



December 30, 2024

Holly Tapani
U.S. Environmental Protection Agency
ENERGY STAR HVAC Program

Subject: Comments from CalMTA on ENERGY STAR Versions 6.0 and 7.0 Room Air Conditioner (RAC) Draft 1 Specifications

Dear Ms. Tapani,

This letter is submitted on behalf of CalMTA, California's Market Transformation Administrator, in response to the recently published ENERGY STAR® Product Specification for Room Air Conditioners Draft 1 for Versions 6.0 and 7.0. CalMTA was established by the California Public Utilities Commission (CPUC) via Decision 19-12-021 for the purpose of developing and supporting statewide market transformation initiatives (MTIs) to increase energy efficiency and reduce greenhouse gas emissions by driving market adoption of selected technologies and practices. CalMTA is a program of the CPUC and is administered by Resource Innovations. These comments represent the CalMTA team's views and are not being submitted on behalf of the CPUC.

CalMTA is supportive of the effort to move quickly to create a heating efficiency specification and respectfully submits the following comments in response to ENERGY STAR Versions 6.0 and 7.0 Room Air Conditioner (RAC) Draft 1 Specifications:

ALIGNMENT OF HEER WITH CEE RESIDENTIAL ROOM HEAT PUMP SPECIFICATION

The Consortium of Energy Efficiency (CEE) recently released their final specifications for room heat pumps (RHPs) with the Tier 2 and Advanced Tier specifications defining products eligible for Inflation Reduction Act (IRA) incentives. To avoid confusion for consumers, CalMTA recommends creating alignment with the CEE RHP specifications in the following manner:

- ***Align the Version 6.0 Type 4 HEER with the CEE Tier 2 value, HEER = 7.0***
- ***Align the Version 7.0 Type 4 HEER with the CEE Advanced Tier, HEER = 8.5***

CalMTA recognizes that there is not a direct relationship between CEE Tiers and the ENERGY STAR Type 1 through 4 designations, but we believe that creating alignment with HEER values for Type 4 RHPs that are already very close to the CEE values (e.g., 6.8 versus 7.0 and 8.3 versus 8.5) will simplify determining eligibility for both manufacturers as well consumers. We note that the

CEE Tier 2 specification has requirements at 17°F for COP (1.75) and capacity (70% 47°F /17°F) that do not exactly map to the requirements at 5°F for ENERGY STAR Version 6.0 Type 4 (COP_{5°F} = 1.5 and Capacity 5°F /47°F = 50%), but believe that most RHPs that meet the lower values at 5°F could likely also meet the values at 17°F and thus satisfy both specifications simultaneously. While this proposed scenario still has some complexity, it improves the alignment over the currently proposed specification where there is no matching of HEER values between ENERGY STAR and CEE.

HEATING CAPACITY REQUIREMENTS FOR VERSION 6.0

CalMTA believes the requirements for heating capacity at 17°F and 5°F for Type 3 and Type 4 products, respectively, should be relaxed for the first specification to increase ENERGY STAR participation and spur product development. **For Version 6.0, we propose setting a 50% capacity requirement for Percent of Heating Capacity at 17°F of that at 47°F (Type 3) and Percent of Heating Capacity at 5°F of that at 47°F (Type 4).** While any capacity requirement below 100% for lower heating temperatures can create a potential issue with lower heating capacity available at temperatures where the required heating load will be greatest, CalMTA wants to encourage manufacturers to release new Type 3 and Type 4 RHPs to the market quickly with a future target of increasing the capacity for the future Version 7.0 specification. We believe that consumer education on the capacity versus temperature should be considered as a part of product labeling efforts.

INCREASING THE HEER LEVEL OF TYPE 2 RHPS COMPARED TO TYPE 1

CalMTA recognizes that the draft specifications were likely created without a significant volume of performance data on RHPs, creating a challenge for specification levels. We believe, however, that there should be an increase in HEER for Type 2 products compared to Type 1 products for both Versions 6.0 and 7.0 to better differentiate these products.

With the HEER temperature fraction bins, a Type 1 product with an average cut in/cut out temperature of $T_L = 40^\circ\text{F}$ will cover ~45% of the temperature fraction bins, while a Type 2 product with $T_c = 30$ would cover 63% of the bins and a Type 2 with $T_L = 20^\circ\text{F}$ would cover ~91% of the bins. For RHPs with similar COP_{47°F} values but different lower temperature operating ranges, a Type 2 RHP should have a higher HEER value compared to a Type 1 product. CalMTA believes it is important to create a framework in which RHPs with higher Type numbers have similar or better COP_{47°F} compared to those with lower Type numbers. **Thus, CalMTA recommends increasing the HEER for Type 2 products to an intermediate value between the HEER set for Type 1 and Type 3 products for both Versions 6.0 and 7.0.** We recognize that the range in which Type 2 RHPs operate between 40°F and 30°F will have reduced performance due to active defrost, but the Type 2 products should still be able to achieve a higher HEER due to the bin fraction values.

If it is determined that there is insufficient data available to create an increased Type 2 HEER for Version 6.0, then it should be a high priority to revise the Version 7.0 Type 2 HEER as more data become available in 2025.

Increasing the HEER for Type 2 products will also lessen the gap in required performance between Type 2 and Type 3 products as exists in the current draft standard (5.1 versus 6.8 in Version 6.0). We believe that the large performance gap between Type 2 and Type 3 products may send a suboptimal incentive signal to manufacturers who can create Type 2 ENERGY STAR certified RHPs much easier compared to Type 3 products.

INCREASING THE HEER LEVEL OF TYPE 4 RHPS COMPARED TO TYPE 3

The difference in COP requirements between Type 3 and Type 4 products (for both Version 6.0 and Version 7.0) implies that the HEER for Type 4 products should be higher than the HEER for Type 3 products. A Type 4 product is required to have a COP_{5°F} of 1.5 (Version 6.0) while a Type 3 product is required to have a COP_{17°F} of 1.5. While the fractional HEER temperature bins around 17°F and 5°F are relatively low, the increased stringency of COP_{5°F} = 1.5 compared to COP_{17°F} = 1.5 would likely translate to higher efficiency over a range of temperature bins for Type 4 products. **Thus, CalMTA recommends creating a HEER for Type 4 products at least 0.5 larger than for Type 3 products to reflect the higher low-temperature efficiency requirements.** If Type 4 from Version 6.0 aligns with CEE with HEER = 7.0 as recommended here, this would be a HEER = 6.5 for Type 3 products.

CalMTA acknowledges the interdependencies of changing Type 2, 3, and 4 HEER levels. As mentioned previously, one of our priorities is to reduce the performance gap between Type 2 and Type 3 specifications to encourage manufacturers to release Type 3 products that will be able to serve more of the market compared to Type 2 products.

THE IMPORTANCE OF PROPER LABELING FOR TEMPERATURE PERFORMANCE


CalMTA believes that creating a simple but informative label to help consumers understand the difference in the temperature performance between RHP Types 1 through 4 is critical for both consumer satisfaction and safety. Most consumers have experience with zonal space conditioning systems that can provide relatively constant heating or cooling output over typical outdoor temperatures and will not be aware that a RHP may have a decreased output or simply stop operating as temperatures drop. In addition, the lowest temperatures often occur at nighttime when occupants may be asleep and unaware that their heat pump is no longer operating.

CalMTA recognizes the importance of proper labeling and also believes that this requires research and consultation of experts beyond what would be possible within the current comment period. **We strongly encourage ENERGY STAR to create an initiative on labeling to learn more and determine the most effective labeling strategy so that consumers can understand the benefits and limitations of different types of RHP products.** CalMTA, in partnership with CEE

and the Northwest Energy Efficiency Alliance (NEEA), is launching a National RHP Collaborative in Q1 2025, which will bring together both utility and industry partners interested in furthering the market for RHPs. This collaborative could serve as an opportunity for ENERGY STAR to gain additional partners and support for further research on a RHP label and consumer educational materials, as this topic is a key priority for the collaborative.

Thank you for your hard work on this important product category. We appreciate the opportunity to provide comments on these draft specifications and welcome the opportunity to discuss our comments further. Any questions regarding these comments should be directed to ecmiller@calmta.org.

Sincerely,



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