



# ENERGY STAR Qualified Homes Revision 04 Overview

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# Agenda

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- **EPA Policy Communications**
- **Revision 04 Highlights**
- **Version 3 Transition Resources**



# EPA Policy Communications

# Revision process

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- **Regular revision process being implemented**
  - Purpose of revision process is to be responsive to partner questions, to disseminate and enforce policy changes in a consistent manner, and to adapt the program as needed for success.
  - EPA anticipates making revisions once per quarter in 2011, slowing to once every 6 months in 2012 and beyond.
- **New Policy Record provides additional transparency, guidance**
  - In between formal revisions, EPA will periodically post a log of policy changes under consideration in a document called the Policy Record.
  - The Policy Record will also contain informative responses from EPA to partner questions. These responses don't result in policy changes; they're provided to share information equally among all partners.

# Revision process

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- **Document versioning and communications**

- Program policy documents (e.g., the National Program Requirements) are stamped with a “Revision XX” heading, the date they were last updated, and the date they take effect. This should enable partners to easily confirm that they’re looking at current policy documents in the field.
- All partners are notified via email when revised documents have been posted. EPA will hold a webinar for each revision to explain key changes.
- The Policy Record is posted to the Version 2.5 and 3 Policy Changes and Clarifications website, accessible through [www.energystar.gov/newhomesguidelines](http://www.energystar.gov/newhomesguidelines).



# Revision 04 Highlights

# Revision 04 updates

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- **Revision 04 responds to partner questions and feedback**
  - EPA has clarified requirements for which partners requested additional guidance and has provided exemptions and alternatives for practices that partners identified as unnecessary or unworkable for specific climate locations and construction types.
- **Revision 04 is required for homes permitted after 10/1/2011**
  - Partners may begin using these policies immediately. Partners must use them for homes permitted after October 1, 2011.
  - As with the implementation timeline, the Rater may define the 'permit date' as either the date that the permit was issued or the date of the contract on the home.

# Revision 04 updates

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- **The following policy documents have been updated to reflect changes in Revision 04:**
  - Version 3 National Program Requirements
  - Version 3 Inspection Checklists
  - Version 3 ENERGY STAR HERS Index Target Procedure
  - Version 3 county-level ENERGY STAR Reference Designs
  - Version 2.5 National Program Requirements
- **Resources to understand Revision 04 changes**
  - EPA posts a Tracking Document for each revision to the Version 2.5 and 3 Policy Changes and Clarifications website. This Tracking Document explains all changes from the prior revision and classifies them according to how significant they are. EPA also posts a document highlighting the most significant changes.

# Revision 04 updates

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- **EPA is updating the following training materials and supplementary guidance resources:**
  - Version 3 Builder Orientation
  - Version 3 Rater Training
  - Version 2.5 training presentation
  - Version 3 Inspection Checklist Guidebooks
  - Slab edge insulation guidance
  - HVAC design temperatures
- EPA will advise partners when these resources have been updated.

# Major changes in Revision 04

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- **Some of most significant changes include:**
  - The implementation timeline has been adjusted, allowing homes permitted before January 1, 2012 to be qualified under Version 2.5 through June 30, 2012.
  - All bedrooms will be counted when determining Benchmark Home Size, including bedrooms in below-grade basements.
  - Verification through sampling has been restricted to the Thermal Enclosure System Rater Checklist and the HVAC System Quality Installation Rater Checklist.
  - Exemptions to slab edge insulation details have been clarified.
  - Additional flexibility has been provided for HVAC sizing, duct design, and bedroom pressure balancing.
  - The requirement for a layer of aggregate or sand with geotextile matting beneath slabs has been eliminated.

# Revision 04 timeline changes

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- **Changes have been made to help partners successfully transition to Version 3**
  - Homes permitted beginning January 1, 2012 must use the Version 3 guidelines. This provides a clearer transition date that will enable builders to better plan which version of the guidelines to use.
  - Homes permitted prior to January 1, 2012, can qualify under Version 2.5 through June 30, 2012.
  - Additionally, many partners have noted that the HVAC requirements for site-specific design and pressure-balancing bedrooms are taking more time to successfully implement than planned. EPA has provided extended phase-in periods for these specific requirements.

# Revision 04 timeline changes



Permit Date <sup>2</sup>	Date of Final Inspection <sup>1</sup>		
	4/1/2011	1/1/2012	7/1/2012
Before 4/1/2011 <sup>3, 4</sup>	v2	v2.5	v3
Between 4/1/2011 and 12/31/2011 <sup>4</sup>		v2.5	v3
On or after 1/1/2012 <sup>5</sup>		v3	

<b>Version 2</b>	Version 2: 2006 Guidelines
<b>Version 2.5</b>	Version 2.5: Core Version 3 energy efficiency measures with Air Barriers and Air Sealing sections of Thermal Enclosure System Rater Checklist; Other checklists completed but not enforced
<b>Version 3</b>	Version 3: Core Version 3 energy efficiency measures with all checklists completed and enforced

# Revision 04 timeline changes

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- **No changes to the national training timeline**
  - At least one person in each builder organization must complete the online Builder Orientation training by January 1, 2012.
    - See [www.energystar.gov/mesa](http://www.energystar.gov/mesa).
  - At least one person in each Rater and Provider organization must complete the Version 3 Rater Training by January 1, 2012. Additionally, each individual Rater and Field Inspector who works on a home qualified under Version 3 must complete the Version 3 Rater Training.
    - See [www.resnet.us/energystar](http://www.resnet.us/energystar).
  - Each HVAC organization that designs or installs systems on homes qualified under Version 3 must be credentialed by an EPA-recognized industry training and oversight organization.
    - See [www.energystar.gov/newhomeshvac](http://www.energystar.gov/newhomeshvac).
  - Partners can find explanations of the national training requirements and links to training at [www.energystar.gov/newhomestraining](http://www.energystar.gov/newhomestraining).
  - Partners who work with regional programs (e.g., Pacific Northwest, Florida, California, Hawaii) may have different training requirement timelines.

# Revision 04 highlights

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- **National Program Requirements**

- The procedure for calculating the Benchmark Home Size and Size Adjustment Factor has been revised to include all bedrooms, regardless of location, but to continue to exclude conditioned floor area in most basements.
- To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above). Note that the exception regarding the floor area in basements is only for the purpose of determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path. The full conditioned floor area, per RESNET's standards, should be used when rating the home (e.g., determining compliance with duct leakage requirements).

# Revision 04 highlights

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- **Inspection checklists**

- The use of sampling to verify compliance with items on the Inspection Checklists has been restricted to the Thermal Enclosure System Rater Checklist and the HVAC System Quality Installation Rater Checklist.
  - Currently, there is no oversight or sampling protocol for inspections not completed by Home Energy Raters.
  - Sampling was designed to reduce the cost of Rater verification where builders can achieve consistent compliance. In contrast, no additional site visits are required to verify the HVAC System Quality Installation Contractor Checklist or Water Management System Builder Checklist, because the person completing the work can also verify the work at the same time.
- Field Inspectors may verify any item on the Inspection Checklists that Raters may verify.

# Revision 04 highlights

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- **Thermal Enclosure System Rater Checklist**

- Footnote 5: “Where an insulated wall separates a garage, patio, porch, or other unconditioned space from the conditioned space of the house, slab insulation shall also be installed at this interface to provide a thermal break between the conditioned and unconditioned slab. Where specific details cannot meet this requirement, partners shall provide the detail to EPA to request an exemption prior to the home’s qualification. EPA will compile exempted details and work with industry to develop feasible details for use in future revisions to the program. A list of currently exempted details is available at: [www.energystar.gov/slabeledge](http://www.energystar.gov/slabeledge).”
- The guidance at that website will be posted within the next few weeks. EPA will notify partners when this (and other training materials) have been posted.

# Revision 04 highlights

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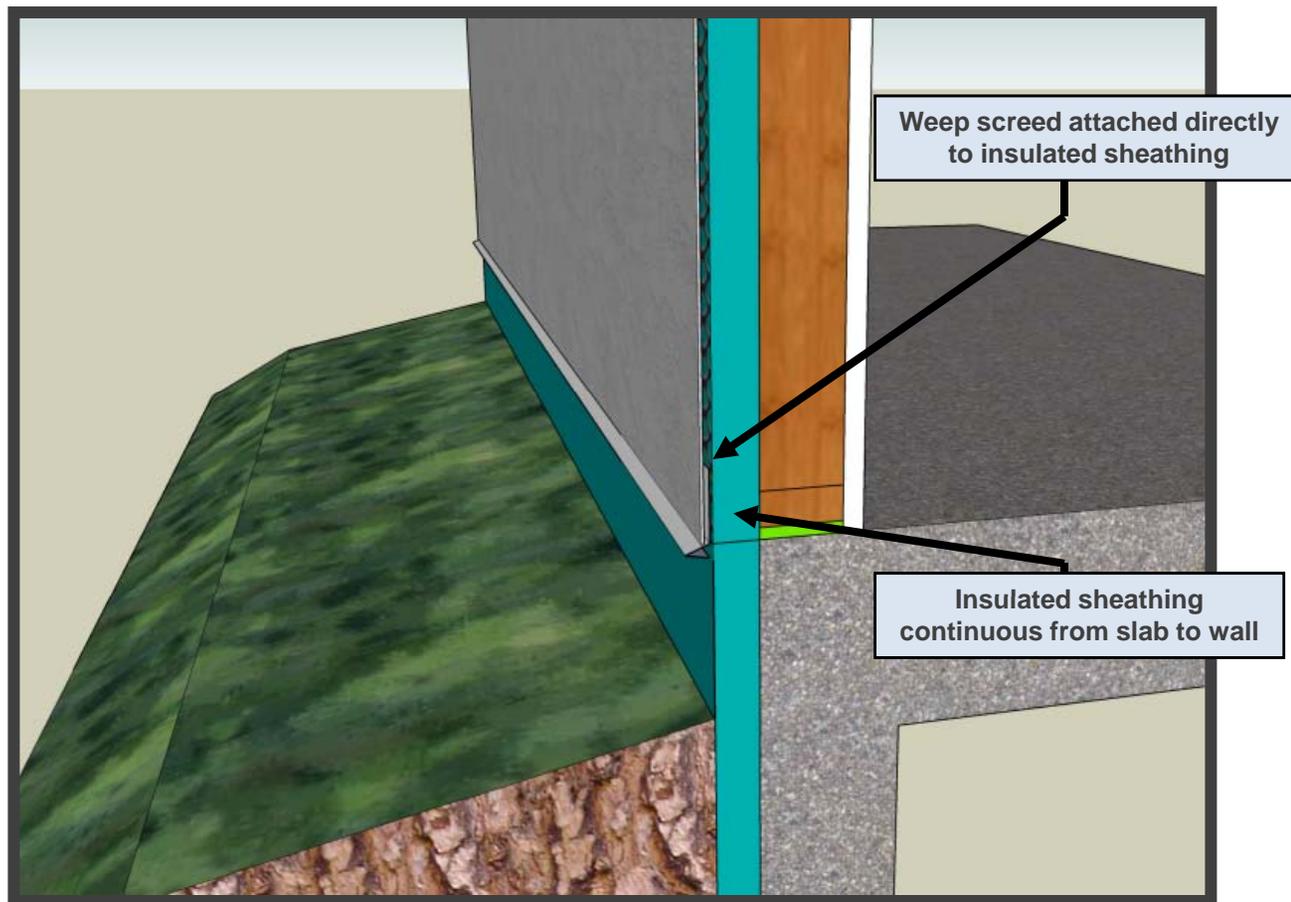


- **Thermal Enclosure System Rater Checklist**
  - Slab edge insulation detail for stucco wall systems
    - Walls can be designed such that the weep screed rests upon slab insulation rather than directly on the foundation. For example, the sheathing of the exterior wall can be aligned in the same plane as the foundation insulation, providing a continuous insulated surface. Therefore, insulation must extend behind the weep screed to satisfy the intent of Item 4.2.

# Revision 04 highlights



Slab edge insulation detail for stucco wall systems



# Revision 04 highlights

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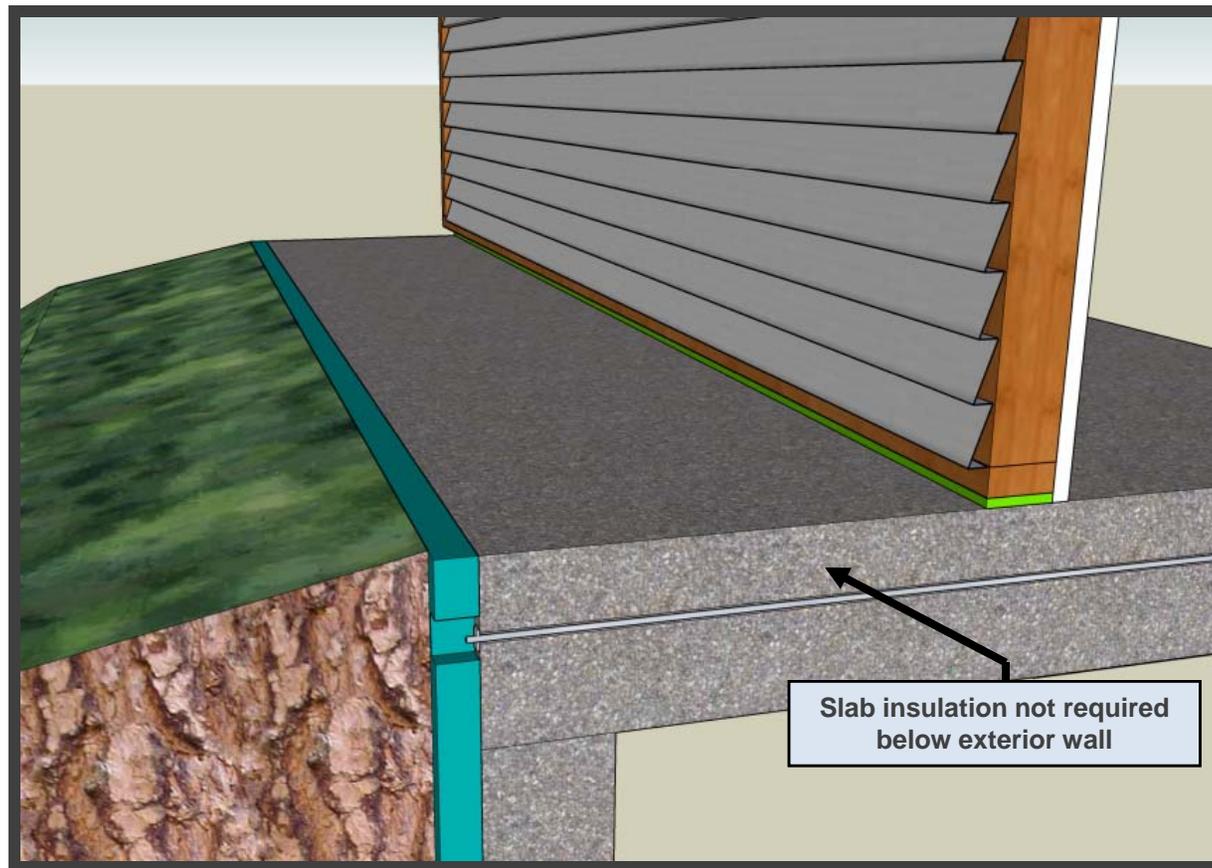


- **Thermal Enclosure System Rater Checklist**
  - Slab edge insulation exemption for post-tensioned slabs
    - Where a continuous post-tensioned slab extends from conditioned to unconditioned space (e.g., from conditioned space to an adjacent unconditioned hallway, to an unconditioned garage, to a porch), insulation is not required to be provided at this boundary to satisfy Item 4.2. This exemption applies to both multifamily and single-family homes.

# Revision 04 highlights



Slab edge insulation exemption for post-tensioned slabs



# Revision 04 highlights

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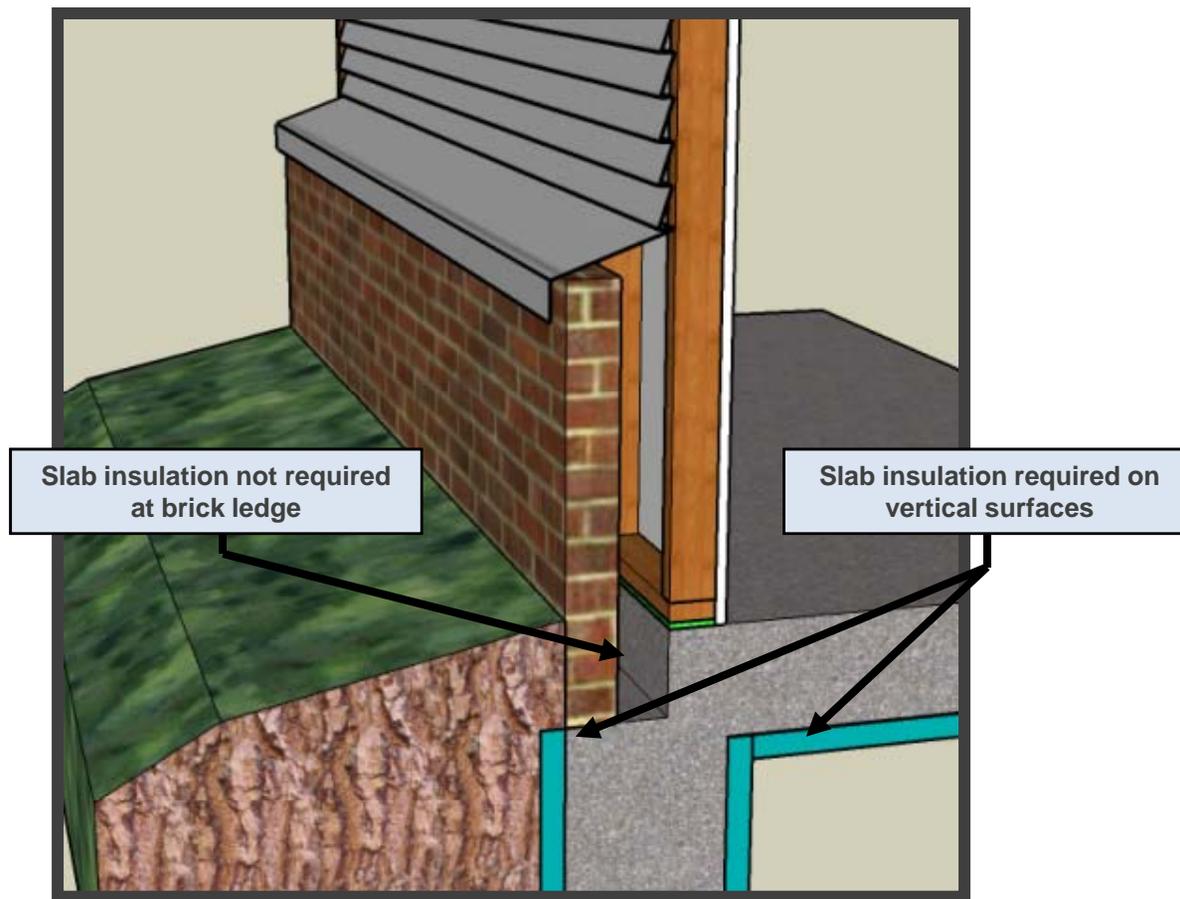


- **Thermal Enclosure System Rater Checklist**
  - Slab edge insulation detail for monolithic slabs with brick ledges
    - EPA will not require the horizontal brick ledge of monolithic slabs to be insulated in order to satisfy the intent of Item 4.2. However, the vertical surface on either side of the ledge shall be insulated. Furthermore, floating slabs with brick ledges are not exempted because the insulation layer can be moved to the interior vertical surface of the foundation.

# Revision 04 highlights



Slab edge insulation detail for monolithic slabs with brick ledges



# Revision 04 highlights

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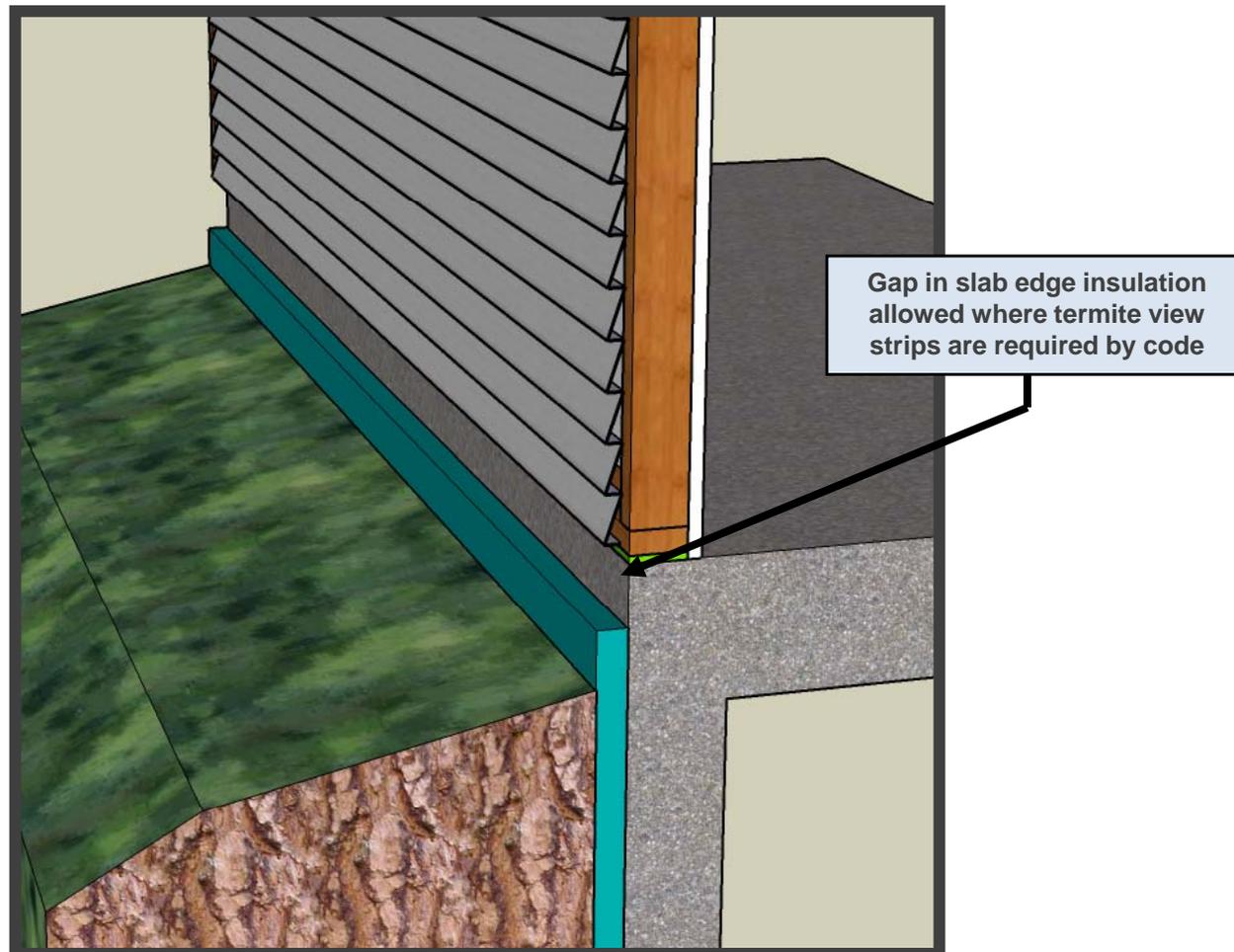
- **Thermal Enclosure System Rater Checklist**

- Slab edge insulation exemption for termite view strips
  - Homes that have uninsulated termite view strips due to code requirements satisfy the intent of Item 4.2.
  - As noted in the footnotes of the National Program Requirements (Rev. 04), “In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation).”

# Revision 04 highlights



Slab edge insulation exemption for termite view strips



# Revision 04 highlights



- **Thermal Enclosure System Rater Checklist**

- Requirement for reducing thermal bridging at walls has been clarified:
  - Item 4.4: “Reduced thermal bridging at above-grade walls separating conditioned from unconditioned space (rim / band joists exempted) using one of the following options:”
  - Footnote 13: “Mass walls utilized as the thermal mass component of a passive solar design (e.g., a Trombe wall) are exempt from this item. To be eligible for this exemption, the passive solar design shall be comprised of the following five components: an aperture or collector, an absorber, thermal mass, a distribution system, and a control system. For more information, see:  
[http://www.energysavers.gov/your\\_home/designing\\_remodeling/index.cfm/mytopic=10270](http://www.energysavers.gov/your_home/designing_remodeling/index.cfm/mytopic=10270).  
“Mass walls that are not part of a passive solar design (e.g., CMU block or log home enclosure) shall either utilize the strategies outlined in Section 4.4 or the pathway in the assembly with the least thermal resistance shall provide > 50% of the applicable component insulation requirement in the 2009 IECC – Table 402.1.1.”

# Revision 04 highlights

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- **Thermal Enclosure System Rater Checklist**
  - Header insulation levels determined by cavity depth instead of Climate Zone:
    - Footnote 18: “Header insulation shall be  $\geq$  R-3 for wall assemblies with 2x4 framing, or equivalent cavity width, and  $\geq$  R-5 for all other assemblies (e.g., with 2x6 framing).”

# Revision 04 highlights

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- **HVAC System QI Contractor Checklist**

- More time has been provided to fully implement the load calculation and duct design requirements of Version 3, per Footnote 7.
- In essence, the ‘worst case’ configuration of a house plan can be used to calculate the loads and size the duct system for homes with a date of final inspection through 12/31/2012:
  - **Loads:** “For each house plan with multiple configurations (e.g., orientations, elevations, options), the loads shall be permitted to be calculated for the configuration that will result in the largest load. The largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S.”
  - **Room-level airflows:** “For each house plan with multiple configurations, the room-level design airflows shall be permitted to be calculated using the configuration that resulted in the largest load.”

# Revision 04 highlights

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- **HVAC System QI Contractor Checklist**
  - However, Revision 04 has no impact on these requirements for homes with dates of final inspection on or after 01/01/2013. For these homes, the loads and room-level design airflows shall be calculated for each potential configuration of a house plan, though some flexibility is still provided for equipment selection and duct design.

# Revision 04 highlights

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- **HVAC System QI Contractor Checklist**
  - For homes with dates of final inspection on or after 01/01/2013:
    - **Loads:** “If the loads across all configurations vary by  $\leq 25\%$ , then the largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S. Otherwise, the contractor shall group the load for each configuration into a set with  $\leq 25\%$  variation and equipment selection shall be completed for each set of loads.”
    - **Room-level airflows:** “If the design airflows for each room vary across all configurations by  $\leq 25\%$  or 25 CFM, then the average room-level design airflow shall be permitted to be used when designing the duct system. Otherwise, the contractor shall group the room-level design airflow for each configuration into a set with  $\leq 25\%$  or 25 CFM variation and the duct design shall be completed for the average airflow of that set.”

# Revision 04 highlights

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- **HVAC System QI Rater Checklist**
  - Additional time has been provided for Item 1.2.1, outdoor design temperatures. For homes with dates of final inspection through December 31, 2012, Item 1.2.1 is permitted to be within +/- 5 degrees of the 1% and 99% ACCA Manual J design temperatures for the contractor-designated design location.
  - In addition, for each house plan with multiple configurations (e.g., orientations, elevations, options), the Rater shall confirm that the parameters listed in Items 1.2.2 to 1.2.6 are aligned with either: the rated home or with the plans for the configuration used to calculate the loads, as provided by the contractor.
    - 1.2.2 Orientation
    - 1.2.3 Number of occupants
    - 1.2.4 Conditioned Floor Area
    - 1.2.5 Window area
    - 1.2.6 Predominant window SGHC

# Revision 04 highlights

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- **HVAC System QI Rater Checklist**
  - For homes with dates of final inspection on or after January 1, 2013, Item 1.2.1 shall match the 1% and 99% ACCA Manual J design temperatures for the contractor-designated design location.
  - In addition, for each house plan with multiple configurations (e.g., orientations, elevations, options), the Rater shall confirm that the parameters listed in Items 1.2.2 to 1.2.6 are aligned with the rated home.
    - 1.2.2 Orientation
    - 1.2.3 Number of occupants
    - 1.2.4 Conditioned Floor Area
    - 1.2.5 Window area
    - 1.2.6 Predominant window SGHC

# Revision 04 highlights

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- **HVAC System QI Rater Checklist**
  - Additional time has been provided for Item 2.8, bedroom pressure balancing. Compliance with this Item will only be required for homes with dates of final inspection on or after 01/01/2013 to provide architects and designers with additional time to integrate these features into their homes.
  - Combustion safety test procedures have been clarified.
  - Item 10.1: “Furnaces, boilers, and water heaters located within the home’s pressure boundary are mechanically drafted or direct-vented. As an exception, naturally drafted equipment is allowed in Climate Zone 1-3. For naturally drafted furnaces, boilers, and water heaters, the Rater has followed RESNET or BPI combustion safety test procedures and met the selected standard’s limits for depressurization, spillage, draft pressure, and CO concentration in ambient air, as well as a CO concentration in the flue of  $\leq 25$  ppm.”

# Revision 04 highlights

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- **HVAC System QI Rater Checklist**

- Item 10.2: “For fireplaces that are not mechanically drafted or direct-vented to outdoors, total net rated exhaust flow of the two largest exhaust fans (excluding summer cooling fans) is  $\leq 15$  CFM per 100 sq. ft. of occupiable space when at full capacity or the Rater has verified that the pressure differential is  $\leq -5$  Pa using BPI’s or RESNET’s worst-case depressurization test procedure.”
  - Footnote 31: “...If using RESNET’s protocol to evaluate fireplaces, per Item 10.2, the blower door will not be set to exhaust 300 CFM to simulate the fireplace in operation. The remainder of the protocol for determining worst-case depressurization shall be followed.”

# Revision 04 highlights

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- **HVAC System QI Rater Checklist**
  - Item 10.3: “If unvented combustion appliances other than cooking ranges are located inside the home’s pressure boundary, the Rater has operated the appliance for at least 10 minutes and verified that the ambient CO level does not exceed 35 ppm.”

# Revision 04 highlights

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- **Water Management System Builder Checklist**
  - EPA has provided an alternative to tamping backfill at the time of construction:
    - Footnote 4: “Where setbacks limit space to less than 10 ft., swales or drains designed to carry water from foundation shall be provided. Also, tamping of back-fill is not required if either: proper drainage can be achieved using non-settling compact soils, as determined by a certified hydrologist, soil scientist, or engineer; OR, the builder has scheduled a site visit to provide in-fill and final grading after settling has occurred (e.g., after the first rainy season).”

# Revision 04 highlights

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- **Water Management System Builder Checklist**
  - EPA has removed the requirement for aggregate or sand with geotextile matting beneath slabs.
    - Item 1.3: “Capillary break beneath all slabs (e.g., slab on grade, basement slab) except crawlspace slabs using either:  $\geq 6$  mil polyethylene sheeting, lapped 6-12 in., or  $\geq 1$ ” extruded polystyrene insulation with taped joints.”:

# Revision 04 highlights

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- **Version 2 TBC**

- At their discretion, Providers are permitted to allow their Raters to use IR thermography to complete relevant portions of the Thermal Bypass Inspection Checklist for homes qualified under Version 2 of the program. EPA recommends, but does not require, that RESNET's Interim Guidelines for Thermographic Inspections of Buildings be used. Regardless of the method used, the Rater and Provider are the parties responsible for verifying that the requirements of the checklist have been completed.
- Note that EPA is evaluating its policy regarding the use of IR thermography for homes qualified under Version 2.5 and Version 3 of the program, given the increased requirements under these versions and the pending finalization of RESNET's Guidelines for Thermographic Inspections of Buildings.



# Version 3 Transition Resources

# Transition resources

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- **Training requirements**

- Builders – link to online training through ENERGY STAR Website ([www.energystar.gov/MESA](http://www.energystar.gov/MESA))
- Raters and Field Inspectors – link to approved training organizations through RESNET website ([www.resnet.us/energystar](http://www.resnet.us/energystar))
- HVAC contractors - program Website for information on HVAC contractor credentialing ([www.energystar.gov/newhomeshvac](http://www.energystar.gov/newhomeshvac))

# Transition resources

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- **New main Technical Resource page for program guidelines and training**
  - [www.energystar.gov/newhomesguidelines](http://www.energystar.gov/newhomesguidelines)
- **New quick link to training resources**
  - [www.energystar.gov/newhomestraining](http://www.energystar.gov/newhomestraining).
  - Click through to supplemental training resources, including:
    - Live webinars (also at [www.energystar.gov/newhomeswebinars](http://www.energystar.gov/newhomeswebinars))
    - Slide decks and recorded trainings on Version 2.5 and the key systems in Version 3
    - Version 3 Field Inspection Checklist Guidebooks

# Transition resources



- **Key upcoming webinars**

- [www.energystar.gov/newhomeswebinars](http://www.energystar.gov/newhomeswebinars)

Title	Date & Time (Eastern)
Installation Rater Checklist	Tues 9/13 2-3 pm
Successful ENERGY STAR Project Kick-off Meetings	Thurs 9/22 2-3 pm
Building Homes under Version 3	Wed 9/28 2-3 pm
Learning the Thermal Enclosure System Rater Checklist	Tues 10/4 1-2 pm
Learning the Water Management System Builder Checklist	Wed 10/12 1-2 pm
How to Sidestep the Most Common Version 3 Pitfalls	Thurs 10/20 2-3 pm
Best Practices for Selling ENERGY STAR Qualified Homes	Wed 10/26 2-3 pm

# Transition resources

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- **Technical questions**

1. The best first step when you have a question about the guidelines is to read the guidelines themselves. The guidelines, including footnotes, include many details that answer common, and uncommon, partner questions.
2. For checklist items, consult the checklist guidebooks, which explain the rationale and installation standards for each item.
3. Builders can consult their Raters, particularly for questions on the Thermal Enclosure System Rater Checklist. Raters should consult with their Providers.
4. If you can't find your answer through the above steps, contact the ENERGY STAR team at [energystarhomes@energystar.gov](mailto:energystarhomes@energystar.gov).

# Transition resources



- **Build momentum in your market by participating in the We're In! Campaign**
  - Builders committed to qualifying homes under Version 3 can make that commitment public and be recognized for their early leadership.
  - Builders can make the commitment for some or all of their homes at [www.energystar.gov/v3commitment](http://www.energystar.gov/v3commitment).
  - Participants will receive a press release from EPA to use in media outreach, will be showcased on EPA's website at [www.energystar.gov/v3builders](http://www.energystar.gov/v3builders), and may be featured in EPA's own media outreach.

## Are You "In" for Version 3?

Show your leadership and make a commitment!



ENERGY STAR builder partners across the nation are making a public commitment to building their homes to the [new Version 3 requirements](#) in 2012. These builders will be featured on the ENERGY STAR web site, will receive an EPA press release template for promotional use, and may be featured in EPA-led media outreach about the value of the new Version 3 requirements.

# Discussion

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## ENERGY STAR for New Homes

[www.energystar.gov/newhomespartners](http://www.energystar.gov/newhomespartners)

[energystarhomes@energystar.gov](mailto:energystarhomes@energystar.gov)

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