

## **EPA Responses to Comments on Proposed Merged Multifamily New Construction Specification**

This document contains a summary of comments received during the second comment period for the Merged Multifamily New Construction Specification, which ended April 20, 2018. EPA's response to each new point raised and the resulting policy change, if any, are also included. EPA consolidated similar ideas into single comments. This document does not respond to all comments received, but rather gives a summary of the most common feedback topics.

*The Environmental Protection Agency  
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# EPA Responses to Comments on Proposed Merged Multifamily New Construction Specification

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ID	Comment Summary	EPA's Response	EPA's Policy Decision
<i>General</i>			
1	<ul style="list-style-type: none"> <li>Many respondents suggested alternative wording and formatting corrections that improved the clarity of a requirement.</li> </ul>	<ul style="list-style-type: none"> <li>EPA accepted many, but not all, of the proposed edits to wording and formatting.</li> </ul>	<ul style="list-style-type: none"> <li>All checklists have been revised.</li> </ul>
2	<ul style="list-style-type: none"> <li>Multiple respondents requested that the Rater Design checklist be separate from the Rater Field checklist, since the placement of the combined footnotes at the end of the document is confusing.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that separating the checklists makes sense for multifamily projects.</li> </ul>	<ul style="list-style-type: none"> <li>The Rater Design Checklist and corresponding footnotes are now a separate document from the Rater Field Checklist and footnotes.</li> </ul>
3	<ul style="list-style-type: none"> <li>Multiple respondents provided input on whether certain requirements were better on the Rater Design checklist or the Rater Field checklist. Respondents suggested moving items that required calculations such as the window to wall ratio and lighting power density to the Rater Design Checklist since they would be calculated before going into the field.</li> <li>One respondent suggested moving Item 1.2 from the Rater Design Checklist to the Field Checklist, as the FT Agent may not be known at design stage.</li> <li>Another respondent requested that the pressure-balancing requirement on the Rater Field Checklist be added to the optional section of the Rater Design Checklist.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA agrees that calculations are not done in the "field", not all the "field" checklist items are intended to be done in the field, but rather once installation or construction is complete for that measure. Additionally, many MFHR Participants found it time consuming to calculate lighting power allowances at the Design stage as the fixtures were not selected at that time and often subject to change. While the field component remains where it is, the lighting requirement is covered under Item 5.7 of the optional Construction Document Review section of the Rater Design Checklist and the window-to-wall ratio has been added as well (Item 5.3).</li> <li>EPA agreed with the suggestion to add Rater Design Checklist Item 1.2 on the Rater Field Checklist (Item 5.6), as the FT Agent may not be known during design. It remains on the Rater Design checklist, in the optional section, as Item 5.6.3.</li> <li>EPA also added the pressure-balancing text to the optional Construction Document review section of the</li> </ul>	<ul style="list-style-type: none"> <li>Section 5 of the Rater Design and Rater Field Checklists have been updated.</li> </ul>

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		Rater Design checklist, as Item 5.6.2.	
4	<p>One respondent thought the number of items that are allowed to be verified by a Licensed Professional was high compared to the number that a Builder is allowed to verify, but also thought it was strange to not allow a LP to verify all the ones where a checkbox was provided.</p>	<ul style="list-style-type: none"> <li>EPA is allowing some items to be verified by the builder in recognition that due to construction schedules there may be some items that the Rater is not on site to verify when they are visible. While the Rater is still ultimately responsible for those items, EPA intends to keep those items limited to ensure proper verification is happening. The intent of allowing the Licensed Professional (LP) to verify some items from the new sections is to work with the current construction process where many times these items are already being verified by LPs. While the rationales behind both are based on improving the certification process based on construction timelines and practices, EPA intends to analyze the rules for each allowance separately given the differences. EPA appreciates the feedback from respondents on this issue and is proposing to remove the number of items restriction from the items LP can verify. Any items with a checkbox under the LP column have the option to be verified by an LP. EPA will continue to monitor feedback based on these new sections and this allowance for LP verification and may impose more restrictions depending on the feedback received. EPA still intends for the Rater to ultimately be responsible even if an LP is performing the verification.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist footnote 38 has been updated to remove the restriction on the number of items with a LP checkbox that can be verified by an LP.</li> </ul>
5	<ul style="list-style-type: none"> <li>One respondent commented that, while they were not opposed to the requirement, providing whole-building monitoring energy consumption isn't a requirement in ESCH or MFHR and should be acknowledged as a scope addition</li> </ul>	<ul style="list-style-type: none"> <li>EPA intends for the energy monitoring requirement to replace the current benchmarking commitment that exists in the ENERGY STAR MFHR program. In order to benchmark a property, the project would need to implement one of the strategies associated with the energy monitoring requirement. EPA believes in the value of benchmarking and, based on partner feedback during the initial program development, is proposing this requirement as a more direct way to facilitate a</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>

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		project with benchmarking than the current MFHR commitment.	
6	<ul style="list-style-type: none"> <li>One respondent thought the footnotes defining common spaces were contradictory and needed improvement. Another respondent asked if there was guidance on how “connected” buildings needed to be before the requirements applied (e.g, if connected to a community building without dwelling units by a small breezeway/corridor, is that community building subject to the ENERGY STAR requirements too?)</li> </ul>	<ul style="list-style-type: none"> <li>The intent of the footnotes is to clarify that commercial space within a multifamily building or on a multifamily property are not subject to the requirements. Additionally, a building, such as a community building on the property or one that is minimally attached to a multifamily building, that doesn’t contain ANY dwelling units, but otherwise meets the definition of ‘common space’, is also not subject to the requirements. EPA has updated the footnote to define what would be considered a separate building. A building is separate when at least 90% of its boundary is comprised of exterior walls, and therefore not a connection to another building.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Design footnotes 1 and 2 have been updated to provide more clarity and an explanation for a building.</li> </ul>
7	<ul style="list-style-type: none"> <li>One respondent thought the intent of the new construction document review section in the Rater Design checklist was important and provided suggestions on how an Excel file could be useful for documenting compliance with this section. They also suggested that an Excel file could automatically calculate the various testing targets that are required and better accommodate multiple units than a PDF checklist.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that Excel may be more useful for documenting multifamily projects than PDFs. EPA has created a conceptual draft of an Excel version for the checklists and will continue to look for feedback on the need for and formatting of the Excel version.</li> </ul>	<ul style="list-style-type: none"> <li>A draft document has been posted and the issue is still under review.</li> </ul>
8	<ul style="list-style-type: none"> <li>One respondent suggested revising ENERGY STAR requirements, such as allowing 7 ACH50 as the equivalent to 0.30 cfm50/ft<sup>2</sup> and allowing the LEED Energy Budget approach, to maintain alignment with LEED for Homes, to enable program partners to more easily achieve both certifications.</li> </ul>	<ul style="list-style-type: none"> <li>EPA does engage with various high performance building programs to ensure the program requirements do not result in unnecessary conflicts. EPA does not agree that 7ACH is equivalent to 0.30 cfm50/ft<sup>2</sup>. EPA also believes it will limit confusion to align with the proposed metric in the update to ANSI 301 (compartmentalization) and only have one metric type. A project that pursues the LEED Energy Budget could achieve ENERGY STAR certification without a HERS</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>

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		rating by following the Prescriptive Path.	
<i>Modeling (HERS Reference Design, ASHRAE)</i>			
9	One respondent asked what document would contain the ENERGY STAR Reference Design and if that was available for review. The respondent also asked where the HERS vs. ASHRAE approach would be explained and if there would be a National Program Requirements document to supplement these checklists	<ul style="list-style-type: none"> <li>The Reference Design will be part of the National Program Requirements document as it is now in the Homes program. The Exhibit that contains the Reference Design is now available for review along with the revised checklists. The website will contain the details regarding the various path options and will be available later in the summer. That information is currently contained within the webinar slides from April.</li> </ul>	<ul style="list-style-type: none"> <li>The Reference Design Exhibit has been posted.</li> </ul>
10	One respondent requested participants submit all modeling files and construction documents required under ASHRAE 90.1 Appendix G for projects pursuing the ASHRAE path.	<ul style="list-style-type: none"> <li>While EPA agrees that it is valuable for MRO's to have access to these documents, EPA does not intend to increase the depth of the file review beyond what is required in either program now. In addition, some of the information contained in the required documentation from Appendix G is already reported through the other ENERGY STAR program templates. EPA appreciates that access to this documentation may further streamline the review process. Therefore, EPA is adding in a new requirement for projects going through the ASHRAE Path to submit construction documents and either modeling input/out files or the modeling file itself. These files are to be used by the MRO to provide a reference for MRO reviewers and reduce review times; MROs are not expected to fully review this documentation for consistency with the other elements of the submittal.</li> </ul>	<ul style="list-style-type: none"> <li>The MRO application has been amended to note this required documentation.</li> </ul>
11	One respondent suggested that all projects pursuing the ASHRAE path be required to model using Appendix G from ASHRAE 90.1-2016, since it is the most current modeling protocol and will be simpler to use moving forward, since establishes a fixed Baseline,	<ul style="list-style-type: none"> <li>EPA reaffirms its intent that overall, the merged program mandatory items do not increase the stringency beyond both initial program requirements. While Appendix G from ASHRAE 90.1-2016 does allow projects to model to earlier codes, and the new Performance Path Calculator for the 2016 modeling</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>

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	even as codes advance beyond 2016.	pathway does have more functionality to help both the modeler and reviewer, EPA is not yet planning to phase out the allowance to model using ASHRAE 90.1-2007 or 2010. EPA is removing the option to model using Appendix G of ASHRAE 90.1-2013.	
12	<ul style="list-style-type: none"> <li>One respondent wanted to confirm that buildings 3 stories and less could use ASHRAE 90.1 Appendix G Performance Rating Method even though the scope of that Standard is 4 stories and higher. The respondent also indicated it poses a challenge to modelers to have to modify the baseline from a steel-frame building, as required by Appendix G, to a wood-framed building as is proposed for the new program. They suggested that modifying the target may be a better approach. They also suggested that if the Baseline walls are modified, the windows should be too.</li> </ul>	<ul style="list-style-type: none"> <li>EPA is intentionally permitting low-rise projects to choose the ASHRAE modeling path even though they are not part of the scope of 90.1. EPA is not requiring compliance with the standard, just the performance rating method. As most low-rise buildings are wood-framed, allowing the Baseline to be modeled as steel-frame provides energy savings not associated with an intentional efficiency measure. While modifying Building Performance Factors or Performance Targets may be a way to address this, the most direct approach is to modify the Baseline. Those modified factors and targets are also not readily available. EPA will analyze the window frame suggestion further and make a determination later in the summer.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change, but window frame issue still under review.</li> </ul>
13	<ul style="list-style-type: none"> <li>One respondent asked whether the HERS and Appendix G performance targets were tested for approximate equivalency, to make sure that the same project would pass (or fail) ENERGY STAR irrespective of the path it selected.</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR is a binary certification. Given the variety of multifamily project types and needs, EPA is proposing the multiple performance targets to allow projects some flexibility in approach. EPA recognizes that flexibility means not all projects certified are exactly the same in each Path, but EPA has analyzed the targets to confirm that all options will provide above-code savings consistent with the Program goals.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
<i>Envelope – Air Sealing</i>			
14	<ul style="list-style-type: none"> <li>Multiple respondents noted confusion regarding the air-sealing items in Section 4 and if they applied to dwelling units, common spaces, or all spaces, since the organization is different in the draft Rater Design checklist.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the section should be re-organized to provide clarity on the locations for which the items are applicable.</li> </ul>	<ul style="list-style-type: none"> <li>Section 4 of the Rater Field checklist was revised to provide this clarity.</li> </ul>

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15	<ul style="list-style-type: none"> <li>One respondent voiced a concern regarding the list of recommended air-sealing locations and suggested that EPA remove ‘sprinkler heads’ and add ‘medicine cabinets’.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA provided a recommended list based on consistent feedback requesting it, the list not intended to be comprehensive nor are the items required to be sealed. However, to avoid any potential issues regarding the sprinkler heads, those will be removed.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Design Checklist footnote 21 has been revised.</li> </ul>
16	<ul style="list-style-type: none"> <li>One respondent noted that finding UL fire rated exterior assemblies showing the sealant as required in Item 4.3 (now Item 4.4) of the Rater Field checklist is difficult, and without the UL rating, certain fire codes may not allow it. The respondent suggested removing the requirement to avoid the potential conflict with fire code. Another respondent inquired how to comply with Item 5.1.8 (now Item 5.1.10) of the Rater Design checklist without compromising the fire rating of the common wall when it is a UL-rated assembly.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA understands that certain code officials may object to requirements that may alter the UL-rating of a given assembly, the ENERGY STAR program has always maintained a position that if a conflict exists between code and ENERGY STAR, the conflicting ENERGY STAR requirement does not need to be met, if an equivalent solution does not exist. This note is included in the National Program Requirements document which has been posted.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
17	<ul style="list-style-type: none"> <li>One respondent questioned whether Rater Design Item 5.1.3 (now Item 5.1.9) applies only at the sill plates that are at the exterior perimeter of the building, or all sill plates that are installed on concrete/masonry.</li> </ul>	<ul style="list-style-type: none"> <li>While this item is optional and not a requirement on the Rater Field Checklist in the merged program, consistent with the Homes enforcement of this requirement, this applies at the exterior perimeter of the building, rather than the dwelling unit boundary.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
18	<ul style="list-style-type: none"> <li>One respondent commented that Rater-measured compartmentalization isn’t a requirement in Certified Homes and should not be added now since it is not required by code and is an impactful scope addition. The respondent suggested making it a requirement in the Prescriptive Path only. Another respondent provided feedback in support of the compartmentalization test and the use of the CFM50/ft<sup>2</sup> metric.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA did attempt to minimize the addition of new requirements when merging the two existing programs, compartmentalization has been required in the MFHR program since the beginning of the pilot program. Given the indoor air, comfort, and energy benefits, EPA believes compartmentalization is an important requirement for attached housing.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>

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19	<ul style="list-style-type: none"> <li>One respondent indicated that Rater Design checklist Item 5.1.10 (now Item 5.1.7) seemed to imply that an attic access panel or drop-down stair that is insulated to R-10 without a cover, would not meet the requirement.</li> </ul>	<ul style="list-style-type: none"> <li>EPA copied this requirement from the air-sealing section of the Certified Homes Rater Field checklist. Access panels and stairs that are insulated to R-10 would meet the requirement, as long as they are also gasketed. The language has been modified to reference the air sealing aspects in the air sealing section and the insulation requirements under the thermal bridging requirements.</li> </ul>	<ul style="list-style-type: none"> <li>The Rater Design and Field checklists have been updated.</li> </ul>
<i>Envelope – Thermal Bridging</i>			
20	<ul style="list-style-type: none"> <li>One respondent suggested improving the checklist requirement or footnote for “continuous exterior rigid insulation” to clarify what “continuous” means and what are permissible interruptions in the insulation. The respondent noted that the balcony exemption makes it unclear whether the project can still meet “continuous exterior rigid insulation” if using that exemption or if the balcony area is part of the exempted percentage in footnote 16 (now footnote 17).</li> </ul>	<ul style="list-style-type: none"> <li>ASHRAE 90.1 defines continuous insulation as “insulation that is uncompressed and continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior or is integral to any opaque surface of the building envelope.” Balconies either need to meet the thermal break option, or fall within the exempted percentage in footnote 17. EPA has further clarified the allowances this exemption in the updated checklists and has additionally revised the 5% allowance to align with the current 10% allowance in ESCH.</li> </ul>	<ul style="list-style-type: none"> <li>Footnote 17 of the Rater Field checklist was revised to provide this clarity.</li> </ul>
21	<p>One respondent asked why the R-5 slab edge requirement for elevated slabs (Item 2.3, now Item 2.5) does not apply to intermediate slab floor edges since they are a heat fin like any other uninsulated slab adjacent to conditioned space.</p>	<ul style="list-style-type: none"> <li>While EPA agrees that intermediate slab floor edges do create a thermal bridge, the intent of this requirement is to explicitly expand the current slab edge insulation requirement in Homes for slab-on-grade to similar elevated slab edges, not typically seen in Homes. The intermediate slab floor edges are addressed in the section on reduced thermal bridging, Item 2.6</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
22	<ul style="list-style-type: none"> <li>One respondent noted that many gut rehabs would find it extremely challenging to meet the reduced thermal bridging options and the insulated slab edge requirements and proposed an option of a modified UA calculation.</li> </ul>	<ul style="list-style-type: none"> <li>EPA has made some allowances in the past for gut rehabs, however the only solution available currently is to insulate on top of the slabs. For walls, EPA added footnote 20 such that continuous interior insulation rather than continuous exterior rigid insulation will be permitted.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist Item 2.6.1 has been updated with a footnote.</li> </ul>

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<i>Envelope - General</i>			
23	<ul style="list-style-type: none"> <li>One respondent inquired why in the section on fully aligned air barriers, the air barrier needs to be fully aligned on the interior vertical surface of wall insulation in Climate Zones 4-8, but not other Climate Zones.</li> </ul>	<ul style="list-style-type: none"> <li>In Climate Zones 1-3, ESCH does not require an interior air barrier, although they are typically provided. The reason for this requirement in cold climates is that there is an increased risk that warm air in the house will migrate through the insulation to the exterior air barrier and condense against the cold surface inside the wall assembly.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
24	<ul style="list-style-type: none"> <li>One respondent noted that all three-story buildings fall under the IECC Residential chapter and the requirement to follow the commercial provisions could cause conflict since the residential and commercial values are different.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA agrees that there may be different minimum insulation requirements whether a building is subject to the residential or commercial provisions in code, this difference reflects an overlap rather than a conflict, and the project team should select the value that meets both code and ENERGY STAR.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
25	<ul style="list-style-type: none"> <li>One respondent noted that for projects going through the HERS path, it may create challenges to have the common areas have different requirements for insulation and windows than the dwelling units.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA understands that there are some challenges to referencing multiple requirements, EPA feels that the baseline values for the common areas are reasonable and cost-effective to achieve. Note that in many instances, projects are likely already meeting the common area requirements based on code requirements.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
26	<ul style="list-style-type: none"> <li>One respondent noted that the current Simulation Guidelines in ENERGY STAR MFHR requires a de-rate of the wall assembly U-value where PTACs, shelf angles or other metal fasteners are used and suggested that the same de-rate apply to projects as they demonstrate compliance with mandatory U-values.</li> <li>Another respondent suggested that the de-rate text is expanded to also include z-girts and exempt thermally broken shelf angles.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that this consistency is needed across the three paths. EPA has clarified this requirement in the updated checklists such that the U-value must account for these features when determining compliance. EPA also agrees that thermally broken shelf angles should be exempted and that including z-girts will improve the accuracy of the de-rate calculation. EPA has clarified this requirement in the Rater Design Checklist and the Simulation Guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>Footnote 6 of the Rater Design checklist was revised to include the de-rate to align with the Simulation Guidelines and both documents will include the notes on z-girts and shelf angles.</li> </ul>
27	<ul style="list-style-type: none"> <li>One respondent indicated that the heated plenum insulation requirement was a step in</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the additional criteria for the insulation to be paper-faced is important. EPA has clarified this</li> </ul>	<ul style="list-style-type: none"> <li>Footnote 9 of the Rater Field checklist</li> </ul>

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	the right direction, but without a requirement for the insulation to be paper-faced and the tiles to be air-sealed, it would not be very effective against air movement.	requirement in the updated checklists such that the paper-faced batt is required. While EPA agrees that air-sealing the tiles would be best practice, it will not be added as a requirement at this time.	was updated.
28	<ul style="list-style-type: none"> <li>One respondent said the heated plenum requirement (Item 1.5.1) was confusing since it did not identify R-values for the plenum walls in Climate Zones 1-4.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the plenum wall insulation requirement could be explicit for those zones. EPA has clarified this requirement in the updated checklists such that R-3 is required in CZ1-4 in Item 1.5.1.</li> </ul>	<ul style="list-style-type: none"> <li>Item 1.5.1 of the Rater Field checklist was updated.</li> </ul>
29	<ul style="list-style-type: none"> <li>One respondent noted that heating garages did not seem appropriate, but it is not a common practice in their climate zone. This respondent also questioned whether requiring insulation made sense given that the garage would be running exhaust fans.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that minimizing the heating load in a garage is optimal, however EPA understands that heating garages is common practice in some climates and therefore EPA is looking to provide the most cost-effective strategies to reduce the heating load rather than prohibit the practice of heating garages.</li> <li>While EPA agrees that ventilating the garage does reduce the impact of the insulation, with the requirement for ventilation controls the insulation will still help reduce the thermal load.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
30	<ul style="list-style-type: none"> <li>Multiple respondents commented that the envelope requirements were not clear about whether they applied to just exterior walls, walls adjacent to other unconditioned spaces, and/or below-grade walls adjacent to other buildings.</li> </ul>	<ul style="list-style-type: none"> <li>EPA has made changes to footnote 6 on the Rater Design checklist to clarify that walls adjacent to other unconditioned spaces are also subject to insulation requirements. Section 4 and Footnote 16 of the Rater Field Checklist has been similarly updated, with respect to the reduced thermal bridging requirement.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Design and Rater Field checklists have been updated.</li> </ul>
31	<ul style="list-style-type: none"> <li>One respondent commented that there are limits on window U-values and SHGC, but not window area and suggested capping window area for all Paths, not just Prescriptive.</li> </ul>	<ul style="list-style-type: none"> <li>EPA caps the window area in the Prescriptive Path at 30%, but believes in allowing the two modeling paths to trade-off window area as needed to meet design goals and the ENERGY STAR Performance Targets.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
<i>DHW</i>			
32	<ul style="list-style-type: none"> <li>One respondent noted that limiting measured temperatures at faucets and showerhead to no more than 125F would be challenging given that project teams are also trying to store water at high enough temperatures to avoid</li> </ul>	<ul style="list-style-type: none"> <li>EPA understands that projects would like to store water at temperatures hot enough to prevent Legionnaire's disease. Through the use of mixing valves, it is still possible to bring those measured values below 125F. While a 5 degree range would be narrow,</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>

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	Legionnaire’s disease and to meet design temperatures of 120F and a 5 degree range is very narrow. Another respondent provided input that the 125F maximum seemed too high and possibly not code-compliant.	EPA is not establishing a minimum delivery temperature or storage temperature.	
33	<ul style="list-style-type: none"> <li>One respondent noted that no standard is referenced regarding how to conduct the DHW delivery temperature test or how long to run the water before measuring the temperature.</li> </ul>	<ul style="list-style-type: none"> <li>While no ANSI Standard is available for reference, EPA has adopted language from RESNET’s Guidelines for Multifamily Energy Ratings, which specifies that the temperature is recorded once the hot water has been turned completely on and the delivery temperature does not increase for a period of 10 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>Footnote 65 has been added to the Rater Field Checklist.</li> </ul>
<i>HVAC Design</i>			
34	<ul style="list-style-type: none"> <li>One respondent suggested including Project Address and client name in section 1 of the HVAC Design Report, similar to the Functional Testing checklist.</li> </ul>	<ul style="list-style-type: none"> <li>While a space to document the client name is already provided, EPA agrees that the suggestion to also list the project address would be valuable.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design Report has been updated.</li> </ul>
35	<ul style="list-style-type: none"> <li>One respondent noted that it has been difficult to collect HVAC Design Reports from engineers in the Homes program for multifamily projects and this checklist doubles the size of the requests, and does not clearly delineate exactly what information needs to be provided. The respondent suggests working with Mechanical Engineers, software load sizing companies and others to have load calculations verified automatically. The respondent also suggested accepting documentation in other equivalent formats, such as ventilation rates that use a LEED template.</li> </ul>	<ul style="list-style-type: none"> <li>EPA did solicit input from HVAC designers when developing a single HVAC Design Report that could take the place of the multiple HVAC Design Reports that were needed in the Homes program to properly document all the systems in a multifamily project. The long-term vision is to work with software developers to populate this checklist from the load calculation software directly and in the interim, to collect and implement any feedback that will make it easier for designers to complete the checklist in a PDF format. EPA is still exploring creating the design report in alternate formats such as an Excel version, but is not currently planning to accept other documentation.</li> </ul>	<ul style="list-style-type: none"> <li>Issue under review</li> </ul>
36	<ul style="list-style-type: none"> <li>One respondent commented that the additional items associated with Internal Gains with respect to calculating loads were a good addition to the HVAC Design Report. Other</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that it was critical to provide limits to both occupant gains and internal gains associated with lights and appliances to avoid equipment over-sizing due to very inflated loads. Manual J suggests 2,400 Btuh,</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>

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	respondents thought the 3,600 Btuh might be too large and should scale with square footage.	based on a presumed number of appliances and lights, and ENERGY STAR added 50% to attain the 3,600 Btuh proposed. While the ASHRAE Handbook of Fundamentals does scale by square footage, this value was proposed as a simple threshold that can be easily evaluated. Future versions of the program may consider a smaller allowance for smaller apartments.	
37	<ul style="list-style-type: none"> <li>Multiple respondents requested a change to the range allowed when reviewing the HVAC Design Report, with respect to window areas (Item 3.8, now Item 3.9) and floor areas (Item 3.7, now Item 3.8), citing the different ways that designers and Raters calculate those.</li> </ul>	<ul style="list-style-type: none"> <li>The Certified Homes team is currently reviewing this issue and agrees with the respondents to allow a range for these Items. The checklists will be updated to match the Certified Homes Rev09 language (still under internal review) and allow conditioned floor area to be within 100 sq. ft. smaller and 300 sq. ft. larger than the Rated Home. Window areas will be allowed to be between 15 sq. ft. smaller and 60 sq. ft. larger than the Rated Home, with a percent range introduced for homes with more than 500 sq. ft. of window area.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design Report footnote 22 and Rater Design checklist Items (4.2.4 and 4.2.5) were updated. Issue is still under review to be consistent with the determination from Homes.</li> </ul>
38	<ul style="list-style-type: none"> <li>More than one respondent commented that they didn't understand what the number in parentheses meant in Section 4 of the Rater Design checklist (Review of the HVAC Design Report).</li> </ul>	<ul style="list-style-type: none"> <li>While the header to section 4.2 does state that the numbers indicate the corresponding checklist item number on the HVAC Design Report, EPA has added that text to the main header of Section 4 and has additionally added the word "Item" to each number in parentheses.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Design checklist section 4 has been updated.</li> </ul>
39	<ul style="list-style-type: none"> <li>One respondent appreciated the addition of the local exhaust ventilation requirements to the HVAC Design report, but suggested adding a checkbox to document whether the design was based on the continuous or intermittent rates.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that a checkbox to document the design intent with respect to continuous and/or intermittent rates is useful and has added the suggested checkbox.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design Report has been updated.</li> </ul>
40	<ul style="list-style-type: none"> <li>One respondent indicated that more guidance was needed on how to use the new tables in the HVAC Design report and what to do if you had more units or systems than the tables</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that more guidance is needed and has added more text and a footnote to clarify how to fill out the checklist. EPA also removed the example column headers (e.g., "Unit A", "RTU-1"), which were</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design report has been updated.</li> </ul>

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	<p>could accommodate. Another respondent suggested that the tables for documenting ventilation rates be split into two tables, one for dwelling units and another for common spaces, and to separate the inputs for square footage from the number of occupants.</p>	<p>shown previously to demonstrate how the tables could be completed.</p> <ul style="list-style-type: none"> <li>As suggested, in section 2 the dwelling units and common area ventilation rates have also been separated.</li> <li>An appendix has been added with the tables repeated for projects that need additional space.</li> </ul>	
41	<ul style="list-style-type: none"> <li>Multiple respondents suggested that the HVAC Designer be required to submit construction documents with mechanical schedules as part of the HVAC Design Report, to allow the Rater to verify the accuracy of the documented items.</li> </ul>	<ul style="list-style-type: none"> <li>While it is understood that most Raters will have collected the construction documents in order to evaluate the building, EPA is not requiring the documents to be submitted as part of the Design Report or for the Rater to compare the items to the construction documents provided. Once installed, the Rater will verify that the installation matches the Design Report. Where it does not, the HVAC Designer has to provide written approval.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
42	<ul style="list-style-type: none"> <li>One respondent indicated that there is no timeframe associated with the HVAC Design Report and no requirement to update the Design report if values change, such as SHGC. Another respondent suggested that a default SHGC be provided for when the values are not known at design and another suggested the infiltration rate needs to be tighter and could at least stipulate the compartmentalization level required.</li> </ul>	<ul style="list-style-type: none"> <li>In trying to remain aligned with the Certified Homes program, EPA will not institute a specific timeframe for the completion of the HVAC Design report. While values are subject to change over the course of construction, it is the choice of the HVAC Designer to update their calculations if needed to re-calculate sizing and select equipment. If at the time of the Review of the HVAC Design report, the SHGC of the window is not known, the Rater should use their best judgment in order to determine if the HVAC Designer sizing loads using a SHGC within 0.1 of that value.</li> <li>Since compartmentalization is a requirement of the new program, EPA evaluated the air change values in Manual J and did determine that “tight” levels would be more appropriate. Alternatively, a maximum of 0.24 air changes will be available.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design Report footnote 27 was updated with the new guidance on infiltration rates.</li> </ul>
43	<ul style="list-style-type: none"> <li>One respondent found that it was still not clear whether the section on dwelling unit load</li> </ul>	<ul style="list-style-type: none"> <li>EPA will revise the footnote to be more explicit that non-ducted systems, including mini-splits and</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design Report footnote 20</li> </ul>

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	<p>calculations were required for ducted or non-ducted mini-splits. They noted that non-ducted systems should also be required to have load calculations to reduce over-sizing.</p>	<p>PTAC/PTHPs are currently exempt from documenting the inputs that factored into the load calculations and system sizing. While EPA agrees that non-ducted systems can be over-sized, to remain as aligned with Homes, the scope of this requirement was kept the same as Homes.</p>	<p>was updated.</p>
44	<ul style="list-style-type: none"> <li>One respondent asked whether window orientations were intended to be removed from the section on load calculations</li> </ul>	<ul style="list-style-type: none"> <li>EPA adopted the requirements from Homes, which did not require HVAC Designers to document the orientations of the windows. While the gains are documented by orientation in the Homes version, that component was not adopted in the new program since many units will only be in one orientation. Where a designer needs multiple orientations, this can be included in the space description (e.g., Unit A NW). The Designer is still required to model the unit in the same orientation as the unit to be certified, and the Rater still verifies this in the Rater Design checklist.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
45	<ul style="list-style-type: none"> <li>One respondent suggested removing the sections to do with common area loads and instead add a single row check box for the engineer to verify loads have been calculated and installed capacity does not exceed those by more than 20%. The respondent also suggested that the checklist should be limited to apartment loads only since otherwise the complexity is too great.</li> </ul>	<ul style="list-style-type: none"> <li>One of the main goals of the merged program was to ensure common area systems were included in the ENERGY STAR requirements, as they are in the MFHR program. EPA did want to limit the complexity of the data collected and ultimately decided to only ask that the design loads in common areas be reported, but not the inputs used to calculate them as is done for dwelling units. In addition, the Rater is only verifying that the loads were reported. While there currently is no system sizing limit, the loads must be calculated and the over-sizing is documented in Items 4.18 and 4.30.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
46	<ul style="list-style-type: none"> <li>One respondent suggested listing the additional filtration requirements on the HVAC Design report and requiring checkboxes for each individual item in those sections, rather than the single checkbox. Another respondent added a suggestion of an “N/A” option, such</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that adding the Rater Field checklist items to the Design Report improves the likelihood of success since the HVAC Designer sees the requirement early in the process. The missing items related to filtration have been added. The extra checkboxes will not be added at this time since the intent was visibility, not to increase</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design report has been updated.</li> </ul>

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	<p>that the Rater would clearly know which measures were not present in the building. Another respondent requested that the full text be copied from Rater Field rather than paraphrased and that Prescriptive Path items should also be added.</p>	<p>the effort needed to complete the report. The text will be updated to match the Rater Field items and will include the Prescriptive Path items.</p>	
47	<ul style="list-style-type: none"> <li>One respondent thought footnote 15 (now 16) of the HVAC Design Report and footnote 52 (now 56) of the Rater Field that provide a reduced kitchen ventilation rate to certain projects should increase the required whole-building infiltration rate from 0.05 to 0.10 or 0.20 cfm50/ft<sup>2</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>EPA is keeping this requirement in alignment with the Homes allowances. The allowance was developed to address the challenge of providing ventilation with the extremely tight enclosure that is required for Passive House certification. It was extended to all projects meeting the same level of envelope tightness, regardless of whether they are pursuing Passive House certification.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
<i>HVAC-General, Ducts, and Combustion Appliances</i>			
48	<ul style="list-style-type: none"> <li>One respondent inquired why static pressure tests were being required when there is no pass/fail criteria associated with the test as there is for other tests.</li> </ul>	<ul style="list-style-type: none"> <li>In trying to remain aligned with the Certified Homes program, EPA kept many requirements the same as Homes, unless they needed to be changed for multifamily. EPA believes completing the test can be valuable regardless of whether the result has a specific threshold. Having the Rater perform the test is the first step in the Rater being able to provide oversight of the test. EPA is continuing to work with RESNET on a new standard that would provide more robust verification procedures for Raters.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
49	<ul style="list-style-type: none"> <li>One respondent commented that the lower duct leakage allowance for systems without ducted returns would be challenging.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA understands that this may be challenging for some partners, the original allowance was based on systems with ducted returns. In multifamily, where non-ducted returns are more prevalent, using the same allowance as systems with ducted returns results in an inconsistent level of stringency. The lower allowance is appropriate for systems with less ductwork subject to the test.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
50	<ul style="list-style-type: none"> <li>One respondent commented that the new</li> </ul>	<ul style="list-style-type: none"> <li>While EPA understand that this may be challenging for</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>

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	percentage based metric for central exhaust duct leakage allowance would be challenging without resorting to an aerosol based application.	some partners, EPA has also received feedback that the metric should be more stringent. Since the original allowance was based on registers and building height, it often allowed over 40% of the fan's rated flow to come from leakage.	
51	One respondent indicated that the pressure-balancing requirement should not state undercut doors as one of the permitted options.	<ul style="list-style-type: none"> <li>EPA reaffirms its intent that overall, the merged program mandatory items do not increase the stringency beyond both initial program requirements. Undercut doors are currently permitted in both programs.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
52	<ul style="list-style-type: none"> <li>One respondent inquired whether the pressure-balancing requirement applied to bedrooms in dwelling units without central ducted systems. Another respondent indicated that the full text of the requirement should be included in the HVAC Design Report, rather than a condensed version. Another respondent indicated that the Rater would need to know which bedrooms were subject to the test, since it is based on design airflow, but airflow is not a mandatory reported item on the HVAC Design Report (Item 5.5, now Item 5.2). Other respondents commented that the table for airflows should not be optional and should be expanded to accommodate more units or if optional should be moved to another location.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the pressure-balancing requirement should be clear and that the full requirement text should be on the HVAC Design Report. EPA also agrees that the design airflows should be required to be documented, rather than optional, and needs to be able to address multiple units. EPA has clarified this requirement in the updated checklists.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field Item 6.2 and HVAC Design Report Item 6.6 have been revised. HVAC Design Report, Item 5.2, is no longer optional and has been updated to accommodate multiple units.</li> </ul>
53	<ul style="list-style-type: none"> <li>One respondent inquired whether heat tracing controls are to be based on pipe wall temperature or permitted to be based on garage temperature. Another respondent asked whether the requirements for the R-3 pipe insulation were limited to heat tracing for pipe freeze protection.</li> </ul>	<ul style="list-style-type: none"> <li>Similar to the ENERGY STAR MFHR program requirement, the intent was for the controls to be based on pipe wall temperature. The intent of the pipe-insulation requirement was to limit energy use when heat trace is used for freeze protection. EPA has clarified this requirement in the updated checklists.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design Report (Item 4.35) and Rater Field checklists (Items 5.8 and 5.8.1) have been updated.</li> </ul>
54	<ul style="list-style-type: none"> <li>One respondent suggested that the Rater need</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that a requirement for the Rater to verify</li> </ul>	<ul style="list-style-type: none"> <li>Rater Design</li> </ul>

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	<p>not additionally verify in Rater Design checklist Item 4.2.2 that 62.1 rates had been met unless they were being asked to actually re-do the calculations like in 4.2.1. Similarly, 4.2.3 seems redundant to Item 4.1 unless the Rater is specifically being asked to check access to measure the airflow on the plans.</p>	<p>the ASHRAE 62.1 rates could be overly complicated and best left to the HVAC Designer. This requirement (4.2.2) has been removed from the Review HVAC Design Report section of the Rater Design checklist. Item 4.2.3 has been moved to the optional section 5, to allow the Rater the option to review the construction document to confirm access is available to measure ventilation rates.</p>	<p>checklist Item 4.2.2 was removed and 4.2.3 was moved to the optional section 5 for Construction Document Review.</p>
55	<ul style="list-style-type: none"> <li>One respondent questioned whether the control requirements of Item 2.17 on HVAC Design report and 7.2 (now 7.4) on Rater Field also applied to outdoor air intakes that supply OA into the mechanical closet or some place in the dwelling unit or building, but are not directly 'connected' to the return side of the dwelling unit HVAC. The respondent noted that it's not clear if this strategy is not permitted or if they are required to follow the same controls and filtration requirements (9.1.2) as systems 'connected' to the return.</li> </ul>	<ul style="list-style-type: none"> <li>This requirement was adopted from the Homes requirement, which was written expressly for systems designed with OA intakes directly connected to the return. The strategy described by the respondent is not prohibited and also not subject to the control requirements of 2.17. The filtration requirement in 9.1.2 would still apply as the OA does qualify as "return" air, but does not require the filter to be installed at the point at which the OA is provided to the home.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
56	<ul style="list-style-type: none"> <li>One respondent requested that footnote 54 (now 58) be revised so that it's clear that ducted and non-ducted mini-splits are exempt from the MERV 6 requirement. Another respondent asked that the 10 ft length be clarified to mean total supply or per run/branch.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the footnote should be more clear and has clarified that the exemption applies to all permutations of mini-splits, ducted or not. Additionally, the footnote was revised to state that the length is calculated as the total supply length.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist footnote 58 revised.</li> </ul>
57	<ul style="list-style-type: none"> <li>One respondent suggested that the specific pipe insulation levels in Item 5.12 should be identified such that the Rater can easily verify it in the field, rather than needing to look up the value in ASHRAE.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the verification could be simplified by adding the specific insulation thickness to the HVAC Design Report and updating the Rater Field checklist to compare what is installed to what was reported by the HVAC Designer.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist Item 5.12 and HVAC Design Report Item 4.40 have been updated.</li> </ul>

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58	<ul style="list-style-type: none"> <li>One respondent thought Item 7.1 of the Rater Field checklist wasn't clearly indicating that the rater was also required to measure airflows of common area systems. Another respondent asked whether the Rater had to directly measure all the airflows or if they could accept airflow measurements conducted by another qualified individual in their presence.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that this could be made more clear by separating the requirement into two rows. While the measurement of the ventilation rate is the responsibility of the Rater, the Rater may choose to watch a qualified individual perform the test rather than perform the test themselves. A footnote has been added to the common area ventilation systems to note this allowance.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist Item 7.3 and a footnote has been added</li> </ul>
59	<ul style="list-style-type: none"> <li>One respondent thought the Rater Field requirement (Item 5.7) to verify the dampers on stairwell and elevator shaft vents could be re-written such that the Rater confirms that they are in fact closed during normal operation, and not just capable of closing.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that this would provide a clear verification step and has revised the requirement accordingly.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist Item 5.7 has been updated.</li> </ul>
60	<ul style="list-style-type: none"> <li>One respondent suggested that the requirement for furnaces, water heaters, and boilers should be more stringent and limited to direct-vented systems only.</li> </ul>	<ul style="list-style-type: none"> <li>While EPA agrees that direct-vented systems perform better than other systems, project teams should be allowed to use naturally drafted systems if they are outside the pressure boundary and if they can still meet the performance target.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
<i>Lighting, Appliances and Fixtures</i>			
61	<ul style="list-style-type: none"> <li>Multiple respondents noted confusion regarding the common area lighting occupancy control requirements and the different options listed. Other respondents questioned whether the common area lighting allowance was not to exceed the LPD in each space or the combined allowance of all common spaces. Another respondent suggested remaining aligned with ASHRAE 90.1-2007 Building Area method value of 0.7 W/ft<sup>2</sup>, rather than 1 W/ft<sup>2</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>EPA updated the language in 12.1 and 12.2 regarding common area controls and lighting power allowances, and how they differ depending on path chosen. EPA also updated the requirement to align with the Building Area method value of 0.7 W/ft<sup>2</sup>. EPA additionally clarified that while the exterior lighting control requirements apply to light fixtures in parking lots, the lighting power maximum does not and was removed. EPA also clarified that the efficiency requirements in the Prescriptive Path also apply to exterior light fixtures.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist section 12 has been updated.</li> </ul>
62	<ul style="list-style-type: none"> <li>One respondent requested that the actual Lighting Power Densities be provided, rather</li> </ul>	<ul style="list-style-type: none"> <li>A footnote on the Rater Field Checklist has been added to list the actual LPDs from ASHRAE for simplicity and</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist has been updated.</li> </ul>

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	<p>than a reference to a Standard that most Raters do not have, especially for spaces like elevators and laundry rooms, which are not clearly identified in 90.1-2007.</p>	<p>the actual lighting power density for parking garages has been added to Item 12.3.</p>	
63	<ul style="list-style-type: none"> <li>One respondent suggested using more accurate LPD value in Item 12.7 for dwelling units in Prescriptive Path, citing studies that used 1.07 W/ft<sup>2</sup> rather than 1.1 W/ft<sup>2</sup> and reducing the 0.75 W/ft<sup>2</sup> to 0.60 W/ft<sup>2</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>For the first iteration of the new merged program, where possible, EPA is trying to leverage current requirements to minimize the overall number of changes to Partners. For that reason, EPA intends to keep 1.1 and 0.75 W/ft<sup>2</sup> in Item 12.7 as those values are the same as in the current MFHR program.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
64	<ul style="list-style-type: none"> <li>One respondent suggested that linking the common area lighting power allowance to ASHRAE 90.1-2007 is too lenient for HERS and Prescriptive Paths in states that have adopted 2015 IECC, compared to Performance Path projects which will need to achieve 15% savings over 2015 IECC (which is essentially 90.1-2013). Alternatively, the respondent suggested setting the requirement to be not worse than lighting requirements in 90.1-2004, to align with 90.1 2016 Appendix G baseline.</li> </ul>	<ul style="list-style-type: none"> <li>A comparison of the LPDs for the dominant common spaces in multifamily building (e.g. corridors and stairs) shows the 2007 values to be more stringent than 2013, not less, and identical to the 2004 values suggested. To reduce complexity, unless there are significant changes in code, EPA prefers not to have prescriptive requirements change for projects with different state codes outside of the reference design updates.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
65	<ul style="list-style-type: none"> <li>One respondent noted that WaterSense fixtures for inside a residential bathroom have a minimum 0.8 gpm, and so Prescriptive Path projects would not be able to specify bathroom aerators lower than 0.8 gpm.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that since Prescriptive Path projects must specify WaterSense labeled bathroom aerators, the projects will not be able to specify aerators below 0.8 gpm for dwelling unit bathrooms.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
<i>Functional Testing</i>			
66	<ul style="list-style-type: none"> <li>One respondent indicated that it was not clear what systems were not subject to the items in the checklist.</li> </ul>	<ul style="list-style-type: none"> <li>All systems in a multifamily building that serve the dwelling units or common spaces, are subject to this checklist. Specific sections may or not apply, depending on the type of system or location. In mixed-use building, systems solely serving commercial/retail spaces are not subject to this checklist.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
67	<ul style="list-style-type: none"> <li>One respondent requested that Section 5 for</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the section header should list out the</li> </ul>	<ul style="list-style-type: none"> <li>Section 5 of the</li> </ul>

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	<p>testing of indoor units list the specific systems that are required to complete that section and if the systems subject to prior sections on refrigerant charge and airflow, like residential ducted systems, must also now complete Section 5.</p>	<p>systems and be clear that the residential ducted systems noted in section 2, 3 and 4 are also subject to section 5.</p>	<p>HVAC Functional Testing checklist has been updated.</p>
68	<ul style="list-style-type: none"> <li>One respondent requested that it be clarified whether the FT Agent needed to be 3<sup>rd</sup> party. Another respondent asked whether the FT Agent needed to be present during the functional tests or installation checks in order to check the box or if they could attest that it was done by reviewing the reports of another FT Agent. Another respondent said it wasn't clear when the FT Checklist was required to be collected.</li> </ul>	<ul style="list-style-type: none"> <li>The FT Agent needs to meet the qualifications listed on the checklist. The installing contractor is allowed to serve as the FT Agent as long as they are an HVAC contractor credentialed by an H-QUITO, as evidenced by their listing on the <a href="#">directory</a>. Otherwise, the FT Agent must meet one of the other qualifications and cannot be the installing contractor. The Checklist is only required to be collected if the FT Agent is not a credentialed contractor.</li> </ul>	<ul style="list-style-type: none"> <li>Rater Field checklist Item 5.5 and HVAC Functional Testing checklist has been updated.</li> </ul>
69	<ul style="list-style-type: none"> <li>One respondent commented that the proposed Functional Testing Checklist is a useful checklist in lieu of the Commissioning Checklist which was not very clear in the previous versions of the program. The respondent additionally requested that ENERGY STAR develop a How-To guide for Functional Testing Agents verifying the items on this checklist.</li> </ul>	<ul style="list-style-type: none"> <li>EPA appreciates that the added items are seen as an improvement in how ENERGY STAR addresses systems in multifamily projects. In lieu of developing a How-To guide, EPA has established the qualifications needed to perform the verification. The checklist items are expected to be within the scope of these qualified individuals, without the need of a guidance document.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>
70	<ul style="list-style-type: none"> <li>One respondent requested that terms like 'unitary' and 'terminal' be defined. Another requested that the exemption for mini-splits in the Refrigerant Charge testing section include the reasoning.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that a definition would add clarity. The exemption for mini-splits is being retained from the Certified Homes program and not modified. It was a footnote that was simply moved to the section headers to increase visibility. In section 2, the text has been clarified such that it's clear that the exemption applies to ducted and non-ducted mini-splits.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Functional Testing checklist has been updated.</li> </ul>
71	<ul style="list-style-type: none"> <li>One respondent requested that Item 5.1.2 be revised to be more similar to the related</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that consistency would be beneficial and has adapted the language to more closely resemble the</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Functional Testing checklist</li> </ul>

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	requirement (4.6) in the ESCH Water Management System Builder Requirements.	requirement from the Water Management Checklist.	has been updated.
72	<ul style="list-style-type: none"> <li>One respondent suggested that checklist items that require readings within 2-3 degrees be increased to 5 degrees due to the inherent limitations in equipment accuracy.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that 5 degrees is an appropriate range given the inherent inaccuracy with some testing equipment. Item 5.2.1 was increased to 5 degrees.</li> </ul>	<ul style="list-style-type: none"> <li>Functional Testing checklist Item 5.2.1 has been updated.</li> </ul>
73	<ul style="list-style-type: none"> <li>One respondent inquired whether any of the commissioning credentials by NEBB would be acceptable for the Functional Testing agents.</li> </ul>	<ul style="list-style-type: none"> <li>EPA reviewed the NEBB credentials and identified the specific credentials (BSC CxCT, BSC CP, and BSC CxPP) that would be equivalent to the others listed and has added them to the Functional Testing checklist.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Functional Testing checklist has been updated.</li> </ul>
74	<ul style="list-style-type: none"> <li>One respondent inquired whether sampling will be permitted on the Functional Testing checklists and if it is, what standard should be followed.</li> </ul>	<ul style="list-style-type: none"> <li>Sampling is not permitted for any items on the Functional Testing Checklist, whether verified by an FT Agent or a Rater.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change</li> </ul>
75	<ul style="list-style-type: none"> <li>One respondent asked how the checklist should be completed for multiple units in a project and how would tests be documented for a specific dwelling unit or system, since a dwelling unit address is not required to be documented. Another respondent suggested an Excel format that could filter out the non-applicable requirements.</li> </ul>	<ul style="list-style-type: none"> <li>The checklist has been updated so that an FT Agent can document which system is being verified and to clarify the expectation that the relevant sections of multiple checklists would be needed to document each individual dwelling unit and each common area HVAC system. An Excel version of the Checklist is scheduled for development to accommodate multiple units and systems.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Functional Testing Checklist has been updated. EPA expects to develop an Excel version that will be released at a later date.</li> </ul>
76	<ul style="list-style-type: none"> <li>One respondent suggested that Footnote 1 in both the HVAC Design Report and Functional Testing checklist be revised to state 'lack of maintenance <i>or occupant behavior</i>'.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that the footnote could be revised as suggested.</li> </ul>	<ul style="list-style-type: none"> <li>HVAC Design Report and Functional Testing checklist footnote 1 have been updated.</li> </ul>
77	<ul style="list-style-type: none"> <li>One respondent asked whether, for outdoor units that serve a lot of indoor units, there is a minimum number of indoor units that need to be operating in order to evaluate that heat is being absorbed/rejected, per 6.2.1 and 6.2.2. The respondent asked if there should be an exception for the cooling mode when the</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that a minimum percentage of indoor units served by the outdoor unit should be specified for the test and has added a footnote to set that percentage at 25%. While outdoor temperature does impact the ability to conduct certain tests, the VRF checklist items were developed such that they can be conducted irrespective of outdoor temperature. In addition, while</li> </ul>	<ul style="list-style-type: none"> <li>Functional Testing checklist Items 6.2.1 and 6.2.2 have been updated with a footnote.</li> </ul>

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	ambient temperature is below a certain temperature, like in Homes.	noted as an “Issue under Review” in the previous draft, all items for boilers, chillers, and cooling towers must be verified, regardless of the outdoor temperature, unless specifically exempted.	
78	<ul style="list-style-type: none"> <li>One respondent noted that heat being “absorbed” is too abstract a concept for a checklist item and suggested asking if the outdoor unit is blowing warm air or cool air and inquired whether the verification should include a comparison of the temperature being measured to the ambient temperature.</li> </ul>	<ul style="list-style-type: none"> <li>EPA agrees that a more specific procedure and language would improve this requirement. EPA has updated the text to compare measured discharge temperatures to ambient temperatures.</li> </ul>	<ul style="list-style-type: none"> <li>Functional Testing checklist Items 6.2.1 and 6.2.2 have been updated.</li> </ul>
79	<ul style="list-style-type: none"> <li>One respondent suggested that the requirement (5.1.1) to verify that the thermostat was not located on an exterior wall be required of all spaces not just dwelling units.</li> </ul>	<ul style="list-style-type: none"> <li>EPA reaffirms its intent that overall, the merged program mandatory items do not increase the stringency beyond both initial program requirements and that there is a smooth transition between the single-family and multifamily program requirements. While EPA agrees that having thermostats on internal walls is valuable even in common spaces, EPA does not intend to add this requirement during the program merging since it is not currently included in either program.</li> </ul>	<ul style="list-style-type: none"> <li>No policy change.</li> </ul>