

Thank you for the opportunity to review the Draft 1 ENERGY STAR Version 3.0 specification for geothermal heat pumps. On behalf of Trane, I would like to submit the following comments.

Under the Eligibility Criteria, section 3, there are new minimum Efficiency Requirements for Qualifying Products. Our comments are central to this section of the draft. It seems that the incremental efficiency level increases called out for the proposed Tier 2 and Tier 3 requirements are somewhat arbitrary. The incremental percentage increase in efficiency for each Tier over the previous minimum requirement Tier is anywhere from 3% to 16% (see attached file). In addition, the proposed tiers of efficiency and their associated deadlines are cumbersome from a timing standpoint. In our previous experience with ENERGY STAR programs for other equipment systems, we have employed methodologies which more evenly spread increments for efficiency level increase (for example, 10 or 15% across the board for a given Tier's incremental increase) as well as timing deadlines (for example, deadlines consistently on January 1st of a given calendar year). We would like to see similar methodology used to determine future minimum efficiency increases for the ENERGY STAR program for geothermal heat pumps as well as the associated deadlines for these changes.

We also take issue with the magnitude of efficiency increase between the initial Tier 1 minimum efficiencies and the final Tier 3 requirements. In a very short period of time, the required efficiency increase for continued participation in the ENERGY STAR program ranges from 14% to 30% (Closed Loop EER and COP require 20% and 9% increases respectively, Open Loop EER and COP require 30% and 14% increases respectively). While we are certainly in support of increased energy efficiency requirements for this ENERGY STAR program, a more even-handed approach seems more appropriate. Although we recognize that products exist in the marketplace that may already reach the proposed Tier 3 efficiency levels today, we feel that the ENERGY STAR levels should be set based on what efficiency levels are actually economically feasible for a broad group of customers. We understand that the ENERGY STAR program, by design, intends to label only the top 25% of product efficiency levels. However, by separating the geothermal heat pump system from other residential systems in this analysis, we unfairly penalize the geothermal heat pumps by requiring minimum efficiency levels far and above those required for other HVAC systems in their respective ENERGY STAR programs. A vehicle analogy for this would be a comparison between a 20 MPG SUV and a 35 MPG compact car. The 20 MPG SUV may qualify for ENERGY STAR because it is the best in its class of SUV's, but the 35 MPG compact car does not qualify because they are in the same class with 60 or 70 MPG compact cars with hybrid or electric fuel sources (which a very small percentage of the population can actually afford).

We would like to see the efficiency levels determined based on volume of sales of a specific efficiency level vs. ranges of efficiency level performance. This would allow us to grant ENERGY STAR to products that will realistically be sold on a regular basis in the marketplace. This would also provide a more level playing field for all HVAC systems and a means for customers (in this case, homeowners) to evaluate one HVAC system vs. another on the available efficiency levels.

Last, we wish to comment on the note in the blue box under section 2, Qualifying Products. This note requested feedback on whether the ENERGY STAR program for geothermal heat pumps should be expanded to units designed for small commercial use. We would like to see a companion program for commercial water-source heat pump products, but wanted to call out some differences that should exist between the two programs.

- A commercial program should include 3-phase powered units.
- Desuperheaters should not be a required standard feature or even an option for the commercial program. On a commercial job, these are rarely if ever used or justifiable on a commercial building.

- Standard warranty requirements should be more consistent with those typically provided in the commercial marketplace. The residential warranty requirements are very different from commercial.
- Minimum efficiency levels should be different for a commercial program as well. We suggest the same approach as above – setting minimum efficiency levels based on sales volume of efficiency level instead of range of available efficiency levels in the marketplace.
- It would also be nice to include the boiler-tower application in the program. This application is predominant in the commercial marketplace for WSHPs and also provides another energy efficient solution for customers.

Thank you again for the opportunity to review this draft and your consideration of our comments. Please feel free to contact me if there are any questions or needs for clarification of our comments.

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