

# **EPA Responses to Comments on ENERGY STAR Qualified Homes, Version 3 Program Requirements for the State of Hawaii**

EPA previously posted a compilation on its Web site of all comments received during the comment period for its proposed ENERGY STAR Qualified Homes, Version 3 Program Requirements for the State of Hawaii, which ended April 21, 2011.

This document contains a summary of these comments, along with EPA's response to each point raised and the resulting policy change, if any.

When similar comments were received from multiple respondents, EPA has consolidated these ideas into a single summary bullet. However, EPA has attempted to retain all unique comments received, including those submitted by a single respondent.

*The Environmental Protection Agency  
is not responsible for any typographical errors or omissions.*

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## EPA Responses to Comments on the ENERGY STAR Qualified Homes, v3, Program Requirements for the State of Hawaii

ID	Comment Summary	EPA's Response	EPA's Policy Decision
<b><i>Program Requirements for the State of Hawaii</i></b>			
1	<ul style="list-style-type: none"> <li>One respondent suggested increasing the SEER requirement for installed AC systems to 16 from 14.5 SEER.</li> </ul>	<ul style="list-style-type: none"> <li>EPA believes that meaningful energy savings can be generated using the final ENERGY STAR Qualified Homes, Version 3, Program Requirements for the State of Hawaii and does not intend to increase the stringency of the requirements at this time. Of course, partners are free to install AC systems above the minimum required efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
2	<ul style="list-style-type: none"> <li>One respondent noted that it is unclear whether infiltration testing is required and if not, what default value should be used when modeling the home using rating software under the Performance Path.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the infiltration requirements need to be clarified by defining a maximum allowed value in the Prescriptive Path and by defining a value in the HERS Index Target Procedure for the State of Hawaii from which the ENERGY STAR HERS index target is determined. Note that with these revisions, partners following the Prescriptive Path would be required to measure the infiltration rate while partners following the Performance Path would be permitted to either measure the infiltration rate or use the default infiltration value in the RESNET standards to avoid testing.</li> </ul>	<ul style="list-style-type: none"> <li>An infiltration rate of 6 ACH50 has been added to Exhibit 1, ENERGY STAR Reference Design, in the final ENERGY STAR Qualified Homes, Version 2.5 and 3 Program Requirements for the State of Hawaii and to Exhibit 2, Expanded Hawaii ENERGY STAR Reference Design Definition in the final ENERGY STAR Qualified Homes, Version 3 HERS Index Target Procedure for the State of Hawaii.</li> </ul>
3	<ul style="list-style-type: none"> <li>Multiple respondents provided feedback about the insulation levels required in the draft Prescriptive Path:                             <ul style="list-style-type: none"> <li>One respondent noted that the <math>\geq</math> R-30 ceiling insulation requirement may be impractical due to the common use of 2x6 framing in roof trusses and roof rafters and due to low-pitch roofs. The respondent also noted that Hawaii is developing modifications to this requirement for their state code to accommodate these challenges.</li> <li>Multiple respondents noted that the requirement for floor insulation over unconditioned space does not align with typical passive design techniques used in Hawaii.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>EPA's intent is to align the insulation requirements in the Prescriptive Path and the HERS Index Target Procedure for the State of Hawaii with the Hawaii code requirements. The code requires R-30 at the ceiling/attic interface and does not require insulation in floors above unconditioned spaces. The ceiling insulation level is permitted to be reduced in exchange for other efficiency measures using the Performance Path of the ENERGY STAR Program Requirements for the State of Hawaii,</li> </ul>	<ul style="list-style-type: none"> <li>EPA has removed the insulation requirement for floors over unconditioned spaces in Exhibit 1, ENERGY STAR Reference Design, in the final ENERGY STAR Qualified Homes, Version 2.5 and 3 Program Requirements for the State of Hawaii. In addition, EPA has included a U-factor that represents an uninsulated assembly for floors over unconditioned spaces in Exhibit 2, Expanded Hawaii ENERGY STAR Reference Design Definition in the final ENERGY STAR Qualified Homes, Version 3 HERS Index Target Procedure for the State of Hawaii.</li> </ul>

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4	<ul style="list-style-type: none"> <li>Multiple respondents provided feedback on the solar water heating system referenced in Exhibit 1, ENERGY STAR Reference Design, of the draft ENERGY STAR Qualified Homes Program Requirements for the State of Hawaii:             <ul style="list-style-type: none"> <li>One respondent asked if this system is permitted to have an electric backup water heater.</li> <li>Another respondent requested that EPA clarify in the associated Footnote 7 of the draft document how the ENERGY STAR water heating equipment relates to the Hawaii Solar Water Heating System Standards.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>EPA's intent is to align with HRS 196-6.5 "Solar Water Heating System Standards". Therefore, as long as the system meets the requirements of HRS 196-6.5, then the product is permitted to be used. EPA agrees with the respondent that the associated Footnote needs to be clarified.</li> </ul>	<ul style="list-style-type: none"> <li>The solar water heating system requirements have been revised to reference HRS 196-6.5 "Solar Water Heating System Standards", rather than HECO Solar Water Heating System Accepted Products.</li> <li>In addition, Footnote 13 of the final ENERGY STAR Qualified Homes, Version 2.5 and 3 Program Requirements for the State of Hawaii has been added to provide additional guidance on complying with the intent of this Item: "The Hawaii Solar Water Heater Standard is defined in HRS 196-6.5 at <a href="http://www.capitol.hawaii.gov/hrscurrent/Vol03_Ch0121-0200D/HRS0196/HRS_0196-0006_0005.htm">http://www.capitol.hawaii.gov/hrscurrent/Vol03_Ch0121-0200D/HRS0196/HRS_0196-0006_0005.htm</a>. This document requires a solar water heater system to be installed in new single-family dwellings unless a variance application is approved for one of four reasons. For homes without a variance, a compliant solar water heater system shall be installed. For homes with a variance application approved using the first, second, or fourth justification, an ENERGY STAR qualified Gas Condensing, Whole Home Gas Tankless, or Electric Heat Pump Water Heater shall be installed to meet the intent of the water heater requirement in Exhibit 1. For homes with a variance application approved using the second justification, which relates to the use of a renewable energy technology system, an ENERGY STAR qualified water heater is not required to be installed to meet the intent of this water heater requirement in Exhibit 1."</li> </ul>
5	<ul style="list-style-type: none"> <li>One respondent requested that it be clarified in Exhibit 1, ENERGY STAR Reference Design, that if appliances are installed, they must be ENERGY STAR qualified rather than suggesting that ENERGY STAR appliances must always be installed.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees with the respondent.</li> </ul>	<ul style="list-style-type: none"> <li>EPA has clarified the requirement for efficient appliances in Exhibit 1, ENERGY STAR Reference Design, in the final ENERGY STAR Qualified Homes, Version 2.5 and 3 Program Requirements for the State of Hawaii.</li> </ul>
6	<ul style="list-style-type: none"> <li>One respondent noted that Footnote 15 of the draft ENERGY STAR Qualified</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees with the respondent.</li> </ul>	<ul style="list-style-type: none"> <li>The final Thermal Comfort System Rater Checklist for Hawaii has been moved to a</li> </ul>

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	Homes, Version 3, Program Requirements for the State of Hawaii incorrectly references Exhibit 1 instead of Exhibit 3.		separate document and the footnotes have been updated accordingly.
<b><i>Inspection Checklists for Hawaii Program Requirements</i></b>			
7	<ul style="list-style-type: none"> <li>• One respondent noted that the removal of the national Thermal Enclosure System Rater Checklist and addition of the Thermal Comfort System Rater Checklist for Hawaii is an appropriate policy modification for mild climates.</li> </ul>	<ul style="list-style-type: none"> <li>• EPA agrees with the respondent.</li> </ul>	<ul style="list-style-type: none"> <li>• No policy change.</li> </ul>
8	<ul style="list-style-type: none"> <li>• One respondent noted that development density is typically a factor when deciding whether to include an HVAC system in the home and suggested defining requirements based upon residential zoning type.</li> </ul>	<ul style="list-style-type: none"> <li>• EPA's intent is to ensure that each qualified home is designed and constructed with features that reduce the cooling load, regardless of whether a mechanical cooling system is installed at the time of construction. Therefore, EPA does not see value at this time in defining program requirements according to development density.</li> </ul>	<ul style="list-style-type: none"> <li>• No policy change.</li> </ul>
9	<ul style="list-style-type: none"> <li>• Multiple respondents provided feedback about Item 1.1 of the draft Thermal Comfort System Rater Checklist for Hawaii:               <ul style="list-style-type: none"> <li>○ A request to clarify whether HVAC load calculations are required for homes that are passively cooled and have no HVAC system.</li> <li>○ A comment that requiring a mechanical contractor to complete a Manual J load calculation for a home that will not include a mechanical cooling system may be cost prohibitive.</li> <li>○ A comment that it will be difficult for homes that are passively cooled to meet the intent of this requirement due to the use of ventilation apertures that are always open (and therefore open during the peak conditions for which the cooling load is calculated for Manual J).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• EPA agrees that the intent of this Item can be clarified by redefining it in terms of the maximum permitted load, in btu/h, rather than in terms of the maximum permitted capacity, in tons. The purpose of this requirement is to demonstrate quantitatively that efficiency features have been incorporated into the design of the home in such a manner as to meaningfully reduce the cooling load. This requirement is important to meet regardless of whether a mechanical cooling system is installed at the time of construction. Because the intent of the Item is to limit the cooling load of the home, the availability of equipment with various cooling capacities is not relevant.</li> <li>• With regards to ventilation apertures, this Item requires the use of operable ventilation apertures that can be open or closed during peak conditions. When performing Manual J calculations, ventilation air will not contribute to the cooling load if the ventilation apertures are closed during peak conditions. Where open apertures would reduce the cooling load during</li> </ul>	<ul style="list-style-type: none"> <li>• EPA has clarified Item 1.1 of the final Thermal Comfort System Rater Checklist for Hawaii by revising the requirement from 1 ton to 12,000 btu/h of cooling load per 1,000 square feet of conditioned floor area.</li> </ul>

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	<ul style="list-style-type: none"> <li>○ A comment that this Item will be difficult to achieve because AC systems come in 1 ton increments.</li> </ul>	<p>peak conditions, such benefits are permitted to be claimed as long as such credits are recognized in Manual J.</p>	
10	<ul style="list-style-type: none"> <li>● Multiple respondents provided feedback about Item 1.2 and the associated Footnote of the draft Thermal Comfort System Rater Checklist for Hawaii:                             <ul style="list-style-type: none"> <li>○ One respondent noted that it is cumbersome to calculate the free unobstructed areas through an aperture with blinds or louvers.</li> <li>○ Another respondent suggested replacing the reference to “louvers” in Footnote 12 with “shutters or blinds” to clarify that glass louvers in windows are not considered an obstruction.</li> <li>○ Another responded requested that EPA clarify the definition of “aperture”.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● EPA’s intent is for partners to determine the free unobstructed area through the aperture itself, and not to include obstructions that can be removed from the aperture by the occupant without tools or special knowledge, such as blinds, shades, or operable shutters.</li> <li>● EPA agrees that it may be difficult for Raters to calculate the free unobstructed area through a jalousie window and that further guidance is needed for this aperture type.</li> </ul>	<ul style="list-style-type: none"> <li>● EPA has added examples of operable apertures (e.g., windows, skylights, window air inlets) to Item 1.2 of the final Thermal Comfort System Rater Checklist for Hawaii. In addition, Footnote 3 has been added to Item 1.2.1 to clarify that “operable area shall be based on the free unobstructed area through the aperture. Obstructions that can be removed from the aperture by the occupant without tools or special knowledge, such as blinds, shades, or operable shutters shall not be included when calculating the unobstructed area. For the purposes of this checklist item, 90% of the nominal window or door area of jalousie window and door products shall be permitted to be used as the free unobstructed area.”</li> </ul>
11	<ul style="list-style-type: none"> <li>● One respondent questioned whether opaque louvers, storm shutters, or hurricane shutters would meet the intent of Item 1.5.1 of the draft Thermal Comfort System Rater Checklist for Hawaii, which requires the use of overhangs to reduce solar gain.</li> </ul>	<ul style="list-style-type: none"> <li>● Opaque louvers, storm shutters, and hurricane shutters do not meet the intent of using overhangs to reduce solar gain. This is because fixed components of this type significantly reduce not just solar radiation but visible light transmittance relative to overhangs and adjustable components of this type depend on the behavior of the occupant to reduce solar gain.</li> </ul>	<ul style="list-style-type: none"> <li>● No policy change.</li> </ul>
12	<ul style="list-style-type: none"> <li>● Multiple respondents suggested that Item 1.5.1 of the draft Thermal Comfort System Rater Checklist for Hawaii should be aligned with the window overhang and orientation code requirements that are already being developed for Hawaii, which are defined using projection factors.</li> </ul>	<ul style="list-style-type: none"> <li>● EPA agrees with the respondent.</li> </ul>	<ul style="list-style-type: none"> <li>● The final Thermal Comfort System Rater Checklist for Hawaii has been revised to define the overhang requirements using projection factors.</li> </ul>
13	<ul style="list-style-type: none"> <li>● Multiple respondents provided feedback on Item 1.6 of the draft Thermal Comfort System Rater Checklist for Hawaii:</li> </ul>	<ul style="list-style-type: none"> <li>● EPA concurs with the first respondent that ceiling fan junction boxes should be required rather than ceiling fans or ENERGY STAR qualified ceiling fans. While builders may elect to include ceiling</li> </ul>	<ul style="list-style-type: none"> <li>● EPA has revised Item 1.6 in the final Thermal Comfort System Rater Checklist for Hawaii to require that one ceiling fan junction box be installed in every primary living area greater</li> </ul>

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	<ul style="list-style-type: none"> <li>○ Multiple respondents recommended that this Item require ceiling fan junction boxes rather than ceiling fans to be installed. They noted that consumers often replace builder-supplied ceiling fans in new homes to accommodate individual tastes.</li> <li>○ One respondent recommended that this Item require ENERGY STAR qualified ceiling fans rather than just requiring ceiling fans.</li> </ul>	<p>fans, requiring only ceiling fan junction boxes will reduce the cost and effort required for qualification while still providing occupants with the infrastructure to easily install ceiling fans at a later time.</p>	<p>than 75 ft<sup>2</sup>, where “primary living areas” include dining rooms, living rooms, family rooms, dens, bedrooms and home offices.</p>
14	<ul style="list-style-type: none"> <li>● Multiple respondents have asked whether the two HVAC System Quality Installation Checklists are required to be completed in homes that have no mechanical cooling.</li> </ul>	<ul style="list-style-type: none"> <li>● EPA agrees with the respondents that it needs to clarify whether the two HVAC System Quality Installation Checklists are required to be completed in homes that have no mechanical cooling, given that many of the Items on these Checklists are not applicable to such homes.</li> </ul>	<ul style="list-style-type: none"> <li>● EPA has revised the final ENERGY STAR Qualified Homes, Version 2.5 and 3 Program Requirements to include Footnote 19, which states that homes that do not include mechanical cooling are exempted from compliance with all Items on the HVAC System QI Contractor Checklist and with Sections 1 through 7 and Section 11 on the HVAC System QI Rater Checklist.</li> </ul>
15	<ul style="list-style-type: none"> <li>● One respondent questioned how to complete Item 2.2 of the Water Management System Builder Checklist for homes that do not use house wrap products.</li> </ul>	<ul style="list-style-type: none"> <li>● A house wrap product is not required to create a fully-sealed continuous drainage plane, as required by Item 2.2. Any of the following systems may be used: a monolithic weather-resistant barrier (i.e., house wrap) sealed or taped at all joints; weather resistant sheathings (e.g., faced rigid insulation) fully taped at all “butt” joints; lapped shingle-style building paper or felts; or another water-resistive barrier recognized by ICC-ES or other accredited agency.</li> </ul>	<ul style="list-style-type: none"> <li>● No policy change.</li> </ul>
<b><i>HERS Index Target Procedure for the State of Hawaii</i></b>			
16	<ul style="list-style-type: none"> <li>● One respondent noted that the ENERGY STAR HERS Index Target Procedure for Hawaii is not currently available, although referenced in the draft ENERGY STAR Qualified Homes, Version 3, Program Requirements for the State of Hawaii.</li> </ul>	<ul style="list-style-type: none"> <li>● EPA agrees that the ENERGY STAR Qualified Homes, Version 3, HERS Index Target Procedure for the State of Hawaii must be developed.</li> </ul>	<ul style="list-style-type: none"> <li>● EPA has developed the ENERGY STAR Qualified Homes, Version 3, HERS Index Target Procedure for the State of Hawaii and has released this document with the final ENERGY STAR Qualified Homes, Version 3, Program Requirements for the State of Hawaii.</li> </ul>