

EPA Responses to Comments on ENERGY STAR Qualified New Homes Guidelines, Version 3.0

EPA previously posted a compilation on its Web site of all comments received during the second comment period for its proposed version 3.0 ENERGY STAR Qualified New Homes guidelines, which ended December 16, 2009.

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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Costs and Impact on Builder Participation

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
|----------------|---|--|--|
| General | | | |
| 1 | <ul style="list-style-type: none"> Some respondents feel that EPA is not taking into account costs associated with training their staff and subcontractors. | <ul style="list-style-type: none"> EPA acknowledges that raters, builders, and trades will need significant additional training and intends to help defray costs by providing training resources to partners. | <ul style="list-style-type: none"> EPA plans to provide field guides; host webinars; facilitate regional training classes; and will develop new marketing materials for partners. |
| 2 | <ul style="list-style-type: none"> Many respondents noted concerns that the changes to the program will have negative implications on their business, in particular for custom builders who have very small margins. A few respondents feel that linking ENERGY STAR qualified homes to the federal tax credits could overcome cost concerns. | <ul style="list-style-type: none"> EPA is confident that substantial decreases in costs will rapidly occur as partners gain experience with the new requirements. Tax credits and utility rebates are often not aligned with EPA's strategic goals for ENERGY STAR Qualified Homes. EPA's guidelines are the result of a deliberative process to ensure a cost-effective and comprehensive whole-house approach that offers meaningful savings and is grounded in building science principles. However, even where EPA's requirements don't exactly align with various tax credit and rebate programs, they often happen to result in partial or full compliance, thereby allowing costs to be defrayed. | <ul style="list-style-type: none"> No policy change. |
| 3 | <ul style="list-style-type: none"> Multiple respondents suggested that EPA offer a two-tier program definition that would allow more progressive builders to differentiate themselves with the proposed version 3.0 guidelines while allowing less progressive builders to still participate in the program without all of the added costs. Respondents stated that with the currently proposed guidelines, the added costs and prescriptive requirements (e.g., rigid insulation or Grade I insulation; raised heel truss; minimum performance requirements for windows, insulation levels, and duct leakage; and added inspection checklists) will result in fewer builder partners. | <ul style="list-style-type: none"> Despite the downturn in the housing market, ENERGY STAR homes now represent nearly 20% of the market nationally, the rigor of both national and local codes are significantly increasing, and builders are continuing to sign onto the program in record numbers. Therefore, EPA believes that the time is right to substantially raise the bar for homes to earn the ENERGY STAR label. Some builders may feel that the new guidelines are too much for them at this time and EPA accepts that some partners may drop out of the program. ENERGY STAR is not mandatory or required as part of code. Rather, it is a voluntary program for builders who want recognition for building superior energy-efficient homes. As such, builders who participate should expect that the program will periodically need to enhance its guidelines so that the brand continues to make good on its promise of substantially improved efficiency over code. EPA believes that the proposed version 3.0 guidelines | <ul style="list-style-type: none"> No policy change. |

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| | | continue to represent a cost-effect package of improvements for both home builders and homebuyers. | |
| 4 | <ul style="list-style-type: none"> One respondent suggested that government incentives for solar and geothermal systems improperly emphasize efficient systems over efficient building envelope measures such as increased insulation. Building envelope measures can reduce loads on the home and result in smaller, less expensive, systems. | <ul style="list-style-type: none"> Note that EPA's ENERGY STAR program is not related to government incentives for solar and geothermal systems. ENERGY STAR is the symbol for energy efficient performance, not the application of renewable energy systems. Therefore, the guidelines have been designed to primarily promote energy efficiency improvements in qualified homes. | <ul style="list-style-type: none"> No policy change. |
| 5 | <ul style="list-style-type: none"> One respondent expressed concern about the cost of including the water management and quality framing checklists in the ENERGY STAR guidelines, because if the guidelines become mandatory rather than voluntary these requirements will price certain prospective homeowners out of the market. | <ul style="list-style-type: none"> EPA has consistently guided state and local governments that ENERGY STAR Qualified Homes is designed as a voluntary program instead of a mandatory code program, and has recently met with representatives from several regional areas using ENERGY STAR as code to suggest alternatives. | <ul style="list-style-type: none"> No policy change. |
| Increased Construction Costs | | | |
| 6 | <ul style="list-style-type: none"> Respondents noted concerns about the cost of the high number of required items. With a large increase in prescriptive requirements, respondents feel that the program is no longer cost-effective as they are not able to make business decisions that would be most cost-effective. One respondent noted that the one-size-fits-all approach does not work in the industry. Respondents believe the cost estimates provided by EPA are not realistic. A few respondents noted that showing costs over the life of a mortgage with an assumed interest rate is not appropriate. Others noted concerns about the costs for particular required features. A few respondents noted that EPA fails to take into account indirect costs such as real estate sales commission, site supervision costs, engineering review costs, and overhead costs. One respondent noted that taking into account such indirect costs would increase the cost of the figures displayed in the cost document by one-third. The same respondent noted that the final | <ul style="list-style-type: none"> EPA has created a Savings & Cost Estimate Summary which includes estimates of representative incremental costs and savings for the updated ENERGY STAR guidelines. This document is available on the ENERGY STAR Web site. After the first comment period, EPA eliminated mandatory requirements for lighting, appliances, ceiling fans, R-8 duct insulation, and efficient hot water distribution measures that were included in the first iteration of the proposed guidelines. The efficient hot water distribution measures have also been removed from the ENERGY STAR Reference Design for this iteration of the guidelines. EPA still intends to promote guidelines that ensure meaningful energy savings, a complete thermal enclosure system, a quality-installed HVAC system, and a water management system for all qualified homes, and believes that the mandatory requirements listed will ensure those features are consistently provided. Further, based on extensive discussion with builders, raters, and building science experts across the country during the vetting process, EPA is confident that the estimates detailed in its Savings & Cost Estimate Summary, available on EPA's Web site, are | <ul style="list-style-type: none"> No policy change. |

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| | <p>costs are more realistically in the range of \$6,000-\$8,000 rather than \$2,000 to \$4,000.</p> <ul style="list-style-type: none"> • One respondent requested information on the increased cost impact on builders of the version 3.0 ENERGY STAR guidelines. Note that the respondent may not be familiar with the ENERGY STAR Qualified Homes version 3.0 Savings & Cost Estimate Summary. | <p>conservative and that substantial decreases in costs will rapidly occur as partners gain experience with the new requirements. EPA received similar concerns during the development of the 2006 guidelines, with many respondents over-estimating the cost of the Thermal Bypass Checklist (e.g., some estimated the cost as high as \$7,000 compared to actual costs often about \$250).</p> | |
| 7 | <ul style="list-style-type: none"> • Multiple respondents expressed concern about the increased costs associated with checklist requirements not being included in the Savings & Cost Estimate Summary. The concerns include: <ul style="list-style-type: none"> ○ The Water Management System Rater checklist requirement for clean gravel and fabric filters surrounding drain tiles would have a cost increase of \$250 per house and \$250 per day of losses due to inspection and correction and is not included in the total Water Management System Rater checklist Savings & Cost Estimate Summary of \$200; ○ The Water Management System Rater checklist requirement for kick out flashing and an ice & water shield would cost an additional \$100-200 per house and is not included in the total Water Rater checklist Savings & Cost Estimate Summary of \$200; ○ The mandatory requirement on the HVAC checklist requiring 4 CFM per 100 square feet would add \$300 per unit, \$400 in labor and \$250 per day in losses for inspection and correction that is not included in the Savings & Cost Estimate Summary of \$220; ○ Requirements 5.1 and 5.2 in the HVAC System Quality Installation Rater Checklist, which limit net exhaust and net supply flow, may add \$400 per home to account for the addition of makeup ventilation; ○ One respondent expressed concern about | <ul style="list-style-type: none"> • EPA is confident that the estimates detailed in its Savings & Cost Estimate Summary, available on EPA's Web site, are conservative and that substantial decreases in costs will occur as partners adjust their construction processes and improve coordination among subcontractors. Specifically, EPA believes that: <ul style="list-style-type: none"> ○ Given the nearly two year transition period for the new inspection checklist requirements, re-inspection and correction costs will not be significant for most partners; ○ Many of the Water Management System checklist requirements are aligned with code requirements and should not represent an incremental cost for many builders; ○ Requirements 5.2 and 5.3 in the HVAC System Quality Installation Rater Checklist will not be applicable to a large majority of homes because of the ventilation system type selected; ○ Compliance with ACCA Manuals will not cost significantly more than the \$250 already estimated by EPA when accounting for the savings from smaller HVAC capacities; ○ No cost will be accrued for carbon monoxide alarms, because they have been eliminated as a result of the first comment period. • EPA also believes that its incremental cost benefits are conservative because other cost benefits have not been accounted for, such as reduced warranty costs and shorter time to sell. Furthermore, increasing utility costs will make the home more affordable over time. • Overall, EPA recognizes that the version 3.0 guidelines represent a significant increase in stringency. As has always been the case with the program, some partners will have already incorporated many of the new | <ul style="list-style-type: none"> • No policy change. |

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| | <p>compliance with ACCA Manual J, D, S, and T as they would require additional lead time as well as an additional \$300 per house for drafting and design that is not included in the HVAC Rater checklist Savings & Cost Estimate of \$200;</p> <ul style="list-style-type: none"> o The installation of carbon monoxide detectors will add \$20 for the first detector, to upgrade from a smoke alarm, and \$40 for additional detectors. The respondent may not be aware that the requirement for carbon monoxide detectors has been removed from the proposed version 3.0 guidelines. | <p>requirements into their homes, while others that are building code-minimum homes or minimally complying with the current guidelines will need to make a more substantial investment to continue participation. EPA believes that version 3.0 of the guidelines will continue to recognize cost-effective homes that are meaningfully more efficient and that do not sacrifice quality and those builders who believe that selling such homes would benefit their business will voluntarily participate.</p> | |
| 8 | <ul style="list-style-type: none"> • One respondent noted that sealing recessed light fixtures is not currently required, but instead a part of overall tightness associated with an attic package. As a result, the respondent felt that additional compliance costs would result that are above and beyond EPA's cost estimates. | <ul style="list-style-type: none"> • EPA believes that it is necessary to require that recessed lighting fixtures be fully gasketed, caulked, or otherwise sealed. Even when overall infiltration targets are met, it is important to seal penetrations in the ceiling given the extreme temperature differential between the house and attic space. Furthermore, this requirement is not new to the version 3.0 guidelines; it is also a requirement under the Thermal Bypass Checklist used for the current guidelines. | <ul style="list-style-type: none"> • No policy change. |
| 9 | <ul style="list-style-type: none"> • One respondent was unclear about how to determine compliance with the advanced framing requirement to minimize "vertical studs [that] lack apparent or documented structural purpose". If structural redesign and city permitting are required, then compliance will cost thousands of dollars per home. | <ul style="list-style-type: none"> • This requirement indicates the need for raters and builders to communicate early and clearly about the new requirements and expectations for compliance. EPA will assist in this matter by providing ample time to integrate the new requirements into the workflow of partners. There will be approximately a nine month transition period between the release of the final version 3.0 guidelines and its initial implementation date to allow builders and raters to integrate the new requirements into their workflow. Additional transition time has also been provided prior to full enforcement of the new checklist requirements. Furthermore, EPA does not anticipate the need for Partners to re-permit their plans. If a framing element is needed it should appear on the plan and that plan should be followed on site during construction. | <ul style="list-style-type: none"> • No policy change. |

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| Increased Verification Costs | | | |
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| 10 | <ul style="list-style-type: none"> Respondents noted concerns over the anticipated increase of verification costs due to the increase in the number of checklists, paperwork, and reporting required. Respondents feel that raters will spend additional time in the field, thereby increasing their cost to the builder, and questioned whether verification of the checklist requirements can really be accomplished in only two site visits. In addition, respondents feel that additional time will be spent on energy modeling. One respondent noted that at least 3 hours per project is anticipated. Another noted that verification time will at least double. | <ul style="list-style-type: none"> EPA has field tested the final checklists, which have been simplified in part by eliminating the Water Management System Rater checklist, and finds they can be fully implemented on an average size home in approximately two extra hours. This should result in very reasonable costs for the additional quality assurance provided. Moreover, while stakeholder confusion was evident in the feedback received, EPA's intention has been to not require any additional field visits beyond the typical framing and final inspections, in part through the use of adequate allowances for builder-verified items. EPA also believes that increased modeling time for energy modeling will be minimal where software vendors automate the calculation of the ENERGY STAR HERS index target. EPA has received indications from several vendors that this automation will occur. | <ul style="list-style-type: none"> EPA has combined the Water Management System Rater and Builder checklists into a single checklist for the builder. |
| 11 | <ul style="list-style-type: none"> One respondent expressed concern about the costs associated with testing and administration tasks not being incorporated into the Savings & Cost Estimate Summary. One respondent noted that the inspection checklists will add time and costs to qualification, reducing participation in the program. In particular, they noted that the requirement to seal the vapor barrier to top plates will not be easily integrated into the inspection process. Multiple respondents also expressed concern about the large paperwork burden and overhead expenses required for homes to comply with the mandatory inspection checklists. Respondents believed that many partners will cease participation if required to complete the currently proposed checklists. | <ul style="list-style-type: none"> EPA is confident that substantial decreases in costs will rapidly occur as partners gain experience with the new requirements. EPA is willing to accept some drop in initial builder participation to ensure a cost-effective and comprehensive whole-house approach that offers meaningful savings and is grounded in building science principles. EPA believes that these guidelines will offer builders a much more competitive product relative to new homes that are minimally code-compliant and to existing homes through increased customer satisfaction, reduced risk, and substantially reduced energy consumption and greenhouse gas emissions. Ultimately, by committing to guidelines that emphasize added value over first costs, EPA believes long-term builder participation will increase. New requirements such as the sealed vapor barrier indicate the need for raters and builders to communicate early and clearly about the new requirements and expectations for compliance. EPA will assist in this matter by providing ample time to integrate the new checklist requirements into the workflow of partners. EPA received similar concerns during the development of the 2006 guidelines, with many respondents over-estimating the cost of the Thermal Bypass Checklist by an order of magnitude. | <ul style="list-style-type: none"> No policy change. |

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| Increased Cost of an ENERGY STAR Qualified Home | | | |
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| 12 | <ul style="list-style-type: none"> • Respondents expressed concerns that the increased cost to build and verify an ENERGY STAR qualified home will be passed on to the homeowner, thereby increasing the cost to purchase an ENERGY STAR qualified home. This would result in a decrease in the number of homeowners eligible to qualify for a mortgage to purchase an ENERGY STAR qualified home. • Some respondents feel that the payback period to purchase an ENERGY STAR qualified home is too long. | <ul style="list-style-type: none"> • EPA understands the importance for ENERGY STAR qualified homes to remain competitive in the marketplace. Energy efficient mortgages (EEMs) can be used to ensure no additional income or down-payment are needed to purchase qualified homes, which increase affordability by fully offsetting monthly mortgage increases with monthly utility savings. • EPA will continue to promulgate guidelines that may increase first costs if they offer home buyers increased value and affordability. With current construction and utility costs, EPA estimates a payback period of 5-10 years for most homes. For several less common configurations, such as heatpumps in very cold climates, the payback period may extend to 15 years. With learning curve improvements and increased utility costs, the payback period will decrease. | <ul style="list-style-type: none"> • EPA is working with lenders to continue to offer EEMs. In addition, an ENERGY STAR mortgage pilot program is underway to demonstrate that financing can be a useful tool for enhancing the success of investing in energy-efficient homes by lowering borrowing costs. |
| 13 | <ul style="list-style-type: none"> • Some respondents noted that the increased cost to purchase an ENERGY STAR qualified home in relation to utility savings no longer represents a positive cost-benefit ratio to the homeowner. | <ul style="list-style-type: none"> • EPA has created a Savings & Cost Estimate Summary which includes estimates of representative incremental costs and savings for the updated ENERGY STAR guidelines. Based on extensive discussion with builders, raters, and building science experts across the country during the vetting process, EPA is confident that the estimates detailed in its Savings & Cost Estimate Summary, available on EPA's Web site, are conservative and that the homeowner will see a positive cost-benefit ratio. | <ul style="list-style-type: none"> • No policy change. |
| Impact on Affordable Housing | | | |
| 14 | <ul style="list-style-type: none"> • A few respondents noted concerns regarding the cost to build an ENERGY STAR qualified home in the affordable housing industry. Affordable housing developers stated that the new guidelines are cost-prohibitive. One respondent noted concerns that construction of these homes will no longer be feasible as the increased costs outweigh their set-in-stone maximum sales prices. This is of particular concern where ENERGY STAR qualification is a requirement for affordable housing developers to obtain funding. | <ul style="list-style-type: none"> • Affordability, durability, and health are just as essential, if not more essential, for the affordable housing segment. Further, ENERGY STAR labeling is generally easier and lower in cost for affordable housing, as the home plans are often more conducive to implementing the guidelines, as compared to other, more complex houses. Furthermore, EPA cannot develop the version 3.0 guidelines using first cost as the only consideration, especially when doing so would compromise the true affordability of the home. | <ul style="list-style-type: none"> • No policy change. |

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| <i>Drop in Builder Participation</i> | | | |
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| 15 | <ul style="list-style-type: none"> • Respondents noted concerns that there will be a drop in builder participation due to increased complexity and cost of constructing an ENERGY STAR qualified home. One respondent noted concerns that EPA has acknowledged they are willing to lose builder participation. The respondent feels this reflects a failure in the program as it suggests that the program does not consider the implications of the proposed changes. • A few builders who responded threatened to discontinue their participation with the program if the proposed guidelines are implemented due to concerns that flexibility, consistency, and cost have been compromised. One respondent noted concern that their long-term investment in the ENERGY STAR program will be lost. | <ul style="list-style-type: none"> • EPA received similar concerns during the development of the 2006 guidelines, with many respondents over-estimating the costs and complexity of the proposal. While there was a slight initial drop in builder participation during the last guideline change, partnership eventually increased to record numbers. Some builders may feel that the new guidelines are too much for them at this time and EPA accepts that some partners may drop out of the program. ENERGY STAR is not a mandatory code. Rather, it is a voluntary program for builders who want recognition for building superior energy-efficient homes. As such, builders who participate should expect that the program will periodically need to enhance its guidelines so that the brand continues to make good on its promise of substantially improved efficiency over code. EPA believes that the proposed version 3.0 guidelines continue to represent a cost-effect package of improvements for both home builders and homebuyers. • Furthermore, EPA has eliminated many of the originally proposed mandatory requirements to increase flexibility and is confident that substantial decreases in costs will rapidly occur as partners gain experience with the new requirements. | <ul style="list-style-type: none"> • No policy change. |

Financing

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| <i>Energy Efficient Mortgages</i> | | | |
| 16 | <ul style="list-style-type: none"> • A few respondents noted concerns regarding the proposed guidelines in relationship to Energy Efficient Mortgages (EEMs). One respondent noted concerns that the new guidelines will not pass FHA's eligibility criteria to qualify for an EEM. Another respondent noted that lenders already do not take into account energy savings when determining their client's debt-to-income ratio. | <ul style="list-style-type: none"> • There are efforts underway at Federal Housing Administration (FHA) to revamp their EEM to make it more useful for borrowers and easier for lenders to understand and implement. EPA is working with FHA on this. EPA has also launched the ENERGY STAR mortgage pilot program in a limited number of states. Under this program, participating lenders agree to offer borrowers a financial benefit (i.e. reduced interest rate, closing cost discount, pay for HERS rating) if they are financing the purchase of an ENERGY STAR qualified home, or making efficiency improvements under a | <ul style="list-style-type: none"> • No policy change, though EPA will continue to pursue the strategies noted in the response to the left. |

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| | | Home Performance with ENERGY STAR or Weatherization Assistance Program and are able to reduce energy use by at least 20%. In general, the measures in the version 3.0 guidelines will meet FHA's current metric for qualifying homes for EEMs. EPA developed the version 3.0 guidelines using cost effectiveness as one consideration and considered whether the utility bill savings at least equaled the amortized incremental costs. For this analysis EPA used a range of costs as well as an interest rate of 6% and a 30-year period. | |
| Appraisals | | | |
| 17 | <ul style="list-style-type: none"> One respondent expressed concerns that appraisers do not understand how to appraise an energy efficient home. | <ul style="list-style-type: none"> EPA is currently working on developing strategies for engaging the appraisal industry, including developing clear recommendations for valuating energy efficiency of a home and coordinating with key industry players to promote appraisal industry participation. | <ul style="list-style-type: none"> No policy change, though EPA will continue to pursue the strategies noted in the response to the left. |

Relationship to Green Building

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| General | | | |
| 18 | <ul style="list-style-type: none"> A few respondents feel that the proposed guidelines are an effort by ENERGY STAR to become a green building program and compete with the other major green building programs such as USGBC's LEED for Homes and NAHB's National Green Building Standards. Many respondents noted that the non-energy requirements, such as the indoor air quality and water management components, should be left to the major green building programs. One respondent feels that consumers associate ENERGY STAR with energy efficiency and not green building and with these changes, it will increase confusion and uncertainty by the public. Other respondents suggest that EPA support/adopt and promote the other major green building programs in lieu of requiring the non-energy measures. | <ul style="list-style-type: none"> EPA continues to promote ENERGY STAR as a label for energy efficient products and eliminated several mandatory requirements that were not directly related to energy efficiency during the first comment period. However, the core principles of ENERGY STAR continue to be energy efficiency, affordability, and performance. It is critical that the new guidelines, in addition to producing meaningful savings, provide a comprehensive building science package that helps to ensure a complete and effective thermal enclosure system, HVAC system, and Water Management System. These additional components are interrelated with the energy efficiency requirements and research indicates that their omission is the major cause of consumer complaints and possible defects in qualified homes. Moreover, these additional components allow EPA to market qualified homes as being both energy efficient and high quality to American homebuyers. Thus, despite some potential for overlap with related | <ul style="list-style-type: none"> No policy change. |

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| | | programs, EPA must define the guidelines in a way that qualified homes will offer both meaningful savings, accompanied by associated reductions in greenhouse gas emissions, and ensuring performance meets or exceeds consumer expectations. | |
| 19 | <ul style="list-style-type: none"> One respondent requested further explanation on how EPA plans to integrate with the major green building programs such as LEED for Homes and NAHB's National Green Building Standards. NAHB responded that they would welcome the opportunity to meet with EPA to discuss ways their program can better integrate with ENERGY STAR. | <ul style="list-style-type: none"> While ENERGY STAR is not a comprehensive green building program in itself, it offers a great, cost-effective first step to green building that can later be incorporated into the more comprehensive programs. Despite some potential for overlap with related programs, EPA must define the guidelines in a way that qualified homes will offer both meaningful savings, accompanied by associated reductions in greenhouse gas emissions, and ensuring performance meets or exceeds consumer expectations. | <ul style="list-style-type: none"> EPA will continue to work with Green Building programs to allow builders to more easily integrate ENERGY STAR into their energy efficiency, water management, and indoor air quality requirements. Several webinars with green building guest speakers will be available through the ENERGY STAR Web site this year. |
| Consistency with Major Green Building Programs | | | |
| 20 | <ul style="list-style-type: none"> Some respondents feel that the proposed ENERGY STAR guidelines are not consistent with the major green building programs including how EPA specifies program requirements and definitions. One respondent noted there is variance in how EPA defines Conditioned Floor Area (CFA) versus how USGBC and the LEED for Home program defines it. | <ul style="list-style-type: none"> EPA recognizes that goals, definitions, and program requirements of the ENERGY STAR program may not be perfectly aligned with the major green building programs. Where possible EPA has relied on industry standards to define its requirements, such as the use of RESNET's definition of conditioned floor area. Where the potential arises to further align with other programs and to ease the integration of the ENERGY STAR program, EPA will continue to pursue those opportunities. | <ul style="list-style-type: none"> No policy change. |

Implementation Timeline

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| Request for Longer Transition Period | | | |
| 21 | <ul style="list-style-type: none"> One respondent suggested that EPA consider adopting the new checklists over a 2-year period, thereby making them officially required January 1, 2013. They feel this would allow for a more gradual transition and improve the feasibility for builders. | <ul style="list-style-type: none"> EPA believes it needs to get the new guidelines out as quickly as possible. However, EPA also recognizes that training and other necessary transition processes are important and must be accommodated. EPA will release the new guidelines, as well as complementary training and supplemental technical resources, as quickly as possible. This will allow builder partners that desire the improved performance and quality of the new guidelines | <ul style="list-style-type: none"> No policy change. |

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| | | <p>to begin implementation as soon as possible. EPA added an additional transition period - through January 1, 2012, during which lack of compliance with the new checklist requirements will not result in disqualification of the home. That is to say, for each home qualified during the 2011 calendar year, all requirements of the new performance path and prescriptive path shall be met and all mandatory checklists shall be completed, but only Sections 3 and 5 of the new Thermal Enclosure System Checklist shall be enforced.</p> | |
| 22 | <ul style="list-style-type: none"> One respondent expressed concern about the second comment period timing and length. It was suggested that a comment window of “less than one month during a very busy time of year” is not enough time to incorporate feedback from trade groups working with builders. | <ul style="list-style-type: none"> EPA instituted a second, shorter, comment period for stakeholders to review and respond to the revised guidelines that were developed as a result of the comments received during the first comment period, simply to supplement the first round of edits. Additionally, EPA continually gathers expert input and researches new technology costs and performance developments during the implementation of each iteration of the guidelines. For these reasons, EPA feels that its process for soliciting feedback during the second comment period has been adequate, particularly given that ENERGY STAR is a voluntary guideline and not a mandatory standard. | <ul style="list-style-type: none"> No policy change. |
| 23 | <ul style="list-style-type: none"> Several respondents expressed concern that EPA’s ENERGY STAR program goes beyond the status of a voluntary program and warrants a more formal review process. They illustrate this point by noting legislation under consideration that would promulgate ENERGY STAR buildings criteria as the basis for federally-promulgated national building energy codes. In addition, respondents suggested that the use of the Federal Register would have been a better process for soliciting comments from all affected parties and that the current process demonstrates a “strong bias” from existing ENERGY STAR homes participants, clients, and other parties and may not be reflective of the broader range of potentially affected parties. Another respondent suggested that the | <ul style="list-style-type: none"> EPA has consistently guided state and local governments that ENERGY STAR Qualified Homes is designed as a voluntary program instead of a mandatory code program, and has recently met with representatives from several regional areas using ENERGY STAR as code to suggest alternatives. EPA has promoted the revision of the guidelines to all of its partners and key stakeholders and has additionally solicited comments from all interested parties through its Web site. This has resulted in comments from hundreds of unique respondents, representing a wide range of viewpoints. In addition, EPA continually gathers expert input and researches new technology costs and performance developments during the implementation of each iteration of the guidelines. ENERGY STAR is a voluntary program and the specifications are not legislative rules. Therefore, the notice and comment procedures of § 553 of the Administrative Procedure Act do not apply. | <ul style="list-style-type: none"> EPA will continue to promote ENERGY STAR Qualified Homes as a voluntary label and will continue to offer alternatives to jurisdictions currently implementing or considering ENERGY STAR as code. |

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| | <p>specifications are legislative rules that are required to be promulgated through the notice and comment procedures in § 553 of the Administrative Procedure Act.</p> | | |
| 24 | <ul style="list-style-type: none"> • Several respondents noted that even if it is appropriate to consider the ENERGY STAR program a voluntary one, they believe that EPA has violated its information quality guidelines outlined in its document, "Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency," EPA/260R-02-008, October, 2002. Specific examples of conflicts include the following: <ul style="list-style-type: none"> ○ EPA provides no technically supporting information or references for its actions on Comment #156, ("EPA's Response"), Comment #163, ("EPA's Response"), Comment #164, Comment #166, Comment #167 ("EPA's Response"), Comment #168, or Comment #179 ("EPA's Response"). ○ Public policy needs, requirements, or scope for EPA's actions are not substantiated in EPA's response to Comment #5 ("EPA's Response"), Comment #12 ("EPA's Response"), or Comment #73 ("EPA's Response"). EPA's acceptance of outside technical opinions for Policy Decisions appear without evidence of independent technical review or justification by EPA (Comment #175). EPA has provided no verification or other independent action on comments of the cited "building science experts" used to justify its actions on combustion equipment and venting systems. | <ul style="list-style-type: none"> • The documents referred to by respondents are primarily relevant to regulatory processes and not voluntary programs. Because ENERGY STAR is a voluntary program, it is not governed by the "Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency." Despite this, EPA has striven to make its comment process transparent and objective, collecting responses from hundreds of stakeholders, gathering expert input, and researching new technology costs and performance developments. EPA feels that its current process for soliciting feedback is adequate. Note that for some measures, EPA has to rely upon the general consensus among the building science community to inform policy decisions. Such was the case with the Thermal Bypass Checklist, which was implemented with excellent results in 2006. Regarding technical concerns cited by the respondents, EPA would generally refer the respondents to building science references, such as US DOE's Building Technologies Program Web site, EEBA's Builder Guides, and the wide variety of building science conferences around the country. | <ul style="list-style-type: none"> • No policy change. |
| Number of Changes at One Time | | | |
| 25 | <ul style="list-style-type: none"> • A few respondents noted they still feel that | <ul style="list-style-type: none"> • EPA understands that all changes to the guidelines for | <ul style="list-style-type: none"> • EPA has added a transition |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| | <p>there are too many changes at one time in this version. As a result, the program will become a niche program.</p> | <p>all product categories have an initial impact of reduced participation. This is inherent in any effort to increase the stringency of program requirements. Ultimately, by committing to guidelines that emphasize added value over first costs, EPA believes long-term builder participation will increase.</p> | <p>period through January 1, 2012 during which lack of compliance with the new checklist requirements will not result in disqualification of the home. Effectively, this plan allows partners nearly two years to educate and train partners and allow them to integrate the new mandatory checklists into their workflows prior to full implementation.</p> |
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Marketing

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| <i>Transparency for the Homebuyer</i> | | | |
| 26 | <ul style="list-style-type: none"> • Many respondents noted concerns that the new proposed guidelines will cause confusion in the marketplace, especially in how to explain the new guidelines to prospective homebuyers, justify the payback, and explain the difference between the ENERGY STAR and green building programs. • Multiple respondents felt that the use of the ENERGY STAR HERS Index Target Procedure and associated variable HERS index may present challenges to marketing qualified homes to consumers and to comparing the results of the two compliance paths for the same home. The respondent requested additional information on how these issues will be resolved before version 3.0 of the ENERGY STAR guidelines are completed. | <ul style="list-style-type: none"> • EPA has always believed that the value proposition for builders participating in ENERGY STAR and consumers buying qualified homes is that home buying is complex enough without having to know all the details of energy-efficient construction. Instead, consumers should just look for the government-backed ENERGY STAR label to easily identify homes that are truly energy efficient. That key message to homebuyers does not change with the new guidelines. However, for those buyers who want to dig deeper, EPA believes that the increased number of mandatory measures and inspection checklists actually makes it easier for consumers to understand specifically what energy-saving features and equipment will be found in their homes and, therefore, improves the transparency of the program. | <ul style="list-style-type: none"> • EPA will continue to promote a definition of ENERGY STAR Qualified Homes comparable to the currently used language, "To earn the ENERGY STAR, a home must meet guidelines for energy efficiency set by the U.S. Environmental Protection Agency. These homes are at least 15% more energy efficient than homes built to the 2009 IECC, and include additional energy-saving features that typically make them 20–30% more efficient than standard homes."; • EPA is currently working on developing strategies for communicating the ENERGY STAR New Homes version 3.0 program to all stakeholders – raters, builders, sponsors, and consumers; • EPA is in the process of developing a consumer page |

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| | | | <p>highlighting the history of ENERGY STAR and the events that have led to the change in guidelines;</p> <ul style="list-style-type: none"> • EPA will update all communications materials to be released shortly after the release of the final ENERGY STAR version 3.0 guidelines; • EPA will update all trainings available to partners to reflect the changes to the guidelines; • EPA is also working on studies with several partners to identify the greatest training needs in building, rating, and selling qualified homes. |
| 27 | <ul style="list-style-type: none"> • A few respondents recommended that the homes built to the new guidelines be labeled as an “ENERGY STAR 2010 Home” or “ENERGY STAR Version 3.0 Home” and continue this trend moving forward. In addition, a few respondents feel that the sticker label should specify the HERS Index of the corresponding home. • One respondent questioned whether the new EPA label for the version 3.0 ENERGY STAR guidelines will be available in time for software providers to incorporate them into their software programs. | <ul style="list-style-type: none"> • EPA intends to release an updated label for the ENERGY STAR New Homes program that will include the version of the guidelines that the home was qualified under and a field to enter the home’s HERS index if desired. Those homes that choose to fully comply with the new guidelines during the 2011 transition period will be allowed to indicate that the home is qualified under version 3.0. Those that meet the new performance requirements but are not fully compliant with the checklists will be allowed to indicate that the home is qualified under version 2.5. | <ul style="list-style-type: none"> • No policy change, though EPA will continue to develop the resources noted in the response to the left. |
| <i>EPA’s role in marketing ENERGY STAR</i> | | | |
| 28 | <ul style="list-style-type: none"> • Some respondents requested information on how EPA will help increase consumer awareness of the program. | <ul style="list-style-type: none"> • EPA is currently working on developing strategies for communicating the ENERGY STAR New Homes version 3.0 program to all stakeholders – raters, builders, sponsors, and consumers; • EPA is in the process of developing a consumer page highlighting the history of ENERGY STAR and the events that have led to the change in guidelines; • EPA will update all communications materials to be released shortly after the release of the final ENERGY STAR version 3.0 guidelines; | <ul style="list-style-type: none"> • No policy change, though EPA will continue to develop the resources noted in the response to the left. |

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| | | <ul style="list-style-type: none"> • EPA will update all trainings available to partners to reflect the changes to the guidelines; • EPA is also working on studies with several partners to identify the greatest training needs in building, rating, and selling qualified homes. | |
| 29 | <ul style="list-style-type: none"> • Multiple respondents suggested that the new version 3.0 ENERGY STAR guidelines should target the homebuilders that are not participating in the ENERGY STAR program instead of requiring builders that are already involved in the program to do even more. With the increased requirements, fewer builders are likely to participate, which may result in fewer overall savings. | <ul style="list-style-type: none"> • Despite the downturn in the housing market, ENERGY STAR homes now represent over 20% of the market nationally, the rigor of both national and local codes are significantly increasing, and builders are continuing to sign onto the program in record numbers. Therefore, EPA believes that the time is right to substantially raise the bar for homes to earn the ENERGY STAR label. Some builders may feel that the new guidelines are too much for them at this time and EPA accepts that some partners may drop out of the program. ENERGY STAR is not a mandatory code. Rather, it is a voluntary program for builders who want recognition for building superior energy-efficient homes. As such, builders who participate should expect that the program will periodically need to enhance its guidelines so that the brand continues to make good on its promise of substantially improved efficiency over code. EPA believes that the proposed version 3.0 guidelines continue to represent a cost-effect package of improvements for both home builders and homebuyers. | <ul style="list-style-type: none"> • No policy change. |
| 30 | <ul style="list-style-type: none"> • One respondent suggested making a “consumer’s guide” for architects and homeowners. The intent of the guide would be to describe what particular products do and do not do well, note where they can be installed by code and specifications, as well as to dispel myths so that the consumer can make sound decisions. The respondent also suggested a separate guide for foam insulation so that builders and homeowners can assess the differences between batt insulation and spray foam insulation, including infiltration and safety issues. These steps would help to make spray foam easier to approve for projects and become a regular | <ul style="list-style-type: none"> • EPA is planning to develop and provide guidance to consumers about the benefits of the version 3.0 guidelines, though the format of this documentation is still being developed. While EPA cannot endorse specific products, it can highlight classes of products that can be used to satisfy the requirements of the guidelines. | <ul style="list-style-type: none"> • No policy change. |

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| | part of building code. | | |
| 31 | <ul style="list-style-type: none"> One respondent suggested that EPA solicit additional feedback from the ten states with the highest participation to ensure that the next revisions to the guidelines are a success. The respondent believes that the currently proposed guidelines will dramatically reduce participation, particularly among small businesses. | <ul style="list-style-type: none"> EPA has promoted the revision of the guidelines to all of its partners and key stakeholders and has additionally solicited comments from all interested parties through its website. This has resulted in over 350 pages of comments from hundreds of unique respondents, representing a wide range of viewpoints. In addition, EPA continually gathers expert input and researches new technology costs and performance developments during the implementation of each iteration of the guidelines. For these reasons, EPA feels that its current process for soliciting feedback is adequate, particularly given that ENERGY STAR is a voluntary guideline and not a mandatory standard. EPA is willing to accept some drop in initial builder participation to ensure a cost-effective and comprehensive whole-house approach that offers meaningful savings and is grounded in building science principles. EPA believes that these guidelines will offer builders a much more competitive product relative to new homes that are minimally code-compliant and to existing homes through increased customer satisfaction, reduced risk, and substantially reduced energy consumption and related greenhouse gas emissions. Ultimately, by committing to guidelines that emphasize added value over first costs, EPA believes long-term builder participation will increase. | <ul style="list-style-type: none"> No policy change. |

Impact on Sponsoring Programs

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| QA/QC | | | |
| 32 | <ul style="list-style-type: none"> Respondents requested additional information on how EPA will address Quality Assurance. A few respondents requested additional information regarding the newly proposed QA requirements, specifically what is the plan for development and implementation and who will provide the QA oversight. One respondent noted such requirements, coupled with other new requirements, may reduce participation by | <ul style="list-style-type: none"> EPA is coordinating with RESNET to integrate components of the new mandatory checklists into the RESNET standards and to revise the Quality Assurance guidelines and requirements for Home Energy Raters. In addition, EPA will be implementing new Quality Assurance requirements for Sponsoring programs and is considering implementation of third-party random testing of ENERGY STAR Qualified homes. | <ul style="list-style-type: none"> No policy change, though EPA will continue to pursue the strategies noted in the response to the left. |

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| | utility sponsors as cost-effectiveness will not be feasible. | | |
| Cost-Effectiveness | | | |
| 33 | <ul style="list-style-type: none"> Several utilities responded that they will be evaluating whether the ENERGY STAR for Homes program will continue to be the most-effective vehicle for them to meet their energy saving goals. Utilities are concerned that they will not achieve the necessary balance between energy savings and implementation costs. One respondent noted that utilities must show a return on investment in a shorter time period than 30 years as EPA has provided. In addition, they feel that EPA did not take into account administrative costs and assumes that costs are similar throughout various jurisdictions despite that energy prices, constructions costs, and building codes vary greatly. One respondent noted concern over the non-energy requirements, including the Water Management Checklist. Another respondent noted that utilities cannot offset the additional costs through larger incentives if there is no verifiable increase in energy savings. | <ul style="list-style-type: none"> The level of efficiency promoted by the program necessitates accompanying water management and air quality measures to mitigate potential problems associated with tight-construction and well-insulated construction practices. With current construction and utility costs, EPA estimates a payback period of 5-10 years for most qualified homes. Moreover, EPA is confident that substantial decreases in costs will rapidly occur as partners gain experience with the new requirements. | <ul style="list-style-type: none"> No policy change. |
| 34 | <ul style="list-style-type: none"> One respondent noted concerns that an anticipated drop in builder participation and market share will lead to a decrease in ENERGY STAR brand awareness and marketing which would lead to a lower perceived value of an ENERGY STAR qualified home. | <ul style="list-style-type: none"> EPA believes the combination of meaningful savings and risk reduction will strengthen long-term program participation, even if there is an initial drop in participation. Further, EPA believes that the expanded checklists only strengthen the potential marketing message to consumers; e.g., "Not only are you as a homebuyer getting a home that is significantly more energy efficient than standard construction, your builder also incorporates a comprehensive approach to building science that can improve comfort, indoor air quality, and durability for you and your family, and better protect your most-valuable asset." | <ul style="list-style-type: none"> EPA is currently working on developing strategies for communicating the ENERGY STAR New Homes version 3.0 program to all stakeholders – raters, builders, sponsors, and consumers; EPA is in the process of developing a consumer page highlighting the history of ENERGY STAR and the events that have led to the change in guidelines; EPA will update all communications materials to be released shortly after the release |

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| | | | <p>of the final ENERGY STAR version 3.0 guidelines;</p> <ul style="list-style-type: none"> EPA will update all trainings available to partners to reflect the changes to the guidelines; EPA is also working on studies with several partners to identify the greatest training needs in building, rating, and selling qualified homes. |
| Training | | | |
| 35 | <ul style="list-style-type: none"> A few respondents requested additional information on EPA's plans to train builders and raters, including the materials' content and projected timeline. | <ul style="list-style-type: none"> EPA is planning to develop training for all partners and, in particular, more comprehensive training for raters on the new guidelines. General trainings will be available online. More complex and in-depth trainings will be available nationwide, and will cover the new checklists and the raters' responsibilities and requirements for each checklist. Additionally, EPA already has plans for developing supplemental technical guidance corresponding to each of the new checklists to provide further technical support to our partners. Also, EPA is working with ACCA and other HVAC professionals to develop appropriate training for raters and HVAC contractors regarding the new guidelines. | <ul style="list-style-type: none"> No policy change, though EPA will continue to pursue the strategies noted in the response to the left. |
| 36 | <ul style="list-style-type: none"> A few respondents asked if EPA will provide financial support for program sponsors who will provide onsite training. If so, how much will be made available, how will the funds be allocated, and what is the timeline? Respondents also noted the need for training of their trade partners and subcontractors, including HVAC contractors and suppliers. | <ul style="list-style-type: none"> Because ENERGY STAR is a voluntary, government-administrated program, support for training can not be provided in the form of financial aid. EPA is planning to develop training for all partners and, in particular, more comprehensive training for raters on the new guidelines. General trainings will be available online. More complex and in-depth trainings will be facilitated nationwide, and will cover the new checklists and the raters' responsibilities and requirements for each checklist. | <ul style="list-style-type: none"> No policy change, though EPA will continue to pursue the strategies noted in the response to the left. |

National Program Requirements

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| General | | | |
| 37 | <ul style="list-style-type: none"> One respondent suggested revising the | <ul style="list-style-type: none"> EPA agrees that the proposed changes would increase | <ul style="list-style-type: none"> EPA has updated the national |

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| | <p>following sentence in the introduction to the performance path, “..a custom combination of measures for each home that is equivalent in performance to the ENERGY STAR Reference Design Home” as follows, “..a custom combination of measures for each home that is equivalent in performance to <u>the minimum requirements of</u> the ENERGY STAR Reference Design..”</p> | <p>the clarity of the statement.</p> | <p>program requirements with the proposed language.</p> |
| 38 | <ul style="list-style-type: none"> One respondent also suggested changing “.. follow these steps below..” to “..follow the steps below..” in the second sentence of the introductory paragraph for the performance path to improve clarity. | <ul style="list-style-type: none"> EPA agrees that the proposed changes would increase the clarity of the statement. | <ul style="list-style-type: none"> EPA has updated the national program requirements with the proposed language. |
| 39 | <ul style="list-style-type: none"> One respondent requested that program sponsors be allowed to set requirements above and beyond the national program requirements, such as: <ul style="list-style-type: none"> Setting a fixed HERS index value that is more stringent than all possible target indices created using the ENERGY STAR Reference Design Defining stricter Size Adjustment Factors. | <ul style="list-style-type: none"> EPA agrees that program sponsors should be allowed to set requirements above and beyond the stringency of the national program requirements. However, partners that are not interested in participating in the regional program may always qualify their home under the national program requirements, independent of the regional program. | <ul style="list-style-type: none"> No policy change is required; EPA has historically allowed and will continue to allow program sponsors to set requirements that are more stringent than the national program guidelines and to allow partners that are not interested in participating in the regional program to qualify under the national program requirements. |
| 40 | <ul style="list-style-type: none"> Multiple respondents expressed concern about the use of the 2009 IECC as a basis for determining requirements for states that have not adopted this code. For example, some states have more lenient codes, such as the 2006 IECC, which will make compliance more difficult. Other states have more progressive or altogether different codes, such as WI’s UDC code, which will make compliance with 2009 IECC insulation requirements more complex. | <ul style="list-style-type: none"> Over half of the states and the District of Columbia have adopted or are considering adoption of the 2009 IECC. EPA believes, therefore, that the 2009 IECC will become the predominant code during the time that the version 3.0 guidelines are in effect and is therefore a logical threshold to define minimum performance in qualified homes. Furthermore, EPA believes that its guidelines are a reflection of what is achievable in the marketplace using currently available cost-effective technologies; therefore, even homes that are in states with less stringent codes should also be able to participate. Regarding states with more stringent codes, EPA has indicated that custom state-level ENERGY STAR Reference Designs may be developed to ensure that the program continues to offer meaningful savings. | <ul style="list-style-type: none"> No policy change. |

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| 41 | <ul style="list-style-type: none"> • One respondent expressed concern that the ventilation level required by ASHRAE 62.2 will necessitate the installation of a Heat Recovery Ventilator (HRV) in cold climates to prevent a substantial energy penalty, which will cost several thousand dollars. The respondent suggested that occupant-controlled ventilation systems could achieve the intent of ASHRAE 62.2 without explicitly requiring an automated system, though how this would be accomplished is not explained. | <ul style="list-style-type: none"> • ASHRAE 62.2 and the national program guidelines only require the use of automatic ventilation devices (e.g., air cyclers or exhaust fan with an automatic timer) and do not require the use of more expensive HRV or Energy Recovery Ventilator (ERV) systems. EPA notes if builders find the use of these systems economical, they may use them and will likely achieve an additional meaningful improvement in HERS value. • Furthermore, homes that have both a tight envelope and an ASHRAE 62.2-compliant ventilation system will not likely have a higher overall amount of outdoor air entering the house than a home with high infiltration and no ventilation system. Therefore, an HRV will not likely be required in the typical qualified home to achieve meaningful energy savings or maintain comfort. • While EPA agrees with the respondent that occupants can have a large impact on the ventilation rate in their home, it is not clear to EPA how an effective ventilation system could be <i>consistently</i> achieved in qualified homes without controls, per ASHRAE 62.2. | <ul style="list-style-type: none"> • No policy change. |
| 42 | <ul style="list-style-type: none"> • One respondent suggested that ResCheck be developed as a means of demonstrating compliance with the ENERGY STAR program requirements | <ul style="list-style-type: none"> • EPA relies on the RESNET standards to set minimum acceptable levels of performance for software programs. It is EPA's understanding that ResCheck is not designed to be a compliance tool for above-code programs and that the software would have to be significantly modified to meet RESNET's requirements. If such modifications were made and RESNET accredited ResCheck, then it could be used to qualify homes. | <ul style="list-style-type: none"> • No policy change. |
| 43 | <ul style="list-style-type: none"> • Several respondents expressed concern that EPA is not using a source-based metric to define the requirements of and compliance with the version 3.0 guidelines. The following reasons were provided for adopting such a metric: <ul style="list-style-type: none"> ○ This metric would better align with EPA's primary goal to maximize carbon reductions. ○ The HERS metric is not an effective predictor of source energy consumption, as illustrated with a comparison between two homes with different fuel types that have similar HERS index values but | <ul style="list-style-type: none"> • Since the inception of the ENERGY STAR New Homes program, EPA's strategy for defining the guidelines has been to identify specific technologies and practices that would meaningfully improve the energy efficiency of homes and that were cost-effective and ready for adoption by the broad market. Because of the voluntary nature of the program, EPA cannot always require the technologies and practices that may have the greatest theoretical potential for carbon reduction because they are too expensive or are unlikely to be adopted by the partners. If EPA were only to consider measures with the greatest technical potential for carbon reduction and many fewer partners participated because of high cost or limited market acceptance, then the realized savings | <ul style="list-style-type: none"> • No policy change. |

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| | <p>different source emissions.</p> <ul style="list-style-type: none"> ○ The EPA ENERGY STAR Commercial and Industrial Buildings branch has endorsed source-based energy efficiency analysis as noted in their suggestion that a source-based metric be used in the ICC's Green Construction Code. ○ EPA has illustrated that high efficiency ratings don't necessarily correlate with high carbon savings (e.g., electric versus gas water heaters). ○ Various organizations have produced reports endorsing the use of source-based metrics, including the National Academy of Sciences, the National Research Council, the Natural Resource Defense Council, the Department of Energy, and the ASHRAE Presidential Ad Hoc Committee. | <p>of the program would be substantially reduced.</p> <ul style="list-style-type: none"> • To define the guidelines, EPA uses its expertise and feedback from partners and stakeholders to identify technologies and practices for inclusion in the prescriptive path and then establishes an equivalent performance target. Therefore, the metric used in the performance path is not integral to defining the requirements of the guidelines; rather it is integral to defining how partners using the performance path can select measures that offer performance equivalent to the prescriptive path. • EPA agrees in principle that a source-based metric would be most appropriate. For instance, EPA's guidelines for CA utilize a source-based metric that has been developed by the state and incorporated into the rating software utilized by that state. However, in other states, EPA relies upon RESNET's independently-developed methodology and is not in a position to impose CA's metric upon that standard. | |
| 44 | <ul style="list-style-type: none"> • Several respondents noted that EPA inconsistently applies the use of ENERGY STAR appliance requirements. For example, ENERGY STAR furnaces are required in the prescriptive path and ENERGY STAR Reference Design in cold climates, but ENERGY STAR water heaters are not. The respondents believe that EPA's explanation that the incremental cost is too great for ENERGY STAR water heaters is not properly documented or reflective of the ability to use natural gas or propane gas storage water heaters. | <ul style="list-style-type: none"> • For version 3.0 of the guidelines, EPA chose to focus primarily on building-science-based fuel-neutral improvements that cannot be easily corrected after completion of the building. This includes, for example, reduced thermal bridging, tighter ducts, reduced infiltration, water-management construction details, and minimum requirements for windows and insulation. Secondly, EPA is supplementing these long-life improvements with improved efficiency of shorter-life equipment, such as efficient HVAC systems, properly designed and installed; efficient lighting; and efficient appliances. • EPA agrees with respondents that ENERGY STAR qualified water heating systems offer additional significant savings. However, because of the relatively high incremental cost and limited market availability of proven products, EPA felt that their direct inclusion in the v3.0 guidelines could be a significant deterrent for participation when added on top of the other new requirements. Therefore, EPA will include ENERGY STAR qualified water heating in v4 of the guidelines, currently referred to as the Concept Home guidelines. Furthermore, partners that wish to use these products | <ul style="list-style-type: none"> • No policy change. |

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| | | under v3.0 of the ENERGY STAR New Homes guidelines can still do so in the performance path and receive the corresponding improvement in the HERS index. | |
| Path Flexibility | | | |
| 45 | <ul style="list-style-type: none"> One respondent requested that EPA clearly state the process and criteria for seeking alternate means of compliance with specific requirements in the version 3.0 guidelines and that EPA explain how such decisions would be communicated to program stakeholders. | <ul style="list-style-type: none"> Partners can currently seek clarification on any aspect of the guidelines by writing to: energystarhomes@energystar.gov. This process will continue with the v3.0 guidelines. In addition, significant policy changes, whether they result from partner questions or other factors, are communicated to partners through newsletters, emails to partners, and updates to the ENERGY STAR New Homes website (www.energystar.gov/homes). In addition, EPA will require that partners participate in annual training that highlights significant policy changes. However, EPA agrees with respondents that the changes can be more prominently and consistently communicated to partners. | <ul style="list-style-type: none"> EPA will improve the process of communicating policy changes to partners by: <ul style="list-style-type: none"> Making the policy clarification page more prominent on its website; Considering sending policy clarification updates to partners on a more consistent basis; Requiring annual training / recertification for builders and raters that will provide a more formal solution for educating all partners on new policies. |
| 46 | <ul style="list-style-type: none"> Multiple respondents noted that allowing for increased flexibility in selecting upgrades would increase participation in the ENERGY STAR program. One respondent questioned whether practical tradeoffs still exist in the performance path, given the stringency of the ENERGY STAR Reference Design. | <ul style="list-style-type: none"> EPA agrees that there will be fewer trade-offs allowed under the proposed version 3.0 guidelines due to the establishment of additional mandatory minimums for windows and insulation levels and because more upgrades are needed to achieve the required savings. However, EPA does believe that meaningful tradeoffs still exist in the performance path, such as energy efficient design techniques, advanced envelope technologies with increased insulation, further reduced infiltration, energy and heat recovery systems, higher efficiency HVAC equipment, advanced HVAC equipment, ENERGY STAR qualified water heaters, and greater use of energy efficient lighting and appliances. | <ul style="list-style-type: none"> No policy change. |
| 47 | <ul style="list-style-type: none"> One respondent requested that a prescriptive path be developed for homes that are above the Benchmark Home Size to provide an extra option for compliance. | <ul style="list-style-type: none"> Because the requirements will be dependent on the extent to which the home is larger than the benchmark home size (e.g., a home that is 1,000 sq ft larger will have different requirements than one that is 2,000 sq ft larger), developing prescriptive options for such homes would require significant resources with potentially very little benefit. | <ul style="list-style-type: none"> No policy change. |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

| Performance Path | | | |
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| 48 | <ul style="list-style-type: none"> In Step 1 of the performance path, one respondent suggested changing “..until a version of the RESNET-accredited software program used by each Rater..” to “..until a version of the RESNET-accredited software program used by <i>the</i> Rater..” to improve clarity. | <ul style="list-style-type: none"> EPA agrees that the proposed changes would increase the clarity of the statement. | <ul style="list-style-type: none"> EPA has updated the national program requirements with the proposed language. |
| 49 | <ul style="list-style-type: none"> In Step 1 of the performance path, one respondent suggested changing “.. configures the ENERGY STAR Reference Design and calculates its associated HERS index value and then applies the appropriate Size Adjustment Factor to determine the ENERGY STAR HERS Index Target..” to “..configures the ENERGY STAR Reference Design, calculates its associated HERS index value and then applies the appropriate Size Adjustment Factor to determine the ENERGY STAR HERS Index Target..” | <ul style="list-style-type: none"> EPA agrees that the proposed changes would increase the clarity of the statement. | <ul style="list-style-type: none"> EPA has updated the national program requirements with the proposed language. |
| 50 | <ul style="list-style-type: none"> In Step1 of the performance path, multiple respondents suggested changing the word “maximum” in the phrase, “..the maximum HERS index value that each rated home may achieve..” to either “highest” or “highest numerical” to improve clarity. | <ul style="list-style-type: none"> EPA agrees that changing “maximum” to “highest numerical” would increase the clarity of the statement. | <ul style="list-style-type: none"> EPA has updated the national program requirements with the proposed language. |
| 51 | <ul style="list-style-type: none"> In Step 2 of the performance path, one respondent expressed concern that limiting the use of on-site power to large homes might encourage builders that wish to use renewable energy systems to increase their house size. The respondent requested that EPA consider allowing homes smaller than the benchmark home size to also use renewable systems to prevent this from happening. | <ul style="list-style-type: none"> Under the proposed guidelines, on-site power systems can only be used to offset the <i>incremental</i> change in ENERGY STAR HERS Index Target caused by the Size Adjustment Factor. Therefore, a builder cannot increase home size to avoid meeting certain energy efficiency requirements; rather the builder will have to incorporate both the energy efficiency requirements and the on-site system to qualify. Therefore, EPA does not believe there is an incentive under the proposed guidelines to increase house size for the sake of incorporating on-site systems. Furthermore, builders can always receive credit for on-site systems through an improved HERS index, above and beyond ENERGY STAR qualification. | <ul style="list-style-type: none"> No policy change. |
| 52 | <ul style="list-style-type: none"> In Step 2 of the performance path, one respondent suggested changing the phrase, | <ul style="list-style-type: none"> EPA agrees that the proposed changes would increase the clarity of the statement. | <ul style="list-style-type: none"> No policy change. |

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| | <p>“Using any RESNET-accredited Home Energy Rating software program..” to “Using <i>the same</i> RESNET-accredited Home Energy Rating software program...” so that raters will be required to use the same software to determine the ENERGY STAR HERS Index target and the actual rating.</p> | | |
| Heating Equipment | | | |
| 53 | <ul style="list-style-type: none"> One respondent requested clarification as to whether the required ground source heat pump COP incorporates the ground loop impact on overall efficiency or is only the equipment efficiency. | <ul style="list-style-type: none"> The ground source heat pump efficiencies do incorporate the ground loop impact. | <ul style="list-style-type: none"> EPA has updated the national program requirements to indicate the required efficiency for each type of ground loop type that is utilized. Also, note that EPA has increased the efficiency requirements to align with those that will go into effect for the ENERGY STAR geothermal heatpump program on 1/1/2011. |
| 54 | <ul style="list-style-type: none"> One respondent expressed concern about including only ENERGY STAR qualified ground-source heat pumps in hot climates, as this level of performance seems excessive in such climates and may limit the use of this equipment type. | <ul style="list-style-type: none"> EPA promotes ENERGY STAR qualified equipment throughout the ENERGY STAR reference design wherever possible. In the case of ground-source heatpumps, EPA believes that the incremental cost between a qualified and non-qualified system is small compared to the cost of the total system and, therefore, warrants inclusion in all climates. Also, note that partners can use non-qualified ground-source heatpumps through the performance path. | <ul style="list-style-type: none"> No policy change. |
| 55 | <ul style="list-style-type: none"> One respondent noted that in the cold climate heating equipment section of Exhibit 1 that a reference to footnote 9 should be included after “Air-source heat pump...” | <ul style="list-style-type: none"> EPA agrees that the proposed changes would increase the clarity of the statement. | <ul style="list-style-type: none"> EPA has updated the national program requirements with the proposed language. |
| 56 | <ul style="list-style-type: none"> One respondent requested that an outdoor cutout thermostat be required for the resistance heat backup on heat pumps located in climate zones 4 to 8. | <ul style="list-style-type: none"> While EPA believes that an outdoor cutout thermostat would be beneficial to ensuring heatpump performance, at this time, there is no industry-standard protocol or labeling process that would allow for this requirement to be consistently enforced. | <ul style="list-style-type: none"> No policy change. |
| 57 | <ul style="list-style-type: none"> One respondent requested clarification as to why the proper sizing of heating systems is required whereas only cooling system sizing is required in the current standard and what level of energy savings would be associated | <ul style="list-style-type: none"> EPA has included the requirement for right-sizing of heating equipment to align with the requirements of the industry-standard ACCA Manual S. Part-load performance degradation of non-electric heating systems is generally much smaller than for electric | <ul style="list-style-type: none"> No policy change. |

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| | with this measure. | heating and cooling systems and the over-sizing limit for non-electric heating systems is therefore much more lenient (i.e., 40% over-sizing limit vs 15%-25% for electric equipment). | |
| 58 | <ul style="list-style-type: none"> • Multiple respondents expressed concern about the heat pump efficiency requirements for cold climates: <ul style="list-style-type: none"> ○ One respondent noted that 9.25 and 9.5 HSPF ducted heat pumps are not readily available in the Pacific Northwest and references a study suggesting that a properly sized heat pump with 8.5 HSPF that is coupled with an auxiliary heat outdoor temperature lockout set at 35 should offer comparable savings. ○ Another respondent requested information on the reasoning behind the heat pump efficiency requirements selected and if EPA has evaluated the market availability for products that meet these requirements. | <ul style="list-style-type: none"> • EPA is continuing to coordinate with respondents that have expressed concern about the availability and cost of high-efficiency heatpumps and the possibility of using more cost-effective advanced control strategies in place of higher efficiency ratings. | <ul style="list-style-type: none"> • No policy change at this time, though EPA will continue to evaluate the policy and may revise the guidelines after further coordination with respondents. |
| Cooling Equipment | | | |
| 59 | <ul style="list-style-type: none"> • One respondent expressed concern about the heat pump requirement of 14.5 SEER in mixed and cold climates, given that the requirement for an AC system is only 13 SEER. The respondent suggested revising the heat pump requirement to 13 SEER. | <ul style="list-style-type: none"> • EPA believes that HSPF and SEER ratings are generally related to one another, such that the additional cost for a 14.5 SEER system will be minimal given the HSPF requirement. Therefore, EPA has elected to align with the requirements of the ENERGY STAR labeled product category. | <ul style="list-style-type: none"> • No policy change. |
| 60 | <ul style="list-style-type: none"> • In contrast, another respondent expressed concern that the requirements for cooling equipment in mixed and cold climates are too lenient because they are aligned with NAECA-minimum standards. They suggest requiring 14 SEER for mixed and cold climates and 15 SEER for hot climates. | <ul style="list-style-type: none"> • While high-efficiency AC systems can offer energy and demand savings in climate zones 4-8, EPA believes that the most cost-effective improvements in these climates generally lay with high-efficiency heating systems. Furthermore, partners using the performance path can utilize high-efficiency AC systems in these climates, as desired. | <ul style="list-style-type: none"> • No policy change. |
| Envelope, Windows & Doors | | | |
| 61 | <ul style="list-style-type: none"> • Multiple respondents requested clarification as to whether it is each component or the total envelope that is required to meet the 2009 IECC insulation requirements. They suggested that a total UA analysis should be | <ul style="list-style-type: none"> • To ensure a complete thermal enclosure, EPA believes that each component of the home (i.e., foundation, floors, walls, and ceilings) must meet or exceed the component insulation requirements in Table 402.1.1, using U-factor alternatives in Table 402.1.3, or using a | <ul style="list-style-type: none"> • EPA has clarified in footnote 10 of the National Program Requirements and in footnote 4 of the Thermal Enclosure System checklist that, "Compliance can |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| | <p>allowed to provide builders with the maximum amount of flexibility in meeting the version 3.0 ENERGY STAR guidelines.</p> | <p>total UA alternative, as described in 402.1.4 of the 2009 IECC.</p> | <p>be determined by meeting component insulation requirements in Table 402.1.1, using U-factor alternatives in Table 402.1.3, or using a total UA alternative, as described in Section 402.1.4 of the 2009 IECC”.</p> |
| 62 | <ul style="list-style-type: none"> One respondent felt that the guidelines’ requirements for improved windows and walls yield less benefit than adding additional requirements for air tightness and improved attics and foundations. | <ul style="list-style-type: none"> EPA believes that the prescriptive path offers a cost-effective approach to saving meaningful amounts of energy and ensuring a complete thermal envelope, along with no sacrifice in durability or indoor air quality. However, partners that believe they can more effectively achieve savings with alternate upgrades may use the performance path to do so. Under the performance path, windows and walls must only meet the minimum requirements of the 2009 IECC, a code that is being considered for adoption by over half of the states in the US. | <ul style="list-style-type: none"> No policy change. |
| 63 | <ul style="list-style-type: none"> Another respondent noted that in Exhibit 1, the reference to footnote 14 after “Homes with total window-to-floor area...” should instead refer to footnote 15 for U-factor and SHGC adjustment. The respondent also requested confirmation that the footnote only applies to the prescriptive path and not to the performance path. | <ul style="list-style-type: none"> EPA agrees with the respondent’s suggestion and confirms that footnote 15 only applies to the prescriptive path, as indicated at the beginning of the footnote. This footnote is not required in the performance path because any change in window area will be reflected directly by the change in HERS index. | <ul style="list-style-type: none"> EPA has updated the national program requirements with the revised footnote numbering. |
| 64 | <ul style="list-style-type: none"> One respondent expressed concern over the absence of window shading, presumed to mean interior or exterior shading devices, or solar heat gain potential in the requirements for windows. Note that the respondent may not be familiar with the version 3.0 ENERGY STAR National Program Requirements, which do require climate-appropriate SHGC values. | <ul style="list-style-type: none"> EPA notes that SHGC requirements are included in the version 3.0 ENERGY STAR National Program Requirements. EPA has not included interior shading requirements because they are highly dependent on the occupant. RESNET also does not provide credit for interior shading devices. Exterior shading devices have not been included in the prescriptive path, because they are generally not favored by builders. However, partners that wish to incorporate exterior shading devices can use the performance path and receive credit. | <ul style="list-style-type: none"> No policy change. |
| 65 | <ul style="list-style-type: none"> One respondent expressed concern about the proposed reduction in allowable infiltration rates. The respondent suggested that the version 3.0 ENERGY STAR new homes | <ul style="list-style-type: none"> EPA appreciates the difficulty that may occur when trying to air seal units with sprinklers. However, in most units, this added infiltration will occur between units and not to the outside. In such cases, raters may isolate | <ul style="list-style-type: none"> No policy change. |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| | <p>guidelines should create an exception for small apartment units that require sprinkler systems as many fire inspectors do not allow sprinkler penetrations to have insulation, gaskets, or other infiltration measures to be installed around them. The exception would provide an allowable increase of 1 ACH50 for each climate zone, consistent with the first draft of the version 3.0 new homes guidelines.</p> | <p>leakage to the outside using simultaneous blower doors. Alternatively, if industry provides a protocol that accounts for leakage through adiabatic surfaces without the use of simultaneous blower doors, that may also be used.</p> | |
| 66 | <ul style="list-style-type: none"> One respondent expressed concern about the SHGC values assumed for the ENERGY STAR Reference Design in climate zones 4-8. The respondent felt that the values are not representative of the marketplace given the low U-values that are specified and suggested lowering the assumed SHGC from 0.40 in climate zone 4 and from 0.45 in climate zone 5-8 to 0.32. Another respondent expressed concern about the SHGC values assumed for the ENERGY STAR Reference Design in climate zones 4-8. The respondent suggested that the values should align with the 2009 IECC performance path, which assumes a value of 0.40. The respondent also suggested that this requirement be applied to the prescriptive path, as well, to help limit electric cooling demand. | <ul style="list-style-type: none"> EPA agrees that it is appropriate for the expanded ENERGY STAR Reference Design to align with the 2009 IECC performance path assumption that windows in cold climates be modeled with 0.40 SHGC. However, the prescriptive path will remain aligned with the ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Version 5.0, which does not set requirements for SHGC values in cold climates. | <ul style="list-style-type: none"> EPA has updated the expanded ENERGY STAR Reference Design to align with the 2009 IECC performance path assumption that windows in cold climates be modeled with 0.40 SHGC. |
| 67 | <ul style="list-style-type: none"> One respondent suggested that the SHGC correction in the prescriptive path, required for homes with window area to floor area ratio $\geq 15\%$, should be extended to climate zone 4. | <ul style="list-style-type: none"> It is likely that for homes where this U-value adjustment is required, a lower SHGC will also result due to typical window configurations available in the marketplace. However, for simplicity, EPA has grouped climate zone 4 with colder climates and therefore only formally requires heating focused improvements. | <ul style="list-style-type: none"> No policy change. |
| 68 | <ul style="list-style-type: none"> Another respondent expressed concern that the 15% glazing allowance would “penalize” small homes and suggested a separate value be established for small homes. | <ul style="list-style-type: none"> EPA has aligned with the reference home configuration in the 2009 IECC, which sets the window area equal to the rated home or to 15%, whichever is less. Lacking data showing window to floor area ratios that are consistently higher than 15% in small homes, EPA does not believe an exemption for small homes is warranted. | <ul style="list-style-type: none"> No policy change. |
| 69 | <ul style="list-style-type: none"> One respondent expressed concern that the infiltration rates in the prescriptive path and | <ul style="list-style-type: none"> The proposed version 3.0 guidelines reduce the infiltration rates relative to the current guidelines, which | <ul style="list-style-type: none"> No policy change. |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| | ENERGY STAR Reference Design do not address humidity issues in certain climate zones. | should only alleviate humidity concerns. The addition of mechanical ventilation systems may potentially increase humidity loads, however, these controlled loads can be better managed through dehumidification than uncontrolled loads that occur through natural infiltration. Furthermore, the HVAC System Quality Installation checklist requires that the HVAC designer ensure that the cooling system either has adequate latent capacity to maintain proper humidity levels or that supplemental dehumidification capacity be added. | |
| 70 | <ul style="list-style-type: none"> One respondent suggested that in footnote 15 of the national program requirements, the references to “minimum required SHGC” and “maximum required U-factor” should be revised to “maximum allowable” SHGC and U-factor, as these are the highest values allowed in the prescriptive path. | <ul style="list-style-type: none"> EPA agrees with the clarification. | <ul style="list-style-type: none"> EPA has updated the national program requirements with the proposed language. |
| 71 | <ul style="list-style-type: none"> Another respondent expressed concern about the window requirements being too aggressive, stating that manufacturers that the respondent works with are not able to deliver such windows. | <ul style="list-style-type: none"> Given that the performance path only requires that windows be compliant with the 2009 IECC and that over half of the states in the US have adopted or are considering adoption of the 2009 IECC, EPA believes that any window availability concerns will quickly subside. | <ul style="list-style-type: none"> No policy change. |
| 72 | <ul style="list-style-type: none"> Multiple respondents expressed concern about the SHGC values required in the prescriptive path will not permit homes with passive solar designs to qualify. One respondent felt that RESNET-accredited software programs don’t accurately model passive solar designs, making a prescriptive path allowance necessary. Possible components of a prescriptive path could include overhangs, a maximum allowable SHGC, and proper orientation. | <ul style="list-style-type: none"> EPA agrees with the respondent that an exemption for the SHGC requirements can be provided in the prescriptive path for fenestration utilized as part of a passive solar design. | <ul style="list-style-type: none"> EPA has revised footnote 12 of the national program requirements to include an exemption on SHGC requirements for fenestration used as part of a passive solar design, defined as follows: fenestration utilized as part of a passive solar design shall be facing within 15 degrees of true south and directly coupled to thermal storage mass that has a heat capacity $\geq 20 \text{ btu/ft}^3 \times ^\circ\text{F}$ and provided in a ratio of at least 3 sq. ft per sq. ft. of south facing fenestration. Generally, thermal mass materials will be at least 2” thick. |
| 73 | <ul style="list-style-type: none"> One respondent requested that raised batten | <ul style="list-style-type: none"> EPA believes that the partner should pursue the | <ul style="list-style-type: none"> No policy change. |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| | <p>products that provide a minimum of ¼” air space between the roof sheathing and the bottom surface of the roof covering be allowed to earn the ENERGY STAR. The respondent cited analysis using Title 24 compliant software showing energy savings of 5-12% for homes in California and studies performed by Dr. Miller at Oakridge National Laboratory.</p> | <p>possibility of labeling raised tile roof products coupled with ¼” air spaces when the ENERGY STAR Roof Products category is revised. If the ENERGY STAR Roof Products category is revised to label such configurations, the ENERGY STAR New Homes program will accept them as well.</p> <ul style="list-style-type: none"> In addition, the partner may wish to work with RESNET to see whether this configuration can be recognized within RESNET-certified rating software. If this were to occur, then partners using the performance path could receive credit through improved HERS index values. | |
| 74 | <ul style="list-style-type: none"> One respondent requested that EPA accept the use of reflectivity ratings by the Cool Roof Rating Council (CRRC) for high slope roof products (> 2:12). They believe that this will promote innovation and more energy efficient roofing products. | <ul style="list-style-type: none"> EPA believes that the partner should raise concerns about the acceptability of ratings by the Cool Roof Rating Council when the ENERGY STAR Roof Products category is revised. If the ENERGY STAR Roof Products category is revised to accept CRRC ratings, the ENERGY STAR New Homes program will accept them as well. | <ul style="list-style-type: none"> No policy change. |
| Water Heaters & Hot Water Conservation | | | |
| 75 | <ul style="list-style-type: none"> One respondent expressed concern that omitting oil-fired water heaters from the prescriptive path will force builders to use electric water heaters, which may increase net carbon emissions. | <ul style="list-style-type: none"> EPA agrees with the respondent that it’s appropriate to add oil-fired water heater options to the guidelines. | <ul style="list-style-type: none"> EPA has updated the national program requirements and the ENERGY STAR HERS Index Target Procedure documents with required efficiencies for oil-fired water heaters. |
| 76 | <ul style="list-style-type: none"> One respondent suggested that non-electric water heaters should be required to be ENERGY STAR qualified. The respondent agreed that the proposed guidelines are justified in excluding electric water heaters from this requirement, given that the only compliance option is a heat pump water heater. | <ul style="list-style-type: none"> EPA agrees with respondents that ENERGY STAR qualified water heating systems offer additional significant savings. However, because of the relatively new technologies being used in these products and the relatively high incremental cost, EPA felt that their direct inclusion in the v3.0 guidelines could be a significant deterrent for participation when added on top of the other new requirements. Therefore, EPA will include ENERGY STAR qualified water heating in v4 of the guidelines, currently referred to as the Concept Home guidelines. Furthermore, partners that wish to use these products under v3.0 of the ENERGY STAR New Homes guidelines can still do so in the performance path and receive the corresponding improvement in HERS index | <ul style="list-style-type: none"> No policy change. |
| 77 | <ul style="list-style-type: none"> One respondent suggested that because electric water heaters produce more source- | <ul style="list-style-type: none"> Since the inception of the ENERGY STAR New Homes program, EPA’s strategy for defining the guidelines has | <ul style="list-style-type: none"> No policy change. |

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| | <p>based emissions than gas water heaters using conventional electricity sources, they should be banned from use in the ENERGY STAR New Homes program</p> | <p>been to identify specific technologies and practices that would meaningfully improve the energy efficiency of homes and that were cost-effective and ready for adoption by the broad market. Because of the voluntary nature of the program, EPA is wary of banning products that are widely in use when fully cost-effective and market-ready alternate products are not widely available. This is particularly the case for technologies that will be replaced throughout the lifetime of the building. Regarding water heaters, EPA feels that its program has little influence on fuel selection and that partners would be more likely to drop out of the program than switch fuel type in order to comply. Therefore, EPA must consider whether participation would be significantly compromised by banning such products, because partners that no longer participate realize zero savings for the program and make no long-life envelope improvements. Furthermore, the carbon intensity of electricity is dependent on the fuel source used to generate the electricity. For example, electric water heaters that use electricity generated from renewable sources will have even lower carbon emissions than gas water heaters. Therefore, the outright ban of electric water heaters is neither feasible nor prudent.</p> | |
| 78 | <ul style="list-style-type: none"> One respondent expressed concern about the removal of low-flow showerheads as a mandatory requirement as it is seen as a low cost method of achieving energy savings. | <ul style="list-style-type: none"> EPA believes that meaningful energy savings can be achieved for this iteration of the guidelines without requiring low-flow showerheads. In addition, EPA feels that it is appropriate to exclude these requirements until uniform standards can be developed. | <ul style="list-style-type: none"> No policy change. |
| Multifamily Buildings | | | |
| 79 | <ul style="list-style-type: none"> One respondent expressed concern about the ability to measure duct leakage to the outside in multifamily homes. The respondent suggested limiting duct requirements in multifamily units to total leakage and removing the limit for leakage to the outside | <ul style="list-style-type: none"> While EPA agrees with the respondent that it is more difficult to differentiate between total duct leakage and duct leakage to the outside in some multi-family homes (e.g., condos, apartments), the v3.0 guidelines do not require more difficult testing relative to the current, v2.0, guidelines. The current guidelines already require that multi-family units achieve duct leakage to the outside that is below a specified level. Under v3.0 of the guidelines, partners that do not want to test both leakage to the outside and total leakage can reduce the total duct leakage to below the limit for leakage to the | <ul style="list-style-type: none"> No policy change. |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| 80 | <ul style="list-style-type: none"> Multiple respondents requested clarification as to how common spaces in multifamily homes, such as common corridors and laundry rooms, should be accounted for in the current Benchmark Home Size calculation as there is currently no category for common spaces. Multiple respondents requested clarification as to whether the calculation of the Benchmark Home Size for multifamily homes is calculated for the entire building or on a per unit basis. It was noted that if it is determined on a per unit basis, then a multifamily building with 10 units would have 10 Benchmark Home Sizes and 10 Size Adjustment Factors. The respondent suggested that determining Benchmark Home Size for the overall building, inclusive of all bedrooms in the building, would be easier and preferable, though the equation would need to be modified to produce the same result as if the units were evaluated separately. | <p>outside and satisfy both requirements with one test.</p> <ul style="list-style-type: none"> EPA's New Homes program will continue to be applicable to individual multi-family units and not to whole buildings. However, EPA believes that the added complexity of calculating the Size Adjustment Factor for multi-family units outweighs the benefit given that a very large majority of multi-family units (e.g., condos and apartments) are unlikely to have a size adjustment factor due to their small size. Table HC1.2.4 of the 2005 Energy Information Administration's Residential Energy Consumption Survey indicates that 69% of existing units are smaller than 1,000 square feet, which is the benchmark size for 1 bedroom homes; an additional 24% are smaller than 1,500 square feet, indicating that more than 93% of multi-family dwellings are smaller than 1,600 square feet, the benchmark home size for 2 bedroom homes. | <ul style="list-style-type: none"> EPA has updated the ENERGY STAR HERS Index Target Procedure to indicate that the Size Adjustment Factor shall always be 1.0 for condos and apartments in multi-family buildings. This exemption does not apply to single-family detached homes, townhomes, rowhomes, duplexes, or triplexes. |
| 81 | <ul style="list-style-type: none"> One respondent requested clarification as to whether the implementation timeline of the version 3.0 guidelines for multi-family homes is different than the timeline for single family homes. Multifamily homes typically have longer planning and construction timelines than single family homes. | <ul style="list-style-type: none"> EPA agrees with the respondent that the development timeline for multi-family buildings is longer than for single-family homes and warrants additional time to meet the new requirements. | <ul style="list-style-type: none"> EPA has modified the implementation timeline by allowing additional time for multi-family buildings to transition to the version 3.0 requirements. Furthermore, it has clarified that some homes may use a transitional version of the guidelines during the 2011 calendar year, named v2.5, which is composed of the version 3.0 ENERGY STAR Reference Design coupled with the Air Barriers and Air Sealing sections of Thermal Enclosure Checklist. Under this version 2.5, the other inspection checklists shall be completed but not enforced. See Exhibit 4 of the National Program |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| | | | Requirements for a detailed illustration of the implementation timeline. |
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HERS Index Target Procedure

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| General | | | |
| 82 | <ul style="list-style-type: none"> One respondent suggested that the table Exhibit 2: Expanded ENERGY STAR Reference Design Definition should be made larger as it is hard to read in its current format. | <ul style="list-style-type: none"> EPA agrees that the proposed changes would increase the clarity of the exhibit. | <ul style="list-style-type: none"> EPA has resized the exhibit to improve legibility. |
| 83 | <ul style="list-style-type: none"> One respondent suggested revising the following sentence in Step 1, “..ENERGY STAR Reference Design Home is virtually identical to the home that would have been built using the prescriptive path requirements” as follows, “..ENERGY STAR Reference Design Home is virtually identical to the home that would have been built using the <i>minimum values of the</i> prescriptive path requirements | <ul style="list-style-type: none"> EPA agrees that the clarity of the statement could be improved. | <ul style="list-style-type: none"> EPA has revised the phrase to state, “..ENERGY STAR Reference Design Home is virtually identical to the home that would have been built using the minimum requirements of the prescriptive path”. |
| 84 | <ul style="list-style-type: none"> Another respondent suggested that continuous insulation deeper than 4’ and under basement slabs be integrated into the version 3.0 ENERGY STAR guidelines because ground temperatures contribute to heating requirements. | <ul style="list-style-type: none"> For version 3.0 of the guidelines, EPA has chosen to align with the 2009 IECC slab insulation requirements and would need empirical data demonstrating the benefit of insulation below 4’ and under basement slabs before further considering a policy change. | <ul style="list-style-type: none"> No policy change. |
| 85 | <ul style="list-style-type: none"> One respondent requested further clarification from EPA about whether raters will alter the definition of the ENERGY STAR Reference Design, how long software developers will have to release software with new state code reference designs, and whether custom ENERGY STAR Reference Designs will be developed for locales smaller than the state level that have aggressive codes. | <ul style="list-style-type: none"> EPA has clarified in the second draft of the guidelines that raters shall not alter the definition of the ENERGY STAR Reference Design themselves. Rather, raters will follow guidance from EPA regarding the applicable ENERGY STAR Reference Design for a given state and, eventually, EPA hopes that software will automatically configure the ENERGY STAR Reference Design according to EPA’s directions. EPA will determine the transition period for the use of new state-level reference designs as they are developed, but will typically set a transition period of 60 days. Generally speaking, EPA will not develop custom ENERGY STAR Reference Designs for locales smaller | <ul style="list-style-type: none"> No policy change, though EPA has clarified in the national program requirements and the ENERGY STAR HERS Index Target Procedure document that EPA will determine the transition period for the use of new state-level reference designs as they are developed, but will typically set a transition period of 60 days. |

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| | | <p>than the state level that have aggressive codes. However, EPA reserves the judgment to evaluate this policy on a case-by-case basis.</p> | |
| 86 | <ul style="list-style-type: none"> Multiple respondents expressed concern about the requirement for configuring the ENERGY STAR Reference Design with internal mass. One respondent noted that REM/Rate already incorporates 10 lbs. per square foot of internal mass and another notes that RESNET guidelines already dictate the amount of thermal mass that must be used. Therefore, EPA's requirements for the ENERGY STAR Reference Design should be clarified so that raters don't add additional thermal mass. One suggested solution was to rewrite the entire section as "Additional mass specifically designed as a Thermal Storage Element shall be excluded from the ENERGY STAR Reference Design." | <ul style="list-style-type: none"> EPA's intent was to ensure that the ENERGY STAR Reference Design was configured with the same internal mass as the RESNET's HERS Reference Home, without any additional mass designed as a Thermal Storage Element. EPA agrees with respondents that the intent of the language could be clarified. | <ul style="list-style-type: none"> EPA has revised the ENERGY STAR HERS Index Target document to indicate that the internal mass will be automatically configured by the HERS rating software to match the HERS Reference Home. EPA has also added the language proposed by the respondent to indicate that: "Additional mass specifically designed as a Thermal Storage Element for the Rated Home shall be excluded." |
| 87 | <ul style="list-style-type: none"> One respondent suggested removing footnote 10, which defines programmable thermostat offset schedules, because these values should reference the RESNET standard and not be configured by the rater. | <ul style="list-style-type: none"> EPA's intent was to ensure that the ENERGY STAR Reference Design was configured with the thermostat offset schedules defined by RESNET's Standard. EPA agrees with respondent that the intent of the language could be clarified. | <ul style="list-style-type: none"> EPA has revised the ENERGY STAR HERS Index Target document to indicate that the thermostat setpoints and offset schedules will be automatically configured by the HERS rating software to match the HERS Reference Home, as follows: "Temperature Setpoints: Same as HERS Reference Home, with offsets defined by RESNET's standard 8, section 303.5.1.2". |
| 88 | <ul style="list-style-type: none"> One respondent noted that the values for gallons of hot water per day and tank temperature are RESNET standards that cannot be adjusted in RESNET-accredited rating software, and therefore recommends deleting them or defining them as being in accordance with RESNET standards. | <ul style="list-style-type: none"> EPA's intent was to ensure that the ENERGY STAR Reference Design was configured with the daily hot water use and water heater setpoint defined by RESNET's Standard. EPA agrees with respondent that the intent of the language could be clarified. | <ul style="list-style-type: none"> EPA has revised the ENERGY STAR HERS Index Target document to indicate that the daily hot water use and water heater setpoint will be automatically configured by the HERS rating software to match the HERS Reference Home, as follows: <ul style="list-style-type: none"> "Use (Gallons per Day): Same as HERS Reference |

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| | | | <p>Home, as defined by RESNET's standard".</p> <ul style="list-style-type: none"> ○ "Tank Temperature: Same as HERS Reference Home, as defined by RESNET's standard". |
| 89 | <ul style="list-style-type: none"> • One respondent suggested removing footnote 11, which defines the amount of internal gains to model in the ENERGY STAR Reference Design, because this is specified in the RESNET standards and therefore should not be manually configured by the rater. Furthermore, referencing the RESNET standards explicitly will ensure that the ENERGY STAR Reference Design is always aligned with the RESNET standards. | <ul style="list-style-type: none"> • EPA's intent was to ensure that the ENERGY STAR Reference Design was configured with the internal gains defined by RESNET's Standard. EPA agrees with respondent that the intent of the language could be clarified. | <ul style="list-style-type: none"> • EPA has revised the ENERGY STAR HERS Index Target document to indicate that the internal gains will be automatically configured by the HERS rating software to match the HERS Reference Home, as follows: "Internal Gains: Defined by Section 303.5.1.1 of RESNET's standard and adjusted for internal gains from the high-efficiency lighting and appliances listed above, as provided by Section 303.4.1.7". |
| <i>Envelope, Windows & Doors</i> | | | |
| 90 | <ul style="list-style-type: none"> • One respondent was unclear whether "Slab R-value" refers to slab-edge insulation or underslab insulation. In addition, the respondent believed that the referenced section of the 2009 IECC only requires insulation for heated slabs and is unclear whether the same is true for the version 3.0 guidelines. | <ul style="list-style-type: none"> • EPA's intent is to align with the 2009 IECC, which requires the indicated insulation levels for unheated slabs and additional insulation for heated slabs. Further, section 402.2.8 clarifies acceptable configurations of the slab insulation, which allows for any combination of vertical insulation, insulation extending under the slab or insulation extending out from the building. | <ul style="list-style-type: none"> • EPA has added further details to Exhibit 2 about the slab types that must be insulated and the configurations that should be used for the ENERGY STAR Reference Design. |
| 91 | <ul style="list-style-type: none"> • One respondent requested clarification on when to use the "Basement Wall U-Factor" requirements versus "Masonry Basement Wall R-Value" Requirements. | <ul style="list-style-type: none"> • The Basement Wall U-Factor and Masonry Basement Wall R-value requirements are inadvertently duplicative. | <ul style="list-style-type: none"> • EPA has removed the Masonry Basement Wall R-value requirements. |
| 92 | <ul style="list-style-type: none"> • One respondent suggested that both insulation R-values and assembly details as well as component U-factors be included in the ENERGY STAR HERS Index Target Procedure. This is because rating software does not always display the component U-values, therefore raters will need the R-values and assembly details when manually | <ul style="list-style-type: none"> • The major HERS rating software programs in use today for the ENERGY STAR New Homes program do display component U-values to the user. Furthermore, if the programs eventually automate the configuration of the ENERGY STAR Reference Design, then the respondent's concerns will be fully resolved. However, in the interim, EPA agrees with the respondent that additional guidance is needed to ensure that raters | <ul style="list-style-type: none"> • EPA has provided additional guidance in the ENERGY STAR HERS Index Target Procedure document regarding the configuration of the ENERGY STAR Reference Design. EPA suggests that raters start with the nominal insulation R-values |

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| | configuring the ENERGY STAR Reference Design Home. | manually configure the ENERGY STAR Reference Design in a consistent manner. | indicated in the county-level Reference Design applicable to the Rated Home, and then modify the assembly details until the U-factor aligns. |
| 93 | <ul style="list-style-type: none"> One respondent suggested removing “For informative purposes” in footnote 5 and adding “except for foundation walls where frame cavity R-values are expressed explicitly, the ENERGY STAR reference design shall be configured using the U-factors in Exhibit 2” to clarify that U-factors are the governing value. Another respondent expressed concern that the component U-values are not equivalent to the R-values required by code. For example, for floors over unconditioned spaces, the component U-factor of 0.047 is more stringent than nominal insulation value of R-19 (or a U-factor of 0.056). | <ul style="list-style-type: none"> EPA notes that the U-values are reflective of the entire assembly (i.e., inclusive of exterior sheathing materials, continuous insulation, cavity insulation, framing, insulation installation quality, and interior finishes), while the R-values required by code represent just the nominal insulation value. Therefore, the two values represent different things, though with reasonable assumptions about the assembly, the two correlate well. With that said, EPA appreciates that this point and the language in the footnote 5 could be further clarified within the guidelines. | <ul style="list-style-type: none"> EPA has removed footnote 5 and has added the following guidance to the first page of the HERS Index Target Procedure for raters that manually configure the ENERGY STAR Reference Design: “In Exhibit 2, slab insulation R-values represent nominal insulation levels; U-factors and SHGC coefficients for windows and doors apply to the entire assembly; and assembly U-factors for foundations, floors, walls, and ceilings represent the overall U-value of the assembly, inclusive of exterior sheathing materials, continuous insulation, cavity insulation, framing, insulation installation quality, and interior finishes. To create an assembly that meets the required U-factor, Raters may wish to start with the nominal insulation R-value indicated in the county-level Reference Design applicable to the Rated Home, and then modify the assembly details until the U-factor aligns”. |
| 94 | <ul style="list-style-type: none"> One respondent suggested stating that the U-factor and SHGC listed for doors are for the “whole-door” so that raters will not assume the opaque and glazed portions have different requirements. | <ul style="list-style-type: none"> EPA agrees that the proposed change would increase the clarity of the statement. | <ul style="list-style-type: none"> EPA has clarified the requirements for doors in footnote 6 of the HERS Index Target Procedure and footnote 12 of the National Program Requirements that the: “U-value and SHGC for doors apply to the whole door, not just to the glazing portion”. |

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| 95 | <ul style="list-style-type: none"> One respondent suggested that the Window Area Adjustment for multi-family and conditioned basements should be removed as it is too complex for raters and give surplus credit to multifamily homes and homes with conditioned basements. | <ul style="list-style-type: none"> While the area adjustment does add complexity to the configuration of the ENERGY STAR Reference Design when manually configured, EPA believes that this adjustment is necessary. The adjustment factor actually reduces the amount of window area in multi-family ENERGY STAR Reference Design homes, which is an accurate reflection of the reduced exposed wall area where windows could be installed. This results in a lower (more stringent) HERS index rather than a higher (less stringent) HERS index and is a better reflection of what is likely to occur in the actual rated home. | <ul style="list-style-type: none"> No policy change. |
| 96 | <ul style="list-style-type: none"> One respondent asked EPA to clarify how the ENERGY STAR Reference Home would be configured when the rated home has a sealed attic. They noted that if the Reference Home is not configured with a sealed attic, it will have a smaller total envelope area than the rated home, which will alter the results. | <ul style="list-style-type: none"> EPA states in the HERS Index Target Procedure document that the ENERGY STAR Reference Design shall always be configured with a vented attic. This is aligned with RESNET's policy for the configuration of the HERS Reference Home, which EPA believes is an appropriate reference to draw from. | <ul style="list-style-type: none"> No policy change. |
| 97 | <ul style="list-style-type: none"> Multiple respondents seemed to express the belief that the radiant barrier is a mandatory requirement for all homes with more than 10 linear feet of ductwork in the attic. One respondent suggested that radiant barriers are not cost effective in any climate when all other requirements are completed correctly. Another suggested that the radiant barrier only be mandatory when the amount of ductwork in the attic exceeds 50 linear feet or if HVAC equipment is located in the attic. | <ul style="list-style-type: none"> EPA would like to reiterate that radiant barriers or ENERGY STAR qualified roof products are only required in the ENERGY STAR Reference Design and only in cases where more than 10 linear feet of ductwork are located in the attic. EPA believes that 10 linear feet is an appropriate threshold to distinguish between homes with minor duct runs in the attic that can't be avoided due to architectural constraints and homes with whole duct systems designed to be in the attic. Furthermore, partners that would prefer not to use a radiant barrier or ENERGY STAR qualified roof product may use the performance path instead. | <ul style="list-style-type: none"> No policy change. |
| Heating Systems | | | |
| 98 | <ul style="list-style-type: none"> Multiple respondents expressed concern regarding the option to set the heating and cooling loads of the ENERGY STAR Reference Design home to the "same as the Rated Home". If the capacity for the rated home has been calculated incorrectly, then this will result in the wrong capacity for the ENERGY STAR Reference Design home, as well. | <ul style="list-style-type: none"> EPA believes that the HVAC system capacity for the rated home will be calculated correctly in compliance with the HVAC System Quality Installation Contractor checklist. While EPA appreciates respondents' concerns that the proper capacity of HVAC system for the rated home and ENERGY STAR Reference Design home may be different, it is allowing the same capacity to be used in both homes to lessen the burden on raters that are manually configuring the ENERGY STAR Reference Design. | <ul style="list-style-type: none"> No policy change. |

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| 99 | <ul style="list-style-type: none"> One respondent suggested that ground-source heat pumps be included in the ENERGY STAR Reference Design for all climate zones when the rated home uses a ground-source heat pump. If the ENERGY STAR Reference Design is configured with an air-source heat pump, as currently proposed, then rated homes with ground-source heat pumps will get a lot of credit and may reduce the thermal envelope in return. | <ul style="list-style-type: none"> EPA has included a ground-source heatpump in very cold climates to ensure adequate savings of electric-heated homes. In other climates, air-source heatpumps can achieve this goal and have therefore been indicated instead. EPA agrees that qualified homes using ground-source heatpumps will receive significant credit relative to ENERGY STAR Reference Design homes with air-source heatpumps, but believes that this is acceptable. Regardless of savings, the thermal envelope will still need to meet at least 2009 IECC levels of insulation and window performance, as well as meet the requirements of the Thermal Enclosure System checklist. | <ul style="list-style-type: none"> No policy change. |
| Cooling Systems | | | |
| 100 | <ul style="list-style-type: none"> In Exhibit 2, one respondent suggested combining the air source heat pump and ground source heat pump cooling requirements into one row of SEER values for all climate zones or providing values for both in all climate zones. The respondent additionally suggested deleting the "System Type" note under cooling systems if the above changes were to be made. As an alternate, EPA could consider increasing the cooling efficiency requirement for ground-source heat pumps in warm and hot climates. | <ul style="list-style-type: none"> EPA believes it is appropriate to maintain a separate line item for SEER and EER. ENERGY STAR qualified air-source heatpump efficiency is defined using SEER, while ENERGY STAR qualified ground-source heatpump efficiency is defined using EER. Therefore, defining all systems using a SEER metric would likely increase, rather than decrease, confusion among partners. | <ul style="list-style-type: none"> EPA has maintained a separate line to indicate ground-source heatpump efficiency. Note, however, that EPA has increased the efficiency of the ground-source heatpumps in the prescriptive path and the ENERGY STAR Reference Design to reflect new ENERGY STAR qualified ground-source heatpump product requirements going into effect on January 1, 2011. In addition, in the prescriptive path it has listed the required efficiency for all ground-source heatpump equipment types covered by the ENERGY STAR product guidelines. |
| Ducts | | | |
| 101 | <ul style="list-style-type: none"> One respondent seemed to express the belief that the version 3.0 guidelines mandate the location of the ducts for qualified homes and expressed concern about this. The respondent may be presuming that the ENERGY STAR HERS index target procedure, which does dictate duct location for the configuration of the reference design home, also applies to rated homes. | <ul style="list-style-type: none"> EPA would like to reiterate that duct location is not mandated in the prescriptive or performance path of the proposed version 3.0 guidelines. Only the ENERGY STAR Reference Design defines default duct locations, which is necessary only for generating the ENERGY STAR HERS Index Target. | <ul style="list-style-type: none"> No policy change. |

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| 102 | <ul style="list-style-type: none"> A respondent expressed concern that the required attic duct insulation R-value of 8 is too low, considering the extreme temperatures that are common in attics. | <ul style="list-style-type: none"> EPA agrees that duct insulation beyond R-8 would be beneficial, as would designs that locate the ducts in conditioned space. Partners may pursue these improvements and receive credit under the performance path. However, for the purpose of setting minimum requirements in the prescriptive path and the ENERGY STAR Reference Design, EPA feels it is appropriate to align with the requirements of the 2009 IECC. | <ul style="list-style-type: none"> No policy change. |
| 103 | <ul style="list-style-type: none"> Another respondent noted that the minimum insulation level of R-6 that is required for ducts in unconditioned spaces would be difficult to achieve for sheet metal ducts. | <ul style="list-style-type: none"> EPA believes that it is appropriate to set the minimum duct insulation level to R-6, given that this is a requirement of the 2009 IECC, which has been adopted or is being considered for adoption by over half of the states and the District of Columbia. Note that exhaust ducts are not required to be insulated. | <ul style="list-style-type: none"> No policy change. |
| <p>Lighting & Appliances</p> | | | |
| 104 | <ul style="list-style-type: none"> One respondent suggested adding a note to “lighting and appliance requirements” stating that the ceiling fan requirement is only applicable when ceiling fans are included in the rated home. | <ul style="list-style-type: none"> EPA understands the rationale for only including ceiling fans (or dishwashers or refrigerators) in the ENERGY STAR Reference Design when present in the Rated home, so as not to create an incentive to exclude these items in the Rated home to improve the score. In practice, however, the improvement to the HERS index that would occur by excluding these items would be quite small. To ease implementation EPA will require that the Reference Design always be modeled with efficient ceiling fans, an efficient refrigerator, and an efficient dishwasher. Using this approach, Raters can more consistently configure the Reference Design without needing to know at the time of analysis whether a refrigerator, dishwasher, or ceiling fans will be installed in the Rated home. | <ul style="list-style-type: none"> No policy change. |
| 105 | <ul style="list-style-type: none"> One respondent had minor concerns about the removal of the mandatory inclusion of ENERGY STAR lighting and appliances in all homes because it is a good opportunity to promote the ENERGY STAR brand. However, given that they are still required in the prescriptive path and the ENERGY STAR Reference Design, the respondent did not have strong objections to this change. | <ul style="list-style-type: none"> EPA appreciates that the respondent understands the proposed policy changes and has only minor concerns. | <ul style="list-style-type: none"> No policy change. |
| 106 | <ul style="list-style-type: none"> Multiple respondents seemed to believe that the version 3.0 guidelines still have | <ul style="list-style-type: none"> EPA would like to reiterate that the mandatory requirements for lighting and appliances have been | <ul style="list-style-type: none"> No policy change. |

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| | <p>mandatory lighting and appliance requirements, which caused them concern. In fact, the revised guidelines maintain lighting and appliance requirements in the prescriptive and performance paths, but no longer include them as mandatory requirements for all homes.</p> | <p>removed from the proposed version 3.0 guidelines. Instead, the requirements have been maintained only in the prescriptive path and the ENERGY STAR Reference Design. Partners using the performance path may select alternative measures as long as they meet the required ENERGY STAR HERS Index Target.</p> | |
| 107 | <ul style="list-style-type: none"> One respondent requested that EPA clarify whether ENERGY STAR qualified CFL's with standard Edison bases can be used to meet the prescriptive path lighting requirement, or if lamps with "twist and lock" GU24 bases must be used. | <ul style="list-style-type: none"> The proposed version 3.0 guidelines indicate that "ENERGY STAR CFLs or pin-based lighting.." must be used. ENERGY STAR qualified CFL's include standard Edison-base products, so these may be used, as may lamps with GU24 bases. | <ul style="list-style-type: none"> No policy change. |
| <p>Size Adjustment Factor & Conditioned Floor Area</p> | | | |
| 108 | <ul style="list-style-type: none"> Multiple respondents expressed concern about the Size Adjustment Factor (SAF), including that it places arbitrary value judgments on house size, that it would cause homebuilders in higher end markets and/or with larger homes to leave the ENERGY STAR program, and that the additional costs for compliance due to the SAF are not accounted for. One respondent suggested that the SAF be removed altogether. | <ul style="list-style-type: none"> Note that EPA's Size Adjustment Factor (SAF) is applied based on the number of bedrooms, not simply on house size. Therefore, the benchmark home size does increase with increasing bedrooms and large homes that also have more bedrooms will not be impacted by this policy. Furthermore, EPA roughly based the SAF on data indicating average house size / bedroom combinations. Therefore, it is not arbitrary, but instead is reflective of what the market has determined is a typical size for a given quantity of bedrooms. The cost estimates prepared by EPA are intended to be representative of a typical partner. It has always been the case that some builders will estimate higher costs and others will estimate lower costs (e.g., a builder that constructs code-minimum homes versus one that already builds above-code). Ultimately, each builder will have to assess whether the costs that would be incurred through participation are offset by the value provided by earning the ENERGY STAR. EPA anticipates that the additional cost resulting from the SAF policy will be minimal for a large majority of partners. | <ul style="list-style-type: none"> No policy change. |
| 109 | <ul style="list-style-type: none"> Multiple respondents expressed concern about the definition of "conditioned floor area" (CFA). One respondent suggested that buffer spaces such as unfinished basements and crawl spaces should be excluded because they can provide benefits despite increasing | <ul style="list-style-type: none"> EPA believes it is most appropriate to align with RESNET standards. Therefore, unfinished spaces including conditioned crawlspaces, conditioned attics, and conditioned basements, should be excluded from the conditioned floor area used to determine the Size Adjustment Factor. | <ul style="list-style-type: none"> EPA has reviewed program documents to ensure that all of them reference RESNET's standard when defining the conditioned floor area that is used to determine the Size Adjustment |

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| | <p>the exterior surface area through reduced loads on ducts and equipment. In addition, multiple respondents noted that both RESNET and ANSI Z765 standards define CFA as “finished” floor area and exclude conditioned but unfinished basements. By requiring that basement conditioned floor area be included regardless of whether it is finished will discourage builders from conditioning the basement. One respondent suggested that only above-grade floor area be included so as not to penalize basements and that different HERS index targets be established for different foundation types.</p> | <ul style="list-style-type: none"> Also, note that for finished conditioned basements, it is likely that at least one additional bedroom will be added to the home using RESNET’s definition. This will increase the conditioned floor area of the Benchmark Home and will minimize the impact that the Size Adjustment Factor has on the HERS index target. | <p>Factor.</p> <ul style="list-style-type: none"> EPA understands that RESNET may be further refining its definition of conditioned floor area in future revisions to better address the issue of unfinished but conditioned spaces. EPA will consider aligning with any revised RESNET definitions. |
| 110 | <ul style="list-style-type: none"> One respondent suggested that instead of explicitly defining the term “Egress Window”, the IRC section R310 should be referenced instead and the section summarized for convenience for both the HERS Index Target Procedure and the National Program Requirements. | <ul style="list-style-type: none"> EPA agrees with the respondent that an explicit reference to the source of this language would be beneficial. | <ul style="list-style-type: none"> EPA has revised the ENERGY STAR HERS Index Target document and National Program Requirements document to include an explicit reference to IRC section 310. |

General Checklists

| ID | Comment Summary | EPA’s Response | EPA’s Policy Decision |
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| 111 | <ul style="list-style-type: none"> Multiple respondents expressed concern that having so many minor requirements in the Inspection Checklists may result in disqualification of homes due to a single minor oversight, which may even be unrelated to energy efficiency. In such cases, builders may become frustrated with the program and cease to participate while raters may find limited support for such extensive requirements | <ul style="list-style-type: none"> EPA believes that with the nearly two-year transition provided for compliance with the new checklists, builders will have sufficient time to adjust their workflow to ensure that the requirements are met for every home. Furthermore, EPA has always empowered the rater to identify minor defects that the Rater deems acceptable versus identifying major defects that undermine the intent of the checklist item. This should provide additional flexibility to qualify homes with only minor oversights. | <ul style="list-style-type: none"> No policy change. |
| 112 | <ul style="list-style-type: none"> One respondent requested clarification as to what extent rater judgment is acceptable in assessing compliance with requirements. | <ul style="list-style-type: none"> EPA has always empowered the rater to identify minor defects that the Rater deems acceptable versus identifying major defects that undermine the intent of the checklist item. In addition, with the proposed version 3.0 guidelines, EPA has clarified that Alternative methods of meeting the checklist requirements may be used if the Provider deems them to be equivalent to or more | <ul style="list-style-type: none"> No policy change. |

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| | | <p>stringent than the checklist guidelines. However, in all cases, these “equivalent” determinations shall be reported prior to project completion to energystarhomes@energystar.gov. This will allow EPA to make formal policy decisions, as needed, to ensure consistent enforcement of the guidelines and to provide a resource for other partners with similar questions.</p> | |
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Thermal Enclosure System Rater Checklist

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| General | | | |
| 113 | <ul style="list-style-type: none"> One respondent suggested that the Thermal Enclosure System Rater Checklist include space for two rater inspection dates: one for pre-drywall inspection and one for final inspection. | <ul style="list-style-type: none"> EPA agrees that the proposed change would increase the clarity of the checklist. | <ul style="list-style-type: none"> EPA has revised the Thermal Enclosure System Rater Checklist to include space for two rater inspection dates: one for pre-drywall inspection and one for final inspection. |
| 114 | <ul style="list-style-type: none"> Multiple respondents noted that many Thermal Enclosure System checklist items would likely be builder sign-offs on a regular basis. This would decrease the flexibility created by these sign-offs. Checklist items noted to be typical sign-offs include air barriers behind showers, tubs, fireplaces, and dropped ceilings and soffits, as well as insulated headers, interior/exterior wall intersections, recessed lighting, sealed drywall, and SIP sealing. One respondent noted that 3 site visits may be required: one for insulation inspection, one for interior air barrier inspection and one for infiltration testing. The concern is that interior air barriers, such as behind the bathtub, would already be concealed when the rater visits for the infiltration testing, therefore must be inspected in a prior visit. | <ul style="list-style-type: none"> EPA feels that it has struck an appropriate balance between the need for third-party verification and the desire to limit the number of visits to two for most homes. This is believed to be true given that the number of details mentioned by the respondent is less than the eight allowances provided for builder-verified items and that not all homes will have all details included in the list. | <ul style="list-style-type: none"> No policy change. |
| 115 | <ul style="list-style-type: none"> One respondent requested clarification as to whether there will be a slab edge insulation exception in the version 3.0 ENERGY STAR guidelines similar to the one that currently exists in the 2006 ENERGY STAR Thermal Bypass Inspection Checklist and suggests that the language be made clearer. | <ul style="list-style-type: none"> EPA has not included the exception from the current guidelines in the version 3.0 guidelines. That is to say, where slab insulation is required by the 2009 IECC, the entire slab perimeter must be insulated. This is in contrast to the current guidelines, which allow up to 25% of the slab to remain uninsulated. EPA believes that the new policy in the version 3.0 guidelines is important in order to ensure a complete thermal envelope in all homes with slab-on-grade foundations. | <ul style="list-style-type: none"> No policy change. |
| 116 | <ul style="list-style-type: none"> One respondent suggested that there should be alternatives for the slab edge insulation | <ul style="list-style-type: none"> While EPA understands that insulating slabs can be a challenging detail, it believes that it is imperative to | <ul style="list-style-type: none"> No policy change. |

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| | <p>requirement, noting that:</p> <ul style="list-style-type: none"> ○ Multifamily projects typically include a post-tensioned slab on grade, which prevents the use of internal vertical slab insulation. ○ Termite issues must be accounted for in the design and can conflict with slab edge insulation requirements. ○ Exterior slab edge details are often not designed specifically and can interface poorly with surrounding building elements. | <p>enforce this requirement for all qualified homes to ensure an adequate thermal break. Slabs without insulation in mixed and cold climates are routinely a source of efficiency and comfort concerns.</p> <ul style="list-style-type: none"> • EPA believes that proper design details can address the concerns listed by the respondents, though it notes in the guidelines that “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).” | |
| 117 | <ul style="list-style-type: none"> • Multiple respondents suggested removing the exception for interior air barriers for climate zones 1 through 3, making fully-aligned interior and exterior air barriers mandatory in all climate zones. One respondent noted that fibrous insulation requires an air barrier in all climates. | <ul style="list-style-type: none"> • EPA agrees with the respondent that a six-sided air barrier for all fibrous insulation is ideal. However, during the last revision to the guidelines, respondents suggested that the added effort to include an air barrier was not offset by the benefit in hot climates, where temperature differentials between the inside and outside are much smaller compared to cold climates. EPA believes that this reasoning is still valid. | <ul style="list-style-type: none"> • No policy change. |
| 118 | <ul style="list-style-type: none"> • Multiple respondents expressed concern that the choices in the Reduced Thermal Bridging section are too limited and requested a process for allowing additional equivalent options. For example, the options provided may not meet local building codes requiring high wind-load resistant framing. Separately, other innovative products may meet the intent of reduced thermal bridging without complying with one of the options listed, such as the Nordic EnviroWall with integrated thermal break. | <ul style="list-style-type: none"> • EPA believes that proper design details can achieve the goal of reduced thermal bridging while meeting wind-load resistant framing requirements. However, EPA does note in the guidelines that “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).” • EPA encourages the use of other innovative products and states that alternative methods of meeting the checklist requirements may be used if the Provider deems them to be equivalent to or more stringent than the checklist guidelines. However, in all cases, these | <ul style="list-style-type: none"> • No policy change. |

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| | | <p>“equivalent” determinations shall be reported prior to project completion to: energystarhomes@energystar.gov. This will allow EPA to make formal policy decisions, as needed, to ensure consistent enforcement of the guidelines and to provide a resource for other partners with similar questions.</p> | |
| 119 | <ul style="list-style-type: none"> One respondent noted that most production builders may likely chose the advanced framing option, but that it is currently “too rigorous”. | <ul style="list-style-type: none"> EPA believes that the advanced framing option can be successfully integrated into the design and build process for many builders, especially given the two-year transition time to achieve these changes. However, EPA does understand that each builder will ultimately have to assess whether the increased benefits from advanced framing (e.g., increase occupant comfort, lower utility costs, reduced scrap wood) will offset any costs incurred. | <ul style="list-style-type: none"> No policy change. |
| 120 | <ul style="list-style-type: none"> Multiple respondents requested clarification as to the definition of “construction documents”. | <ul style="list-style-type: none"> Construction documents are intended to represent any document (e.g., building plans, letter) from the builder, architect, or engineer that indicates the intended scope of work. | <ul style="list-style-type: none"> No policy change. |
| 121 | <ul style="list-style-type: none"> One respondent suggested that the stud spacing requirements in section 4.3.5e should be removed. | <ul style="list-style-type: none"> EPA cannot address the specific concerns of the respondent, because the underlying reason for wanting to remove this requirement was not included. However, EPA believes that the spacing requirements of 16” o.c. for 2x4’s and 24” o.c. for 2x6’s are appropriate and already standard practice in many homes. Furthermore, EPA provides flexibility to deviate from these requirements as long as the builder, architect, or engineer indicates on construction documents that other spacing is structurally necessary. | <ul style="list-style-type: none"> No policy change. |
| 122 | <ul style="list-style-type: none"> One respondent requested clarification about what constitutes excessive vertical framing members, whether it refers to framing that does not appear on plans or framing that is not structurally required. The respondent notes that homes with an exterior stucco finish may requires 16” oc stud spacing to reducing cracking and that an increase to 24” oc would not be acceptable. | <ul style="list-style-type: none"> The respondent’s example of reduced stud spacing to support an exterior stucco finish falls within EPA’s intent of structurally required framing. Under such a scenario, this alternative structural purpose must be apparent to the rater or documented by the builder, architect or engineer. | <ul style="list-style-type: none"> No policy change. |
| 123 | <ul style="list-style-type: none"> Multiple respondents suggested that the determination of stud structural purpose should be left to the engineers designing the | <ul style="list-style-type: none"> EPA agrees that it is generally the builder, architect or engineer, and not the rater, that should determine the structural purpose of the studs. The role of the rater is | <ul style="list-style-type: none"> No policy change. |

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| | <p>structure and should not be at the discretion of the rater as they may not have plans with the level of detail required to make such determinations. The respondent also notes that building code inspectors may require the builder to add studs for reasons not listed on the plans.</p> | <p>simply to assess compliance based upon whether the structural purpose of the stud is apparent to the rater or documentation has been provided.</p> | |
| 124 | <ul style="list-style-type: none"> • One respondent suggested requiring foam insulation behind electrical faceplates and around electrical outlet boxes. | <ul style="list-style-type: none"> • EPA appreciates the respondent's suggestion to add an additional detail to the Thermal Enclosure Checklist. However, considering the requirement for a complete exterior air barrier, a complete interior air barrier in most climates, and the infiltration test, EPA feels that the benefit from this added detail may not outweigh the extra labor and inspection costs, particularly for certain assemblies such as SIP and ICF walls where no benefit would accrue. However, EPA will continue to assess this detail as a source of thermal bypass and may add this best practice to a future version of the guidelines. | <ul style="list-style-type: none"> • No policy change. |
| 125 | <ul style="list-style-type: none"> • One respondent requested clarification whether sills need to be both gasketed and caulked at bottom plates, and for what purpose. The respondent also requested clarification on how field raters would verify this requirement. | <ul style="list-style-type: none"> • EPA's intent is for sill plates to be both gasketed and caulked. The gasket is to be installed beneath the sill plate and the caulking applied to seal the edge of the sill plate to the foundation or subfloor. • Regarding verification, the rater may be able to visually confirm the presence of a gasket or caulking under the sill plate. Otherwise, at the discretion of the rater, the builder can verify this requirement using one of the allowances in the checklist. | <ul style="list-style-type: none"> • EPA has clarified item 5.3.1 of the Thermal Enclosure Checklist to state that for walls, a foam gasket shall be placed beneath the sill plate and sill plate sealed to foundation or sub-floor with caulk. |
| 126 | <ul style="list-style-type: none"> • One respondent suggested adding that sheetrock top plate sealing materials be compliant with NFPA 90 A & B. | <ul style="list-style-type: none"> • EPA believes that NFPA 90 A & B dictate fire safety requirements that are already addressed by code and need not be integrated explicitly into the version 3.0 guidelines. | <ul style="list-style-type: none"> • No policy change. |
| 127 | <ul style="list-style-type: none"> • Multiple respondents expressed concern about why construction adhesive cannot be used as a top-plate drywall sealant as it is typically used to seal sheetrock at the time of installation. <ul style="list-style-type: none"> ○ One respondent requested further clarification of how the sheetrock should be sealed. ○ One respondent questioned how this requirement will be met in climates where a poly-vapor retarder is required on the | <ul style="list-style-type: none"> • In many homes, uneven gaps exist between the top plate and the sheetrock for a variety of reasons, such as dimensionally unstable lumber and hurricane straps. Construction adhesive can effectively adhere the sheetrock to the framing without a completely continuous bond, but adhesive does not have the volume that is needed to provide a continuous air seal between these two materials. Instead, sealing shall be completed using a silicone, latex foam, or equivalent material. Construction adhesives shall not be used. For homes with a poly-vapor layer, which will act as both a | <ul style="list-style-type: none"> • No policy change. |

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| | inside of the building. | vapor barrier and air seal, the sheetrock may be sealed to the poly-vapor retarder at the time the sheetrock is installed. | |
| 128 | <ul style="list-style-type: none"> One respondent suggested that whole-house fan covers should be installed from the “house side” unless mechanically operated, and that covers should be insulated to R-10. | <ul style="list-style-type: none"> EPA agrees with the respondent that fan covers should be installed from the inside or mechanically operated and should be insulated to at least R-10. | <ul style="list-style-type: none"> EPA has modified item 5.6 of the Thermal Enclosure Checklist to require that whole-house fans be equipped with an insulated cover \geqR-10, gasketed to the opening, and either installed on the house side or mechanically operated. |
| 129 | <ul style="list-style-type: none"> One respondent suggested that flexible air barriers should not be allowed, noting that there are many issues associated with using a vapor barrier as an air barrier. | <ul style="list-style-type: none"> EPA recommends, but does not require rigid air barriers. However, EPA agrees with the respondent that flexible air barriers that can be easily torn should not be used, including paper based products such as kraft-paper. | <ul style="list-style-type: none"> EPA has clarified in footnote 5 of the Thermal Enclosure Checklist that it recommends, but does not require, rigid air barriers. If flexible air barriers are used, they shall not be made of materials that are easily torn, including paper-based products such as kraft paper. |
| 130 | <ul style="list-style-type: none"> One respondent suggested that air barriers should be required at band joists for climate zone 6. | <ul style="list-style-type: none"> EPA agrees with respondent that, ideally, an interior air barrier should be included at band joists in all climate zones. However, this detail was considered during the last revision of the guidelines and multiple respondents expressed concern about the difficulty and cost of achieving this detail. EPA believes that these concerns are still valid and will therefore include this detail as a best practice. | <ul style="list-style-type: none"> No policy change. |
| 131 | <ul style="list-style-type: none"> One respondent requested clarification whether an entire wall assembly can pass the Thermal Enclosure System Rater Checklist if a rater believes the assembly as a whole (eg, a well-constructed wall assembly consisting of dense pack cellulose, polyethylene sheeting, and shiplap or tongue and groove finish) functions as an effective air barrier but is not a designated air barrier on the interior wall. | <ul style="list-style-type: none"> In the example provided by the respondent, the polyethylene sheeting would serve as an exterior air barrier and would presumably be coupled with sheetrock or plaster finish as an interior air barrier, thereby meeting EPA’s requirements. | <ul style="list-style-type: none"> No policy change. |
| 132 | <ul style="list-style-type: none"> One respondent requested clarification as to whether the reduced thermal bridging requirements could be “signed off” by the project structural engineer for multifamily homes. | <ul style="list-style-type: none"> The rater is required to either verify the option used by the builder to achieve reduced thermal bridging or, at the raters discretion, can rely upon the builder to verify the requirement using one of eight allowances. If verified by the builder, then the builder may choose to | <ul style="list-style-type: none"> No policy change. |

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| | | <p>collaborate with the project structural engineer but ultimately it is the builder's responsibility to ensure compliance and to sign the checklist.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 133 | <ul style="list-style-type: none"> One respondent requested clarification regarding Grade I insulation installation requirements for floors, given that EPA only requires the insulation to be installed in permanent contact with the interior surface. The respondent believes that unless the insulation is installed in contact with both interior and exterior surfaces, the floor will not achieve Grade I. | <ul style="list-style-type: none"> To attain a rating of "Grade I", RESNET's Standard requires that floor insulation be enclosed on all six sides unless it is over unconditioned basements or enclosed (vented or unvented) crawlspaces, that it be in substantial contact with the sheathing material on at least one side (interior or exterior) of the cavity, and that the insulation be installed in complete contact with the subfloor surfaces it is intended to insulate. RESNET does not require that the insulation be in contact with the exterior air barrier to achieve Grade I. | <ul style="list-style-type: none"> No policy change. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 134 | <ul style="list-style-type: none"> Multiple respondents suggested changing the insulated sheathing R-values required to meet the reduced thermal bridging requirements. Suggestions included: <ul style="list-style-type: none"> R-5 rather than R-6 in climate zones 4 through 6. This would align with the 2009 IECC and R-5 1-inch polystyrene products are readily available and affordable, whereas R-7 polyisocyanurate is much less common, more expensive, and provides little added value. R-3 rather than R-6 in climate zone 5 when using 2x6 walls, which the respondent believed would provide an "adequate thermal break, providing a wall envelope better than code". The respondent suggested that the R-6 requirement should be maintained if a 2x4 wall was used in climate zone 5. R-10 rather than R-6 in climate zone 6, which will better help to prevent condensation in the wall when foil-faced insulation is used. Less than R-10 insulation in climate zones 7 & 8, because this | <ul style="list-style-type: none"> EPA agrees with the respondent that decreasing the requirement for insulated sheathing from R-6 to R-5 in climate zones 4-6 will better align with the 2009 IECC and provide additional flexibility to partners that use this option for compliance. Furthermore, EPA believes that revising the minimum insulated sheathing requirements to be approximately 25% of 2009 IECC insulation values, as follows, will result in a more consistent and easily marketed policy: <table border="1" data-bbox="800 878 1497 1239"> <thead> <tr> <th>Climate Zone</th> <th>2009 IECC Wall R-value</th> <th>EPA Insulated Sheathing Min. R-Value</th> <th>Percent of 2009 IECC Wall R-value</th> </tr> </thead> <tbody> <tr><td>1</td><td>13</td><td>3</td><td>23%</td></tr> <tr><td>2</td><td>13</td><td>3</td><td>23%</td></tr> <tr><td>3</td><td>13</td><td>3</td><td>23%</td></tr> <tr><td>4</td><td>13</td><td>3</td><td>23%</td></tr> <tr><td>5</td><td>20</td><td>5</td><td>25%</td></tr> <tr><td>6</td><td>20</td><td>5</td><td>25%</td></tr> <tr><td>7</td><td>21</td><td>5</td><td>24%</td></tr> <tr><td>8</td><td>21</td><td>5</td><td>24%</td></tr> </tbody> </table> In contrast, EPA believes that R-3 insulated sheathing will not provide an adequate thermal break in climate zone 6, even with 2x6 walls. Adding only R-3 insulated sheathing would provide a thermal break that is well less than 25% of insulation level required by the 2009 IECC. Regarding climate zone 6, EPA believes that an adequate thermal break can be created with R-5, though | Climate Zone | 2009 IECC Wall R-value | EPA Insulated Sheathing Min. R-Value | Percent of 2009 IECC Wall R-value | 1 | 13 | 3 | 23% | 2 | 13 | 3 | 23% | 3 | 13 | 3 | 23% | 4 | 13 | 3 | 23% | 5 | 20 | 5 | 25% | 6 | 20 | 5 | 25% | 7 | 21 | 5 | 24% | 8 | 21 | 5 | 24% | <ul style="list-style-type: none"> EPA has revised the Thermal Enclosure Checklist by requiring that when homes use continuous rigid insulation sheathing to reduce thermal bridging, the following minimum R-values be achieved – homes in climate zones 1 through 4 shall use at least R-3; homes in climate zone 5 through 8 shall use at least R-5. |
| Climate Zone | 2009 IECC Wall R-value | EPA Insulated Sheathing Min. R-Value | Percent of 2009 IECC Wall R-value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 13 | 3 | 23% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 13 | 3 | 23% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 13 | 3 | 23% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 13 | 3 | 23% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 20 | 5 | 25% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 20 | 5 | 25% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 21 | 5 | 24% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 21 | 5 | 24% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | would be cost prohibitive and create 8" deep walls. | <p>agrees with the respondent that builders should be careful to consider the vapor permeability of the materials used in the enclosure to prevent potential condensation problems.</p> <ul style="list-style-type: none"> In climate zones 7 & 8, EPA believes that an R-5 thermal break, which is approximately 25% of the insulation value required by the 2009 IECC, will be sufficient for version 3.0 of the guidelines. | |
| 135 | <ul style="list-style-type: none"> Multiple respondents suggested allowing a combination of insulated sheathing and insulated siding to satisfy the requirement for continuous rigid insulation sheathing. One respondent suggested adding "...at its minimum thickness" after "R-value" regarding continuous rigid insulation requirements as many insulated siding products having varying thickness profiles. One respondent suggested moving the mention of insulated siding from footnote 9 and placing it into the body of the table so it is more apparent. One respondent suggested removing the sentence "Insulated siding can meet this requirement as long as it provides the required R-value and is installed flush with the exterior sheathing." And suggests adding, "Insulated siding must be attached directly over a water-resistive barrier and sheathing." | <ul style="list-style-type: none"> EPA agrees that a combination of insulated sheathing, insulated siding, or a combination of the two may be used as long as all insulated siding provides the required R-value at its minimum thickness and is attached directly over a water-resistive barrier and sheathing. EPA also generally agrees that with the respondents' suggested edits to clarify the intent of this requirement. | <ul style="list-style-type: none"> EPA has revised the Thermal Enclosure Checklist to include mention of insulated siding in the main body of the checklist, stating that continuous rigid insulation sheathing, insulated siding, or combination of the two may be used. EPA has revised footnote 8 of the Thermal Enclosure Checklist as follows: "If used, insulated siding shall provide the required R-value at its minimum thickness and be attached directly over a water-resistive barrier and sheathing". |
| 136 | <ul style="list-style-type: none"> One respondent suggested alternate details to reduce thermal bridging such as: <ul style="list-style-type: none"> Suggesting that the offset requirement for double walls be optional provided that the space between adjacent stud faces is filled with insulation R-value of at least the levels specified in footnote 9 to minimize thermal bridging. The respondent notes that the added cavity thickness will result in whole-wall R-values much higher than minimally compliant systems. Allowing cross-strapping (eg, | <ul style="list-style-type: none"> EPA agrees with the respondent that any framing method that ensures a continuous layer of insulation covering the studs to the same R-value as indicated in Section 4.3.1 of the checklist should satisfy the requirement for double-wall framing. | <ul style="list-style-type: none"> EPA has revised footnote 10 of the Thermal Enclosure Checklist as follows: "Double-wall framing is defined as any framing method that ensures a continuous layer of insulation covering the studs to at least the R-value required in Section 4.3.1 of the checklist, such as offset double-stud walls, aligned double-stud walls with continuous insulation between the adjacent stud faces, or single-stud walls with 2x2 or 2x3 cross-framing. In all cases, insulation |

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| | <p>horizontal 2x3s) walls that allows the same minimum R-value covering the studs. The respondent notes that the area of wood-to-wood contact for cross-strapped framing is small enough that the R-value is similar to continuous foam.</p> <ul style="list-style-type: none"> Both suggestions could be addressed by replacing footnote 11 with the following language: "'Double wall framing' is defined as any framing method that ensures a continuous layer of insulation covering the studs to at least the R-value required in footnote 9, such as offset double stud walls, aligned double studs with the required R-value between adjacent stud faces, or cross-framing that provides the required R-value." | | <p>shall fill the entire wall cavity from the interior to exterior sheathing except at windows, doors and other penetrations".</p> |
| 137 | <ul style="list-style-type: none"> One respondent suggested adding "...and allows access to insulate the cavity" to footnote 11 regarding exterior corner to avoid confusion with "standard" blind corners that also use 3 studs. | <ul style="list-style-type: none"> EPA agrees that the proposed change would increase the clarity of the checklist. | <ul style="list-style-type: none"> EPA has revised footnote 11 of the Thermal Enclosure Checklist per the respondent's suggestion. |
| 138 | <ul style="list-style-type: none"> Multiple respondents suggested changing the minimum R-value for insulated headers from R-3.5 to R-3 or to the level required to accommodate ½" foam sheathing. | <ul style="list-style-type: none"> EPA agrees with respondents that reducing the insulation required for insulated headers to R-3 will better accommodate the use of ½" foam sheathing to meet this requirement. | <ul style="list-style-type: none"> EPA has revised footnote 12 of the Thermal Enclosure Checklist by redefining the minimum required R-value by climate zone, reducing the minimum required R-value to R-3 in Climate Zones 1-4, and adding an explicit allowance to use continuous rigid insulation sheathing to meet this requirement. |
| 139 | <ul style="list-style-type: none"> One respondent suggested allowing 12" of wood around windows rather than the maximum of one pair of king studs and one pair of jack studs per window opening. The respondent notes that this allowance will provide their 25 MIL self-adhesive flashing a surface with which to adhere, as well as lathe nails a more substantial material to penetrate rather than just the flashing alone. | <ul style="list-style-type: none"> EPA believes that exterior sheathing, rather than additional framing, should be used to secure self-adhesive flashing around window and door penetrations and to provide for a nailing surface. The use of 12" of framing would not meet the intent of the advanced framing details. However, the partner may avoid the requirements of the advanced framing details if another compliance option is selected to reduce thermal bridging, such as the use of continuous rigid insulation | <ul style="list-style-type: none"> No policy change. |

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HVAC System Quality Installation Checklists

| ID | Comment Summary | EPA's Response | EPA's Policy Decision |
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| 140 | <ul style="list-style-type: none"> One respondent requested that EPA ensure that mechanical ventilation requirements are "climate appropriate" in the final version of the version 3.0 ENERGY STAR guidelines. | <ul style="list-style-type: none"> EPA believes that the mechanical ventilation requirements, which align with ASHRAE 62.2-2007, are climate appropriate. While the ventilation rate is climate independent, EPA and the ASHRAE standard provide guidance on how that ventilation should be provided. Items 5.2 and 5.3 of the HVAC System Quality Installation Rater Checklist indicate the climate-dependent allowable limit on net exhaust flow and net supply flow. In addition, in the Contractor Checklist, EPA requires that the latent capacity of the AC system be selected to accommodate the design load. | <ul style="list-style-type: none"> No policy change. |
| Rater Checklist | | | |
| 141 | <ul style="list-style-type: none"> One respondent suggested that, in addition to ensuring the completion of the HVAC contractor checklist, the rater should also be responsible for checking that none of the items have been marked as "No". | <ul style="list-style-type: none"> In fact, nearly all items on the HVAC System Quality Installation Contractor checklist are either required or may not be applicable, so contractors should rarely have the option to select "No" for an item. In light of the respondent's question, EPA believes that the requirements could be stated more clearly. | <ul style="list-style-type: none"> EPA has revised the HVAC System Quality Installation Contractor checklist to only include the options that would result in qualification. |
| 142 | <ul style="list-style-type: none"> Regarding the cutoff below which it is not necessary to test duct leakage, one respondent suggested using "5% of the rated system flow" rather than 4 CFM. Multiple respondents also noted that if the total duct leakage is measured to be less than 4 CFM₂₅, then it is not necessary to test the leakage to the outdoors as the total leakage falls below the requirement for outside leakage. | <ul style="list-style-type: none"> The logic of this exemption is that if total leakage does not exceed the limit for leakage to the outside, then it is not possible for the home to fail the limit for leakage to the outside; therefore the second test is not needed. Under the first scenario suggested by the respondent, this logic may not always be true; therefore, testing for leakage to the outside would be required. | <ul style="list-style-type: none"> No policy change. |
| 143 | <ul style="list-style-type: none"> Multiple respondents suggested that a "national protocol" is needed to measure the pressure differential between closed rooms and adjacent spaces that have a return. | <ul style="list-style-type: none"> EPA agrees with the respondent that additional language is needed to clarify the requirements of the test to determine pressure differential. | <ul style="list-style-type: none"> EPA has clarified item 2.7 using the following language: "Bedrooms pressure-balanced by a) providing 1 sq. in. of opening per 1 CFM of measured supply air using transfer grills and/or jump ducts; b) using dedicated return ducts; or c) achieving a |

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| | | | measured pressure differential < 3 Pa (0.012 in. w.c.) with respect to the outside when bedroom doors are closed and the air handler is operating.” |
| 144 | <ul style="list-style-type: none"> One respondent suggested that the bedroom pressure balance requirement be listed on the HVAC Contractor checklist instead of the HVAC Rater checklist so that the contractor could adjust the airflows as necessary. | <ul style="list-style-type: none"> EPA understands that there are many requirements of the inspection checklists that will require coordination between the builder, rater, and HVAC contractor, such as the pressure balancing requirement cited by the respondent. Ultimately, each checklist indicates the party responsible for verification of the items on that checklist, not necessarily the party responsible for implementing each checklist item. EPA also acknowledges that raters, builders, and trades will need significant additional training to understand these requirements and intends to help defray costs by coordinating with industry groups and providing training resources to partners. | <ul style="list-style-type: none"> No policy change. |
| 145 | <ul style="list-style-type: none"> One respondent noted that it is very difficult to improve outdoor leakage at or below 4 CFM25 for homes less than 1000 square feet and request that the duct leakage limit in the current guideline of 5 CFM25 be maintained. | <ul style="list-style-type: none"> EPA agrees with the respondent that achieving duct system leakage to the outdoors at or below 4 CFM25 per 100 sq ft of conditioned floor area for homes less than 1,200 square feet will be challenging, particularly due to the leakage of the air handler, and that a higher limit should be provided for such homes. | <ul style="list-style-type: none"> EPA has added a more lenient duct leakage limit for homes that are $\leq 1,200$ sq ft to footnote 5 of the HVAC System Quality Installation Rater Checklist. The limit for leakage to the outdoors has been increased from 4 to 5 and the requirement for total leakage has been increased from 6 to 8 CFM25 per 100 sq ft of conditioned floor area. |
| 146 | <ul style="list-style-type: none"> One respondent suggested that the total measured duct leakage should be changed to $\leq 10\%$ of the rated systems flow for systems with all ducts in conditioned space and $\leq 5\%$ of rated systems flow for systems with ducts outside the conditioned envelope instead of 6 CFM25 per 100 square feet. | <ul style="list-style-type: none"> EPA understands that there are benefits and drawbacks to each duct leakage metric. EPA believes that defining the leakage rate relative to conditioned floor area produces a more consistent level of quality than defining leakage relative to fan flow, which can encourage the use of oversized fans. | <ul style="list-style-type: none"> No policy change. |
| 147 | <ul style="list-style-type: none"> A respondent requested guidance on how to verify the fan sound requirements. | <ul style="list-style-type: none"> As indicated in the checklist, sound requirements are determined using the rated value of the fan, rather than a value measured in the field. When using exhaust fans that are ENERGY STAR qualified, the sound ratings are reported and publicly available. Most supply fans will be exempt for the sound requirement because they are central HVAC fans or are remotely mounted. | <ul style="list-style-type: none"> No policy change. |

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| | | However, for those fans that do require ratings, a manufacturer specification sheet will suffice. | |
| 148 | <ul style="list-style-type: none"> A respondent suggested that 9.2, intended to prevent back-drafting, should be stated in terms of a pressure requirement rather than a fan CFM requirement. | <ul style="list-style-type: none"> EPA has aligned this requirement with ASHRAE Standard 62.2-2007 and, therefore, believes the metric is adequate as stated. | <ul style="list-style-type: none"> No policy change. |
| 149 | <ul style="list-style-type: none"> Multiple respondents expressed concern about the difficulty and number of measurements required by the various air flow requirements. One respondent stated that a home of 4 bedrooms and 2 ½ baths may require as many as ten readings with equipment that is not typically used by raters, such as flow hoods for kitchen exhaust measurements. | <ul style="list-style-type: none"> EPA understands that version 3.0 of the ENERGY STAR New Homes guidelines includes many new requirements. However, EPA believes that with then early two-year transition provided for compliance with the new checklists, partners will have sufficient time to adjust their workflow to ensure that the requirements are met for every home. | <ul style="list-style-type: none"> No policy change. |
| 150 | <ul style="list-style-type: none"> Multiple respondents expressed concern it will be difficult to test ventilation and exhaust ducts which are often inaccessible to the rater and cannot be blocked off. The respondent requested an alternate verification method. | <ul style="list-style-type: none"> EPA believes that in most homes the ventilation and exhaust ducts or registers will be easily accessible by the rater. In some cases, such as for return-side ventilation systems with a duct to the outside, measured rates can be determined using a manometer inserted through a small hole in the ductwork. A similar approach can be used to measure flow rates from ducts located high on the wall, using the attic to access the ductwork. EPA understands that version 3.0 of the ENERGY STAR New Homes guidelines includes many new requirements. However, EPA believes that with the nearly two-year transition provided for compliance with the new checklists, partners will have sufficient time to adjust their workflow to ensure that the requirements are met for every home. | <ul style="list-style-type: none"> No policy change. |
| 151 | <ul style="list-style-type: none"> One respondent suggested that the measured ventilation rate requirement should be conducted by the HVAC contractor. | <ul style="list-style-type: none"> EPA believes that third-party testing of ventilation rates are a critical component to ensuring effective operation of such systems. However, EPA encourages the rater and builder to coordinate with the HVAC contractor to ensure that the contractor understands that the ventilation rate will be measured by the rater and must meet the proposed design. EPA also acknowledges that raters, builders, and trades will need significant additional training to understand these requirements and intends to help defray costs by coordinating with industry groups and providing training resources to partners | <ul style="list-style-type: none"> No policy change. |
| 152 | <ul style="list-style-type: none"> Multiple respondents expressed concerns that the inclusion of the requirement that | <ul style="list-style-type: none"> EPA's primary concerns with the use of building cavities as ducts are the difficulty achieving tight construction and the difficulty | <ul style="list-style-type: none"> EPA has revised item 2.5, which prohibited building |

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| | <p>building cavities not be used as supply or return ducts is a large burden and is not cost effective.</p> <ul style="list-style-type: none"> One respondent requested clarification as to whether building cavities could be used as supply or return ducts if they have been properly lined and sealed. | <p>achieving adequate insulation levels, particularly when adjacent to exterior rim joists. EPA agrees with respondents that if cavities meet the insulation level, leakage to outside, and total leakage requirements, they may be used as ducts.</p> | <p>cavities from being used as supply or return ducts, as follows: "Building cavities not used as supply or return ducts unless they meet items 3.2, 3.3, 4.1, and 4.2".</p> |
| 153 | <ul style="list-style-type: none"> One respondent expressed concern that the requirement for flex ducts to have less than 0.5" of sag per foot appeared arbitrary and would not be cost-effective. They suggested maintaining the spirit of the requirement but removing the specific 0.5" requirement. | <ul style="list-style-type: none"> EPA agrees with the respondent that it would be difficult to limit the sag to less than 0.5" per foot in all homes and believes that the other new duct installation requirements in the checklist will help reduce egregious errors. | <ul style="list-style-type: none"> EPA has simplified item 2.4 of the checklist to state that: "Flexible ducts supported at intervals as recommended by manufacturer but at a distance < 5 ft." EPA will consider adding additional requirements in future iterations of the guidelines. |
| 154 | <ul style="list-style-type: none"> One respondent suggested that duct boot sealing products meet NFPA 90 A & B. | <ul style="list-style-type: none"> EPA believes that NFPA 90 A & B dictate fire safety requirements are already addressed by code and need not be integrated explicitly into the version 3.0 guidelines. | <ul style="list-style-type: none"> No policy change. |
| 155 | <ul style="list-style-type: none"> Multiple respondents made suggestions or requested clarification regarding acceptable materials for sealing boots to walls, ceilings, and floors. Can mastic tape or UL-181 tape be used to satisfy this requirement? | <ul style="list-style-type: none"> EPA agrees with respondents that the acceptable materials for sealing boots can be further clarified. | <ul style="list-style-type: none"> EPA has revised item 4.3 of the checklist to indicate that: "Duct boots sealed to floor, wall, or ceiling using caulk, foam, mastic tape, or mastic paste". |
| 156 | <ul style="list-style-type: none"> Multiple respondents suggested changes to the height requirement for air inlets for individual reasons. One suggested EPA waive height requirement for cases in which the vent is protected from snow accumulation. Another proposed a height requirement off of roof decks, to reduce the temperature of air being pulled into the intake. | <ul style="list-style-type: none"> EPA has included the air inlet height requirement to prevent blockage from snow, plantings and other material. To ensure that snowfall also does not block inlets located on the roof, EPA believes that the height requirements should also apply at this location. If builders utilize equivalent methods that meet this intent and are approved by the Provider, then they may also be used. For example, ventilation inlets can be routed to attic soffits rather than extending through the roof deck. | <ul style="list-style-type: none"> EPA has revised item 7.2 on the HVAC System Quality Installation Rater checklist to clarify that the height requirements also apply to roof decks. |
| 157 | <ul style="list-style-type: none"> Multiple respondents expressed concerns about the HVAC System Quality Installation Rater Checklist prohibiting ducts in exterior walls. The respondents cited that design constraints of certain home configurations required ducts to be located in exterior walls and that the | <ul style="list-style-type: none"> EPA recommends that partners redesign homes to minimize the amount of HVAC ducts and combustion inlets and outlets that are located in exterior walls. However, for version 3.0 of the guidelines, EPA will allow HVAC ducts and combustion inlets and outlets to be located in exterior walls if partners are able to insulate the exterior side of the wall cavity with at least R-6 insulation, as well as provide the interior and exterior air barrier | <ul style="list-style-type: none"> EPA has revised item 2.6 as follows: "HVAC ducts, cavities used as ducts, and combustion inlets and outlets may pass perpendicularly through exterior walls but shall not be located in exterior walls |

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| | <p>ability to insulate behind ductwork using rigid insulation creates an adequate thermal break. With 2x6 walls, for example, 2" of rigid foam can provide about R-13 of insulation behind the ductwork.</p> <ul style="list-style-type: none"> • Another respondent expressed concern that ventilation inlet height requirements might conflict with the requirement of not installing ductwork in insulated walls. | <p>required for all walls. Note that simply insulating the HVAC duct or pipe itself is not sufficient; a continuous thermal break must be provided in the cavity. While EPA will provide this allowance in version 3.0 of the guidelines, it intends to prohibit this practice in its Concept Home and future iterations of the guidelines. Also, note that ducts and pipes that pass perpendicularly through the wall are allowed.</p> | <p>unless at least R-6 continuous insulation is provided on exterior side of the cavity, along with an interior and exterior air barrier where required by the Thermal Enclosure Checklist".</p> |
| 158 | <ul style="list-style-type: none"> • One respondent expressed concern that measurement instruments' range of error for determining exhaust fan flow rates is high. | <ul style="list-style-type: none"> • EPA appreciates the respondent's concern about the precision of the measurement instruments. If the respondent has specific guidance or standards that can be utilized to improve the precision, EPA encourages them to provide this information for consideration during future revisions to the guidelines. | <ul style="list-style-type: none"> • No policy change. |
| 159 | <ul style="list-style-type: none"> • A number of respondents provided feedback about Section 9 of the checklist, Ventilation & Exhaust Fan Ratings: <ul style="list-style-type: none"> ○ One respondent requested clarification on why air handlers are exempted from the sone rating requirements when not remotely mounted; ○ One respondent suggests raising the exemption for intermittent supply fan sone ratings from 400 CFM to 500 CFM, stating that fans up to 500 CFM can be ENERGY STAR qualified. ○ One respondent stated that due to their short duty cycles and low energy use, it was not cost-effective to require ENERGY STAR qualified local exhaust fans except for those that are a component of a whole house ventilation system; ○ One respondent proposed requiring ECM motors where whole-house mechanical ventilation fans are integral to HVAC equipment. The respondent states that at the 2012 ICC public hearings the IECC committee approved a proposal to | <ul style="list-style-type: none"> • EPA has aligned the sound requirements for fans with ASHRAE 62.2-2007, which does not impose requirements for central fan integrated units (aka air handler fans). EPA notes that obtaining sound ratings on these fans is often difficult and that they are usually separated from grills by several feet, which serves to partially isolate the noise. • Regarding the payback of short-cycle exhaust fans, incremental costs depend heavily on the quality of the fan and not just ENERGY STAR qualification. In addition to energy savings, ENERGY STAR qualified fans also help ensure quiet operation, which promotes proper use to exhaust moisture from the bathroom. However, EPA agrees with the respondent that the most appropriate application of qualified bath fans is for those that are a component of a whole-house ventilation system and will adjust requirements accordingly. Furthermore, this requirement will apply to fans rated up to 500 CFM to align with the scope of the ENERGY STAR product category. • EPA agrees that ECM motors can provide significant energy savings and will consider adding this to the ENERGY STAR Reference Design in version 4.0 of the guidelines. Furthermore, EPA agrees with the respondent that it is necessary to require ECM/ICM motors in version 3.0 where whole-house mechanical ventilation systems utilize the HVAC air handler fan. • EPA agrees that the current footnote regarding remote-mounted fan exemptions may be confusing and could be improved. • Fans with 3 sones will be quiet, but not silent to homeowners. | <ul style="list-style-type: none"> • EPA has revised section 9 of the checklist as follows: <ul style="list-style-type: none"> ○ Intermittent supply & exhaust fans shall be rated at < 3 sones by manufacturer, unless rated flow > 400 CFM; ○ Continuous supply & exhaust fans shall be rated at < 1 sone by manufacturer; ○ Bathroom fans used as part of a whole-house mechanical ventilation system shall be ENERGY STAR qualified; unless rated flow rate > 500 CFM • EPA has added a new footnote to the HVAC System Quality Installation Contractor checklist, indicating that ECM/ICM motors shall be used if the whole-house ventilation system utilizes the HVAC air handler fan. • EPA has updated footnote 15 to align with the definition in |

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| | <p>require that central fan integrated units be powered by an electronically commutated motor. The respondent suggests that ERVs and HRVs be exempted from this requirement for the time being based on their offsetting energy benefits.</p> <ul style="list-style-type: none"> ○ One respondent argued that the current wording in footnote 19 could be read to exempt bathroom exhaust fans from the sound rating requirements since bathrooms are not considered habitable spaces under the 62.2 definition. They state that this is a misreading of ASHRAE 62.2. The respondent suggested removing the reference to remote-mounted fans altogether by changing the header of section 9 to read “Exemptions for HVAC and central ventilation systems” and modifying the footnote to read “Exempted ventilation systems include ERV, HRV, and other ducted, central exhaust and/or supply ventilation systems that do not have in-situ noise ratings.” ○ Multiple respondents worried that quiet fans could inadvertently be left running. One suggested that exhaust fans be required to have an indicator light if the fan noise is below a certain threshold. | <p>Therefore, EPA does not believe that indicator lights or other visual devices are warranted without additional evidence that this is a significant problem.</p> | <p>ASHRAE 62.2-2007, which defines remote-mounted fans as “outside habitable spaces, bathrooms, toilets, and hallways and with \geq 4 ft ductwork between fan and intake grills”.</p> |
| 160 | <ul style="list-style-type: none"> • Multiple respondents supported the elimination of the ban on “ventless combustion” appliances and the requirement for CO alarms, but dispute the rationale for this action, noting that insufficient evidence was provided to justify the original proposal. • In contrast, a respondent stated that a 2008 University of Illinois Building Research Council study found that | <ul style="list-style-type: none"> • For version 3.0 of the guidelines, EPA has elected to align with ASHRAE 62.2-2007, which explicitly notes that it does not address unvented combustion space heaters. However, EPA will prohibit these products from their Concept Home program and encourages partners to provide additional studies evaluating the performance of these products so that EPA may continue to evaluate this policy for future revisions of the guidelines. Also, EPA agrees with the respondent that footnote 18 and section 10 can be clarified. | <ul style="list-style-type: none"> • EPA has revised item 10.1 and 10.2 of the checklist as follows: <ul style="list-style-type: none"> ○ Furnaces, boilers, and water heaters located within the home’s pressure boundary are mechanically drafted, direct-vented to outdoors, or in Climate Zone 1-3 |

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| | <p>ventless fireplaces lead to excessive levels of combustion gases in the majority of homes studied. The respondent felt it was contradictory to prohibit atmospherically vented appliances, but only recommend against unvented appliances.</p> <ul style="list-style-type: none"> • One respondent noted that footnote 18, which allows ventless combustion appliances, conflicts with the guideline that all combustion appliances shall be mechanically drafted or direct-vented. They also felt the footnote should apply to that guideline, 9.1, rather than 9.2. | | <p>atmospherically vented. For atmospherically vented furnaces, boilers, and water heaters, the Rater has conducted BPI's combustion safety test procedure and determined that the CO test results are less than 25 ppm and the combustion appliance zone depressurization limit is not exceeded;</p> <ul style="list-style-type: none"> ○ If atmospherically vented fireplaces are located inside the home's pressure boundary, total net rated exhaust flow of the two largest exhaust fans (excluding summer cooling fans) is < 15 CFM per 100 sq. ft. of occupiable space when at full capacity • Footnote 18 has been associated with item 10.1 and clarified as follows: "In alignment with ASHRAE 62.2-2007, this version of the ENERGY STAR New Homes guidelines does not address unvented combustion space heaters". |
| 161 | <ul style="list-style-type: none"> • Multiple respondents opposed the prohibition of atmospherically vented combustion appliances within the home's pressure boundary. They argue that: <ul style="list-style-type: none"> ○ EPA's decision is "unwarranted and unjustified"; ○ No evidence was provided that such appliances, "installed properly and in accordance with model gas installation | <ul style="list-style-type: none"> • Numerous programs promoting high-quality energy efficient housing mirror EPA's policy to require, or promote as a best practice, the use of power vented and sealed combustion appliances, such as: <ul style="list-style-type: none"> ○ Building America - All combustion appliances in the conditioned space must be sealed combustion or power-vented. Specifically, any furnace inside conditioned space shall be a sealed-combustion 90%+ (AFUE of 90 or greater) unit. Any water heater inside conditioned space shall be | <ul style="list-style-type: none"> • EPA has revised 10.1 of the HVAC System Quality Installation Rater checklist, stating that: "Furnaces, boilers, and water heaters located within the home's pressure boundary are mechanically drafted, direct-vented to outdoors, or in |

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| | <p>codes”, pose any health or safety issue;</p> <ul style="list-style-type: none"> o Recommendations from building science experts were not properly documented; o These appliances can result in lower energy bills and less energy consumption compared to the electric alternative; o Installation of these appliances is covered by major model codes such as the National Fuel Gas Code and the International Fuel Gas Code and that there are many ENERGY STAR qualified models. | <p>power vented or power-direct vented. Designs that incorporate passive combustion air supply openings or outdoor supply air ducts not directly connected to the appliance should be avoided. Use sealed-combustion gas fireplaces to eliminate the threat of harmful combustion gases from entering the house. All fuel-burning fireplaces should have sealed combustion and be properly vented to the outside. If not properly vented and sealed, the fireplace can produce harmful combustion pollutants that may be emitted into the home, such as carbon monoxide, nitrogen dioxide, and sulfur dioxide.</p> <ul style="list-style-type: none"> o LEED for Homes - Space and water heating equipment that involves combustion must be designed and installed with closed combustion (i.e., sealed supply air and exhaust ducting); with power-vented exhaust; or must be located in a detached utility building or open-air facility; unless in IECC Climate Zone 1 or 2; o Environments for Living - Furnaces, water heaters and boilers within the conditioned spaces (including basements) shall be sealed combustion or power vented units. All other combustion appliances shall be vented to the outside. o Energy & Environmental Building Association’s Builder’s Guide - Spilling or backdrafting of combustion appliances is unacceptable. If gas heating or a gas water heater is selected, the appliance must be power vented, sealed combustion or installed external to the conditioned space (e.g. in the garage). Traditional gas water heaters with draft hoods are prone to spillage and backdrafting. They should be avoided inside conditioned spaces (within a building envelope “pressure boundary”). Wood-burning fireplaces or gas-burning fireplaces should be supplied with glass doors and exterior combustion air ducted to the firebox. • EPA’s primary concern is that atmospherically-vented combustion appliances are more susceptible than power-vented or sealed combustion appliances to back-drafting scenarios that can impact indoor air quality. To better address this concern, EPA will allow atmospherically-vented combustion appliances to be located within the pressure boundary of the home in CZ 1-3 if the Rater conducts BPI’s combustion safety test procedure and determines that the home is in compliance. | <p>Climate Zone 1-3 atmospherically vented. For atmospherically vented furnaces, boilers, and water heaters, the Rater has conducted BPI’s combustion safety test procedure and determined that the CO test results are less than 25 ppm and the combustion appliance zone depressurization limit is not exceeded.”</p> |
| 162 | <ul style="list-style-type: none"> • One respondent suggested adding | <ul style="list-style-type: none"> • For version 3.0 of the guidelines, EPA will limit the mechanically | <ul style="list-style-type: none"> • No policy change. |

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| | fireplaces to the list of appliances that require direct-venting in footnote 20. | drafted and direct-venting requirements to furnaces, boilers, and water heaters. Under version 3.0 of the guidelines, fireplaces will not be required to be mechanically drafted or direct-vented. However, if they are atmospherically vented, then the total net rated exhaust flow of the two largest exhaust fans (excluding summer cooling fans) shall be < 15 CFM per 100 sq. ft. of occupiable space when at full capacity. | |
| 163 | <ul style="list-style-type: none"> Multiple respondents requested that EPA clarify its definition of “sealed combustion”, noting that ANSI Z21.47 has an allowable leakage rate to the indoor environment for direct vent appliances. Respondents also noted that EPA’s references to appliance types should be aligned with the current categorization systems for appliances (Categories I through IV). | <ul style="list-style-type: none"> EPA agrees that the terminology and definitions associated with venting needs to be clarified. | <ul style="list-style-type: none"> EPA has aligned the terminology and definitions for venting with the 2009 International Mechanical Code (IMC). Per the IMC, a direct-vent appliance is one that is constructed and installed so that all air for combustion is derived from the outdoor atmosphere and all flue gases are discharged to the outside atmosphere. Furthermore, a mechanical draft system is a venting system designed to remove flue or vent gases by mechanical means consisting of an induced draft portion under non-positive static pressure or a forced draft portion under positive static pressure |
| 164 | <ul style="list-style-type: none"> One respondent requested clarification as to the definition of occupiable space in the section on combustion and non-combustion pollutants. | <ul style="list-style-type: none"> Per ASHRAE 62.2-2007, occupiable space is any enclosed space inside the pressure boundary and intended for human activities, including, but not limited to, all habitable spaces, toilets, closets, halls, storage and utility areas, and laundry areas. EPA agrees with respondent that adding this definition will clarify the guidelines. | <ul style="list-style-type: none"> EPA has revised the guidelines by adding a footnote with the ASHRAE 62.2-2007 definition of occupiable space. |
| 165 | <ul style="list-style-type: none"> One respondent expressed concern that Section 9.2 of the Rater checklist, which requires that if solid-fuel burning appliances are located inside the home’s pressure boundary, total net rated exhaust flow of two largest exhaust fans (excluding summer cooling fans) is < 15 | <ul style="list-style-type: none"> This requirement in the checklist uses the metric of total net rated exhaust flow. The term “net-exhaust flow” is referenced from ASHRAE 62.2-2007 and is defined as the flow through an exhaust system minus the compensating outdoor airflow through any supply system that is interlocked to the exhaust system. Therefore, homes with a woodstove can still earn the ENERGY STAR, even if the two largest exhaust fans have a rated capacity | <ul style="list-style-type: none"> No policy change, though EPA has added footnote 9, which defines the term “net-exhaust flow”, and referenced it in section 5.2 of the checklist. |

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| | <p>CFM per 100 sq. ft. of occupiable space when at full capacity, would make it challenging for any home with a woodstove to meet ENERGY STAR. For instance they noted a 2000 square foot home with a 300 CFM fan would not be allowed to install a solid-fuel appliance.</p> | <p>higher than 15 CFM per 100 sq ft of occupiable space, as long as compensating outdoor airflow is provided.</p> | |
| 166 | <ul style="list-style-type: none"> Multiple respondents expressed concern that the ban on air handlers and ducts in the garage may shift components to unconditioned attics and crawlspaces where air quality can also be problematic and serviceability reduced. Furthermore, even if partners were allowed to install air-tight components in the garage, adding an air-tight closet may cost as much as \$500. Multiple respondents opposed the ban on placing air handlers and ductwork in garages, noting that EPA goes beyond consensus standards that these systems be made “substantially air-tight” and stating that EPA’s decision is not sufficiently documented. One respondent requested clarification as to whether the ban on return ducts in the garage meant that return ducts cannot draw air from a garage, cannot run through a garage at all, or both. | <ul style="list-style-type: none"> While EPA’s proposed ban on air handlers and ducts in the garage does go beyond the requirements of ASHRAE 62.2-2007, EPA included this requirement to help further reduce the potential for indoor air quality problems. However, EPA agrees with respondents’ concerns that prohibiting ducts in the garage may force them to be relocated to unconditioned attics and crawlspaces, spaces which are not inherently better locations than garages for ensuring adequate indoor air quality. | <ul style="list-style-type: none"> EPA has eliminated the requirement that air-handler and return ducts not be located within the garage. EPA will instead include this as a recommended best-practice in the version 3.0 field guides. |
| 167 | <ul style="list-style-type: none"> One respondent suggested a language change from “door to garage” to “doors between the house and garage” in Section 10.4. One respondent suggested that, despite its IAQ connection, the garage door sealing requirements might fit better in Thermal Enclosure Checklist with other sealing guidelines. | <ul style="list-style-type: none"> EPA agrees with the respondent that the door sealing requirement should be moved to the Thermal Enclosure Checklist and that all exterior doors should be gasketed or weather-stripped. | <ul style="list-style-type: none"> EPA has removed Section 10.4 and relocated this requirement to the Thermal Enclosure Checklist. |
| 168 | <ul style="list-style-type: none"> One respondent suggested a pressure diagnostic test to ensure garage separation. They suggested that the | <ul style="list-style-type: none"> While EPA understands that adding a diagnostic test would further ensure pressure separation of the house and garage, it believes that a visual inspection is sufficient to assess | <ul style="list-style-type: none"> No policy change. |

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| | <p>pressure between the house and garage should be -45 Pascals when the house is depressurized to -50 Pascals relative to the outside.</p> | <p>compliance at this time. If data are provided that suggest a visual inspection is insufficient, EPA will consider adding a diagnostic test to future versions of the guidelines.</p> | |
| 169 | <ul style="list-style-type: none"> One respondent requested clarification on what qualifies as “accessible” when referring to filter accessibility in Section 10.3. | <ul style="list-style-type: none"> To be accessible, the filter shall be located and installed in such a manner as to facilitate access and regular service by the owner. | <ul style="list-style-type: none"> EPA has revised item 11.3 of the HVAC System Quality Installation Rater Checklist to state that the filter shall be “located and installed so as to facilitate access and regular service by the owner”. |
| 170 | <ul style="list-style-type: none"> One respondent suggested adding “per 100 square feet” after 4 CFM25 in footnote 6. | <ul style="list-style-type: none"> EPA agrees with respondent that the suggested edit will improve the clarity of the guidelines. | <ul style="list-style-type: none"> EPA has revised footnote 6 of the HVAC System Quality Installation Rater checklist, per the respondent’s suggestion. |
| 171 | <ul style="list-style-type: none"> One respondent expressed concern with the Indoor airPLUS requirement that an exhaust fan be installed in the garage and vented to the outdoors. The respondent may not realize that this requirement from the Indoor airPLUS program is not proposed as part of version 3.0 of the ENERGY STAR New Homes guidelines. | <ul style="list-style-type: none"> Compliance with the Indoor airPLUS program is not a requirement of the ENERGY STAR New Homes guidelines, although co-labeling homes using both the ENERGY STAR and Indoor airPLUS programs is possible and encouraged. | <ul style="list-style-type: none"> No policy change. |
| 172 | <ul style="list-style-type: none"> The installation of a MERV 8 filter will add \$150 for the filter and miscellaneous materials, and possibly \$100 more per home, along with an added \$50 for the customer to replace the filter in the future. The respondent may not be aware that the requirement for the filter has been reduced from MERV 8 to MERV 6. | <ul style="list-style-type: none"> While the first draft of version 3.0 of the ENERGY STAR New Homes guidelines required a MERV 8 filter, EPA responded to concerns similar to those expressed by this respondent during the first comment period by reducing this requirement to MERV 6. | <ul style="list-style-type: none"> No policy change. |
| 173 | <ul style="list-style-type: none"> One respondent suggested that HVAC integrated filtration should become a labeled product and integrated into the New Homes guidelines, due to claims of potential energy savings. The respondent doesn’t define how such systems operate, but may be referencing electrically energized air filtration systems. | <ul style="list-style-type: none"> EPA’s process for considering new product categories is separate from their process for revising the ENERGY STAR New Homes guidelines. For more information about how EPA selects which products can earn the ENERGY STAR, please see: http://www.energystar.gov/index.cfm?c=products.pr_how_e_arn. If such products were to become eligible for labeling in the future, EPA may consider whether to incorporate such products into its new homes guidelines. Presently, EPA believes that the requirement for a MERV 6 filter in a properly designed and installed HVAC system is a cost-effective and adequate solution | <ul style="list-style-type: none"> No policy change. |

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| | | for helping to ensure an effective filtration system. | |
| Contractor Checklist | | | |
| 174 | <ul style="list-style-type: none"> One respondent expressed concern that HVAC contractors are not properly staffed to complete the HVAC Quality Installation Contractor Checklist, which will limit the number of available contractors available to work with. | <ul style="list-style-type: none"> EPA believes the commissioning process encapsulated in the HVAC Quality Installation is critical to achieving a well performing HVAC system. EPA acknowledges that raters, builders, and trades will need significant additional training and intends to help defray costs by coordinating with industry groups and providing training resources to partners. | <ul style="list-style-type: none"> No policy change. |
| 175 | <ul style="list-style-type: none"> A respondent suggested focusing on correct air flow, followed by duct leakage, and then proper charge. They recommend changing the order in the HVAC Contractor checklist by switching items 9 and 10 with 6 and 7. | <ul style="list-style-type: none"> The order of the items in the checklists does not reflect the relative importance EPA assigns to each. All checklist items are equally important. Therefore, EPA will leave the order as is. | <ul style="list-style-type: none"> No policy change. |
| 176 | <ul style="list-style-type: none"> Regarding sampling, one respondent requested clarification as to whether non-rater checklists need to be completed for every home or only the inspected homes. | <ul style="list-style-type: none"> EPA notes on the first page of the inspection checklists document that the checklists may be completed for a batch of homes using a RESNET-approved sampling protocol to qualify homes as ENERGY STAR. This is intended to encompass all checklists. | <ul style="list-style-type: none"> EPA has clarified on the first page of the inspection checklists that all checklists, including the HVAC System Quality Installation Contractor Checklist and Water Management System Builder Checklist may be completed using a RESNET-approved sampling protocol. |
| 177 | <ul style="list-style-type: none"> One respondent suggested changing the order of 2.8 Design Total Heat Loss and 2.9 Design Total Heat Gain as SHR relates to heat gain not to heat loss. | <ul style="list-style-type: none"> EPA agrees with the respondent that this order is more logical. | <ul style="list-style-type: none"> EPA has reversed the order of item 2.8 and 2.9 to improve the clarity of the checklist. |
| 178 | <ul style="list-style-type: none"> Multiple respondents noted that footnotes 7 to 9 are not aligned with the notes in the HVAC contractor checklist. | <ul style="list-style-type: none"> EPA agrees with the respondent that the footnotes are misaligned. | <ul style="list-style-type: none"> EPA has aligned all footnotes on the checklist. |
| 179 | <ul style="list-style-type: none"> One respondent suggested that regional commissioning requirements supported by local infrastructure and based on sound research should be allowed in place of the HVAC contractor checklist. They point out that a set of utilities-supported commissioning standards has been used in the Northwest ENERGY STAR program for 6 years. | <ul style="list-style-type: none"> EPA understands that some regional programs have developed their own HVAC commissioning requirements that should be considered as alternate means of demonstrating compliance with the intent of the HVAC System Quality Installation checklists. | <ul style="list-style-type: none"> No policy change at this time. However, EPA will continue to coordinate with regional programs that have developed their own HVAC commissioning requirements to assess equivalency with the HVAC System Quality Installation checklists. |
| 180 | <ul style="list-style-type: none"> A respondent expressed concern that the | <ul style="list-style-type: none"> EPA believes the commissioning process encapsulated in the | <ul style="list-style-type: none"> No policy change. |

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| | <p>HVAC Contractor checklist will not be achievable by 2012 based on current training.</p> | <p>HVAC Quality Installation is critical to achieving a well performing HVAC system. EPA acknowledges that raters, builders, and trades will need significant additional training and intends to help defray costs by coordinating with industry groups and providing training resources to partners.</p> | |
| 181 | <ul style="list-style-type: none"> One respondent suggested that section 1 requires an "N/A" check box in addition to "Yes" and "No." | <ul style="list-style-type: none"> EPA agrees with the respondent that "N/A" is an appropriate response for items 1.4 and 1.5. | <ul style="list-style-type: none"> EPA has added an "N/A" field to item 1.4 and 1.5 of the checklist. |
| 182 | <ul style="list-style-type: none"> One respondent suggested that ASHRAE 62.2-2010 should not be referenced as it has not been released for public view in its final form and that ASHRAE 62.2-2007 should be referenced instead. | <ul style="list-style-type: none"> EPA agrees with respondent that it is premature to reference the 2010 version of the standard at this time. | <ul style="list-style-type: none"> EPA has revised all references to ASHRAE 62.2-2010 to "ASHRAE 62.2-2007 and published addenda". EPA will consider updating this reference to the 2010 standard after its release. |
| 183 | <ul style="list-style-type: none"> One respondent suggested that 2.11 ask for the design friction rate instead of static pressure. They state that friction rate, not static pressure, is what is calculated during a duct design. | <ul style="list-style-type: none"> The design duct static pressure is the maximum external static pressure allowed by the equipment manufacturer in order to insure the HVAC air handler fan can deliver the rated air flow. While the design friction rate will also be used to design the duct system, EPA believes that static pressure is an appropriate parameter to record on the checklist. Furthermore, this aligns with the ANSI / ACCA 5 QI-2007 protocol. | <ul style="list-style-type: none"> No policy change. |
| 184 | <ul style="list-style-type: none"> One respondent suggested adding "at design conditions" to the requirements 3.10 to 3.12 so that there is no confusion as to what values to use when performing the heating and cooling equipment calculations. They worried that, unless this was explicit, the contractor may use ARI conditions instead of following, for instance, proper Manual S procedure which requires values from the manufacturer's expanded engineering data. | <ul style="list-style-type: none"> EPA agrees with the respondent that this change will improve the clarity of the checklist. | <ul style="list-style-type: none"> EPA has added the phrase, "at design conditions" to checklist items 3.10 through 3.12 to improve clarity. |
| 185 | <ul style="list-style-type: none"> One respondent expressed concern about the ability of contractors and raters to correctly assess proper TXV installation. | <ul style="list-style-type: none"> Note that only the HVAC contractor is required to assess the installation of TXV's and not the Rater. EPA is planning to develop training for all partners, including supplemental technical guidance corresponding to each of the new checklists. Finally, EPA is working with ACCA and other HVAC professionals regarding the development of appropriate training for HVAC contractors regarding the new guidelines. | <ul style="list-style-type: none"> No policy change. |

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| 186 | <ul style="list-style-type: none"> One respondent suggested that footnote 8 should only apply to field-installed TXV's. It is not clear whether respondent meant that only factory-installed TXVs should be allowed as a compliance method in the case of cold weather, or whether the TXV installation requirements in footnote 8 should only apply to field-installed but not factory-installed TXVs. | <ul style="list-style-type: none"> EPA will allow both factory-installed and field-installed TXV's to be used and agrees with respondent that improper TXV installation is primarily a concern with field-installed TXVs. Therefore, EPA will clarify that footnote 8 only applied to field-installed TXVs. | <ul style="list-style-type: none"> EPA has clarified in footnote 8 that "either factory-installed or field-installed TXV may be used. For field-installed TXV's, ensure that sensing bulbs are insulated and tightly clamped to the vapor line with good linear thermal contact at the recommended orientation, usually 4 or 8 o'clock". |
| 187 | <ul style="list-style-type: none"> One respondent suggested only applying the sensible heat ratio verification in section 3.14 to homes in Warm-Humid climates. One respondent suggested removing the dehumidifier verification requirement without elaborating. | <ul style="list-style-type: none"> It is necessary for the HVAC system in all climates to have sufficient latent capacity to control latent loads within the home. Therefore, assessment of the sensible heat ratio is a requirement for homes in all climates, though in climates with low latent loads systems will meet this requirement with little to no effort. In cases where the latent capacity does not exceed the latent load, a dehumidifier must be added to help ensure that the comfort and durability of the home are maintained. | <ul style="list-style-type: none"> No policy change. |
| 188 | <ul style="list-style-type: none"> One respondent noted that section 3.14 should require the selected SHR be lower than the design SHR, not higher, which would imply the selected system has equal or greater latent heat removal capacity than designed. | <ul style="list-style-type: none"> EPA agrees and will update language accordingly. | <ul style="list-style-type: none"> EPA has corrected item 3.14 to indicate that the selected SHR shall be equal or lower than the design SHR. |
| 189 | <ul style="list-style-type: none"> Multiple respondents suggested aligning the capacity verification in section 3.16 of the HVAC Contractor checklist with ACCA Manual S by using sensible values from sections 3.11 and 2.6 instead of total values in sections 3.12 and 2.7 respectively. They state that ACCA Manual S requires equipment be selected to meet the design sensible load, not the total load. | <ul style="list-style-type: none"> ACCA Manual S requires that the total capacity of the selected system exceed the total load calculated using Manual J. Section 3-4 states that "cooling equipment should be sized to satisfy the Manual J design loads (sensible and latent) when the system is operating at the summer design conditions". | <ul style="list-style-type: none"> No policy change. |
| 190 | <ul style="list-style-type: none"> One respondent notes that it is often necessary to choose the next larger equipment capacity available, which in some cases can slightly exceed 115% of the design capacity, as required in section 3.16. | <ul style="list-style-type: none"> ACCA Manual S requires that the total cooling capacity of the selected system not exceed the total load calculated by more than 15% except in the case of heatpump equipment installed in a cold climate, for which cooling capacity can exceed the total cooling load by as much as 25 percent. ACCA Manual S provides guidance on how to adjust the design of systems that are slightly below the required capacity to ensure that they both meet the design load and the over-sizing limit. | <ul style="list-style-type: none"> No policy change. |

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| 191 | <ul style="list-style-type: none"> One respondent suggested using SEER and HSPF values as the measure of heat pump efficiency in section 4, instead of COP. They state that COP is not available on the AHRI website, while SEER and HSPF are. | <ul style="list-style-type: none"> Heatpump efficiency varies with outdoor conditions. In addition to determining HSPF, ARI standards require that heatpump efficiency be evaluated at 17°F and 47°F so that performance can be assessed under different outdoor conditions. While these data points may not be available within the AHRI database, they should be available from the manufacturer and obtainable by the HVAC contractor designing the system. | <ul style="list-style-type: none"> No policy change. |
| 192 | <ul style="list-style-type: none"> A respondent expressed concern about the difficulty in accurately measuring wet-bulb temperatures at supply side because the air may be near saturation and the value of this measurement. Multiple respondents stated that the wet-bulb measurement in heating mode is irrelevant. | <ul style="list-style-type: none"> It is unclear from the respondent why the wet bulb temperature would be any more difficult to measure accurately at the supply side than the wet bulb temperature of the return side. However, EPA agrees that the value of measuring some of the proposed air temperatures may not warrant the effort required. | <ul style="list-style-type: none"> EPA has simplified section 6.2 of the checklist by eliminating the requirement to measure air temperatures in heating mode, to measure supply side air temperatures in cooling mode, and to measure return side dry-bulb temperature in cooling mode. |
| 193 | <ul style="list-style-type: none"> One respondent suggested changing “psi” to “psig” in the context of liquid and suction line pressures in sections 6.3 and 6.5. | <ul style="list-style-type: none"> EPA agrees and will change the units from psi to psig. | <ul style="list-style-type: none"> EPA has revised the units for item 6.3 and 6.5 from “psi” to “psig”. |
| 194 | <ul style="list-style-type: none"> One respondent suggested that the static pressure and airflow sections should be moved to the HVAC Rater checklist. They felt that it did not make sense to sign off on the test having been done without performing it themselves. | <ul style="list-style-type: none"> The purpose of the HVAC System Quality Installation Contractor Checklist is to ensure that the contractor has commissioned the system at the time of installation. EPA has added a disclaimer to the HVAC System Quality Installation Rater Checklist to indicate that: “The Rater is only responsible for ensuring that the Contractor has completed the Contractor checklist in its entirety, not for assessing the accuracy of the load calculations or field verifications included. It is the contractor’s exclusive responsibility to ensure the system design and installation comply with the Contractor checklist specifications.” For version 3.0 of the guidelines, EPA believes that it would be too burdensome to require that raters independently commission the HVAC system. However, Raters that have the capability to commission the HVAC system may wish to provide that value-added service to their builder clients. | <ul style="list-style-type: none"> No policy change. |
| 195 | <ul style="list-style-type: none"> A respondent suggested EPA clarify that an uncontrolled HVAC air handler with passive outdoor air duct not be considered as a controlled mechanical ventilation system, in contrast to ASHRAE 62.2, which the respondent claims does | <ul style="list-style-type: none"> EPA agrees with respondent that the ventilation system should not utilize an intake duct to the return side of the HVAC system unless coupled with a motorized damper and control system. | <ul style="list-style-type: none"> EPA has added a requirement to the HVAC System Quality Installation Contractor checklist stating that the ventilation system should not utilize an intake duct to the |

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| | <p>allow it. The respondent argued that this type of system would have the same energy problem as duct leakage does (over-ventilation when loads are large, under-ventilation when loads are small), and therefore requested a requirement for both a mechanical damper and control.</p> | | <p>return side of the HVAC system unless coupled with a motorized damper and control system.</p> |
| 196 | <ul style="list-style-type: none"> One respondent noted, in regards to footnote 5, that if a given market has a microclimate that is different from the nearest climate reporting station such that an alternative design temperature is necessary, it is unlikely that supporting published climate data would be available. | <ul style="list-style-type: none"> EPA has included this exception to allow for alternative design temperatures where a microclimate makes the nearest climate reporting station data inappropriate. Note that not all weather stations are included in Manual J (or other procedures). If there is weather data supporting an alternative design temperature, EPA only requires that the data be attached. | <ul style="list-style-type: none"> No policy change. |
| 197 | <ul style="list-style-type: none"> Multiple respondents requested confirmation that the option to attach OEM-provided catalog data indicating proper selection of matched system instead of an AHRI certificate is an intentional move away from current ENERGY STAR policy | <ul style="list-style-type: none"> In version 3.0 of the guidelines, EPA has greatly expanded its requirements for proper sizing and installation of HVAC systems. As part of this process, it has aligned with the ANSI / ACCA 5 QI-2007 protocol, which allows OEM-provided catalog data to be used to demonstrate proper selection of systems. | <ul style="list-style-type: none"> No policy change. |
| 198 | <ul style="list-style-type: none"> One respondent suggested changing the language in footnote 8 from "through and active fan" to "through the air handler fan." | <ul style="list-style-type: none"> EPA agrees with the respondent that the description of the pressure matching methodology could be clarified. | <ul style="list-style-type: none"> EPA has revised footnote 9 to state that "the pressure matching method uses a calibrated fan to match the supply plenum pressure produced when the HVAC air handler fan is in operation. The airflow through the calibrated fan that produces the same pressure is assumed to match the HVAC air handler fan airflow". |
| 199 | <ul style="list-style-type: none"> One respondent suggested including the additional requirements to footnote 9, regarding condensate drain pans. Suggestions include requiring that condensate line: should be drained to the exterior of the foundation; cannot be drained to the plumbing waste system; and that, when drained to a shared | <ul style="list-style-type: none"> EPA believes that the current footnote, which requires that the drain pan drain the condensate to a drainage system, rather than just depositing underneath the foundation, sufficiently addresses the first suggestion. However, EPA agrees with the respondent that the other two suggestions will be helpful additions. | <ul style="list-style-type: none"> EPA has revised footnote 10 as follows: "Corrosion-resistant materials include stainless steel and plastic. Drain pan shall be sloped enough so it does not retain standing condensate; shall drain condensate to a |

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| <p>drainage system such as a storm water management system, shall be equipped with backflow prevention valve.</p> | | <p>drainage system, rather than just depositing underneath the foundation; shall not be drained to the plumbing waste system; and, when drained to a shared drainage system such as a storm water management system, shall be equipped with backflow prevention valve.”</p> |
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Water Management System Checklists

| ID | Comment Summary | EPA’s Response | EPA’s Policy Decision |
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| General | | | |
| 200 | <ul style="list-style-type: none"> • Multiple respondents expressed concern about the inclusion of the water management checklists in the version 3.0 ENERGY STAR guidelines and suggested that they be eliminated, postponed, or simplified. The following reasons were cited: <ul style="list-style-type: none"> ○ The brand should not be associated with water efficiency unless it addresses water consumption of residential landscape irrigation, which can be the dominant use of water in some regions; ○ Durability issues are not relevant to the ENERGY STAR program; ○ Additional costs will be incurred for verification, even for partners that already comply with the requirements due to code; ○ The inclusion of non-energy inspection checklists dilutes the meaning of the brand; ○ Overlap with the Indoor airPLUS package makes the benefits of each program less distinct; ○ The checklists are unrelated to gains in energy efficiency; ○ Verifiers/Raters continue to have concerns regarding liability issues associated with moisture damage; | <ul style="list-style-type: none"> • EPA recognizes that the Water Management System Checklists do not contribute to energy savings, but considers them inextricably linked to the other thermal enclosure system requirements that contribute to the meaningful energy savings. Specifically, the requirements for reduced infiltration, continuous air barriers, and quality-installed insulation substantially reduce the tolerance of the home to handle unintended water flows. For this reason, EPA continues to believe that it is critical to highlight details that must be done correctly to ensure proper water management of qualified homes. | <ul style="list-style-type: none"> • No policy change. |

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| | <ul style="list-style-type: none"> ○ The perceived value of the checklist to stakeholders is low versus the added cost and complexity it creates, | | |
| Rater Checklist | | | |
| 201 | <ul style="list-style-type: none"> • Multiple respondents expressed concern that there are too many checklist items for raters to verify effectively or within only two site visits. One respondent estimated that the additional verification would require as many as 3 to 4 site visits, which could result in prohibitive implementation costs to verify measures not directly tied to energy savings. Suggested solutions include: <ul style="list-style-type: none"> ○ Remove the water builder management checklist entirely ○ Remove the rater portion of the water builder management checklist entirely. ○ Incorporate the entire rater portion of the water builder management checklist into the builder checklist. ○ Move sections 3 and 4 (wall and roof assemblies) and associated footnotes from the rater checklist to the builder checklist. ○ Increase the number of allowable builder-verified items. • One respondent expressed concerns as to whether raters will be able to verify if tamping has been completed or if the soil is non-settling and one respondent expressed concern that the checking of the back-fill tamping for final grade slope requirement is “not practical.” | <ul style="list-style-type: none"> • EPA appreciates the respondents’ concern about the cost-effectiveness of the program and also the challenge of integrating the rater checklist into the workflow of the home construction process, given that many of the items on the checklist are only available for inspection for limited time periods. | <ul style="list-style-type: none"> • EPA has combined the Water Management System Rater and Builder checklists into a single checklist for the builder. |
| 202 | <ul style="list-style-type: none"> • One respondent noted their potential need to maximize the number of builder sign-offs on most projects given the large number of items to be verified, which would decrease the extent to which ENERGY STAR is truly a third-party verification program. | <ul style="list-style-type: none"> • Ideally, EPA would prefer to require that all items on the inspection checklists be third-party verified for all homes. However, in the context of a voluntary program, EPA must balance the desire to meet this ideal with the ability of the partners to meet the requirements in a cost-effective manner. In the case of the water management | <ul style="list-style-type: none"> • EPA has combined the Water Management System Rater and Builder checklists into a single checklist for the builder. |

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| | | <p>system checklist, numerous respondents have noted that it would be difficult to verify the requirements of the rater checklist in only two visits. In light of these concerns, EPA believes that for version 3.0 of the program, it will be more effective to leverage the builders in verifying these important water management details.</p> | |
| 203 | <ul style="list-style-type: none"> One respondent requested verification whether the builder needs to verify that the item has already been properly installed, or if it is acceptable to verify that construction plans call for the item to be addressed and properly installed. The respondent notes that, if builder sign-off cannot occur until after all items are installed, substantial delays in project close-out could occur. The respondent that this may be the case for homes completed in the fall, which are often not graded until the spring. | <ul style="list-style-type: none"> Generally speaking, all items on the inspection checklists must only be approved after completion, rather than approved with the intention of completing the item. However, in the specific instance of the final sloped grade requirement, EPA appreciates the respondent's concern that there may be a significant lag between the completion of this requirement and all other requirements on the checklist. | <ul style="list-style-type: none"> EPA has revised item 1.2 of the checklist to read, "Final grade is, or is scheduled by builder to be, sloped > 0.5 in. per ft. away from home for > 10 ft. and back-fill tamped to prevent settling". |
| 204 | <ul style="list-style-type: none"> One respondent expressed concern that the permeability ratings of interior finishes may be "almost impossible to verify." | <ul style="list-style-type: none"> The intent of this requirement is to ensure that vapor barriers are not located on the interior surface of the wall in Warm-Humid climates. EPA will provide examples of materials that are and are not compliant with the intent of this item in the supplemental training materials | <ul style="list-style-type: none"> No policy change. |
| 205 | <ul style="list-style-type: none"> Multiple respondents expressed concern that the exclusion of vapor barriers in below grade walls could prevent the use of foam board insulation and closed-cell sprayed urethane foam, which qualify as vapor barriers. Multiple respondents also agreed that such exclusions could affect thermal bypass compliance. One respondent suggested that allowing Class II or higher vapor retarders as defined in 2009 IRC would allow the use of closed-cell sprayed urethane foam. The respondent did note that the 2009 IRC does not exclude even Class I vapor retarders for below-grade walls, but rather excludes basement walls or the "below grade portion of any wall" from the vapor retarder requirements for zones 5-8 and Marine 4. | <ul style="list-style-type: none"> In alignment with the Indoor AirPLUS program, EPA's intent is only to prevent the installation of materials on the interior side of exterior walls that have a permeability rating less than or equal to 0.1. This should allow for the use of rigid foam board and closed-cell sprayed urethane foam, as long as the manufacturer's product specifications indicate a permeability rating above this limit. | <ul style="list-style-type: none"> EPA has clarified that materials used on the inside of below-grade exterior walls must not have a permeability rating less than or equal to 0.1. EPA will provide additional guidance about typical perm ratings of various materials in the supporting field guide for this checklist. |
| 206 | <ul style="list-style-type: none"> One respondent expressed concerns that the | <ul style="list-style-type: none"> Alternate means of compliance that meet the intent of | <ul style="list-style-type: none"> No policy change. |

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| | lateral size requirement for gutters and downspouts would create an eyesore or require costly underground piping. The respondent suggested allowing the use of a foundation waterproofing system utilizing a drainage board and thick asphaltic coating (e.g., Tuff-N-Dri) as an alternative method to direct water down to the drain tile for collection in a sump pit so it can be directed away from the foundation. | the requirements, such as the system described by the respondent, can also be used if the Provider deems them to be equivalent to or more stringent than the checklist guidelines. However, in all cases, these “equivalent” determinations shall be reported prior to project completion to energystarhomes@energystar.gov. This will allow EPA to make formal policy decisions, as needed, to ensure consistent enforcement of the guidelines and to provide a resource for other partners with similar questions. | |
| 207 | <ul style="list-style-type: none"> One respondent expressed concern that the exclusion of wall-to-wall carpeting within 2.5 feet of toilets and bathing fixtures is outside the scope of ENERGY STAR, noting that the most common reason for installing carpet is that the home purchaser may intend to install tile or other upgraded flooring after moving in. | <ul style="list-style-type: none"> EPA believes this requirement is important to reduce the risk of mold and material damage and that a large majority of their partners will already be in compliance with their current housing designs. | <ul style="list-style-type: none"> No policy change. |
| Builder Checklist | | | |
| 208 | <ul style="list-style-type: none"> One respondent pointed out that trowled mastic is not specified on any of the source documents that are ultimately used to prescribe the Permanent Wood Foundation Moisture Barrier. | <ul style="list-style-type: none"> EPA has further researched this requirement and agrees with the respondent that trowled on mastic is not necessary. | <ul style="list-style-type: none"> EPA has revised this requirement as follows: “For wood framed walls, finish with polyethylene and adhesive or other equivalent waterproofing”. |
| 209 | <ul style="list-style-type: none"> One respondent suggested that a minimum 1” extruded polystyrene insulation layer should qualify as a substitute for sheeting as a slab capillary break. | <ul style="list-style-type: none"> The respondent’s suggestion is consistent with guidance from the Building America program and the Energy & Environmental Building Association’s guidebooks. Therefore, EPA agrees with the respondent that this would be an acceptable alternative detail. | <ul style="list-style-type: none"> EPA has revised the checklist to allow ≥1” extruded polystyrene insulation as an acceptable alternative detail to sheeting. |
| 210 | <ul style="list-style-type: none"> One respondent suggested that, if the “clean aggregate” size was increased from 0.5” to 0.75”, then the requirement for polyethylene sheeting would not be needed as capillary absorption would not occur with 0.75” of uniformly-sized, clean aggregate. | <ul style="list-style-type: none"> EPA would need additional documentation demonstrating the equivalence of 0.75” aggregate and polyethylene sheeting prior to allowing this as an acceptable alternative detail. | <ul style="list-style-type: none"> No policy change. |
| 211 | <ul style="list-style-type: none"> Multiple respondents suggested that when polyethylene sheeting is used as a capillary break on crawlspace floors, EPA remove the requirements that seams be sealed and that the sheeting be mechanically fastened to walls and piers. Respondents suggested that the difficulty of completing this detail would be | <ul style="list-style-type: none"> While sealing the seams would be a best practice, EPA agrees with the respondents that overlapping the sheeting by 6-12” should be sufficient for the sheeting to act as a vapor barrier without further sealing. However, EPA believes that it is necessary to mechanically fasten the sheeting to the bottom of the walls or piers to help ensure that the sheeting is not easily disturbed after | <ul style="list-style-type: none"> EPA has revised this item in the checklist as follows: “≥6 mil polyethylene sheeting, lapped 6-12 in. and attached to bottom of walls and piers with furring strips or equivalent”. |

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| | <p>high and that the long-term durability of this seal would be questionable. Respondents felt that simply lapping the polyethylene, as required in the checklist, would produce an effective vapor barrier with less time and effort.</p> | <p>installation.</p> | |
| 212 | <ul style="list-style-type: none"> • A respondent expressed concern about the added expense of requiring self-sealing bituminous membrane (i.e., ice and water shield) on all roof eaves within a single climate zone as not all locations within a single climate zone may be prone to ice damming. The respondent refers to local code that addresses the conditions in which such products should be installed. | <ul style="list-style-type: none"> • EPA believes this is necessary in the vast majority of climate zone 5 and higher regions to prevent water damage from ice damming and is comfortable with the fact that the requirement may exceed code-minimum requirements in some regions. | <ul style="list-style-type: none"> • No policy change. |
| 213 | <ul style="list-style-type: none"> • One respondent recommends removing the requirement to provide cement board in cases where there would otherwise be no interior wall sheathing behind prefabricated tub or shower units as penetrations for water fixtures would still allow moisture flow around the cement board. The respondent suggests, in cases where an air barrier is required, other materials such as thermo-ply or sheet polyethylene could be used as an economical alternative. • One respondent requested clarification as to what types of showers and tubs (ie, tiled versus fiberglass/ acrylic units) require cement board or moisture-resistant backing material and would like to know if specific sheathing products that are designed for ceramic installation (eg, DenseShield) would be acceptable. • One respondent suggested modifying the language of the requirement for moisture-resistant backing materials behind tubs and showers to “where backer board is required behind tub and shower enclosures per manufacturers instructions, it must be cement board or equivalent moisture-resistant backing material.” The respondent cited that | <ul style="list-style-type: none"> • EPA agrees that further clarification is needed regarding the use of cement board or equivalent moisture-resistant backing material installed behind tub and shower enclosures. • EPA agrees with respondent that for monolithic fiberglass tub and shower enclosures, the use of backing material is only required if indicated per the manufacturer. In such cases the use of paper-faced backerboard that meets ASTM mold-resistant standards is acceptable. In contrast, backerboard must always be included on walls behind tub and shower enclosures composed of tile or panel assemblies with caulked joints and paper-faced backerboard shall not be used as the backing material. Instead, cement board or equivalent materials shall be used. • For version 3.0 of the guidelines, EPA will limit the requirement for backerboard to walls directly behind tubs and showers. However, EPA will consider extending the requirement to nearby walls in future revisions of the guidelines. • EPA believes that is important to provide moisture-resistant backing at all locations with an elevated risk for damage. As clarified above, paper-faced products that meet ASTM mold-resistant standards are acceptable behind monolithic fiberglass tub and shower enclosures. Furthermore, EPA states clearly in the guidelines that local code requirements, including fire codes, always | <ul style="list-style-type: none"> • EPA has clarified the checklist item as follows: “Cement board or equivalent moisture-resistant backing material installed on walls behind tub and shower enclosures composed of tile or panel assemblies with caulked joints. Paper-faced backerboard shall not be used”. |

EPA Responses to ENERGY STAR version 3.0 Qualified New Homes Comments

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| | <p>there had been initial confusion over similar requirements in LEED for Homes and IAP programs in which some project teams thought that the requirement meant that moisture-resistant backer board was to be installed to the floor behind all bathtubs.</p> <ul style="list-style-type: none"> • One respondent suggested adding the requirement of cement board or equivalent moisture-resistant backing to walls that are subject to tub/shower splash. • One respondent expressed concern about fire code officials only recognizing a few select products for “fire-rated party walls” and that these wall types may not satisfy the moisture-resistant backing requirements for tubs and showers. The respondent would like to know if EPA would allow paper-faced product behind the tub if a non-paper-faced product was used in the exposed area around tub. | <p>supersede ENERGY STAR requirements.</p> | |
| 214 | <ul style="list-style-type: none"> • Multiple respondents suggested adding cement board or equivalent moisture-resistant backing material for showers and tub enclosures should be mentioned in the air barrier section of the Thermal Enclosure Checklist. | <ul style="list-style-type: none"> • Because this requirement’s primary intent relates to moisture management, EPA believes it best fits within the water management system checklist. | <ul style="list-style-type: none"> • No policy change. |
| 215 | <ul style="list-style-type: none"> • One respondent requested clarification as to whether all building materials are subject to the requirement that materials with visible signs of water damage or mold not be installed. A suggestion was made to require that “porous” building materials at a minimum should meet the requirement. | <ul style="list-style-type: none"> • The requirement on the builder checklist does apply to all building materials. EPA believes that no materials with evidence of water damage or mold should be installed in qualified homes. | <ul style="list-style-type: none"> • No policy change. |
| 216 | <ul style="list-style-type: none"> • Another respondent expressed concern about the wording regarding high moisture content products, stating that the language “... should not exceed...” is not consistent with the rest of the guidelines. | <ul style="list-style-type: none"> • EPA agrees that the wording can be clarified. | <ul style="list-style-type: none"> • EPA has modified the relevant footnote to state that, “As guidance, EPA recommends that lumber not exceed 18% moisture content”. |