Jason Thomas
Director, Regulatory Affairs
HVAC Americas
O 317-240-5246
C 317-518-5629

November 19, 2020

Ms. Abigail Daken
Manager, Energy Star® HVAC Program
U.S. EPA
Washington DC, 20460
(Sent via email to: cacashp@energystar.gov)

RE: Final Draft Version 6.0 ENERGY STAR® Central Air Conditioner and Heat Pump (CAC/HP) specification and the Final Draft ENERGY STAR Cold Climate Heat Pump Controls Verification Procedure (CVP).

Dear Ms. Daken,

Carrier provides fire safety, security, building automation, heating, ventilation, air conditioning and refrigeration systems and services to promote integrated, high performance buildings that are safer, smarter and sustainable. Carrier is the founder of the modern HVAC industry and operates across the globe. Our range of products includes unitary residential and commercials products, including ducted and ductless, transport refrigeration products, air and water cooled chillers, and HVAC building services.

General Comments

Carrier acknowledges and appreciates changes made in the final draft based on comments EPA received. Removing the design requirement for two or more stages of operation enables equipment manufacturers to use technology that provides the highest value to consumers. Additionally, Carrier agrees the changes to SEER2 and HSPF2 criteria are more reasonable levels. One additional consideration would be to round to 15.0 SEER2. Products tend to be advertised as whole SEER numbers today, and that will likely continue with higher efficiency units designed to SEER2.

While these updates are positive, overall Carrier remains opposed to the final draft of version 6.0 ENERGY STAR® specification because it does not sufficiently address the issues raised with draft 2. Carrier is concerned the requirements to meet this specification will keep many manufacturers from being able to participate and expects there will be very few products that qualify. EPA's analysis shows less than 7% of current heat pumps, less than 14% of single packaged AC's, and approximately 25% of split system ACs meet the efficiency targets. Carrier suggests these percentages will reduce much further when considering the installation and control requirements. Additionally, the products that meet this specification will be financially unfeasible for most consumers. Considering the reduced product choices and increased price,

Jason Thomas
Director, Regulatory Affairs
HVAC Americas
O 317-240-5246
C 317-518-5629

moving forward as specified in this final draft will make the ENERGY STAR® central air conditioner and heat pump program no longer viable. Carrier recommends modifying the specification to align with the program's Guiding Principles, or sunset the program on December 31, 2022.

In the remainder of this document, additional details are included regarding the cold climate heat pump requirement, the control verification procedure, and the installation capabilities required.

Energy-Efficiency Criteria for Certified Residential Cold Climate Heat Pumps

Carrier remains opposed to having a cold climate heat pump requirement for the base ENERGY STAR® program. There is a limited amount of product in the market to meet this requirement. The burden on manufacturers to develop product to region specific standards is a barrier to participation in the program, and consumers are therefore harmed by the lack of choice. Carrier is concerned this lack of product will have unintended consequences and reduce the number of heat pumps installed in colder climates.

Control Verification Procedure

Carrier believes there is too much complexity which will lead to operational issues and excessive test variation. A test room may have to operate for 5+ hours at an ambient of 5 degrees F. It is unclear if typical rooms can maintain this condition within tolerance for extended lengths of time. Another potential point of variation is controlling the unit with the native control. Placement of the control in the test could lead to significant variation in results and requires further investigation into this matter. In lines 92 – 96 of the procedure, EPA acknowledges that repeatability and reproducibility for load-based test is unknown, and therefore did not include tolerances on criteria. Carrier argues this is further evidence the procedure is too complex, not well understood, and will not verify performance as intended.

There are also details within the test procedure that are unclear and need further clarification. One such issue is defrost time. There is no guidance on how to account for issues where the unit defrosts during the official test period. This is a real potential considering the length of the test. Additionally, in lines 31 and 32, the definition of "dynamic equilibrium criteria" is unclear. Lines 55 to 58 in the procedure attempt to define dynamic equilibrium, however, quantifying the "frequency response capability" of our capacity measurement instrumentation is undefined. Further definition is requested. Overall, Carrier has several concerns with the procedure and believes it is inadequate in its current form to accomplish the intended goal.

Jason Thomas
Director, Regulatory Affairs
HVAC Americas
O 317-240-5246
C 317-518-5629

Installation Capabilities

Carrier remains opposed to the capabilities required in the specification. There are very few products on the market that meet these criteria. The price of compliant product in the market will be financially unfeasible for most consumers. As stated previously, Carrier is concerned the ENERGY STAR® program will no longer be viable. The installation requirements should remain in the Most Efficient category.

Conclusion

Carrier is a long-time supporter of the Energy Star® program and wishes to continue working closely with the EPA and the Energy Star® program to develop Version 6.0 in 2023 in conjunction with the impending energy efficiency conservation standards as well as HFC rulemakings which will increase compliance obligations to our products.

Carrier does not believe this final draft of version 6.0 ENERGY STAR® central air conditioner and heat pump specification aligns with the Guiding Principles of this program. The criteria outlined captures a very small percentage of the product on the market and is well below the traditional goal of 25%. Additionally, the increased price for the additional installation requirements and cold climate heat pump criteria will increase the time it takes for the consumer to recover their investment beyond a reasonable time. Finally, the controls verification procedure does not meet the principle of being able to accurately and repeatably verify performance. As stated prior, Carrier recommends modifying the specification to align with the program's Guiding Principles, or sunset the program on December 31, 2022.

Carrier appreciates the opportunity to provide these comments. If you have any questions regarding this submission, or wish to discuss further, please do not hesitate to contact me.

Respectfully submitted,

Jason Thomas
Director, Regulatory Affairs
Carrier

CC: Mr. Matthew Thornblad, Director, Government Relations, Carrier
CC: Mr. Todd Nolte, Sr. Director, Product Strategy and Regulatory