

EPA Responses to Comments on ENERGY STAR Certified Homes Guidelines, Version 3 Proposed Alternative Compliance Pathways for Homes Undergoing Gut Rehabilitation

EPA has posted on its web site a compilation of all comments received during the comment period for Version 3 ENERGY STAR Certified Homes Guidelines Proposed Alternative Pathways for Homes Undergoing Gut Rehabilitation, which ended October 10, 2012.

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 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.

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ENERGY STAR Certified Homes Guidelines, Version 3

ID	Comment Summary	EPA's Response	EPA's Policy Decision
General			
1	<ul style="list-style-type: none"> Multiple respondents commented that the proposed alternatives are too conservative. They requested additional alternatives, the ability to trade off certain requirements in exchange for meeting other unspecified requirements, and more flexibility to select the requirements most applicable to each home. 	<ul style="list-style-type: none"> EPA reaffirms its intent for all homes that earn the ENERGY STAR label to provide the same value to consumers. The intent behind these proposed alternatives was to provide more cost effective options to meet the same intent as the original program requirements. A home that traded off certain requirements in exchange for meeting other requirements (e.g., not producing a thermal break at the slab but instead adding insulation in the attic) is not likely to provide the same value in terms of comfort, durability, and quality. EPA does agree with respondents that additional alternatives, increased flexibility, and better assessment protocols would be ideal. Where respondents provided specific alternatives that met the same intent as the original program requirements, EPA has tried to incorporate these alternatives. EPA is committed to including additional alternatives as they become available so that more homes may earn the ENERGY STAR label without sacrificing performance. 	<ul style="list-style-type: none"> No policy change
2	<ul style="list-style-type: none"> Multiple respondents requested the creation of, or allowance for, alternative inspection protocols to determine if an existing home is already meeting the intent of the program. The benefit of such protocols would be to avoid the need to perform costly procedures such as removing all the exterior cladding, removing the outer layer of the roof, or implementing moisture control measures in the foundation. Respondents requested the following: a process to assess the existing site drainage system; an allowance for architects or engineers to analyze the existing roof, foundation, site, and drainage plane conditions in lieu of visual inspection; an allowance to remove and inspect only the vulnerable locations of the roof and cladding; a protocol to inspect slate roofs, and 	<ul style="list-style-type: none"> EPA agrees that less expensive alternative inspection protocols other than complete visualization would expand the range of homes able to earn the label. However, EPA is not aware of any standardized protocols available to complete these tasks. To be of use, protocols must be standardized to ensure consistent training and enforcement, in contrast to simply identifying a tool (e.g. a moisture meter) or a general approach (e.g. look at vulnerable locations). In addition, alternative inspection protocols must be able to account for seasonal variations and the impact of any changes made to the building during rehabilitation that may affect future moisture management (e.g., reduced air infiltration, increased insulation levels). EPA is committed to including additional alternatives as they become available so that more homes may earn the ENERGY STAR label without sacrificing performance. 	<ul style="list-style-type: none"> No policy change

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	<p>an allowance to use moisture meter readings and / or infrared cameras to assess the foundation for moisture problems. The respondents did not specify any standardized protocols for completing these tasks.</p>		
3	<ul style="list-style-type: none"> One respondent noted that some of the descriptions of the alternatives are difficult to understand and suggested that EPA provide additional illustrations and examples. 	<ul style="list-style-type: none"> The current format of the ENERGY STAR Certified Homes guidelines is not conducive to the inclusion of images due to space constraints. However, EPA will continue to provide training and webinars with visual diagrams. Additionally, EPA encourages partners to submit specific questions to the ENERGY STAR Certified Homes team at energystarhomes@energystar.gov. 	<ul style="list-style-type: none"> No policy change
4	<ul style="list-style-type: none"> One respondent advised that these alternatives be carefully reviewed and vetted by experts in the fields of healthy homes and indoor air quality. 	<ul style="list-style-type: none"> Subject matter experts from EPA have reviewed and vetted these proposed alternatives. In addition, one purpose of this comment period was to allow other professionals in building science, healthy homes, and indoor air quality to review and comment on these proposed alternatives. 	<ul style="list-style-type: none"> No policy change
5	<ul style="list-style-type: none"> One respondent noted his appreciation for the development of proposed alternatives that will help expand the number of homes undergoing a gut rehabilitation that can earn the ENERGY STAR. 	<ul style="list-style-type: none"> EPA is also hopeful that the proposed alternatives will expand the number of homes undergoing a gut rehabilitation that can earn the ENERGY STAR. 	<ul style="list-style-type: none"> No policy change
6	<ul style="list-style-type: none"> One respondent expressed that their experience has shown that implementing strategies to remove water from within and around the home (e.g., a sump pit and pump) is more effective and less costly than strategies designed to reduce the amount of water infiltrating the home. 	<ul style="list-style-type: none"> EPA believes that it is important to implement strategies that both reduce infiltration of water into the home and remove water that enters the home. These dual strategies are required for new homes both within the ENERGY STAR Certified Homes program and within the 2009 International Residential Code. EPA has proposed alternatives that will help achieve both strategies at a lower cost than excavating around and beneath the foundation while still meeting the intent of the original Checklist Items. 	<ul style="list-style-type: none"> No policy change
7	<ul style="list-style-type: none"> One respondent requested that EPA extend by one year the timeline for which low-income projects financed through low-income housing agencies are permitted to earn the ENERGY STAR under Version 2. 	<ul style="list-style-type: none"> EPA has already provided one timeline extension for low-income projects financed through low-income housing agencies to earn the ENERGY STAR under Version 2 of the program. However, that extension was provided so that projects that had submitted applications for funding prior to the release of Version 3 could be completed without a change in scope. EPA reaffirms its intent for all homes that earn the ENERGY STAR label to provide the same value to consumers. EPA is continuing to collaborate with affordable housing funders to educate them about the Checklist Items that may be challenging to achieve in a home undergoing a gut rehabilitation and to continue to develop alternatives 	<ul style="list-style-type: none"> No policy change

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8	<ul style="list-style-type: none"> One respondent expressed concern about continuing disconnects between the ENERGY STAR Certified Homes program and affordable housing funders, and their increased reliance on the program as a prerequisite for funding. 	<p>that alleviate these challenges in the future.</p> <ul style="list-style-type: none"> EPA is continuing to collaborate with affordable housing funders to educate them about the Checklist Items that may be challenging to achieve in a home undergoing a gut rehabilitation and to continue to develop alternatives that alleviate these challenges in the future. 	<ul style="list-style-type: none"> No policy change
9	<ul style="list-style-type: none"> One respondent noted that the following items should only be required for areas that are already being exposed during the rehabilitation: Items 2.1, 2.2, 3.3, 3.4, 4.5 of the Water Management System Builder Checklist and Items 4.1 and 4.4 of the Thermal Enclosure System Rater Checklist. 	<ul style="list-style-type: none"> EPA reaffirms its intent for all homes that earn the ENERGY STAR label to provide the same value to consumers. A home that only met the program requirements in areas that were exposed during the rehabilitation would not offer the same value to consumers as a new home or a completely rehabilitated home that met these requirements throughout the house. For this reason, the program requirements cannot be limited to a subset of the home. 	<ul style="list-style-type: none"> No policy change
10	<ul style="list-style-type: none"> One respondent has noted that several program requirements, including the proposed alternatives, will not be able to be met in historic buildings undergoing gut rehabilitation. This respondent noted that the existing exterior profile of a historic building is often required to remain intact and therefore the removal of exterior cladding, the removal of the outer surface of the roof, and installation of gutters and downspouts will not be possible. Historic homes would therefore have challenges meeting Items 2.1, 2.2, 3.2, 3.3, and 3.4 of the Water Management System Builder Checklist and Item 4.4 of the Thermal Enclosure System Rater Checklist. 	<ul style="list-style-type: none"> EPA recognizes that the ENERGY STAR Certified Homes program requirements may conflict with historic preservation requirements (e.g. preserving distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property). EPA reaffirms its intent for all homes that earn the ENERGY STAR label to provide the same value to consumers. A home that only met some of the program requirements due historic preservation conflicts would not offer the same value to consumers as a new home or a completely rehabilitated home that met all program requirements. For this reason, the program requirements cannot be limited in historic homes. EPA is continuing to collaborate with affordable housing funders to educate them about the Checklist Items that may be challenging to achieve in historic homes. 	<ul style="list-style-type: none"> No policy change
11	<ul style="list-style-type: none"> Multiple respondents noted that the scope of work for homes undergoing a gut rehabilitation may vary from house to house. For example, the foundation, the site drainage, the exterior cladding, and the HVAC 	<ul style="list-style-type: none"> EPA is not proposing to define a fixed scope of work for homes undergoing a gut rehabilitation. Rather, it is proposing to provide informative guidance describing a <i>typical</i> scope of work required for homes to meet all of the ENERGY STAR Certified Homes program requirements. For example, HVAC systems that meet the requirements of the HVAC System QI Contractor and Rater 	<ul style="list-style-type: none"> The Policy Record entry will be updated to state: "...Through this process, EPA has identified key

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	<p>systems may, or may not, need to be modified.</p>	<p>Checklists do not need to be replaced. EPA does agree that modifications to the foundation are likely to be needed to meet the Water Management System Builder Checklist and thus the policy record entry will be updated to reflect this.</p>	<p>components that may need to be in the scope of an existing home project to meet the ENERGY STAR requirements. These include the following:</p> <ol style="list-style-type: none"> 1) Remove exterior cladding and the outer surface of roof to install and/or verify the components on the Water Management Builder Checklist and Thermal Enclosure System Rater Checklist 2) Replace or expose most systems, equipment, or components (e.g. HVAC and ducts, windows, insulation) 3) Grade the site and/or provide drains/swales 4) Implement below-grade moisture management strategies.
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Thermal Enclosure System Rater Checklist

Item 4.1 –Attic Insulation for existing homes			
12	<ul style="list-style-type: none"> • One respondent is concerned that low pitched roofs will not always be able to comply with Item 4.1, but noted that most attics would be able to meet an assembly U-factor limit, if 	<ul style="list-style-type: none"> • This Item is designed to address the thermal bridging that often occurs at the edge of the attic, which impacts both the comfort and the efficiency of the home. Allowing homes to meet this requirement through the use of an assembly U-factor limit would not meet this intent. Partners may choose to use higher-density insulation products 	<ul style="list-style-type: none"> • No policy change

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	allowed.	in space-constrained attic assemblies to meet this requirement.	
Item 4.2 – Slab edge insulation alternative for existing homes			
13	<ul style="list-style-type: none"> Multiple respondents requested that additional alternatives be developed or exemptions be granted for this Item, for a variety of reasons. One stated that insulating an existing slab will cost a disproportionate amount of money compared to the value of the energy saved. Two respondents expressed concern that the increased height of the finished floor could potentially affect door openings, window sills, railings, electrical routing, plumbing, and flooring material selection. One of these respondents suggested reducing the minimum required insulation from R-5 to R-3 to mitigate the change in height. 	<ul style="list-style-type: none"> The intent behind this proposed alternative was to provide a more economical option than excavation around the foundation and installation of perimeter slab insulation. The proposed alternative accomplishes this, while still meeting the original intent of the Item, which is to provide a thermal break between the slab foundation and conditioned space in cold climates. EPA agrees with the respondent that reducing the minimum required insulation from R-5 to R-3 will achieve this intent while mitigating the cost and the change in height. EPA is not currently aware of additional alternatives that would meet the same intent at a lower cost. However, EPA is committed to incorporating additional alternatives as they become known so that more homes may earn the ENERGY STAR label without sacrificing performance. 	<ul style="list-style-type: none"> To further mitigate the cost of compliance and the change in finished floor height, the proposed alternative at the end of Footnote 4 will be revised as follows: “Alternatively, the thermal break is permitted to be created using \geq R-3 rigid insulation on top of an existing slab (e.g., in a home undergoing a gut rehabilitation). In such cases, up to 10% of the slab surface is permitted to not be insulated (e.g., for sleepers, for sill plates).”
14	<ul style="list-style-type: none"> One respondent recommended stating explicitly that if this alternative is used, and insulation is installed on top of the slab in occupiable space, that it shall be protected by a durable floor surface. 	<ul style="list-style-type: none"> EPA agrees that when installing insulation on top of a slab, it must be covered by a durable floor surface to prevent damage to the insulation. 	<ul style="list-style-type: none"> A sentence will be added to Footnote 4 that states: “Insulation installed on top of slab shall be covered by a durable floor surface (e.g., hardwood, tile, carpet).”

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Item 4.4 – Reduced thermal bridging for above grade walls			
15	<ul style="list-style-type: none"> One respondent is concerned that there is no alternative for load-bearing, double-brick walls to comply with Item 4.4. The respondent recommends that EPA allow a continuous layer of Grade I insulation installed on the interior side of the masonry wall to be used to meet this intent. 	<ul style="list-style-type: none"> Item 4.4.1 of this Checklist does permit a continuous layer of Grade I insulation installed on the interior side of the masonry wall to be used to meet this intent, as long as the insulation level is $\geq R-3$ in Climate Zones 1 to 4 and $\geq R5$ in Climates Zones 5 to 8. 	<ul style="list-style-type: none"> No policy change
16	<ul style="list-style-type: none"> One respondent requested an exemption from the reduced thermal bridging requirements in Item 4.4, in exchange for other energy efficiency features. They suggested that removal of both the drywall and the siding is not common in homes undergoing a gut rehabilitation, making compliance with this Item difficult. 	<ul style="list-style-type: none"> EPA understands that meeting reduced thermal bridging requirement will be challenging in gut rehabilitation projects but remains firm in their belief of one performance standard for all homes seeking an ENERGY STAR label. EPA is not currently aware of alternative efficiency measures that would still reduce the thermal bridging which delivers additional comfort for the homeowner. EPA is committed to developing further alternative options as they become available so that more homes may earn the ENERGY STAR label without sacrificing performance. 	<ul style="list-style-type: none"> No policy change
Items 4.4.2-4.4.5 – Reduced thermal bridging for existing above grade walls			
17	<ul style="list-style-type: none"> One respondent suggested that Items 4.4.2 – 4.4.5 are not feasible for a house undergoing a gut rehabilitation. 	<ul style="list-style-type: none"> EPA agrees that Items 4.4.2-4.4.5 are not likely to be used in a house undergoing a gut rehabilitation. However, the home is only required to meet one of the options under Item 4.4. Therefore, Items 4.4.2-4.4.5 are not required to be used in such homes but are permitted to be used, if desired. 	<ul style="list-style-type: none"> No policy change
Item 5.2 – Cracks in the building envelope fully sealed for masonry walls			
18	<ul style="list-style-type: none"> One respondent requested that additional air sealing details be added to Section 5.2 for homes with structural masonry walls due to the potential for high air leakage. 	<ul style="list-style-type: none"> Section 5.2 is comprised of mandatory air sealing details that are overlooked in many homes, but is not intended to be a comprehensive list of all details that might be overlooked. Furthermore, homes using the Prescriptive Path must meet a prescriptive infiltration limit while those using the Performance Path are benchmarked against an ENERGY STAR Reference Design with a low infiltration rate. Therefore, while many homes undergoing a gut rehabilitation will need to be air sealed at locations like those suggested by the respondent, EPA believes that allowing partners to assess these on an as-needed basis will be more effective than adding additional mandatory air sealing details to Section 5.2. 	<ul style="list-style-type: none"> No policy change

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Item 5.2.1 – Foam gasket beneath an existing sill plates			
19	<ul style="list-style-type: none"> One respondent stated that if spray foam insulation is used to insulate the wall, then this insulation will also serve to seal the seam between the sill plate and the sheathing. 	<ul style="list-style-type: none"> EPA agrees that spray foam insulation should be allowed to be used to seal the seam between the sill plate and the side-wall sheathing. 	<ul style="list-style-type: none"> To clarify acceptable sealing materials for meeting the intent of this requirement, the phrase “sealed with caulk, foam, or equivalent material” will be added to the proposed Footnote as follows: “Existing sill plates resting atop concrete or masonry and adjacent to conditioned space (e.g., in a home undergoing a gut rehabilitation) are permitted, in lieu of using a gasket, to be sealed with caulk, foam, or equivalent material at both the interior seam between the sill plate and the subfloor and the seam between the top of the sill plate and the sheathing.”
20	<ul style="list-style-type: none"> One respondent requested an alternative protocol that would first assess the home’s infiltration, and then require the implementation of this measure only if needed. They noted that in some homes, strategies may already be in place that reduce leakage at this location. 	<ul style="list-style-type: none"> EPA believes there are several factors that would limit the value of an alternative that would first assess the home’s infiltration. First, the infiltration rate achieved in new homes using these program requirements is likely be so stringent that existing homes would rarely be eligible to use this alternative. Second, it is expected that the interior finish of exterior walls will need to be removed in most homes to add and inspect cavity insulation. Once this interior finish is removed, the cost and effort of complying with this air sealing detail will be marginal. 	<ul style="list-style-type: none"> No policy change

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		<ul style="list-style-type: none"> Note that partners have also indicated that for some homes, this alternative can be met by removing shoe moulding to seal the sill plate as specified, and then replacing the shoe moulding. This, of course, would meet the intent and is permitted. 	
21	<ul style="list-style-type: none"> One respondent noted that this measure may serve as both an air sealing strategy and as an Integrated Pest Management (IPM) strategy. 	<ul style="list-style-type: none"> EPA agrees that this measure may serve as both an air sealing strategy and an Integrated Pest Management Program (IPM) strategy. While IPM is currently beyond the scope of the ENERGY STAR Certified Homes program requirements, EPA's complementary Indoor AirPLUS program addresses this important topic. Partners interested in incorporating indoor air protections above and beyond the ENERGY STAR program, and earning recognition for doing so, may wish to learn more about this program. 	<ul style="list-style-type: none"> No policy change
22	<ul style="list-style-type: none"> Multiple respondents asked if this measure and the proposed alternative are applicable to structural masonry and other monolithic wall assemblies. 	<ul style="list-style-type: none"> EPA anticipates that for most homes with structural masonry walls or other monolithic wall assemblies that are undergoing a gut rehabilitation, either the wall itself, the wall insulation, or separate air sealing will create an air barrier on the exterior side of the sill plate. For this reason, EPA will exempt existing sill plates on the interior side of structural masonry or monolithic walls from this requirement. EPA recommends, but does not require, that sill plates on the interior side of structural masonry walls be sealed if they are integrated with the air barrier layer. Partners are encouraged to read Building America's "Measure Guideline: Internal Insulation of Masonry Walls" by J.F. Straube, K. Ueno, and C.J. Schumacher of Building Science Corporation for more information about the benefits of a continuous integrated thermal / air barrier. 	<ul style="list-style-type: none"> To clarify this intent, the proposed Footnote will be revised as follows: "Existing sill plates (e.g., in a home undergoing a gut rehabilitation) on the interior side of structural masonry or monolithic walls are exempt from this Item. Existing sill plates resting atop concrete or masonry and adjacent to unconditioned space are permitted, in lieu of using a gasket, to be sealed with caulk, foam, or equivalent material at both interior seam between the sill plate and the subfloor and the seam between the top of the sill plate and the sheathing."

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23	<ul style="list-style-type: none"> One respondent recommended that if gaps between the sill plate and concrete / masonry are $\geq \frac{1}{4}$", backer rod should be installed before sealing with caulk or expanding foam should be used. 	<ul style="list-style-type: none"> EPA also recommends that large gaps between two dissimilar surfaces be properly backed. Rather than requiring backer rod to be used in gaps larger than a specified width, EPA defers to manufacturer guidance on the proper use of their sealing products. 	<ul style="list-style-type: none"> No policy change
24	<ul style="list-style-type: none"> One respondent noted that the top exterior edge of the sill plate cannot be sealed to the sheathing if the exterior cladding is not removed. 	<ul style="list-style-type: none"> Exterior cladding is not required to be removed to comply with this requirement. The sealing is intended to be done from the inside of the structure. 	<ul style="list-style-type: none"> No policy change
<i>Item 5.2.7 – Common wall sealed in multifamily buildings</i>			
25	<ul style="list-style-type: none"> One respondent requested that Item 5.2.7 be revised to apply to the gap between all common walls and the structural framing between units, rather than just to common walls constructed with drywall. 	<ul style="list-style-type: none"> EPA agrees that common walls in masonry buildings should be sealed at all exterior boundaries, regardless of whether they are constructed with drywall. 	<ul style="list-style-type: none"> To clarify the original intent, Item 5.2.7 will be revised to state: "In multifamily buildings, the gap between the common wall (e.g. the drywall shaft wall) and the structural framing between units fully sealed at all exterior boundaries."

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Water Management System Builder Checklist

Items 1.1 and 1.2 – Site grading			
26	<ul style="list-style-type: none"> Multiple respondents suggested that it is not practical to require a home undergoing a gut rehabilitation to comply with Items 1.1 and 1.2 because existing site conditions cannot always be adjusted. One respondent suggested that any final grade that slopes away from the home, or swales or pipes to control run-off water, should be allowed to be used. Another respondent recommended that EPA allow either a trough drain or a chamfer strip with self-leveling caulk to be installed between a brick wall and concrete sidewalk to meet the intent of this requirement. 	<ul style="list-style-type: none"> Footnote 4 of the WMSBC allows homes with space constraints to use swales or drains to remove water from the site in lieu of sloping the grade. EPA believes that this same alternative should be applicable to sites where the slope of the grade cannot be easily altered. Therefore, the use of a chamfer strip or grade / surfaces that are sloped less than required by these Items would not meet the intent of the Checklist. However, the use of a trough drain would meet this intent. 	<ul style="list-style-type: none"> To clarify this intent, Footnote 4 will be revised as follows: “Swales or drains designed to carry water from foundation are permitted to be provided as an alternative to the slope requirements for any home, and shall be provided for a home where setbacks limit space to less than 10 ft....”
Item 1.3 – Capillary break beneath existing slabs except crawlspace slabs			
27	<ul style="list-style-type: none"> One respondent suggested that it is important to inspect for a capillary break beneath the existing slab before installing a vapor barrier on top of the existing slab so as to prevent the unintended consequence of trapping moisture in the slab. 	<ul style="list-style-type: none"> EPA agrees that it would be ideal to first ensure a capillary break is not installed beneath an existing slab before installing one on top of the slab. However, EPA has not identified a process for doing this other than to remove the slab, which partners have indicated would be cost prohibitive. In addition, the primary goal of a capillary break at the slab is to prevent moisture from migrating from the ground, through the slab, and into materials or spaces prone to moisture damage. Research indicates that concrete itself is a moisture-resistant material. Therefore, if a capillary break is already present beneath the slab, an additional capillary break on top of the slab will only serve to further inhibit the migration of moisture into the house where it may impact durability. 	<ul style="list-style-type: none"> No policy change
28	<ul style="list-style-type: none"> One respondent noted it is possible to select a flooring material that can be used in conjunction with, or in lieu of, a separate capillary break. 	<ul style="list-style-type: none"> EPA agrees that the selection of flooring material is important and that some materials may be used in conjunction with a separate capillary break while other materials themselves may be used to create the capillary break. 	<ul style="list-style-type: none"> No policy change
29	<ul style="list-style-type: none"> One respondent noted that it is possible for occupants to install certain flooring materials after certification that could negatively 	<ul style="list-style-type: none"> EPA recognizes that homeowners have the ability to modify homes after certification and that these modifications may impact the efficiency, durability, comfort, or quality of the home. However, the ENERGY STAR certified homes program is only able to assess 	<ul style="list-style-type: none"> No policy change

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	<p>impact the indoor air quality of the home.</p>	<p>compliance with program requirements at the time of certification.</p>	
30	<ul style="list-style-type: none"> One respondent suggested that in some cases it may be more beneficial to remove the entire slab and install a vapor barrier below a new slab. 	<ul style="list-style-type: none"> EPA agrees that the ideal way to ensure compliance with this Item would be to remove the old slab and install a new slab and partners are permitted to do this. However, partners have indicated that this may be cost prohibitive and unnecessary. Furthermore, EPA believes that the alternative developed will achieve the same intent at a lower cost. 	<ul style="list-style-type: none"> No policy change
31	<ul style="list-style-type: none"> One respondent noted that the removal of interior walls sitting on the slab is not likely to be within the scope of a gut rehab. As such, up to 10% of the slab surface should be exempted from this requirement. Exempting up to 10% of the slab surface is also consistent with the exemption for slab insulation. 	<ul style="list-style-type: none"> EPA recognizes that the removal of interior walls in order to apply a vapor retarder would require substantial effort from partners and therefore may be cost prohibitive. EPA agrees that exempting up to 10% of the slab surface would allow partners to avoid removing interior walls sitting on top of the slab. 	<ul style="list-style-type: none"> To clarify that up to 10% of the slab surface is exempt from this alternative, the proposed Footnote will be revised as follows: "For an existing slab (e.g., in a home undergoing a gut rehabilitation), in lieu of a capillary break beneath the slab, a continuous and sealed Class I or Class II Vapor Retarder (per Footnote 6) is permitted to be installed on top of the entire slab. In such cases, up to 10% of the slab surface is permitted to be exempted from this requirement (e.g., for sill plates). In addition, for existing slabs in occupiable space, the Vapor Retarder shall be, or shall be

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			protected by, a durable floor surface. If Class I Vapor Retarders are installed, they shall not be installed on the interior side of air permeable insulation or materials prone to moisture damage.”
32	<ul style="list-style-type: none"> One respondent noted that, due to durability concerns, crystalline water-proofing is not appropriate for surfaces that the occupants will be in contact with and recommended that the allowance be removed. 	<ul style="list-style-type: none"> To address durability concerns, the proposed Footnote requires that the vapor retarder be protected with a durable floor surface if it is in occupiable space. 	<ul style="list-style-type: none"> No policy change
Item 1.4 – Capillary break at all existing crawlspace floors			
33	<ul style="list-style-type: none"> One respondent suggested that this alternative should be clarified to specify whether it is referring to the crawlspace walls, crawlspace floor, or crawlspace ceiling. 	<ul style="list-style-type: none"> Per Item 1.4, a capillary break is required “at all crawlspace floors” and not at the crawlspace ceiling or the walls of the foundation around the crawlspace. Three options are provided for meeting this intent: <ul style="list-style-type: none"> Beneath a concrete slab at the crawlspace floor, On the crawlspace floor and terminated at each wall or pier using furring strips or equivalent, or, On the crawlspace floor and secured at the perimeter using stakes. EPA believes it will be most effective to provide further clarification to individual partners that are unclear about the intent rather than by modifying the policy language. 	<ul style="list-style-type: none"> No policy change
34	<ul style="list-style-type: none"> One respondent noted that the removal of interior walls sitting on the crawlspace is not within the scope of a gut rehab. As such, up to 10% of the crawlspace surface should be exempted from this requirement. Exempting up to 10% of the crawlspace surface is also consistent with the exemption for slab insulation. 	<ul style="list-style-type: none"> Interior walls are not typically installed in crawlspaces. However, EPA recognizes that removal of interior walls in order to apply a vapor retarder would require substantial effort from partners and may be cost prohibitive. EPA agrees that exempting up to 10% of the crawlspace surface would allow partners to avoid removing interior walls sitting on top of the slab. 	<ul style="list-style-type: none"> To clarify that up to 10% of the slab surface is exempt from this alternative, the proposed Footnote will be revised as follows: “For an existing slab (e.g., in a home undergoing a gut rehabilitation), in

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			<p>lieu of a capillary break beneath the slab, a continuous and sealed Class I or Class II Vapor Retarder (per Footnote 6) is permitted to be installed on top of the entire slab. In such cases, up to 10% of the slab surface is permitted to be exempted from this requirement (e.g., for sill plates). In addition, for existing slabs in occupiable space, the Vapor Retarder shall be, or shall be protected by, a durable floor surface. If Class I Vapor Retarders are installed, they shall not be installed on the interior side of air permeable insulation or materials prone to moisture damage.”</p>
35	<ul style="list-style-type: none"> One respondent suggested changing the last sentence in the proposed Footnote from “If Class I Vapor Retarders are installed, they shall not be installed on the interior side of air permeable insulation or materials prone to moisture damage” to “If Class I Vapor Retarders are installed, they shall be installed in 	<ul style="list-style-type: none"> EPA agrees that installing the Class I Vapor Retarders in direct contact with the interior top surface of an existing slab would prevent moisture from inadvertently being trapped within air permeable insulation or other materials prone to moisture damage. However, the current language provides more flexibility for partners to select the most appropriate floor assembly (e.g., not removing existing floor finishes that won’t be prone to moisture damage) while achieving the same intent. 	<ul style="list-style-type: none"> No policy change

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	direct contact with the interior top surface of the existing slab.”		
Item 1.5 – Finishing of exterior surface of existing below-grade walls			
36	<ul style="list-style-type: none"> One respondent suggested that it's important to verify that an exterior vapor barrier isn't already in place before installing an interior vapor barrier. Having an interior and exterior vapor barrier could cause moisture to be trapped in the foundation wall. 	<ul style="list-style-type: none"> EPA agrees that the ideal way to ensure compliance with this Item would be to excavate around the existing foundation wall and apply the damp-proofing or water-proofing finish to the exterior side of the wall, as is done in new construction. However, partners have indicated that this may be cost prohibitive and unnecessary. Furthermore, EPA believes that the alternative developed will achieve the same intent of protecting moisture sensitive materials at a lower cost. Note that the foundation itself is unlikely to be constructed using a moisture sensitive material. Therefore, an interior vapor barrier is not anticipated to cause moisture problems as long as no moisture sensitive materials are located between the foundation wall and the vapor barrier. 	<ul style="list-style-type: none"> No policy change
37	<ul style="list-style-type: none"> One respondent suggested revising the policy language for this alternative to better reflect the diagram used in the webinar. The respondent also requested additional examples to illustrate how this alternative water management detail would be designed and how it would function. 	<ul style="list-style-type: none"> The current format of the ENERGY STAR Certified Homes guidelines is not conducive to the inclusion of images due to space constraints. However, EPA will continue to provide training and webinars with visual diagrams to educate partners about how to meet the intent of these alternatives. Additionally, EPA encourages partners to submit specific questions to the ENERGY STAR Certified Homes team at energystarhomes@energystar.gov. 	<ul style="list-style-type: none"> No policy change
38	<ul style="list-style-type: none"> One respondent suggested adding 'stone' to the list of existing below grade wall types that would be required to have a damp-proof coating. 	<ul style="list-style-type: none"> EPA agrees that all masonry and concrete wall types, including those made of stone, should have a damp-proof coating. 	<ul style="list-style-type: none"> To simplify the ability to reference the damp-proofing and waterproofing requirements for various wall types, the bullets in Item 1.5 will be revised to "a)" and "b)." In addition, the proposed Footnote will now refer to Item 1.5a as opposed to including the entire list of concrete and masonry wall types

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			<p>that qualify for this alternative.</p> <ul style="list-style-type: none"> To ensure that a damp-proof coating is applied to all masonry and concrete wall types and not just a subset of specified wall types, Item 1.5a will be revised as follows: “For masonry and concrete walls (e.g., poured concrete, concrete masonry units, insulated concrete forms) finish with damp-proofing coating.”
39	<ul style="list-style-type: none"> Multiple respondents asked for permission to use additional alternative details: <ul style="list-style-type: none"> One respondent asked if 2” polyisocyanurate foam board is permitted to be used as a drainage plane. One respondent asked if sealed polyethylene is permitted to be used. 	<ul style="list-style-type: none"> Any assembly that provides a drainage plane, capillary break, Class I Vapor Retarder, and air barrier will meet the intent of this requirement. Generally speaking, polyisocyanurate and polyethylene can be used to provide all four of these functions if the seams are sealed so as to be continuous. 	<ul style="list-style-type: none"> No policy change
Item 1.8 – Drain tile for existing basements and crawlspaces			
40	<ul style="list-style-type: none"> One respondent suggested allowing the use of a sump pump instead of an interior drain tile. This respondent is also concerned that installing the drain tile inside the home, and therefore draining water into the home, will cause moisture issues. 	<ul style="list-style-type: none"> The purpose of the interior drain tile is to capture water that enters through the foundation walls or collects beneath the foundation and direct it to a sump to be pumped away from the home. Therefore, the interior drain tile and sump pump must both be installed in the home to work as intended. In addition, the installation of the drain tile and sump pump should not increase the amount of water entering the home, but rather better capture and remove water that is already present in or beneath the home. EPA agrees that the ideal way to ensure compliance with this Item would be to excavate around the existing foundation wall and install an exterior drain tile. However, partners have indicated that this may 	<ul style="list-style-type: none"> No policy change

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		be cost prohibitive and unnecessary. Furthermore, EPA believes that the alternative developed will achieve the same intent of removing water from around and beneath the foundation at a lower cost.	
Item 2.1 – Flashing at bottom of exterior walls			
41	<ul style="list-style-type: none"> Multiple respondents commented on the applicability of flashing (and an associated drainage plane) to a structural masonry wall. One respondent encouraged EPA to include a robust requirement while another noted that integrating this detail within structural masonry walls would be unfeasible. 	<ul style="list-style-type: none"> EPA agrees with the second respondent that integrating a drainage plane and flashing at the bottom of the wall is not typically feasible or necessary for a structural masonry wall assembly. While the exterior surface of the masonry wall serves as a less effective drainage plane than in modern wall assemblies, this is counterbalanced by the masonry's increased moisture storage capacity, which allows water to be retained without damage to the building until drying occurs. The addition of insulation to a masonry wall will alter this balance and must be carefully assessed. However, research indicates that in many cases, this balance can be achieved, avoiding the need to incorporate an interior drainage plane, flashing at the bottom of the drainage plane, and the addition of weep holes through the masonry. Partners are encouraged to read Building America's "Measure Guideline: Internal Insulation of Masonry Walls" by J.F. Straube, K. Ueno, and C.J. Schumacher of Building Science Corporation. Note that a drainage plane with flashing is required for a wall assembly with a masonry veneer. 	<ul style="list-style-type: none"> A new Footnote will be added to Item 2.1 and Item 2.2 as follows: "These Items not required for existing structural masonry walls (e.g., in a home undergoing a gut rehabilitation). Note this exemption does not extend to existing wall assemblies with masonry veneers."
42	<ul style="list-style-type: none"> One respondent suggested a modification to the proposed exemption to flashing. The alternative originally proposed to exempt walls from the flashing requirement if the vertical drainage plane was not interrupted by horizontal obstructions and the drainage plane continued ≥ 5" below the top elevation of the foundation. The respondent proposed modifying this to only require the drainage plane to continue a minimum of 1" below the top elevation of the foundation. 	<ul style="list-style-type: none"> The intent of flashing is to prevent water from penetrating the seam or intersection between two surfaces (e.g., wall / foundation intersection). EPA agrees with the respondent that further refinements to this exemption and its associated policy language may be warranted to improve its clarity and applicability. 	<ul style="list-style-type: none"> EPA needs additional time to review this alternative and may incorporate it into future revisions.
Item 2.2 – Drainage plane compliance for existing homes			
43	<ul style="list-style-type: none"> Multiple respondents commented on the applicability of a drainage plane (and associated flashing) to a structural masonry wall. Two respondents suggested requiring a 	<ul style="list-style-type: none"> Item 2.2 only requires a drainage plane "behind exterior cladding" with an additional "bond-break drainage plane layer provided behind all stucco and non-structural masonry." In general, structural masonry walls do not have exterior cladding and, therefore, this requirement would not be applicable to them. While the exterior surface of the 	<ul style="list-style-type: none"> No policy change

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	<p>drainage plane on the interior face of the masonry wall, while another suggested that a drainage plane is not necessary.</p>	<p>masonry wall serves as a less effective drainage plane than in modern wall assemblies, this is counterbalanced by the masonry's increased moisture storage capacity, which allows water to be retained without damage to the building until drying occurs. The addition of insulation to a masonry wall will alter this balance and must be carefully assessed. However, research indicates that in many cases, this balance can be achieved, avoiding the need to incorporate an interior drainage plane, flashing at the bottom of the drainage plane, and the addition of weep holes through the masonry.</p> <ul style="list-style-type: none"> Partners are encouraged to read Building America's "Measure Guideline: Internal Insulation of Masonry Walls" by J.F. Straube, K. Ueno, and C.J. Schumacher of Building Science Corporation. Note that a drainage plane with flashing is required for a wall assembly with a masonry veneer. 	
44	<ul style="list-style-type: none"> One respondent suggested that if exterior cladding cannot be removed on wood frame homes, then either waterproofing or antifungal products should be permitted to be applied to the existing cladding and new cladding installed over the existing cladding. 	<ul style="list-style-type: none"> If an additional layer of exterior cladding is being added during the gut rehabilitation, the drainage plane is required to be placed behind the outermost exterior cladding. The drainage plane must be fully sealed, continuous, be located behind the exterior cladding, and overlap the flashing required in Item 2.1. Antifungal treatment would not meet the intent of this requirement. 	<ul style="list-style-type: none"> No policy change
<p>Item 2.3 – Flashing on window and door openings for masonry walls</p>			
45	<ul style="list-style-type: none"> Multiple respondents suggested that details need to be provided to clarify the flashing requirements in Item 2.3 for windows and doors in structural masonry walls. One respondent recommended requiring flexible, self-adhering flashing to be installed around window and door rough openings. 	<ul style="list-style-type: none"> A variety of details can be employed to effectively flash windows and doors in structural masonry walls, including the use of flexible self-adhering flashing. Partners are encouraged to read Building America's "Measure Guideline: Internal Insulation of Masonry Walls" by J.F. Straube, K. Ueno, and C.J. Schumacher of Building Science Corporation for an overview of such details. 	<ul style="list-style-type: none"> To provide greater flexibility to select details for flashing of windows and doors in structural masonry walls that meet the same intent as the current Checklist Item, the following phrase will be added to the end of Footnote 9: "...or equivalent details for structural masonry walls."
<p>Item 3.2 – Gutters and downspouts for existing homes</p>			
46	<ul style="list-style-type: none"> One respondent noted that Item 3.2 may not be possible for gut rehabilitation projects given funding 	<ul style="list-style-type: none"> Gutters and downspouts provide the same value in homes undergoing a gut rehabilitation as they do in a new home. Therefore, this important feature cannot be waived if the label is to represent the 	<ul style="list-style-type: none"> No policy change

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	constraints.	same value for a new home and a home undergoing a gut rehabilitation. Note that, per Footnote 11, some homes are exempt from meeting this requirement, depending on the foundation type, soil conditions, and climate zone. Also note that, per this Footnote, alternatives to gutters and downspouts are permitted to be used, which may be more cost effective for some homes undergoing a gut rehabilitation.	
Item 4.4 – Building materials with visible signs of water damage or mold			
47	<ul style="list-style-type: none"> One respondent suggests that EPA allow mold that has not caused significant damage to be treated to prevent further damage rather than require that the building material containing the mold be replaced. 	<ul style="list-style-type: none"> EPA agrees that mold should be allowed to be treated and, if successfully removed, materials be allowed to remain. Footnote 14 already states that if mold is present, effort should be made to remove all visible signs of mold using detergent or other method, and that if removal methods are not effective, then the material shall be replaced. 	<ul style="list-style-type: none"> To clarify the intent, the Item will be revised as follows: “Building materials with visible signs of water damage or mold <i>not</i> installed or allowed to remain.”