

September 20, 2018

Ms. Abigail Daken
Manager, Energy Star HVAC Program
Office of Air and Radiation
U.S. Environmental Protection Agency
Washington, DC 20460

(Sent via email to cacashp@energystar.gov)

RE: Comments on EPA's Energy Star® CAC/ASHP Version 6.0 Product Development Request

Dear Ms. Daken,

Carrier Corporation respectfully submits the following comments to the U.S. EPA request for public comment on Energy Star® Central Air Conditioner (CAC) and Air Source Heat Pump (ASHP) Version 6.0 Product Development.

Carrier Corporation is a part of UTC Climate, Controls & Security, a unit of United Technologies Corporation. We provide fire safety, security, building automation, heating, ventilation, air conditioning and refrigeration systems and services to promote integrated, high performance homes and buildings that are safer, smarter and sustainable. United Technologies is a leading worldwide provider to the aerospace and building systems sectors.

Carrier is the founder of the modern HVAC industry and operates across the globe. Our range of products includes unitary residential and commercial products, including ducted and ductless, gas furnaces, refrigeration products, transport refrigeration products, air and water cooled chillers, and HVAC building services. Carrier is also the world's largest manufacturer of gas furnaces. The combination of our businesses makes us uniquely qualified to comment on regulatory issues associated with environment, product efficiency and the tradeoffs with costs and manufacturing burden associated with government regulation.

Carrier has supported the Energy Star® program since inception, and appreciates the opportunity to provide comments which can help shape the next version of the program. Carrier agrees with EPA that there are emerging market trends toward staged and variable capacity CAC/ASHP products. However, Carrier would like Energy Star® to continue to include high-efficiency single stage products as not all applications are in need of staged capacity, nor can all consumers who want Energy Star products be able to afford staged capacities.

Carrier recommends that EPA postpone Version 6.0 until 1/1/2023 to harmonize with new Department of Energy (DOE) efficiency standards and test procedures.

EPA requested feedback on specific topics/questions which Carrier has provided the following responses:

Regionally-Specific Performance Requirements

1. *Is EER used to predict seasonal; efficiency anywhere outside the U.S. Southwest region?*

EER is not used to predict seasonal efficiency; SEER is the primary metric used by industry to predict seasonal efficiency; SEER is an average over a cooling season. EER is a steady-state full load metric tested at 95° ambient condition. To Carrier's knowledge, no other region domestically relies on EER other than SW US. There are some utility companies which have an EER level as a performance metric in addition to higher SEER metrics for rebate or incentive purposes. Carrier does not support using EER outside the U.S. Southwest region.

2. How widespread is the need to control peak load by incentivizing high EER systems?

To Carrier's knowledge, there is moderate use of utilities controlling peak load at this time. However, Carrier does expect utilities to control peak loads as populations continue to expand (such as in southwestern states) and consumers require more energy to stay comfortable. Since the need to control peak load demand will continue to grow, Carrier recommends Energy Star® to consider a tiering within the program for products which have peak load capability either through wall controls or through the outdoor equipment itself. Carrier does not support incenting higher EER systems as these products are too regional at this time.

3. Are there other opportunities a regional specification would present?

Carrier's preference is for EPA to not overly complicate the Energy Star® program with higher EER levels, nor do we believe that a regional EER specification would be beneficial. Similarly, Carrier does not believe a regional specification for heat pumps intended for colder climates is needed. Both of these approaches will cause a hodge-podge of products with minimal volumes. This will greatly reduce OEM participation in the program. It would also reduce the actual number of products that will qualify, because EER is a difficult metric for OEMs to design and test. Regional specifications are therefore, not supported by Carrier.

4. EPA is aware of ongoing efforts to define northern climate heat pump performance and establish a test method, for instance, the Northwest Energy Efficiency Alliance (NEEA) effort and work that the Canadian Standards Association (CSA) is doing with a Canadian utility. What are the advantages/disadvantages of those efforts, for instance repeatability, testing burden, and capturing real world effects? Should other methods of establishing this performance be considered?

Carrier has been made aware of the efforts of some entities attempting to create a new test protocol tied to load-based testing. Carrier supports the development of alternative testing methods, provided AHRI and DOE develop such methods in conjunction with appropriate validation testing from OEMs. While these standards appear to be "voluntary", they are only voluntary until adopted by a utility company. Carrier supports AHRI's 210/240 (2017). We assume EPA is well aware of the revised Department of Energy (DOE) CACHP test procedure (10 CFR 430 Appendix M1) effective 1/1/2023 which includes an optional heating test at 5°F from the mandatory and current 17°F. Making a test of this nature mandatory is added burden on manufacturers as structural changes in psychometric test rooms are necessary and costly (It is inherently more difficult to sustain the 5°F testing conditions). There is also the consideration of Climate Region 5 versus current rating Climate Region 4. The change to Region 5 from Region 4 would increase the heating load hours at a lower ambient and create an additional metric just for northern climates (Northern US and Canada). Industry does not support an additional metric for small volumes of region-specific products.

Optional Connected/Grid Criteria

5. *Would it be reasonable for products with DR capability to have lower EER requirement (aside from where needed for seasonal energy) than those without?*

Carrier agrees that it would be reasonable to expect products with DR capability to have lower EER requirements. Again, Carrier does not support a regional specification within the Energy Star® program. Carrier does recognize and does support a lower EER with products above 16 SEER, as will be the case in 2023 with the new CAC/HP Energy Conservation Federal standards for the Southwest Region.

6. *Are there any problems with relying on AHRI 1380 for DR criteria?*

Carrier completely supports Energy Star® using AHRI's 1380 standard for DR, but asks EPA to wait until all stakeholders have an opportunity to provide input as the standard is finalized. Carrier recommends EPA and Energy Star® wait for the final published version before reviewing or utilizing this standard in Version 6.0.

7. *What value does connectivity bring to CAC/ASHP customers (aside from grid value)?*

In Carrier's opinion, connectivity via smart thermostats enhances customer configuration/set up, energy management, diagnostics, and energy usage predictability. Carrier recognizes this as a criteria/feature in the Energy Star® Most Efficient program and requests that this remain in that program.

8. *How would one consider connectivity for products intended to work with a proprietary controller that is not part of the unit itself, but instead takes the place of a thermostat?*

We would prefer that these types of products remain solely in the Energy Star® Most Efficient program and not be inserted into the base Energy Star® criteria.

Energy Efficiency Metrics

9. *Would it be possible to establish parallel SEER2, EER2, and HSPF2 criteria?*

Carrier suggests EPA use the current metrics (SEER, EER, HSPF, and AFUE) for the time being and wait to implement the new metrics for Version 6.0 when DOE requires those metrics for representations of product after January 1, 2023. Carrier's largest concern is the confusion duplicate sets of metrics on one product will cause within our channel as well as with end-users. Additionally, product and packaging labels are already over-burdened with information.

10. *If so, would any manufacturers be interested in using this option?*

Carrier would not for the reasons stated in #9. One set of metrics at a time, please.

Again, Carrier appreciates this opportunity to provide comments. Feel free to reach out if you need any further clarification.

Respectfully submitted,

Carrier Corporation
7310 W. Morris Street
Indianapolis, Indiana 46231



A handwritten signature in black ink, appearing to read "John J. Gibbons".

John J. Gibbons
Executive Director, Regulatory Affairs
UTC Climate, Controls and Security

CC: Mr. Matthew Pine, President, Residential Products, Carrier Corporation
Mr. Matthew Thornblad, Sr. Director, Government Relations, United Technologies Corporation