



ENERGY STAR Qualified Homes Version 2.5 Training for Sponsor Partners

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Agenda



- **Qualifying Homes under Version 2.5**
 - Prescriptive and Performance Paths
 - Inspection Checklists
- **Qualifying Homes under Version 3**
- **v3 Training Requirements**
- **EPA Support Plan**
- **Special Considerations for Early Adopters of Version 3**



Qualifying Homes under Version 2.5: Prescriptive and Performance Paths



What is v2.5?



- **Version 3 guidelines with allowances for transition**

v2.5 applies to:

- Single-family homes that are permitted before Jan. 1, 2011 and completed between July 1, 2011 and Dec. 31, 2011; and
- All homes that are both permitted and completed between Jan. 1, 2011 and December 31, 2011.

Homes that can be qualified under v2 can, at the builder's discretion, be qualified under v2.5.

- **Version 2.5 will help partners succeed with v3**

By completing all mandatory checklists, but providing an allowance for deficiencies during this transitional period, v2.5 allows partners to identify what parts of the full v3 guidelines require further preparation and assistance.

Major changes from v2 to v2.5



- **Variable vs. Fixed HERS Index Threshold**

A custom threshold called the ENERGY STAR HERS Index Target is calculated for each home following the Performance Path.

- **Size Adjustment Factor**

Homes of all sizes may be labeled. However, homes larger than a benchmark size for a specified number of bedrooms (called the 'Benchmark Home Size') must apply a Size Adjustment Factor. This will result in reduced ENERGY STAR HERS Index Targets and increased requirements for larger homes.

- **New inspection checklists**

The current Thermal Bypass Checklist has been expanded into the Thermal Enclosure Checklist (TEC). New HVAC Quality Installation and Water Management Checklists have been added.

Qualifying homes under v2.5



- **Verify eligibility**
 - Single family homes;
 - Units in multifamily buildings with 3 stories or less; and
 - Units in four- or five-story multi-family buildings, including mixed-use buildings, that have their own heating, cooling, and hot water systems, separate from other units.

Qualifying homes under v2.5



- **Select energy efficiency measures**

Homes qualified under v2.5 must include the core v3 energy efficiency measures. These specifications can be met in one of two ways:

- Select a predefined package of improvements under the Prescriptive Path; OR
- Create a customized set of upgrades through the Performance Path.

Homes that are larger than their Benchmark Home Size must use the Performance Path so that the Size Adjustment Factor can be applied. They cannot use the Prescriptive Path.

Benchmark Home Size

Bedrooms	1	2	3	4	5	6	7	8
CFA	1,000	1,600	2,200	2,800	3,400	4,000	4,600	5,200

v2.5: Prescriptive Path



- **ENERGY STAR Reference Design**

- The ENERGY STAR Reference Design is a pre-defined set of specifications that must be met for all homes under the Prescriptive Path.
- National and county-level specifications are available.

- **Key specification categories**

Cooling Equipment (where provided); Heating Equipment; Envelope, Windows, & Doors; Water Heater; Thermostat; Ductwork; and Lighting & Appliances

- **Compliance**

- Only homes the same size or smaller than their Benchmark Home Size may use this path.
- No trade-offs are allowed.
- The home must be designed and constructed to specifications and pass all required inspections and testing.

v2.5: Prescriptive Path



- **Envelope requirements**

- Insulation, windows, envelope tightness requirements have all been raised above v2 levels.
- New minimum efficiencies for doors and skylights have been defined.
- A radiant barrier or ENERGY STAR qualified roofing product is required in Climate Zones 1-3 if there are more than 10 linear feet of ductwork in an unconditioned attic.

- **Lighting & appliance requirements**

- ENERGY STAR qualified CFLs or pin-based lighting must be installed in 80% of RESNET-defined Qualifying Light Fixture Locations OR the ENERGY STAR Advanced Lighting Package must be installed.
- Where refrigerators, dishwashers, ceiling fans, or exhaust fans are installed, those products shall be ENERGY STAR qualified.

v2.5: Prescriptive Path



- **HVAC distribution requirements**
 - Supply ducts in unconditioned attics must be insulated to R-8.
 - Leakage to outdoors remains at the v2 level of 4 CFM₂₅ per 100 ft² CFA.

v2.5: Performance Path



- **ENERGY STAR HERS Index Target**
 - The ENERGY STAR HERS Index Target is the customized threshold that each home following the Performance Path must meet to earn the ENERGY STAR.
 - The ENERGY STAR HERS Index Target is based on the ENERGY STAR Reference Design used in the Prescriptive Path and, for homes larger than their Benchmark Home Size, includes the Size Adjustment Factor.
- **Automatic software configuration**
 - In the near future, rating software will automatically determine the ENERGY STAR HERS Index Target for each home.

v2.5: Performance Path



- **Select upgrades**

The rater/builder have flexibility to select a custom set of energy efficiency specifications, so long as the resulting HERS Index meets or exceeds the ENERGY STAR HERS Index Target and other requirements (e.g., minimum efficiency for windows, insulation) are met.

- **Verification**

The home must be designed and constructed to the customized specifications and pass all required inspections and testing.

v2.5: Performance Path



- **On-site power generation credit**

On-site power generation can be used to lower a home's HERS Index under the Performance Path, but only if:

- The home is larger than the Benchmark Home Size; and
- The home meets pre-size-adjusted ENERGY STAR HERS Index Target through efficiency alone.

Under those conditions, credit for onsite power generation can be used to make up for the incremental reduction in the ENERGY STAR HERS Index Target caused by the Size Adjustment Factor.

v2.5: Performance Path



- **Credit for CFLs and pin-based fluorescents**

There is no cap on the use of CFLs or pin-based fluorescents to lower the HERS Index.
- **ENERGY STAR qualified products**
 - There is no requirement that the home include at least 1 ENERGY STAR qualified product category, however the ENERGY STAR HERS Index Target is based on an ENERGY STAR qualified refrigerator and dishwasher, qualified ceiling and exhaust fans, and fluorescent lighting in 80% of lighting fixtures in RESNET-defined Qualifying Light Fixture Locations.
 - Therefore, the ENERGY STAR HERS Index Target must be met by either including efficient appliances and lighting or by offsetting their performance with other features.

v2.5: Performance Path



- **HVAC distribution requirements**

As in v2, duct leakage to the outdoors is capped at 6 CFM₂₅ per 100 ft² CFA.

Qualifying homes under v3



1. Check eligibility.
2. Check Benchmark Home Size.
3. Select Version 3 energy efficiency measures.

Prescriptive Path

1. Build the home using the ENERGY STAR Reference Design.
2. Complete the inspection checklists.

Performance Path

1. Model the home and find the ENERGY STAR HERS Index Target.
2. Select upgrades that achieve a HERS Index \leq ENERGY STAR HERS Index Target and meet other program requirements.
3. Complete the inspection checklists.

Example #1



Verification Path Bedrooms	Performance Path 4 bedrooms	CFA Benchmark Home Size	2,500 ft ² 2,800 ft ²
---------------------------------------------	--------------------------------	------------------------------------------	------------------------------------------------

- The home to be built is smaller than the Benchmark Home Size, so it can be qualified under either path.
- The builder wants to use the Performance Path. Model the home to find the ENERGY STAR HERS Index Target. For this home, it turns out to be 76.
- Select any set of upgrades that achieves a HERS Index ≤ 76 and meets other program requirements.
- Verify that the home is built with the selected upgrades and complete the inspection checklists.

Example #2



Verification Path Bedrooms	Prescriptive Path 3 bedrooms	CFA Benchmark Home Size	2,100 ft ² 2,200 ft ²
---------------------------------------------	---------------------------------	------------------------------------------	------------------------------------------------

- The home to be built is smaller than the Benchmark Home Size, so it can be qualified under either path.
- The builder wants to use the Prescriptive Path. Prescribe the necessary upgrades based on the ENERGY STAR Reference Design.
- Verify that the home is built to the ENERGY STAR Reference Design and complete the inspection checklists.

Example #3



Verification Path	Performance Path	CFA	2,500 ft ²
Bedrooms	3 bedrooms	Benchmark Home Size	2,200 ft ²

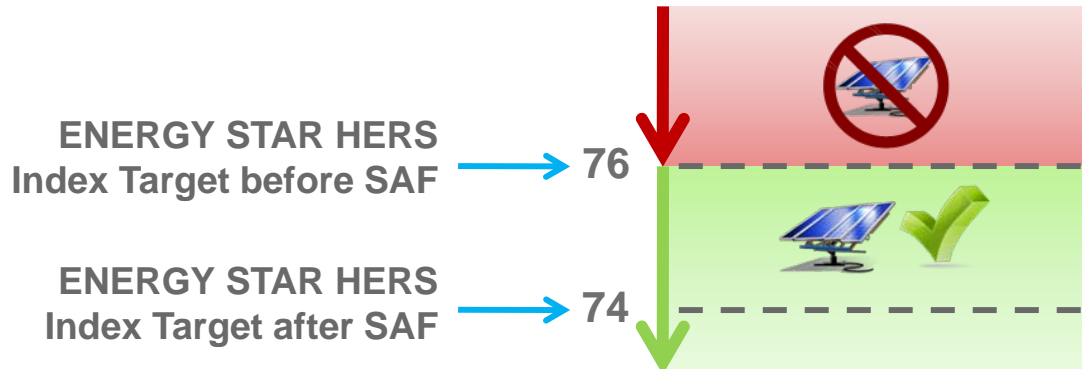
- The home is larger than the Benchmark Home Size, so it must be qualified under the Performance Path.
- Model the home to find the ENERGY STAR HERS Index Target.
 - Before the Size Adjustment Factor is applied, the ENERGY STAR HERS Index Target is 76.
 - The Size Adjustment Factor lowers the threshold by 2 Index points.
 - The ENERGY STAR HERS Index Target for the home is 74.
- Select any set of upgrades that achieves a HERS Index ≤ 74 and meets other program requirements, then verify that the home is built with the selected upgrades and complete the inspection checklists.

Example #3



Verification Path Bedrooms	Performance Path 3 bedrooms	CFA Benchmark Home Size	2,500 ft ² 2,200 ft ²
---------------------------------------------	--------------------------------	------------------------------------------	------------------------------------------------

- Note that onsite power generation (e.g., photovoltaics) can be used to help this home earn the ENERGY STAR.
 - The Size Adjustment Factor lowered the ENERGY STAR HERS Index Target by 2 Index points to 74
 - Onsite power generation cannot be used to help the home achieve an Index of 76. It can, however, be used to reduce the Index beneath 76.



Overlapping requirements



- **Overlapping requirements**

EPA has clarified the interactions between ENERGY STAR and local codes, manufacturers' installation instructions, engineering documents, and regional ENERGY STAR programs.

- Where overlapping requirements exceed ENERGY STAR, the more stringent requirements must be met.
- Where overlapping requirements conflict with ENERGY STAR, the conflicting ENERGY STAR requirements are waived.
 - Qualification shall only be allowed if the rater has determined that no equivalent option is available that could meet the intent of the conflicting ENERGY STAR requirement.

v3 and advanced codes



- **Initial v3 implementation in states with advanced codes**
 - EPA is evaluating regional modifications to Version 3 for states with advanced energy codes, including California, Florida, Hawaii, and the Pacific Northwest.
- **Advanced code adoption after v3 implementation**
 - As states that initially are subject to the national Version 3 requirements adopt more rigorous codes, EPA will provide modified guidelines.
 - Until such time, use the National Program Requirements and inspection checklists to qualify homes.



Qualifying Homes under v2.5: Inspection Checklists

v2.5: Inspection Checklists



- **Complete inspection checklists**
 - In addition to the core Version 3 energy efficiency measures, homes must include additional measures enforced with inspection checklists. These measures help ensure comprehensive systems and energy efficiency with every qualified home under v3.
 - In Version 2.5, all inspection checklists must be completed. Homes must pass all requirements of the Air Barriers and Air Sealing section of the Thermal Enclosure Checklist. Noncompliance with other items will not prevent homes from earning the label under Version 2.5.
 - Compliance with all checklist items will be required under v3.

Changes from v2 to v2.5



- **New Thermal Enclosure System Checklist**

- Full compliance with Sections 3 and 5 required for v2.5
- Section 3, Fully-Aligned Air Barriers is based on the current TBC.
 - Overall air barrier alignment and insulated floors clarified.
- Section 5, Air Sealing, includes some TBC requirements that more closely relate to air sealing, along with new prescriptive details at critical locations where failures are common.
- Note that the v2 slab edge insulation exemption remains.
- The builder can verify up to 6 items at rater discretion.

Changes from v2 to v2.5



- **Water Management System Checklist**
 - Requires inspection of key areas to help assure bulk moisture control, including water-managed foundation, walls, roofs, and building materials.
 - Must be completed by the builder's site supervisor or other qualified individual on the builder's staff.
 - Raters may provide advisory or training services, but are not responsible for the accuracy of this checklist unless contracted to complete it by the builder. Ultimately, the builder is responsible for accuracy of all checklist requirements.
 - Completed and signed checklist should be provided to the Home Energy Rater to keep with the home's ENERGY STAR file.
 - As an alternative, homes can be qualified to earn EPA's Indoor airPLUS label which includes all water management system requirements.
 - For v2.5, this checklist must be completed, but homes will not be denied the ENERGY STAR label for deficiencies.
 - For v3, all checklist elements must pass for the home to be qualified.

Changes from v2 to v2.5



- **HVAC Quality Installation Contractor Checklist**
 - Ensures that the HVAC systems in ENERGY STAR homes are designed and installed according to industry-accepted quality installation practices.
 - Checklist to be completed by HVAC contractor.
 - Raters will be responsible for validating some key data points.
 - Accuracy of calculations and all of the requirements of the HVAC System Quality Installation Contractor checklist are the exclusive responsibility of the HVAC contractor.
 - Raters are not held liable for the HVAC contractors work. However, Raters will be empowered to deny the ENERGY STAR label to a home when discrepancies are found as part of their validation of elements of the Contractor checklist listed above.

Changes from v2 to v2.5



- **HVAC Quality Installation Contractor Checklist (cont'd)**
 - Only HVAC contractors who have demonstrated requisite skills and capabilities to perform these checklists and have been credentialed by a recognized industry body can install systems in homes qualified under v3.
 - For v2.5, this checklist must be completed, but homes will not be denied the ENERGY STAR label for deficiencies.
 - For v3, all checklist elements must pass for the home to be qualified.

Changes from v2 to v2.5



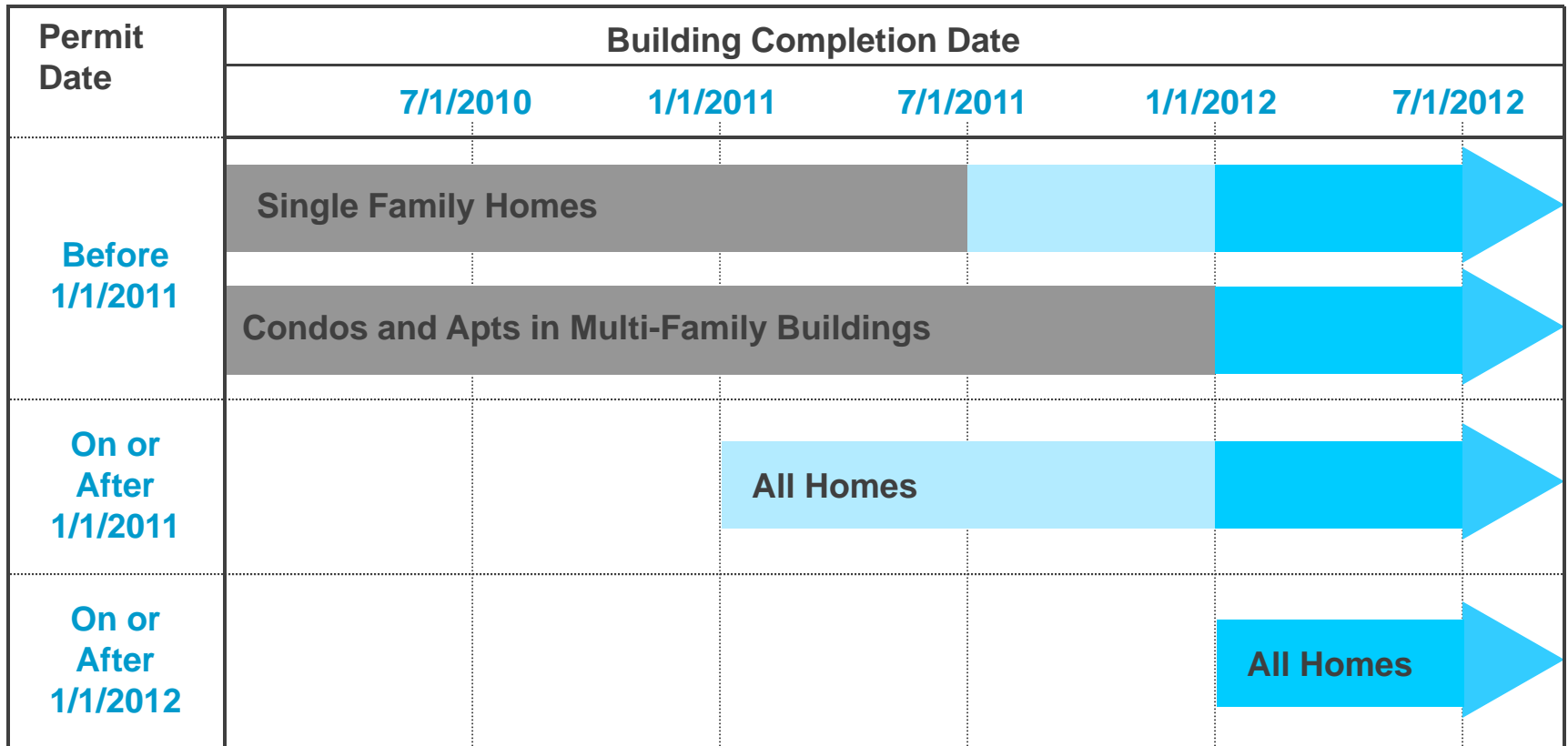
- **HVAC Quality Installation Rater Checklist**


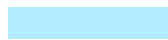

- Used to verify that the home's ductwork and ventilation system have been installed properly.
- Also used to validate key elements in HVAC Contractor's work.
- For v2.5, this checklist must be completed, but homes will not be denied the ENERGY STAR label for deficiencies.
- For v3, all checklist elements must pass to the home to be qualified.



Qualifying Homes under v3

Implementation timeline



-  v2: 2006 Guidelines
-  v2.5: Core v3 energy efficiency features with Sec. 3 and 5 of Thermal Enclosure Checklist
-  v3: Core v3 energy efficiency features with all inspection checklists

Transition to v3



	ENERGY STAR for Homes Guidelines		
	Version 2.0	Version 2.5	Version 3.0
Performance Path	Fixed HERS Index	Variable HERS Index	
Prescriptive Path	Builder Option Package (BOP)	ENERGY STAR Reference Design	
House Size	No impact on requirements	Size Adjustment Factor	
Duct Leakage to Outside	<ul style="list-style-type: none"> • ≤ 4 CFM₂₅ per 100 ft² CFA for Prescriptive Path • ≤ 6 CFM₂₅ per 100 ft² CFA for Performance Path 		≤ 4 CFM ₂₅ per 100 ft ² CFA for both Prescriptive and Performance Paths
Total Duct Leakage	No maximum leakage		≤ 6 CFM ₂₅ per 100 ft ² CFA

Transition to v3



ENERGY STAR for Homes Guidelines			
	Version 2.0	Version 2.5	Version 3.0
ENERGY STAR Labeled Products – Prescriptive Path	≥ 5 ENERGY STAR qualified products		<ul style="list-style-type: none">• Where refrigerators, dishwashers, ceiling fans, and exhaust fans are installed, products shall be ENERGY STAR qualified.• ENERGY STAR qualified CFLs or pin-based lighting in 80% of fixtures in RESNET-defined Qualifying Light Fixture Locations shall be installed. (Alternate: ENERGY STAR Advanced Lighting Package)

Transition to v3



ENERGY STAR for Homes Guidelines			
	Version 2.0	Version 2.5	Version 3.0
ENERGY STAR Labeled Products – Performance Path	≥ 1 ENERGY STAR qualified product category		<ul style="list-style-type: none">• No requirements, though the ENERGY STAR HERS Index Target is configured with an ENERGY STAR qualified refrigerator and dishwasher, qualified ceiling and exhaust fans, and fluorescent lighting in 80% of lighting fixtures in RESNET-defined Qualifying Light Fixture Locations.• Therefore, the ENERGY STAR HERS Index Target must be met by either including efficient appliances and lighting or by offsetting their performance with other features.

Transition to v3



ENERGY STAR for Homes Guidelines			
Version 2.0		Version 2.5	Version 3.0
HERS Scoring Limitations	Up to 20% of screw-in light bulb sockets may use CFLs to achieve HERS Index.	There is no cap on use of CFLs to achieve ENERGY STAR HERS Index Target.	
	On-site power may not be used to achieve HERS Index.	On-site power may be used if the home is larger than the Benchmark Home to make up for the incremental reduction in the ENERGY STAR HERS Index Target caused by the Size Adjustment Factor.	

- **Updated ENERGY STAR label**
 - The ENERGY STAR label is being updated to include the version of the guidelines that each home is qualified under.
 - ENERGY STAR will provide an updated Label Printing Tool to Providers and begin sending new label stock as the existing stock is depleted. This new label is not tied to v3; v2 and v2.5 homes can also use the new label.
 - Every ENERGY STAR qualified home must be labeled. This applies to homes qualified under all versions of the ENERGY STAR guidelines.

- **ENERGY STAR Version 3 certificate**
 - EPA is updating the ENERGY STAR certificate to include more customized information for homeowners. The updated certificate will only be available for homes qualified under Version 3.
 - Unlike the current ENERGY STAR certificate, which is optional for homes qualified under Version 2 and 2.5, the new certificate will be required to be distributed to all homes qualified under Version 3.



v3 Training Requirements

Version 3 training requirements



- **Training requirements for builders, raters, and HVAC contractors**
 - Builders, raters, and HVAC contractors must complete Version 3 training before they can work on homes qualified under Version 3.
 - One person from each builder and HVAC contractor will be required to complete the training, but the training will be open to additional staff as well.
 - All individual raters who work on qualified homes must complete Version 3 Training. It will not be sufficient for one rater in each organization to complete this training.
 - Homes that are built to the v3 guidelines but whose builder, rater, or HVAC contractor has not yet completed the v3 training will not earn the ENERGY STAR under v3, but must instead be issued the label under v2.5.

Version 3 training requirements



- **Builder training**

- The ENERGY STAR Orientation Training for builders is a free, web-based training available through ENERGY STAR. It can be completed in under 1 hour and includes a test on the content.
- Builders who joined prior to 2011 must complete their orientation by January 1, 2012 to continue to hold active ENERGY STAR partnerships.
- New builders will need to take the orientation to join ENERGY STAR for the first time.

Version 3 training requirements



- **Builder partnership**

- All new builders must sign Partnership Agreements to join ENERGY STAR before qualifying homes under Version 3. Builders who joined ENERGY STAR prior to 2011 will sign new Partnership Agreements as part of their ENERGY STAR Orientation.
- EPA has previously accepted reports of qualified homes by builders who have not been partners. Starting in 2012, reports of qualified homes by non-partner builders will not be accepted. The online reporting system will not permit non-partner entries because Providers will have to select the builders from a pre-populated drop-down list.
- Raters should ensure that every builder they work with is an ENERGY STAR partner.

Version 3 training requirements



- **Rater training**

- ENERGY STAR Version 3 Training for raters will be available through RESNET-accredited Training Providers who have attended an EPA-approved Train-the-Trainer session.
- Raters must complete ENERGY STAR Version 3 Training by January 1, 2012 to maintain active ENERGY STAR partnerships.
- New raters who join beginning in 2012 will need to take this training to join ENERGY STAR for the first time.
- All rater partners must also be certified and working under accredited Providerships.

Version 3 training requirements



- **HVAC contractor**

- ENERGY STAR Version 3 Training for HVAC contractors will be available through industry associations. This training will likely be available online and in person to permit national accessibility.
- HVAC contractors must complete training and be credentialed before they can complete the HVAC QI Contractor Checklist required in v3.
- Lists of credentialed HVAC contractors will be available from industry organizations through the ENERGY STAR Website.
- Raters will also sign off on the inspection checklists that they have verified HVAC contractors' credential status.

Preparation and training



- **Training will be critical to program success**
 - Version 2 introduced some guidelines that required increased coordination among trades and changes to work scopes (e.g., air barriers behind showers and tubs), but could often be taught on the fly.
 - Versions 2.5 and 3 will require much more coordination and teamwork to properly design, procure, install, and verify measures.
- **Training comes in many sizes**
 - There are lots of ways that you can provide additional support to your partners and their trade allies for the transition to Version 3:
 - Delivering individual mentoring or group training;
 - Facilitating local training events through industry-recognized trainers; or
 - Directing partners and allies to ENERGY STAR training materials to use on their own.

Preparation and training



- **Facilitate access to mandatory v3 trainings**
 - The ENERGY STAR Orientation Training for builders will be available online in early 2011.
 - Version 3 training for raters and HVAC contractors will not be delivered directly by EPA. Sponsors can facilitate local training events by contacting industry-recognized trainers. EPA will provide access to lists of trainers through its website.
- **Reach out to trade allies**
 - Trade allies will play important roles in the success of v3. HVAC contractors, architects, insulators, and roofing and foundation contractors in particular may need additional training to see the value in these enhanced practices and understand how to do them correctly.
 - As a program sponsor, you may consider organizing, sponsoring, or hosting additional training for these important allies.

Preparation and training



- **Assess needs through v2.5 checklists**
 - Version 2.5 is designed to identify v3 implementation challenges early so that solutions can be developed.
 - All checklists must be completed as part of v2.5 and should be submitted for qualified homes.
 - Analyze them to identify training needs and then provide support individually or through training for all partners.

Training timeline





EPA Support Plan

Partner resources



- **v3 and v2.5 guidelines**

- The Version 3 National Program Requirements and Inspection Checklists are available online.

- **v2.5 guidance**

- EPA has been conducting webinars for raters on v2.5 and will post a recorded training.
- EPA is developing a v2.5 cover letter to summarize the details explained in the training.

- **Checklist guidebooks**

- EPA is producing field guides for the mandatory checklists that will explain the rationale behind each item and provide examples of successful and unsuccessful details. These checklists will be available for download in late 2010 at www.energystar.gov/homes.

Partner resources



- **v3 online recordings**
 - Sam Rashkin presents three recorded modules that discuss the key systems that make up Version 3.
- **v3 FAQs**
 - EPA is developing a list of frequently-asked questions about v3. EPA will provide this as a supplemental training resource. It will be used to provide examples and explanations of aspects of the guidelines that some partners have found confusing.

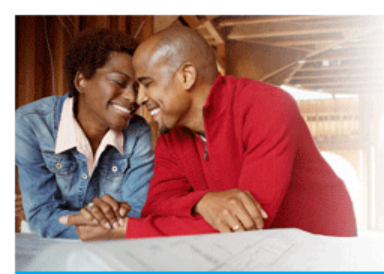
Partner resources



- **EPA collaboration**

EPA works with sponsors to provide training materials, assist in training development, and, where possible, conduct workshops and trainings sponsored by local partners. Sponsors can contact the ENERGY STAR for Homes Team through the program email box or through direct EPA or Account Manager contacts:

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Special Considerations for Early Adopters of Version 3

Early v3 adoption



- **Early v3 availability**

- No homes may be qualified under Version 3 until January 1, 2012 except where a utility or state sponsor is mandating or incentivizing early adoption of Version 3 in their area.
- In these cases, EPA will allow the labeling of ENERGY STAR Version 3 homes prior to January 1, 2012 on a pilot program basis, provided that the sponsor meets certain requirements.

Early v3 adoption



- **Ensure access to mandatory trainings**
 - Sponsors that incentivize early Version 3 implementation and jurisdictions that mandate it must ensure adequate access to required training for all pilot program participants.
 - This requirement can be most easily met by directly sponsoring training sessions for participants in the area.
 - EPA can provide interested sponsors with a list of qualified training providers.

Early v3 adoption



- **Verify training completion**
 - Pilot sponsors must assume responsibility for verifying that partners participating in their pilots have satisfied all Version 3 training requirements before qualifying homes in the pilot.
 - EPA will provide access to lists of builder, raters, and HVAC contractors who have completed v3 training.
 - v3 training is mandatory. Homes built to v3 but whose builder, rater, or HVAC contractor have not completed v3 training must be labeled as v2.5.

Early v3 adoption



- **Provide feedback**

- Pilot sponsors must track which homes are qualified as Version 3 under their pilot.
- EPA will request information on the number of Version 3 homes completed under pilot programs, as well as periodic feedback on implementation successes and challenges.

Early v3 adoption



- **Available materials**

- A new ENERGY STAR sticker label, available by the end of 2011, will allow builders to identify homes qualified as Version 3.
- A new consumer brochure, substantially revised to reflect the systems-based approach to Version 3, will be available in January, 2012; a new builder recruitment brochure will be available by the end of the first quarter of 2012.
- The new ENERGY STAR Version 3 certificate, which will be required for all homes in 2012, will not be available in 2011. Therefore, this requirement will be waived for homes qualified in Version 3 pilot markets.

Early v3 adoption



- **Pilot program notification**

Program sponsors or jurisdictions who have decided to incentivize or require Version 3 in 2011 as a pilot program must notify EPA by submitting the brief form available at www.surveymonkey.com/s/v3pilotnotification.

Discussion



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