



**GE APPLIANCES**  
*a Haier company*

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Via E-mail (HVAC@energystar.gov)

Ms. Holly Tapani  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Re: Energy Star Version 6.0 and 7.0 Room Air Conditioners Draft Specifications

Dear Ms. Tapani:

I write in response to Energy Star's publication of the Version 6.0 and 7.0 Room Air Conditioner Draft Specifications. We appreciate Energy Star reopening the comment period for these draft specifications.

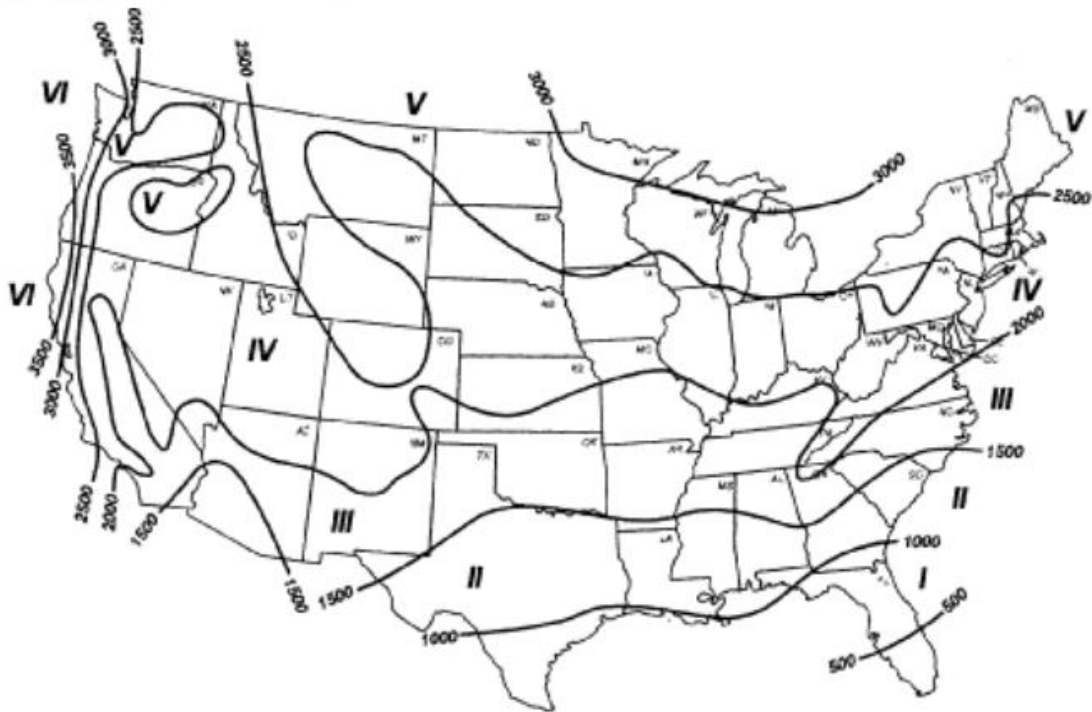
**1. Version 6.0 Specification**

GE Appliances appreciates EPA's comments regarding differentiating the performance specifications for Type 3 versus Type 4 heat pump products, specifically the ratio between heating capacity at 47°F and 17°F. GE Appliances supports the 55% heating capacity ratio proposed by Energy Star.

As GE Appliances has shared with Energy Star, including in a presentation at the Energy Star Products Partners conference, Type 3 Room Heat Pumps are appropriate for Climate Zones I, II, III, and VI, as defined in AHRI 210/240 and shown in the map below.

AHRI STANDARD 210/240-2024 (I-P)

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As shown in the table below, Climate Zones I and VI have zero fractional bin hours at 17°F and Climate Zones II and III have fractional bin hours of only .002 and .009 at 17°F. Type 3 room heat pumps will be required to operate for very limited times at 17°F in the climate zones for which they are designed and correspondingly little time at temperatures below 47°F as compared to climate zones III and V, where Type 4 products are the appropriate room heat pump solution. Conversely, Type 4 room heat pumps are required to operate at their 5°F minimum temperature around four times as long as Type 3 products operate at 17°F (between .038 and .029 fractional bin hours). Therefore, a higher heating capacity ratio is more important for Type 4 products.

Table 14. Distribution of Fractional Heating Hours in Temperature Bins, Heating Load Hours, and Outdoor Design Temperature for Different Climatic Regions							
Region Number		I	II	III	IV	V	*VI
Heating Load Hours, HLH		493	857	1247	1701	2202	1842
Outdoor Design Temperature, $T_{OD}$		37	27	17	5	-10	30
Heating Load Line Equation Slope Factor, C		1.10	1.06	1.30	1.15	1.16	1.11
Variable-speed Slope Factor, $C_{VS}$		1.03	0.99	1.21	1.07	1.08	1.03
Zero-Load Temperature, $T_{zL}$		58	57	56	55	55	57
j	$t_j$ (°F)	Fractional Bin Hours, $n_j/N$					
	$t_j$ (°F)						
1	62	0	0	0	0	0	0
2	57	.239	0	0	0	0	0
3	52	.194	.163	.138	.103	.086	.215
4	47	.129	.143	.137	.093	.076	.204
5	42	.081	.112	.135	.100	.078	.141
6	37	.041	.088	.118	.109	.087	.076
7	32	.019	.056	.092	.126	.102	.034
8	27	.005	.024	.047	.087	.094	.008
9	22	.001	.008	.021	.055	.074	.003
10	17	0	.002	.009	.036	.055	0
11	12	0	0	.005	.026	.047	0
12	7	0	0	.002	.013	.038	0
13	2	0	0	.001	.006	.029	0
14	-3	0	0	0	.002	.018	0
15	-8	0	0	0	.001	.010	0
16	-13	0	0	0	0	.005	0
17	-18	0	0	0	0	.002	0
18	-23	0	0	0	0	.001	0

Additionally, as we have shared with Energy Star previously, market transformation based on room heat pump technology requires consumer interest in these products. And cost, size, and weight are all significant factors in generating the necessary consumer interest that leads to market transformation. A capacity ratio of 55% for Type 3 room heat pumps is the appropriate balance between ensuring sufficient performance and supporting consumer adoption of these new products. We also incorporate by reference our previous comments regarding the inappropriateness of derating 47°F capacity in order to obtain an artificially high capacity ratio.

## **2. Version 7.0 Specification**

GE Appliances largely supports the specification as drafted. We have two areas of feedback below.

### **A. Type 3 Heat Pump HEER**

The HEER for Type 3 heat pumps should be set at 7.8 instead of 8.3. As discussed above, Type 3 room heat pumps are intended for different climate zones than Type 4 products. As shown in the table above, Type 3 products will have, on average, significantly fewer heating load hours and will be required to operate at lower temperatures (and therefore lower efficiency) much less often than Type 4 heat pumps. For example, the average heating load hours for Zones I, II, III, and VI is 1,110 while the average heating load hours for Zones IIII and V is 1951, a 75% increase.

Moreover, the test procedure for room heat pumps already accounts for the increased resistance heating load in the dwelling space as a result of Type 3 heat pump's cool climate, not cold climate, design. The test procedure for room heat pumps assigns an electric resistance heat efficiency level (COP of 1) for all temperature bins outside the operating temperature of the tested unit. Type 3 units will have a COP of 1 assigned to them for multiple temperature bins, including -3, 2, 7, and 12°F. Of course, the products are not intended for use in climates that reach these temperatures during any normal year. This means that Type 3 products are already treated as less efficient than Type 4 products despite the fact that they should not be marketed for use or used in climates that experience these temperatures. To account for this discrepancy, and the inherently different markets and uses between Type 3 and Type 4 products, the HEER for Type 3 products should be lower than for Type 4 products. GE Appliances research and testing indicates 7.8 is the maximum level that can be reasonably reached by Type 3 heat pumps while maintaining the differentiation in cost, size, weight, and difficulty of installation between Type 3 and Type 4 room heat pumps that is necessary to support market transformation.

### **B. Temperature Range Mandatory Labeling**

GE Appliances appreciates Energy Star's initiative to develop labeling that will help communicate to consumers the heat pump type being sold and the climate range for each room heat pump type. GE Appliances supports Energy Star's work to create a voluntary label for this purpose and provides additional feedback on the content of a voluntary label below.

GE Appliances opposes the creation of a mandatory product label for any Energy Star product beyond the brand guidelines for the Energy Star logo and name. GE Appliances is not aware of any such label for any other product. The requirement for labels in addition to the Energy Star logo is not included in the scope of the program in the Energy Star Guiding Principles.

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Ms. Holly Tapani

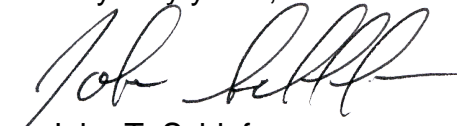
As to the label design proposed by Energy Star, GE Appliances generally supports the concept of the label. We believe that determining the underlying technical information and finalizing the design of the label is a significant undertaking that will require meaningful dialogue between Energy Star and stakeholders moving forward and well in excess of this comment period.

As an initial item, the climate zones for each product type should be cumulative. Each successive product type will perform better at heating than units in the lower product type. Using the 210/240 climate zones, Type 1 products should be listed for Zone I; Type 2 products should be listed for Zones I and II, Type 3 products should be listed for Zones I, II, III, and VI, and Type 4 products should be listed for all Zones.

We look forward to working further with Energy Star on this labeling proposal beyond these comments.

GE Appliances appreciates the opportunity to provide these comments. Please do not hesitate to contact me with any questions or concerns.

Very truly yours,



John T. Schlafer