

## **Hawaii Regional Guideline ENERGY STAR v3 Qualified New Homes Comments**

This is a compilation of all comments received by EPA during the Hawaii ENERGY STAR Qualified New Homes comment period ending April 21, 2011.

*The following comments have been compiled from the Hawaii ENERGY STAR New Homes Proposed Guidelines Comment Forms submitted by respondents. The Environmental Protection Agency is not responsible for any typographical errors or omissions.*

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## ENERGY STAR New Homes Proposed Guidelines Comment Form

**Organization Name:**E3 Energy LLC

**Respondent Last Name:**Erickson

**Respondent First Name:** Justin

**Comments:** I believe this is a good starting point for Energy Star Hawaii.

A couple of comments:

- Define apertures a little more.
- Regarding window overhangs, will external louvers-storm or hurricane shutters also qualify for 45 deg overhangs?  
<http://www.stormshutters.com/bahama-colonial-shutters/images/alum-1.jpg>
- Will the solar hot water heater be able to have electric back up? At what EF?
- What about the water management inspection checklist if they do not use or are not use to using a house rap?
- Change the wording to reflect energy star ceiling fans.



## ENERGY STAR New Homes Proposed Guidelines Comment Form

**Organization Name:**Newport Ventures, on behalf of the Steel Framing Alliance

**Respondent Last Name:**Moore

**Respondent First Name:** Mike

**Comments:**The Steel Framing Alliance would like to thank EPA for the thoughtful analysis that it has displayed in drafting the Hawaii-specific V3 guidelines. We appreciated your comments given during the Hawaii stakeholder presentation that confirmed that there should be less emphasis on insulation levels in exterior walls in Hawaii than in colder climate zones due to lower temperature differentials across the building envelope. Your findings on this topic align with those of the Steel Framing Alliance, and your adjustment to the requirements based on these findings (i.e., removing the thermal bridging reduction requirement from the checklists) demonstrates your clear commitment to promoting cost-effective and significant energy efficiency improvements. We look forward to the opportunity to promote these guidelines with our builder partners in Hawaii upon their release.



## ENERGY STAR New Homes Proposed Guidelines Comment Form

**Organization Name:** Pacific SBS, LLC

**Respondent Last Name:** Stone

**Respondent First Name:** Peter

**Comments:**

Mandatory requirements specify both HVAC system checklists, what about passively cooled homes with no mechanical cooling?

2. Performance path – where is the document “ENERGY STAR HERS Index Target Procedure for Hawaii, Version 3” referenced in number 1?
3. From website: “significant changes include the elimination of requirements for infiltration and door u-value”. Does this mean that testing for infiltration is not going to be required? Thus default numbers are to be used in REM for infiltration?
4. Note 11 – need to require rater to see the HVAC load calculations done by the mechanical contractor. Again, what about total passive cooling? The form doesn’t have a box for N/A on this one. Are load calcs required even if no mechanical cooling system is installed?
5. Note 12 – operable area’s calculated based on free unobstructed areas through the opening when obstructed by louvers etc... This is unrealistic to make raters calculate the percentage that the blinds or louvers cover the opening. Most such devices are adjustable such that the blinds close or open which in strict terms will change the amount of airflow through the opening. Our goal is to rate things independent of occupant behavior and interior shading is user dependent. Suggest a basic ‘penalty’ of XX% if the opening has interior blinds.
6. Note 15 - For the improved SHGC calculation, it references the “maximum allowable SHGC in Exhibit 1, Energy Star Reference Design”. I don’t see anywhere in exhibit 1 that refers to windows at all. Do they mean the exhibit 3 and the max. SHGC of .27?



# ENERGY STAR New Homes Proposed Guidelines Comment Form

**Organization Name:**Pacific SBS

**Respondent Last Name:**Camfield

**Respondent First Name:** Sara

**Comments:**1. Thermal Comfort Rater Checklist –

1.1 Main issues are:

- How this applies to passively cooled homes. ACCA Manual J is not equipped to take into account the cooling effects of breezes through the structure in calculating cooling loads.
- System sizing for conditioned spaces was also a concern. The most efficient residential systems come in whole sizes only. Question: What if the manual J calculation says the required load is 2.2 tons of air for a 2,500 square foot home. The load calculation is within limits of 1 ton per 1,000 sf, but only choice is to put a 3 ton system in the home. Will this disqualify the home?
- Mandatory requirements specify both HVAC system checklists, what about passively cooled homes with no mechanical cooling?

EPA RESPONSE - " A Manual J calculation will need to be performed for all homes to demonstrate compliance with the target cooling load required in the Thermal Comfort System Rater Checklist. In effect, the cooling load calculation will quantify the benefits of the passive cooling features in the home. Note that this does not mean that an HVAC system must then be installed in the home in order for the home to be qualified."

- Density is also a factor when builders choose to add mechanical systems in Hawaii.
- Might this be addressed somehow?
- Perhaps different requirements for different residential zones?
- Item 1.1 will automatically cause almost all passively cooled homes to fail to meet energy star ratings. This is due to the use of Jalousie Windows, Louvers and other continuously vented openings such as the Calloway Cooling Skylight. A home designed and built to be passively cooled is much more energy efficient, but it is being penalized by this requirement. Item 1.1 should either be removed in it's entirety or at least offer an alternative requirement for passively cooled homes.

1.2 & 1.5 Windows and openings

- Hawaii has already developed a very good system for window overhangs and orientation as part of the 2009 IECC code variations. Could Energy Star simply reference that?
- There is a concern again with the low SHGC numbers required and the popularity of louvered or jalousie windows here which are ideal for passive cooling. They don't always have low SHGC ratings, but again are ideal for allowing much air movement while keeping out the weather.

1.6 Ceiling fans



## ENERGY STAR New Homes Proposed Guidelines Comment Form

- Suggest that rather than require ceiling fans themselves, J-boxes and wiring be provided. The point was made that we would end up adding many brand new ceiling fans to our landfills since most people would soon remove it or change it out to a style of their choosing. Most production builders would utilize the least expensive ones to keep costs down and those are not often to homeowners liking.

### 2. Energy Star Reference Design

- Minimum efficiency for cooling equipment seems low. Suggest 16 SEER as the minimum
- Ceiling insulation – moving to R-30 is already in discussion as part of the IECC 2009 code modifications. Due to the prevalent use of 2x6 framing in the roof trusses and rafters, R-30 won't fit well when the builder chooses to insulate the underside of the roof deck either with Batt or spray foam. This practice is becoming increasingly common. Hawaii energy code is looking at adopting modifications that Energy Star might reference.
- Even putting the R-30 on the flat ceiling with the low pitch roofs common here, it becomes difficult at the eave where space become tight and it tends to compress anyway.
- Requiring floor insulation over unconditioned crawl space would actually be counter-productive in a passively cooled home. A good post and pier design actually encourages air infiltration from the cooler underside of the home into the living space for cooling purposes. Again, Manual J is not designed to really address this kind of design and the effects on the cooling load of the home.
- Clarify on Lighting and Appliances section that Energy Star qualified appliances are required IF PROVIDED as part of the package. Many builders leave this to the buyer.

### 3. Footnotes

- Clarify Note 7: the Hawaii Solar statute does not cover some of the technologies mentioned.
- Note 12: in the second sentence, replace the word louvers with “shutters or blinds” to avoid confusion with fixed glass louvered windows that are popular here.



## ENERGY STAR New Homes Proposed Guidelines Comment Form

**Organization Name:**Pohaku Consulting

**Respondent Last Name:**Stone

**Respondent First Name:** Peter

**Comments:**Below please find my feedback regarding the Hawaii regional guidelines:

1. The requirement that ALL homes (passive or actively cooled) have a manual J cooling load calculation done is unrealistic. For many custom single family homes that will be passively cooled, finding a qualified mechanical contractor to complete the necessary calculations when they are not subsequently going to be selling a mechanical system will be difficult and expensive. The time for doing the calculations are usually rolled into the overall cost of providing a system for a home. So stand alone calculations will have to be charged at a pretty high rate adding unnecessary expense to the cost of the home. Many mechanical contractors I have spoken to simply won't provide manual J calculations for homes where they are not installing a system. It is not worth their time and they may have insurance restrictions as well.

2. For active cooling, I suggest we use the term cooling "loads" vs. "capacity" of < 1 ton per 1000 sf (rounded up to the nearest whole ton). Residential mechanical systems only come in full sizes in most cases. For a 3250 square foot home, we would need a system with a cooling capacity of less than 3.25 tons to qualify. If the load is calculated at say 3.2 tons, the only system that any mechanical contractor would specify would be a 4 ton system. So that would disqualify the home for energy star as currently written.

3. Requiring ceiling fans is generally a good idea. For production builders, the issue is that they will find the cheapest fan they can to meet the requirement and in 90% of the cases, the homeowner will immediately remove them to find ones that better suit their tastes. We risk adding to the already huge trash problem here where our landfill is already beyond capacity. I suggest at least requiring junction boxes per the specified rate and perhaps making the buyer choose from an builder provided list for fans as well as an educational brochure as to the benefits of ceiling fans on most days.

4. Because there are such different issues with homes that are actively vs. passively cooled, I think we need to make two different paths for prescriptive measures. For example, in mechanically cooled (or heated) homes, with frame floors, everyone now advises rightfully so that we have insulation under the floor that is in contact with the underside of the floor to prevent air leakage and heat loss (or gain) out under the floor along the floor joists cavities and out the band joists. However in a passively cooled home on post and pier we actually want to encourage cool air from under the home to come in and I have seen some very good designs that can create a nice convective current using the cool underside air from vents combined with upper ceiling or ridge venting to create a nice cool draft. By requiring frame floor insulation in such cases we would prevent a great passive cooling design from working. There are many areas where passive and active cooling strategies are at odds and we need to be encouraging the use of passive techniques with our mild climate here.

5. You should be in touch with Howard Wiig at the State of Hawaii Energy office. He is currently developing energy codes for Hawaii based on the 2009 IECC with modifications for Hawaii. The insulation requirements proposed are difficult for many reasons and don't really save much in the way of energy due to the low delta T out here. He has come up with some different configurations that seem to work for the goals of efficiency and for builders. They have also developed an excel tool for windows that helps folks using the popular jalousie windows here. Again, see paragraph 4 above - SHGC window requirements for passive cooling would disqualify the use of jalousie windows which work very well at keeping weather out, but allowing air in.



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6. In general you need to be mindful of making the requirements so stringent that no one will choose to get certified energy star. I understand the need to "raise the bar" in order to keep things moving forward on the energy front in homes. But the way things are written inadvertently pushes builders to build (and homeowners to expect) air conditioned homes and that is the wrong direction to go out here. Even the most efficiently built conditioned home will never beat a non-mechanically cooled home. There are ways to design and build passively cooled homes that won't be so hot that owners feel the need to go buy inefficient window units and that is what we should be encouraging. There are also micro climates out here that should be taken into consideration as well as density issues. Perhaps the usual breezes are blocked by homes on 10 foot lot lines or rainfall is so abundant that water management should be the top priority.

Thank you for your consideration.

Peter Stone  
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## ENERGY STAR New Homes Proposed Guidelines Comment Form

**Organization Name:** Verde Homes, Inc. San Juan, PR

**Respondent Last Name:** Palos

**Respondent First Name:** Peter

**Comments:**

Regarding the Prescriptive Method:

- Heating Equipment section Inspection Guideline, should include, where provided.
- Solar water heaters, only for Hawaii.
- Lighting & Appliances, should be Energy Star qualified CFLs or pin-based lighting in 100% of fixtures.

Regarding the Completed Thermal Comfort System Rater Checklist for Hawaii:

1.2 Where no A/C is provided the operable aperture areas should total a minimum of 18 percent of the floor area for all primary living areas and main bedroom.

1.5.1 South-facing windows must be protected with a overhang that will provide shade at all times. The angle and length of the overhang will be influenced or determined by any permanent structure that will block the sun from impacting the window. The same principle should apply to other windows with direct exposure to the sun.

General comments to be considered in future revisions:

Energy Star for Homes should eventually be sensitive to the per capita income of states and especially territories that significantly deviate from the national average and will not be able to comply with some of the requirements because economic factors, thus missing the opportunity to participate in EEMs.

Our suggestions are directed, with the hope, of the applicability of these guidelines in Puerto Rico and the U.S. Virgin Islands.