



January 30, 2009

Mrs. Rachel Schmeltz
Energy Star Program Manager
Environmental Protection Agency
Ariel Rios Building, SW, MS 6202J
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: EPA Proposed Draft Energy Star Specification for Light Commercial HVAC Equipment

Dear Mrs. Schmeltz:

These comments are submitted by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) in response to the U.S. Environmental Protection Agency (EPA) proposed draft Energy Star specification for light commercial HVAC equipment, issued on January 2, 2009. AHRI is the trade association representing manufacturers of heating, cooling, and commercial refrigeration equipment. More than 350 members strong, AHRI is an internationally recognized advocate for the industry, and develops standards for and certifies the performance of many of the products manufactured by our members. In North America, the HVACR industry produces more than \$20 billion worth of product, and in the United States alone, our members employ approximately 130,000 people, and support some 800,000 dealers and contractors.

AHRI supports EPA's decision to continue the Energy Star program for light commercial air conditioners and heat pumps. The program has been valuable to consumers and has helped HVAC manufacturers promote the sale of high efficiency air conditioners and heat pumps. The proposed revisions to the specification are timely, since new federal minimum energy efficiency standard will become effective on January 1, 2010. AHRI has reviewed the draft specification and would like to make the following recommendations:

3-Phase Air-Source Air Conditioners and Heat Pumps < 65,000 Btu/h

AHRI recommends that the specification for both single-package and split air conditioners and heat pumps be set at ≥ 14 SEER/ ≥ 11 EER/ ≥ 8.0 HSPF. While we understand the reasoning behind EPA's desire to harmonize this specification

with the specification for single-phase residential equipment, the data currently listed in the AHRI directory does not justify it. According to the data, only 11% of the 3-phase split heat pumps and about 8.3 % of the 3-phase split air conditioners listed in the AHRI directory meet the proposed ≥ 14.5 SEER/ ≥ 12 EER/ ≥ 8.2 HSPF levels. This is far below the 25% target that EPA is aiming at. While the commercial 3-phase and the residential single-phase products are similar in design, they do not serve the same markets and consequently are not sold in the same quantities. In general, shipments for 3-phase products represent less than 7% of shipments for all air conditioners and heat pumps less than 65,000 Btu/h of cooling capacity (the remaining 93% are single-phase products). Therefore, given the low volume of 3-phase products and the fact that few split systems are available at the proposed specification, AHRI recommends that both single package and split systems be required to meet the energy efficiency levels shown in Tables 1 and 2 below:

Table 1: AHRI Proposal for ENERGY STAR Qualified Light Commercial Air Conditioners <65,000 Btu/h

Equipment Type	Size Category	Heating Section Type	Minimum Efficiency	Test Procedure
Air-Source Air Conditioner (Three Phase) (Single Package and Split System)	<65,000 Btu/h	All	≥ 14.0 SEER, ≥ 11.0 EER	AHRI 210/240

Table 2: AHRI Proposal for ENERGY STAR Qualified Light Commercial Heat Pumps <65,000 Btu/h

Equipment Type	Size Category	Heating Section Type	Minimum Efficiency	Test Procedure
Air-Source Heat Pump (Three Phase) (Single Package and Split System)	<65,000 Btu/h	All	≥ 14.0 SEER, ≥ 11.0 EER; ≥ 8.0 HSPF	AHRI 210/240

Air-Source Air Conditioners and Heat Pumps $\geq 65,000$ Btu/h and $< 240,000$ Btu/h

As noted in the proposed draft specification, new federal minimum energy efficiency standards for commercial unitary equipment with cooling capacities greater or equal to 65,000 Btu/h and less than 240,000 Btu/h will take effect on January 1, 2010. At the same time, AHRI standard 340/360 was revised and introduced a new part load energy efficiency descriptor called the “Integrated Energy Efficiency Ratio” or IEER as a replacement to IPLV. The proposed IEER is a significant improvement over IPLV as it allows for uniform rating of all products including single and multi stage units. It is based on a weighted

average of performance at 100%, 75%, 50% and 25% of capacity. The new part load metric is expected to more accurately rate the part load performance of commercial unitary equipment. The IEER is now an integral part of AHRI standard 340/360, and AHRI is expected to start certifying IEER in 2010. In addition, ASHRAE, through the publication of addendums to ASHRAE 90.1-2007 adopted new IEER minimum levels that will become effective on January 1, 2010.

Given that IEER is a new part load descriptor not yet listed on the AHRI directory, AHRI collected confidential data from manufacturers and developed a proposal as shown in Tables 3 and 4 below:

Table 3: AHRI Proposal for ENERGY STAR Qualified Light Commercial Air Conditioners ≥65,000 Btu/h - <240,000 Btu/h

Equipment Type	Size Category	Heating Section Type	Minimum Efficiency	Test Procedure
Air-Source Air Conditioner	≥65,000 Btu/h – <135,000 Btu/h	Electric Resistance (or None)	≥11.5 EER; ≥11.6 IEER	AHRI 340/360
		All Other	≥11.3 EER; ≥11.4 IEER	
Air-Source Air Conditioner	≥135,000 Btu/h – <240,000 Btu/h	Electric Resistance (or None)	≥11.3 EER; ≥11.4 IEER	AHRI 340/360
		All Other	≥11.1 EER; ≥11.2 IEER	

Table 4: AHRI Proposal for ENERGY STAR Qualified Light Commercial Heat Pumps ≥65,000 Btu/h - <240,000 Btu/h

Equipment Type	Size Category	Heating Section Type	Minimum Efficiency	Test Procedure
Air-Source Heat Pump	≥65,000 Btu/h – <135,000 Btu/h	Electric Resistance (or None)	≥11.3 EER ≥ 11.4 IEER, ≥3.35 COP @47F	AHRI 340/360
		All Other	≥11.1 EER ≥ 11.2 IEER; ≥3.35 COP @47F	
Air-Source Heat Pump	≥135,000 Btu/h – <240,000 Btu/h	Electric Resistance (or None)	≥10.9 EER ≥ 11.0 IEER; ≥3.25 COP @47F	AHRI 340/360
		All Other	≥10.7 EER ≥ 10.8 IEER; ≥3.25 COP @47F	

The proposed EER for air conditioners between 65,000 and 135,000 Btu/h is consistent with the Consortium for Energy Efficiency (CEE) new Tier I specification. The corresponding IEER was derived based on the expected performance of commercial unitary products meeting the full load EER. For products between 135,000 and 240,000 Btu/h, AHRI proposes a slightly lower EER and IEER to account for additional inefficiencies as the equipment gets larger in size (i.e.; additional fan power consumption, pressure drops etc.). For heat pumps, AHRI proposes EER and IEER proportionally lower (by 0.2) than air conditioners. This deduction is to account for refrigeration cycle losses that are inherent to heat pumps. Similar deductions have been adopted by ASHRAE 90.1 and the Department of Energy.

Finally, for each cooling size category, we are proposing a new “heating section type” category with two sets of EER/IEER values. The first set is for products

equipped with electric resistance, and the second (which has a 0.2 EER/IEER deduction) is for all other types of equipment (i.e.; equipment with gas heat). The 0.2 EER/IEER deduction is necessary to account for the additional pressure drops (increase fan power consumption) caused by the gas heating element. The same deduction has been in the ASHRAE 90.1 standard since 1989 and was adopted by the Department of Energy in the federal standards for commercial air conditioners and heat pumps.

Air-Source Air Conditioners and Heat Pumps \geq 240,000 Btu/h

AHRI recommends against expanding the energy Star program for light commercial air conditioners and heat pumps to products above 240,000 Btu/h of cooling capacity. While industry is interested in exploring the idea, we feel that it is premature to launch a program by January 1, 2010 because there is no certification program in place. Products above 240,000 Btu/h were not federally regulated before the enactment of the Energy Policy Act of 2005 and therefore were never certified. Consequently, there is no independent third-party certified data that can be used to develop the Energy Star specification. However, AHRI is currently developing a certification program (for products up to 760,000 Btu/h) and plans to launch it in 2010. So we expect to have certified data in our directory sometime in 2010. Given that this is a totally new program, we would recommend waiting until 2011 or 2012 to give enough time for the certification program to mature before considering expanding the Energy Star program.

AHRI appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,



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