

Appliance Standards and Rulemaking Federal Advisory Committee
Commercial Package Air Conditioners and Commercial Warm Air Furnaces Working Group
Term Sheet
June 15, 2015

Background

On April 1, 2015, DOE issued a Notice of Intent to Establish the Commercial Package Air Conditioners and Commercial Warm Air Furnaces Working Group To Negotiate either a Notice of Proposed Rulemaking (NOPR) or Final Rule for Energy Conservation Standards for Commercial Package Air Conditioners and Commercial Warm Air Furnaces. 80 FR 17363. This working group is established under the Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC) in accordance with the Federal Advisory Committee Act and the Negotiated Rulemaking Act. The purpose of the working group was to discuss and, if possible, reach consensus on a proposed or final rule for the energy efficiency of commercial package air conditioners and heat pumps (specifically, air-cooled with rated cooling capacities greater than or equal to 65,000 Btu per hour and less than 760,000 Btu per hour split and package AC and HP) and commercial warm air furnaces, as authorized by the Energy Policy and Conservation Act (EPCA) of 1975, as amended. The scope of this term sheet does not include package terminal air conditioners and heat pumps (PTAC/PTHP), single package vertical units (SPVU), computer room air conditioners (CRAC), or variable refrigerant flow (VRF) systems. The working group was to consist of representatives of parties having a defined stake in the outcome of the proposed standards, and will consult as appropriate with a range of experts on technical issues.

DOE received 17 nominations for membership. Ultimately, the working group consisted of 17 members, including one member from ASRAC and one DOE representative (see Appendix A). The working group met six times (five times in-person and once by teleconference). The meetings were held on April 28, May 11-12, May 20-21, June 1-2, June 9-10, and June 15, 2015. The working group successfully reached consensus on energy conservation standards for commercial package air conditioners and commercial warm air furnaces. This document includes the working group's recommendations to ASRAC on the energy conservation standards. The group also chose to provide test procedure and metric-related recommendations to the committee.

Commercial Warm Air Furnaces

Energy Conservation Standards and their Compliance Dates

Recommendation #1.

- *Gas-fired Commercial Warm Air Furnaces.* Gas-fired commercial warm air furnaces manufactured on and after January 1, 2023 must have a thermal efficiency at the maximum rated capacity (rated maximum input) not less than 81 percent.

- *Oil-fired Commercial Warm Air Furnaces.* Oil-fired commercial warm air furnaces manufactured on and after January 1, 2023 must have a thermal efficiency at the maximum rated capacity (rated maximum input) not less than 82 percent.

Vote results: Consensus¹ (16 yes - 0 no – 1 abstention) on 6/15/2015

Air-Cooled, Commercial Package Air Conditioners and Heat Pumps

Test Procedure

Recommendation #2.

- A rulemaking to amend the test procedure for air-cooled, commercial package air conditioners and heat pumps with rated cooling capacities greater than or equal to 65,000 Btu/h and less than 760,000 Btu/h, shall be initiated no later than January 1, 2016. DOE shall issue a final rule for the amended test procedure no later than January 1, 2019. The primary focus of the rulemaking will be to better represent the total fan energy use, including considering a) alternative external static pressures and b) operation for other than mechanical cooling and heating. The energy consumption from the supply air fan during hours of operation when it is used to provide ventilation air and the energy use with the supply fan operation when the unit is in heating mode shall be included in an energy efficiency metric as a result of this test procedure modification. Working group members will support the use of this new test procedure and any resulting revised metric(s) in the ASHRAE 90.1 building standards. However, the new test procedure and any resulting revised metric will not be used for assessing representations or compliance with the standards described in this term sheet.

Vote results: Consensus (14 yes - 0 no – 1 abstention – 2 absent) on 6/15/2015

Recommendation #3.

- The Commercial Package Air Conditioners and Commercial Warm Air Furnaces Working Group recommends to the Fans and Blowers Working Group that supply air fans and outdoor coil fans (used for heat rejection from the unit’s refrigeration system during cooling mode) which are embedded in air-cooled, commercial air conditioners and heat pumps with rated cooling capacities greater than and equal to 65,000 Btu/h and less than 760,000 Btu/h not be considered for test procedures, certifications, or standards in the fans and blowers rulemaking. This recommendation is conditional on finding a way to implement the fans and blowers regulation so that it does not create loopholes for fans or blowers that may be used as stand-alone equipment or embedded in other non-covered equipment. A fan standard may cover fans sold as stand-alone products that are also embedded in equipment covered in this term sheet.

Vote results: Consensus (13 yes –0 no – 1 abstention 3 - absent) on 6/15/2015

Energy Conservation Standards and their Compliance Dates

Recommendation #4.

¹ There are 17 members of the working group. Consensus has been defined as no more than 2 no votes.

- Commercial package air conditioners, including heat pumps, but excluding dual-duct air conditioners and heat pumps as defined in Recommendation #5 (and to be proposed for codification at 10 CFR part 431.92), manufactured starting on January 1, 2018, must meet the applicable minimum energy efficiency standard level(s) listed in the tables below.

Minimum Cooling Efficiency Standards for Air-Cooled Air Conditioners and Heat Pumps

Equipment Category	Rated Cooling capacity	Sub-Category	Heating Type	Minimum Energy Efficiency Standard
Small Commercial Split and Single Package Air-Conditioners and Heat Pumps (Air-Cooled)	≥65,000 Btu/h and <135,000 Btu/h	AC	Electric Resistance Heating or No Heating	IEER = 12.9
			All Other Types of Heating	IEER = 12.7
		HP	Electric Resistance Heating or No Heating	IEER = 12.2
			All Other Types of Heating	IEER = 12.0
Large Commercial Split and Single Package Air-Conditioners and Heat Pumps (Air-Cooled)	≥135,000 Btu/h and <240,000 Btu/h	AC	Electric Resistance Heating or No Heating	IEER = 12.4
			All Other Types of Heating	IEER = 12.2
		HP	Electric Resistance Heating or No Heating	IEER = 11.6
			All Other Types of Heating	IEER = 11.4
Very Large Commercial Split and Single Package Air-Conditioners and Heat Pumps (Air-Cooled)	≥240,000 Btu/h and <760,000 Btu/h	AC	Electric Resistance Heating or No Heating	IEER = 11.6
			All Other Types of Heating	IEER = 11.4
		HP	Electric Resistance Heating or No Heating	IEER = 10.6
			All Other Types of Heating	IEER = 10.4

Minimum Heating Efficiency Standards for Air-Cooled Heat Pumps

Equipment Category	Rated Cooling capacity	Heating type	Minimum Energy Efficiency Standard
Small Commercial Split and Single Package Heat Pumps (Air-Cooled)	≥65,000 Btu/h and <135,000 Btu/h	Electric Resistance Heating or No Heating	COP = 3.3
		All Other Types of Heating	
Large Commercial Split and Single Package Heat Pumps (Air-Cooled) (Air-Cooled)	≥135,000 Btu/h and <240,000 Btu/h	Resistance Heating or No Heating	COP = 3.2
		All Other Types of Heating	
Very Large Commercial Split and Single Package Heat Pumps (Air-Cooled)	≥240,000 Btu/h and <760,000 Btu/h	Resistance Heating or No Heating	COP = 3.2
		All Other Types of Heating	

- Commercial package air conditioners, including heat pumps, but excluding dual-duct air conditioners and heat pumps as defined in Recommendation #5 (and to be proposed for codification at 10 CFR part 431.92), manufactured starting on January 1, 2023, must meet the applicable minimum energy efficiency standard level(s) listed in the tables below.

Minimum Cooling Efficiency Standards for Air-Cooled Air Conditioners and Heat Pumps

Equipment Category	Rated Cooling capacity	Sub-Category	Heating Type	Minimum Energy Efficiency Standard
Small Commercial Split and Single Package Air-Conditioners and Heat Pumps (Air-Cooled)	≥65,000 Btu/h and <135,000 Btu/h	AC	Electric Resistance Heating or No Heating	IEER = 14.8
			All Other Types of Heating	IEER = 14.6
		HP	Electric Resistance Heating or No Heating	IEER = 14.1
			All Other Types of Heating	IEER = 13.9
Large Commercial Split and Single Package Air-Conditioners and Heat Pumps (Air-Cooled)	≥135,000 Btu/h and <240,000 Btu/h	AC	Electric Resistance Heating or No Heating	IEER = 14.2
			All Other Types of Heating	IEER = 14.0
		HP	Electric Resistance Heating or No Heating	IEER = 13.5
			All Other Types of Heating	IEER = 13.3
Very Large Commercial Split and Single Package Air-Conditioners and Heat Pumps (Air-Cooled)	≥240,000 Btu/h and <760,000 Btu/h	AC	Electric Resistance Heating or No Heating	IEER = 13.2
			All Other Types of Heating	IEER = 13.0
		HP	Electric Resistance Heating or No Heating	IEER = 12.5
			All Other Types of Heating	IEER = 12.3

Minimum Heating Efficiency Standards for Air-Cooled Heat Pumps

Equipment Category	Rated Cooling capacity	Heating type	Minimum Energy Efficiency Standard
Small Commercial Split and Single Package Heat Pumps (Air-Cooled)	≥65,000 Btu/h and <135,000 Btu/h	Electric Resistance Heating or No Heating	COP = 3.4
		All Other Types of Heating	
Large Commercial Split and Single Package Heat Pumps (Air-Cooled)	≥135,000 Btu/h and <240,000 Btu/h	Resistance Heating or No Heating	COP = 3.3
		All Other Types of Heating	
Very Large Commercial Split and Single Package Heat Pumps (Air-Cooled)	≥240,000 Btu/h and <760,000 Btu/h	Resistance Heating or No Heating	COP = 3.2
		All Other Types of Heating	

Vote results: Consensus (14 yes - 0 no – 1abstention - 2 absent) on 6/15/2015

Dual Duct Unit Definition

Recommendation #5.

- Existing EER standard levels as provided in Table 1 of part 431.97 shall continue to apply to dual duct air conditioners and heat pumps.
- Dual duct air conditioner or heat pump means air-cooled commercial package air conditioning and heating equipment that
 1. is either a horizontal single package or split-system unit; or a vertical unit that consists of two components that may be shipped or installed either connected or split;

2. is intended for indoor installation with ducting of outdoor air from the building exterior to and from the unit, where the unit and/or all of its components are non-weatherized and are not marked (or listed) as being in compliance with UL 1995 or equivalent requirements for outdoor use;
3. (a) if it is a horizontal unit, the complete unit has a maximum height of 35 inches or the unit has components that do not exceed a maximum height of 35 inches;
(b) if it is a vertical unit, the complete (split, connected, or assembled) unit has component that do not exceed maximum depth of 35 inches; and
4. has a rated cooling capacity greater than and equal to 65,000 Btu/h and up to 300,000 Btu/h.

Vote results: Consensus (15 yes – 0 no – 1 abstention – 1 absent) on 6/15/2015

While the elements described herein may proceed in separate regulatory actions, this term sheet has been approved by the ASRAC Commercial Package Air Conditioners and Commercial Warm Air Furnaces working group by consensus with the intent that it will be adopted in its entirety. (13 yes – 0 no – 1 abstention - 3 absent) on 6/15/15.

Appendix A—Members

U.S. Department of Energy—ASRAC Commercial Package Air Conditioners and Commercial Warm Air Furnaces Working Group

John Cymbalsky	U.S. Department of Energy
Marshall Hunt	Pacific Gas & Electric Company, San Diego Gas & Electric Company, Southern California Edison, and Southern California Gas Company
Andrew deLaski	Appliance Standards Awareness Project
Louis Starr	Northwest Energy Efficiency Alliance
Meg Waltner	Natural Resources Defense Council
Jill Hootman	Trane/Ingersoll Rand
John Hurst	Lennox
Karen Meyers	Rheem Manufacturing Company
Charlie McCrudden	Air Conditioning Contractors of America
Harvey Sachs	American Council for and Energy Efficient Economy
Paul Doppel	Mitsubishi Electric
Robert Whitwell	United Technologies Corporation
Michael Shows	Underwriters Laboratories
Russell Tharp	Goodman Manufacturing
Sami Zendah	Emerson Climate Technologies
Mark Tezigni	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Nick Mislak	Air-conditioning, Heating, and Refrigeration Institute