	2	EABC–F024S
Cascade	CES–2–2–3	4	Maytag	2	DT3BD–024K
Cascade	CES–2–2–3	4	Rheem	2	13PJA24
Cascade	CES–2–2–3	4	Ruud	2	13PJA24
Cascade	CES–2–2–3	4	Tappan	2	FT3BD–024K
Cascade	CES–2–2–3	4	Trane	2	2TWB3024A1
Cascade	CES–2–2–3	4	York	2	E1RC024S06
Cascade	CES–2–2–3	4	Westinghouse	2	FT3BD–024K
Cascade	CES–2–2–3	4	Whirlpool	2	W2H324A–1A
Cascade	CES–2–2–4	4	Amana	2	ASH130241A
Cascade	CES–2–2–4	4	Aire-Flo	2	2HP13(B,L)24P–1
Cascade	CES–2–2–4	4	AirPro	2	FRHS0241CD
Cascade	CES–2–2–4	4	American Standard	2	2A6B3024A1
Cascade	CES–2–2–4	4	Bryant	2	213ANA024–A
Cascade	CES–2–2–4	4	Carrier	2	25HBA324A30
Cascade	CES–2–2–4	4	Coleman	2	DRHS0241BD
Cascade	CES–2–2–4	4	Ducane	2	2HP13(B,L)18P–1
Cascade	CES–2–2–4	4	Fedders	2	CH24ABD1VF
Cascade	CES–2–2–4	4	Frigidaire	2	FT3BD–024K

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade	CES–2–2–4	4	Gibson	2	GT3BD–024K
Cascade	CES–2–2–4	4	Goodman	2	GSH130241A
Cascade	CES–2–2–4	4	Lennox	2	12HPB24–P
Cascade	CES–2–2–4	4	Luxaire	2	EABC–F024S
Cascade	CES–2–2–4	4	Maytag	2	DT3BD–024K
Cascade	CES–2–2–4	4	Rheem	2	13PJA24
Cascade	CES–2–2–4	4	Ruud	2	13PJA24
Cascade	CES–2–2–4	4	Tappan	2	FT3BD–024K
Cascade	CES–2–2–4	4	Trane	2	2TWB3024A1
Cascade	CES–2–2–4	4	York	2	E1RC024S06
Cascade	CES–2–2–4	4	Westinghouse	2	FT3BD–024K
Cascade	CES–2–2–4	4	Whirlpool	2	W2H324A–1A
Cascade	CES–2–2–5	4	Amana	2	ASH130241A
Cascade	CES–2–2–5	4	Aire-Flo	2	2HP13(B,L)24P–1
Cascade	CES–2–2–5	4	AirPro	2	FRHS0241CD
Cascade	CES–2–2–5	4	American Standard	2	2A6B3024A1
Cascade	CES–2–2–5	4	Bryant	2	213ANA024–A
Cascade	CES–2–2–5	4	Carrier	2	25HBA324A30
Cascade	CES–2–2–5	4	Coleman	2	DRHS0241BD
Cascade	CES–2–2–5	4	Ducane	2	2HP13(B,L)24P–1
Cascade	CES–2–2–5	4	Fedders	2	CH24ABD1VF
Cascade	CES–2–2–5	4	Frigidaire	2	FT3BD–024K
Cascade	CES–2–2–5	4	Gibson	2	GT3BD–024K
Cascade	CES–2–2–5	4	Goodman	2	GSH130241A
Cascade	CES–2–2–5	4	Lennox	2	12HPB24–P
Cascade	CES–2–2–5	4	Luxaire	2	EABC–F024S
Cascade	CES–2–2–5	4	Maytag	2	DT3BD–024K
Cascade	CES–2–2–5	4	Rheem	2	13PJA24
Cascade	CES–2–2–5	4	Ruud	2	13PJA24
Cascade	CES–2–2–5	4	Tappan	2	FT3BD–024K
Cascade	CES–2–2–5	4	Trane	2	2TWB3024A1
Cascade	CES–2–2–5	4	York	2	E1RC024S06
Cascade	CES–2–2–5	4	Westinghouse	2	FT3BD–024K
Cascade	CES–2–2–5	4	Whirlpool	2	W2H324A–1A
Cascade	CES–2–2–6	4	Amana	2	ASH130241A
Cascade	CES–2–2–6	4	Aire-Flo	2	2HP13(B,L)24P–1
Cascade	CES–2–2–6	4	AirPro	2	FRHS0241CD
Cascade	CES–2–2–6	4	American Standard	2	2A6B3024A1
Cascade	CES–2–2–6	4	Bryant	2	213ANA024–A
Cascade	CES–2–2–6	4	Carrier	2	25HBA324A30
Cascade	CES–2–2–6	4	Coleman	2	DRHS0241BD
Cascade	CES–2–2–6	4	Ducane	2	2HP13(B,L)24P–1
Cascade	CES–2–2–6	4	Fedders	2	CH24ABD1VF
Cascade	CES–2–2–6	4	Frigidaire	2	FT3BD–024K
Cascade	CES–2–2–6	4	Gibson	2	GT3BD–024K
Cascade	CES–2–2–6	4	Goodman	2	GSH130241A
Cascade	CES–2–2–6	4	Lennox	2	12HPB24–P
Cascade	CES–2–2–6	4	Luxaire	2	EABC–F024S
Cascade	CES–2–2–6	4	Maytag	2	DT3BD–024K
Cascade	CES–2–2–6	4	Rheem	2	13PJA24
Cascade	CES–2–2–6	4	Ruud	2	13PJA24
Cascade	CES–2–2–6	4	Tappan	2	FT3BD–024K
Cascade	CES–2–2–6	4	Trane	2	2TWB3024A1
Cascade	CES–2–2–6	4	York	2	E1RC024S06
Cascade	CES–2–2–6	4	Westinghouse	2	FT3BD–024K
Cascade	CES–2–2–6	4	Whirlpool	2	W2H324A–1A
Cascade	CES–2–2–7	4	Amana	2	ASH130241A
Cascade	CES–2–2–7	4	Aire-Flo	2	2HP13(B,L)24P–1
Cascade	CES–2–2–7	4	AirPro	2	FRHS0241CD
Cascade	CES–2–2–7	4	American Standard	2	2A6B3024A1
Cascade	CES–2–2–7	4	Bryant	2	213ANA024–A
Cascade	CES–2–2–7	4	Carrier	2	25HBA324A30
Cascade	CES–2–2–7	4	Coleman	2	DRHS0241BD
Cascade	CES–2–2–7	4	Ducane	2	2HP13(B,L)24P–1
Cascade	CES–2–2–7	4	Fedders	2	CH24ABD1VF
Cascade	CES–2–2–7	4	Frigidaire	2	FT3BD–024K
Cascade	CES–2–2–7	4	Gibson	2	GT3BD–024K

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade	CES–2–2–7	4	Goodman	2	GSH130241A
Cascade	CES–2–2–7	4	Lennox	2	12HPB24–P
Cascade	CES–2–2–7	4	Luxaire	2	EABC–F024S
Cascade	CES–2–2–7	4	Maytag	2	DT3BD–024K
Cascade	CES–2–2–7	4	Rheem	2	13PJA24
Cascade	CES–2–2–7	4	Ruud	2	13PJA24
Cascade	CES–2–2–7	4	Tappan	2	FT3BD–024K
Cascade	CES–2–2–7	4	Trane	2	2TWB3024A1
Cascade	CES–2–2–7	4	York	2	E1RC024S06
Cascade	CES–2–2–7	4	Westinghouse	2	FT3BD–024K
Cascade	CES–2–2–7	4	Whirlpool	2	W2H324A–1A
Cascade	CES–2–2–8	4	Amana	2	ASH130241A
Cascade	CES–2–2–8	4	Aire-Flo	2	2HP13(B,L)24P–1
Cascade	CES–2–2–8	4	AirPro	2	FRHS0241CD
Cascade	CES–2–2–8	4	American Standard	2	2A6B3024A1
Cascade	CES–2–2–8	4	Bryant	2	213ANA024–A
Cascade	CES–2–2–8	4	Carrier	2	25HBA324A30
Cascade	CES–2–2–8	4	Coleman	2	DRHS0241BD
Cascade	CES–2–2–8	4	Ducane	2	2HP13(B,L)24P–1
Cascade	CES–2–2–8	4	Fedders	2	CH24ABD1VF
Cascade	CES–2–2–8	4	Frigidaire	2	FT3BD–024K
Cascade	CES–2–2–8	4	Gibson	2	GT3BD–024K
Cascade	CES–2–2–8	4	Goodman	2	GSH130241A
Cascade	CES–2–2–8	4	Lennox	2	12HPB24–P
Cascade	CES–2–2–8	4	Luxaire	2	EABC–F024S
Cascade	CES–2–2–8	4	Maytag	2	DT3BD–024K
Cascade	CES–2–2–8	4	Rheem	2	13PJA24
Cascade	CES–2–2–8	4	Ruud	2	13PJA24
Cascade	CES–2–2–8	4	Tappan	2	FT3BD–024K
Cascade	CES–2–2–8	4	Trane	2	2TWB3024A1
Cascade	CES–2–2–8	4	York	2	E1RC024S06
Cascade	CES–2–2–8	4	Westinghouse	2	FT3BD–024K
Cascade	CES–2–2–8	4	Whirlpool	2	W2H324A–1A
Cascade	CES–2–2.5–4	5	Amana	2	ASH130301A
Cascade	CES–2–2.5–4	5	Aire-Flo	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–4	5	AirPro	2	FRHS0301CD
Cascade	CES–2–2.5–4	5	American Standard	2	2A6B3030A1
Cascade	CES–2–2.5–4	5	Bryant	2	213ANA030–A
Cascade	CES–2–2.5–4	5	Carrier	2	25HBA330A30
Cascade	CES–2–2.5–4	5	Coleman	2	DRHS0301BD
Cascade	CES–2–2.5–4	5	Ducane	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–4	5	Fedders	2	CH30ABD1VF
Cascade	CES–2–2.5–4	5	Frigidaire	2	FT3BD–030K
Cascade	CES–2–2.5–4	5	Gibson	2	GT3BD–030K
Cascade	CES–2–2.5–4	5	Goodman	2	CPLT30–1
Cascade	CES–2–2.5–4	5	Lennox	2	12HPB30–P
Cascade	CES–2–2.5–4	5	Luxaire	2	EABC–F030S
Cascade	CES–2–2.5–4	5	Maytag	2	DT3BD–030K
Cascade	CES–2–2.5–4	5	Rheem	2	13PJA30
Cascade	CES–2–2.5–4	5	Ruud	2	13PJA30
Cascade	CES–2–2.5–4	5	Tappan	2	FT3BD–030K
Cascade	CES–2–2.5–4	5	Trane	2	2TWB3030A1
Cascade	CES–2–2.5–4	5	York	2	E1RC030S06
Cascade	CES–2–2.5–4	5	Westinghouse	2	FT3BD–030K
Cascade	CES–2–2.5–4	5	Whirlpool	2	WGH430A
Cascade	CES–2–2.5–5	5	Amana	2	ASH130301A
Cascade	CES–2–2.5–5	5	Aire-Flo	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–5	5	AirPro	2	FRHS0301CD
Cascade	CES–2–2.5–5	5	American Standard	2	2A6B3030A1
Cascade	CES–2–2.5–5	5	Bryant	2	213ANA030–A
Cascade	CES–2–2.5–5	5	Carrier	2	25HBA330A30
Cascade	CES–2–2.5–5	5	Coleman	2	DRHS0301BD
Cascade	CES–2–2.5–5	5	Ducane	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–5	5	Fedders	2	CH30ABD1VF
Cascade	CES–2–2.5–5	5	Frigidaire	2	FT3BD–030K
Cascade	CES–2–2.5–5	5	Gibson	2	GT3BD–030K
Cascade	CES–2–2.5–5	5	Goodman	2	CPLT30–1

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade	CES–2–2.5–5	5	Lennox	2	12HPB30–P
Cascade	CES–2–2.5–5	5	Luxaire	2	EABC–F030S
Cascade	CES–2–2.5–5	5	Maytag	2	DT3BD–030K
Cascade	CES–2–2.5–5	5	Rheem	2	13PJA30
Cascade	CES–2–2.5–5	5	Ruud	2	13PJA30
Cascade	CES–2–2.5–5	5	Tappan	2	FT3BD–030K
Cascade	CES–2–2.5–5	5	Trane	2	2TWB3030A1
Cascade	CES–2–2.5–5	5	York	2	E1RC030S06
Cascade	CES–2–2.5–5	5	Westinghouse	2	FT3BD–030K
Cascade	CES–2–2.5–5	5	Whirlpool	2	WGH430A
Cascade	CES–2–2.5–6	5	Amana	2	ASH130301A
Cascade	CES–2–2.5–6	5	Aire-Flo	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–6	5	AirPro	2	FRHS0301CD
Cascade	CES–2–2.5–6	5	American Standard	2	2A6B3030A1
Cascade	CES–2–2.5–6	5	Bryant	2	213ANA030–A
Cascade	CES–2–2.5–6	5	Carrier	2	25HBA330A30
Cascade	CES–2–2.5–6	5	Coleman	2	DRHS0301BD
Cascade	CES–2–2.5–6	5	Ducane	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–6	5	Fedders	2	CH30ABD1VF
Cascade	CES–2–2.5–6	5	Frigidaire	2	FT3BD–030K
Cascade	CES–2–2.5–6	5	Gibson	2	GT3BD–030K
Cascade	CES–2–2.5–6	5	Goodman	2	CPLT30–1
Cascade	CES–2–2.5–6	5	Lennox	2	12HPB30–P
Cascade	CES–2–2.5–6	5	Luxaire	2	EABC–F030S
Cascade	CES–2–2.5–6	5	Maytag	2	DT3BD–030K
Cascade	CES–2–2.5–6	5	Rheem	2	13PJA30
Cascade	CES–2–2.5–6	5	Ruud	2	13PJA30
Cascade	CES–2–2.5–6	5	Tappan	2	FT3BD–030K
Cascade	CES–2–2.5–6	5	Trane	2	2TWB3030A1
Cascade	CES–2–2.5–6	5	York	2	E1RC030S06
Cascade	CES–2–2.5–6	5	Westinghouse	2	FT3BD–030K
Cascade	CES–2–2.5–6	5	Whirlpool	2	WGH430A
Cascade	CES–2–2.5–7	5	Amana	2	ASH130301A
Cascade	CES–2–2.5–7	5	Aire-Flo	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–7	5	AirPro	2	FRHS0301CD
Cascade	CES–2–2.5–7	5	American Standard	2	2A6B3030A1
Cascade	CES–2–2.5–7	5	Bryant	2	213ANA030–A
Cascade	CES–2–2.5–7	5	Carrier	2	25HBA330A30
Cascade	CES–2–2.5–7	5	Coleman	2	DRHS0301BD
Cascade	CES–2–2.5–7	5	Ducane	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–7	5	Fedders	2	CH30ABD1VF
Cascade	CES–2–2.5–7	5	Frigidaire	2	FT3BD–030K
Cascade	CES–2–2.5–7	5	Gibson	2	GT3BD–030K
Cascade	CES–2–2.5–7	5	Goodman	2	CPLT30–1
Cascade	CES–2–2.5–7	5	Lennox	2	12HPB30–P
Cascade	CES–2–2.5–7	5	Luxaire	2	EABC–F030S
Cascade	CES–2–2.5–7	5	Maytag	2	DT3BD–030K
Cascade	CES–2–2.5–7	5	Rheem	2	13PJA30
Cascade	CES–2–2.5–7	5	Ruud	2	13PJA30
Cascade	CES–2–2.5–7	5	Tappan	2	FT3BD–030K
Cascade	CES–2–2.5–7	5	Trane	2	2TWB3030A1
Cascade	CES–2–2.5–7	5	York	2	E1RC030S06
Cascade	CES–2–2.5–7	5	Westinghouse	2	FT3BD–030K
Cascade	CES–2–2.5–7	5	Whirlpool	2	WGH430A
Cascade	CES–2–2.5–8	5	Amana	2	ASH130301A
Cascade	CES–2–2.5–8	5	Aire-Flo	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–8	5	AirPro	2	FRHS0301CD
Cascade	CES–2–2.5–8	5	American Standard	2	2A6B3030A1
Cascade	CES–2–2.5–8	5	Bryant	2	213ANA030–A
Cascade	CES–2–2.5–8	5	Carrier	2	25HBA330A30
Cascade	CES–2–2.5–8	5	Coleman	2	DRHS0301BD
Cascade	CES–2–2.5–8	5	Ducane	2	2HP13(B,L)30P–1
Cascade	CES–2–2.5–8	5	Fedders	2	CH30ABD1VF
Cascade	CES–2–2.5–8	5	Frigidaire	2	FT3BD–030K
Cascade	CES–2–2.5–8	5	Gibson	2	GT3BD–030K
Cascade	CES–2–2.5–8	5	Goodman	2	CPLT30–1
Cascade	CES–2–2.5–8	5	Lennox	2	12HPB30–P

Combinations of indoor-outdoor units that are subject to the waiver

Indoor unit			Outdoor unit		
Manufacturer	Cascade model	Tons	System heat pump manufacturer	Qty of outside units per cascade unit	Model number
Cascade	CES–2–2.5–8	5	Luxaire	2	EABC–F030S
Cascade	CES–2–2.5–8	5	Maytag	2	DT3BD–030K
Cascade	CES–2–2.5–8	5	Rheem	2	13PJA30
Cascade	CES–2–2.5–8	5	Ruud	2	13PJA30
Cascade	CES–2–2.5–8	5	Tappan	2	FT3BD–030K
Cascade	CES–2–2.5–8	5	Trane	2	2TWB3030A1
Cascade	CES–2–2.5–8	5	York	2	E1RC030S06
Cascade	CES–2–2.5–8	5	Westinghouse	2	FT3BD–030K
Cascade	CES–2–2.5–8	5	Whirlpool	2	WGH430A

(3) Alternate Test Procedure

(A) Cascade shall be required to test the products listed in paragraph (2) according to those test procedures for residential central air conditioners and heat pumps prescribed by DOE at 10 CFR part 430, Subpart B, Appendix M, except that Cascade shall test such products in accordance with the provisions of subparagraph (B) of this paragraph. Furthermore, Cascade shall make representations concerning its CES multi-blower products covered by this waiver according to the provisions of subparagraph (C) below.

(B) Cascade shall test the CES products covered by this waiver under 10 CFR Part 430, Subpart B, Appendix M, as supplemented by the following:

(1) Appendix A

Cascade shall test according to the modifications to the test procedure for residential central air conditioners and heat pumps contained in Appendix A (which is consistent with the appendix submitted as part of Cascade's Petition for Waiver), as supplemented by the rules set forth in subparagraph (B)(3) and the set-up requirements in subparagraph (B)(4).

(2) Table of System Configurations

Cascade shall test according to the CES system configurations in the following table:

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Cascade Energy Saver Table of System Configurations:

Number of Single-Speed Outdoor Units	Number of two-Speed Outdoor Units	Nominal Capacity of Each Outdoor Unit (Tons)	Nominal System Full-load Capacity (Tons)	Number of Indoor Blowers or Outlets	Low-Capacity Configuration (k=1)			High-Capacity Configuration (k=2)			DOE Test Procedure	
					Number of Outdoor Units Turned On	Number of Indoor Blowers Turned On	Nominal Air Volume Rate (cfm)	Number of Outdoor Units Turned On	Number of Indoor Blowers Turned On	Nominal Air Volume Rate (cfm)	Key Sections: Cooling Mode	Key Sections: Heating Mode
1	0	2	2	2	1	1	400	1	2	800	3.2.2.1 & 4.1.2.1	3.6.2 & 4.2.2
1	0	2	2	3	1	2	400	1	3	800		
1	0	2	2	4	1	2	400	1	4	800		
1	0	2.5	2.5	2	1	1	500	1	2	1000		
1	0	2.5	2.5	3	1	2	500	1	3	1000		
1	0	2.5	2.5	4	1	2	500	1	4	1000		
2	0	1.5	3	2	1	1	600	2	2	1200	3.2.3 & 4.1.3	3.6.3 & 4.2.3
2	0	1.5	3	3	1	2	600	2	3	1200		
2	0	1.5	3	4	1	2	600	2	4	1200		
2	0	2	4	2	1	1	800	2	2	1600		
2	0	2	4	3	1	2	800	2	3	1600		
2	0	2	4	4	1	2	800	2	4	1600		
2	0	2	4	5	1	3	800	2	5	1600		
2	0	2	4	6	1	3	800	2	6	1600		
2	0	2	4	7	1	4	800	2	7	1600		
2	0	2	4	8	1	4	800	2	8	1600		
0	1	High = 5 Low = 3	5	4	1 (Low)	2	1200	1 (High)	4	2000		
2	0	2.5	5	2	1	1	1000	2	2	2000		
2	0	2.5	5	3	1	2	1000	2	3	2000		
2	0	2.5	5	4	1	2	1000	2	4	2000		
2	0	2.5	5	5	1	3	1000	2	5	2000		
2	0	2.5	5	6	1	3	1000	2	6	2000		
2	0	2.5	5	7	1	4	1000	2	7	2000		
2	0	2.5	5	8	1	4	1000	2	8	2000		

(3) Rules for Generalizing the Specific Test Procedure Modifications

Cascade shall test its CES products according to the following rules:

Rule One: These rules apply to testing of residential CES systems ranging from two-ton/single-speed/two-blower models up to and including dual-2.5-ton heat pump/eight-zone models. It also applies to all CES model configurations in between for cooling and heating with single-phase units that are less than 65,000 btu/hr.

Rule Two: A 400 cubic feet/minute (cfm) per ton nominal evaporator air flow rate will be used, not to exceed 450 cfm per ton on the high end (same as 37.5 cfm per 1000 BTU/hr capacity).

Rule Three: The CES configurations should be tested so that regardless of the number of blowers and heat pumps, the resultant test procedure will model the CES system as a one-blower evaporator with a two-speed fan and one heat pump with one or more speeds. The test procedure will follow the procedure found in 10 CFR part 430, Subpart B, Appendix M. For example, two heat pumps are to be modeled as a single heat pump with two speeds. Also, dual two-speed heat pumps are to be modeled as a single heat pump with four speeds. Further, given that the number of indoor blowers may range from two to eight per unit, these will be modeled as a single blower with two speeds such that half the fans will be used to blow air at low speed; when operated at high speed, all fans will operate such that the air flow delivered per fan equals in total the air flow needed for the total heat pump capacity (i.e., 800 cfm for a two-ton heat pump).

Rule Four: For an even number of blowers, the air flow per blower is the same, and the sum of the air flow per blower equals the total air flow. For odd number of blowers, see Rule Five.

Rule Five: If the number of fans is an odd number, divide the number of fans by two. Round the quotient up to a whole number, and define this whole number as the quantity of ''low-speed fans.'' In the case of three blowers, low-speed mode will have two blowers and the remaining blower will be used only in high-speed mode. These are electrically commutated motors [4] (ECMs), so adjust the speed of the fans that are part of ''low-speed'' mode so that each blower produces an equal share of the low-speed air quantity. Likewise, the third blower, which operates during high-speed mode, blows an air flow equal to half of the total air flow for the tonnage of the heat pump(s). This is accomplished by adjustment of the ECM for the single fan, which runs in high-speed mode to produce half the total air flow needed for the total tonnage.

Rule Six: Once the CES system is modeled as required under Rules One through Five, perform Tests A, B, C and D (or if the default is accepted, then Test D is not required) as found in the procedure of 10 CFR 430, Subpart B, Appendix M for cooling and heating for the variations in speeds and settings found therein.

(4) Test Procedure Set-Up Requirements

When testing its CES products, Cascade shall adhere to the following test procedure set-up requirements:

(a) *Piping:* Determine the number of heat pumps. Connect the heat pump to the evaporator coil circuit, whether single- or dual-circuit. Thus, if there are two heat pumps, there is a heat pump piped into one of the circuits of the evaporator coil, while the second heat pump is piped into the second circuit of the evaporator coil.

(b) *Unit sizing:* If two heat pumps are used, they shall be equal in tonnage. Thus, a four-ton Cascade unit will have dual two-ton heat pumps attached.

(c) *Fans' cfm sizing:* As set forth in Rules Two through Five, blowers shall be driven by ECM motors, and the cfm for each blower shall be as calculated under Rules Four and Five.

(d) *Ducting the blowers:* The discharge of each blower will be connected so that the total cfm from all blowers is collected into a single duct, sized consistent with appropriate industry pressure-drop standards and ducted to the wind tunnel.

(e) *Pressures, delta Ps, temperatures, and other metric points:* These values are measured by installing devices appropriately calibrated to National Institute of Standards and Technology-traceable standards for refrigerant and condensate pipes, circuits and air flows in the evaporator coil, and condenser coils to measure quantities to be used for the calculation of capacities in heating and cooling modes in tests A, B, C, and D.

(C) *Representations.* In making representations about the energy efficiency of its CES multi-blower products, for compliance, marketing, or other purposes, Cascade must fairly disclose the results of testing under the DOE test procedure, as modified by the alternate test procedure in this waiver.

(4) This waiver shall remain in effect from the date of issuance of this Decision and Order until the effective date of a DOE final rule prescribing amended test procedures appropriate to the above model series manufactured by Cascade.

(5) This waiver is conditioned upon the presumed validity of statements, representations, and documentary materials provided by the petitioner. This waiver may be revoked or modified at any time upon a determination that the factual basis underlying the Petition for Waiver is incorrect, or DOE determines that the results from the alternate test procedure are unrepresentative of the basic model's true energy consumption characteristics.

Issued in Washington, DC, on August 8, 2008.

Alexander A. Karsner,

Assistant Secretary,Energy Efficiency and Renewable Energy

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[4] An ''electronically commutated motor'' is a high-efficiency, programmable, brushless, direct-current (DC) motor utilizing a permanent magnet motor and a built-in inverter. DC motors are significantly more energy efficient than alternating current (AC) motors and much easier to control.

DEPARTMENT OF ENERGY

Environmental Management Site-Specific Advisory Board, Savannah River Site

AGENCY: Department of Energy.

ACTION: Notice of open meeting.

SUMMARY: This notice announces a meeting of the Environmental Management Site-Specific Advisory Board (EM SSAB), Savannah River Site. The Federal Advisory Committee Act (Pub. L. No. 92–463, 86 Stat. 770) requires that public notice of this meeting be announced in the **Federal Register**.

DATES: Monday, September 22, 2008, 1 p.m.–5 p.m. Tuesday, September 23, 2008, 8:30 a.m.–4 p.m.

ADDRESSES: The Sheraton North Charleston,4770 Goer Drive,North Charleston, SC 29406.

FOR FURTHER INFORMATION CONTACT: Gerri Flemming, Office of External Affairs, Department of Energy, Savannah River Operations Office, P.O. Box A, Aiken, SC 29802; Phone: (803) 952–7886.

SUPPLEMENTARY INFORMATION:

Purpose of the Board: The purpose of the Board is to make recommendations to DOE in the areas of environmental restoration, waste management, and related activities.

Tentative Agenda:

Monday, September 22, 2008

1 p.m. Combined Committee Session