

## **Summary of Comments, EPA Responses, and Resulting Policy Changes on Draft 1 ENERGY STAR Manufactured New Homes Version 3 (formerly labelled v2.1) Program Requirements**

EPA has posted on its website a compilation of all comments received on Draft 1 of a new version of the ENERGY STAR Manufactured New Homes Program Requirements, which was initially referred to as Version 2.1 but is ultimately being titled Version 3. The stakeholder feedback period was open from August 1 to August 29, 2022.

This document contains a summary of these comments, along with EPA's responses and the resulting policy change, if any.

When similar comments were received from multiple respondents, EPA has consolidated these ideas into a single summary bullet. However, EPA has attempted to retain all unique comments received, including those submitted by a single respondent.

**ENERGY STAR Manufactured New Homes Version 3 Program Requirements**

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## ENERGY STAR Manufactured New Homes Version 3 Program Requirements

ID	Comment Summary	EPA's Response
<b>Overall Program Structure</b>		
1	<ul style="list-style-type: none"> <li>• Commenters provided a range of feedback on the program structure for single-section units, which involves meeting the thermal envelope performance in Exhibit 1 but not the additional measures (e.g. equipment, appliance and lighting) in Exhibit 2:               <ul style="list-style-type: none"> <li>○ One commenter was supportive of the program structure for single-section units as proposed. Two commenters suggested increasing the overall stringency of the envelope and glazing requirements, while one other commenter recommended reducing the stringency.</li> <li>○ Two commenters suggested allowing single-section units to install equipment-based packages in return for less stringent envelope and glazing performance.</li> <li>○ Two other commenters proposed that single-section homes should be required to install equipment packages in addition to the envelope requirements.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• EPA believes that the original proposal provides a consistent, high level of thermal envelope performance across single and multi-section units while balancing the space constraints and structural limitations of manufactured housing. For these reasons, EPA is retaining its initial proposal that all homes meet the thermal envelope requirements in Exhibit 1 as proposed.</li> <li>• At the same time, the Exhibit 1 envelope measures by themselves deliver energy cost savings of at least 16% for single-section units relative to code, which is on the upper end of the program's historical savings range. Requiring additional measures beyond this point may reduce program participation. For that reason, EPA is also retaining its initial proposal that single-section only be required to meet Exhibit 1.</li> </ul>
2	<ul style="list-style-type: none"> <li>• Commenters were generally supportive of the program structure for multi-section units, which involves meeting both Exhibits 1 and 2, but requested additional flexibility:               <ul style="list-style-type: none"> <li>○ Multiple commenters requested an option to create new combinations of measures beyond the three packages proposed in Exhibit 2. One example was combining a high-efficiency gas furnace with an electric water heater.</li> <li>○ Commenters also requested a method for new measures be recognized as technologies are adopted by the market.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• To provide additional flexibility, EPA is transitioning Exhibit 2 from pre-defined packages of measures to individual measures with point values, which allows partners to mix and match measures to achieve a minimum total of 10 points (corresponding to 10% energy cost savings).</li> <li>• Each of the Exhibit 2 packages from the original draft adds up to 10 points and, therefore, remains compliant under the points table format. Manufacturers that preferred one of the packages from the original draft are free to select that same combination of measures.</li> <li>• EPA will continue to evaluate technology adoption and has the ability to add measures into future program revisions, as appropriate.</li> <li>• Because this new Exhibit 2 format causes a more complete departure from Version 2's structure, EPA is labelling the final program requirements "ENERGY STAR Manufactured Homes <u>Version 3</u>", instead of the Version 2.1 moniker used during the initial proposal.</li> </ul>

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3	<ul style="list-style-type: none"> <li>Two commenters suggested adjustments to make the program's quality assurance protocols more stringent.</li> </ul>	<ul style="list-style-type: none"> <li>The primary purpose of this new version is to respond to the Energy Conservation Standards for Manufactured Housing so that ENERGY STAR certified manufactured homes maintain a performance advantage compared to the baseline code. EPA is retaining the existing quality assurance protocols for the program, but will continue to monitor implementation and consider updates to the quality assurance protocols as appropriate.</li> </ul>
<b>Requirements for All Certified Manufactured Homes (Exhibit 1)</b>		
4	<ul style="list-style-type: none"> <li>Several commenters requested changes to specific prescriptive R-values or U-factors based on product availability or limitations with certain product types. This includes requests to:                             <ul style="list-style-type: none"> <li>Adjust the Climate Zone 3 window U-factor from 0.28 to 0.30.</li> <li>Raise the Climate Zone 1 SHGC requirement.</li> <li>Lower the wall R-value in Climate Zones 1 and 2.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>EPA recognizes the benefit of standardization and the relative difficulty of producing a specialized window for ENERGY STAR homes in a single climate zone. For this reason, EPA is revising Exhibit 1's Climate Zone 3 window U-factor requirement from U-0.28 to U-0.30 to align with the requirements in Climate Zones 1 and 2.</li> <li>Tier 2 of the Energy Conservation Standards for Manufactured Housing require an SHGC of 0.25 in Climate Zone 2. Therefore, EPA anticipates that products meeting this SHGC will be available in the market and, for that reason, EPA is retaining the Exhibit 1 requirement that glazing in both Climate Zones 1 and 2 achieve an SHGC of 0.25 or better.</li> <li>EPA believes the option to calculate the overall coefficient of heat transmission (<math>U_o</math>) will provide partners sufficient flexibility to work around other product limitations. For this reason, EPA is retaining the remaining insulation and glazing levels in Exhibit 1 as proposed.</li> </ul>
5	<ul style="list-style-type: none"> <li>One commenter requested tradeoff credit for exceeding the prescriptive levels, for example by using continuous wall or roof insulation, radiant barriers, or sealed and insulated crawlspaces.</li> </ul>	<ul style="list-style-type: none"> <li>The <math>U_o</math> path is based on the Energy Conservation Standards for Manufactured Housing (outlined in 10 CFR 460.102 (e)), which does give credit to insulation strategies such as continuous insulation. However, the methodology does not include provisions for crediting radiant barriers or sealed crawlspaces. EPA is retaining its original proposal to align with the code <math>U_o</math> calculation methodology, but will continue to monitor market development and consider adding radiant barriers or sealed crawlspace strategies as optional measures in Exhibit 2 in the future.</li> </ul>
6	<ul style="list-style-type: none"> <li>Three commenters requested a more detailed definition of the requirement for ducts to be fully buried in attic insulation.</li> </ul>	<ul style="list-style-type: none"> <li>Research has shown that the practice of burying ducts within insulation has the potential to result in condensation. While guidance on buried ducts was introduced in the 2018 and 2021 International Energy Conservation Code (IECC), the practice is optional and the more popular strategy is to install non-buried ducts insulated to R-8. A particular challenge with buried ducts in warmer climates (approximately Climate Zones 1 and 2 based on the manufactured housing code map) is the IECC's requirement to install R-13 duct insulation, which is not widely available at this time. For these reasons, EPA is removing the mandatory requirement that ducts in the attic be "fully buried," and replacing it with a requirement that all ducts in unconditioned attics have a minimum of R-8 duct insulation, regardless of whether they are buried within ceiling insulation.</li> <li>For partners who choose to bury ducts within ceiling insulation, EPA is adding a footnote recommending but not requiring that such ducts be installed in accordance with the applicable requirements from the 2021 IECC.</li> </ul>

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7	<ul style="list-style-type: none"> <li>• One commenter expressed concerns about low-flow water fixtures being a mandatory measure, noting that homebuyers commonly select an upgrade to higher-flow showerheads.</li> </ul>	<ul style="list-style-type: none"> <li>• EPA is changing low-flow bathroom faucets and showerheads to an optional measure in Exhibit 2 that partners can select from the points table when circumstances allow. With this change, low-flow water fixtures will no longer be mandatory for all homes.</li> </ul>
<b><i>Additional Requirements for Multi-Section Certified Manufactured Homes (Exhibit 2)</i></b>		
8	<ul style="list-style-type: none"> <li>• Commenters suggested adjustments to the following measure specifications:                             <ul style="list-style-type: none"> <li>○ Changing the gas/propane furnace efficiency from 95 to 96 AFUE, noting the latter is more commonly available.</li> <li>○ Changing the heat pump water heater efficiency requirement from 3.3 UEF to 2.2 UEF.</li> <li>○ Requiring a more efficient, cold-climate designated, and/or ENERGY STAR certified heat pump in Climate Zone 3</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• EPA is adding an option for a 96 AFUE furnace to the Exhibit 2 points table, while also retaining the option for a 95 AFUE furnace as originally proposed.</li> <li>• EPA is adding an option for a 2.2 UEF heat pump water heater to the Exhibit 2 points table, while also retaining the option for a 3.3 UEF heat pump water heater as originally proposed.</li> <li>• EPA is retaining the heat pump measure's specifications as proposed, which are aligned with the forthcoming federal appliance standards for heat pumps. Because electrically-heated manufactured homes are typically shipped with only electric resistance heating coils, EPA believes the greatest immediate opportunity is encouraging manufacturers to coordinate heat pump installation at the time of sale, even if those heat pumps are at the federal minimum levels. EPA will continue to monitor market development and consider adding higher efficiency heat pump options or a cold climate requirement in the future.</li> </ul>
9	<ul style="list-style-type: none"> <li>• Multiple commenters responded to EPA's request for feedback on alternative measures:                             <ul style="list-style-type: none"> <li>○ Most commenters supported adding LED lighting, high-efficiency appliances, and a high-efficiency exhaust fan as options, but not necessarily as mandatory measures. Commenters also expressed challenges with these measures in certain scenarios.</li> <li>○ One commenter recommended adding measures for a more stringent envelope package.</li> <li>○ One commenter suggested adding a measure for a heat-pump water heater with venting to unconditioned spaces or the outdoors.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• EPA is adding the following measures to the Exhibit 2 points table, as additional options to help reach the required 10-point total:                             <ul style="list-style-type: none"> <li>○ Coefficient of heat transmission (<math>U_o</math>) <math>\leq</math> 0.049.</li> <li>○ LED lighting installed in all permanently installed fixtures.</li> <li>○ ENERGY STAR certified refrigerator and dishwasher.</li> <li>○ ENERGY STAR certified clothes washer.</li> </ul> </li> <li>• EPA's research indicates inconsistent manufacturer recommendations on venting heat pump water heaters to unconditioned spaces, with some manufacturers recommending against the practice in general. While EPA is not banning the practice, it is declining to incentivize any particular venting strategy until consistent guidance is available. Therefore, the heat pump efficiency measure will remain silent in regard to the venting setup, as originally proposed.</li> <li>• EPA evaluated potential savings from a high-efficiency bathroom exhaust fan (4.7 CFM/W) serving as the whole-home ventilation system and found minimal savings compared to the baseline ventilation system, which uses a mid-efficiency exhaust fan (2.8 CFM/W). Therefore, EPA is not including this measure in Exhibit 2.</li> </ul>

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10	<ul style="list-style-type: none"> <li>One commenter noted that the furnace packages delivered less savings relative to the other packages, and suggested requiring additional measures. The commenter also suggested eliminating the furnace package in Climate Zone 1.</li> </ul>	<ul style="list-style-type: none"> <li>In the original proposal, all packages met EPA’s minimum target of 10% energy cost savings. The updated Exhibit 2 points table format retains the 10% minimum energy cost savings threshold while providing additional flexibility. While measures may be installed in any Climate Zone, the point credit assigned to heating and cooling equipment measures is specific to each Climate Zone. For example, furnace measures earn fewer points in the warm Climate Zone 1 compared to the colder Climate Zones 2 or 3.</li> </ul>
11	<ul style="list-style-type: none"> <li>One commenter noted that DOE has proposed a rulemaking to increase the federal minimum efficiency standards for mobile-home gas furnaces that could reduce future savings from those measures.</li> </ul>	<ul style="list-style-type: none"> <li>The proposed DOE rulemaking would enforce updated mobile-home furnace efficiency standards 5 years after the publication of a final rule. EPA will monitor the rulemaking and consider whether program adjustments are necessary as it gets closer to the enforcement date.</li> </ul>
12	<ul style="list-style-type: none"> <li>One commenter expressed concerns regarding heat pump water heater availability in the sector due to a misalignment of the testing standard references in the Manufactured Housing Construction and Safety Standards (“HUD Code”).</li> </ul>	<ul style="list-style-type: none"> <li>EPA has confirmed with the U.S. Department of Housing and Urban Development that a proposed update to the HUD Code includes the suggested reference to the most recent heat pump water heater safety standard, UL 60335–2–34.</li> </ul>

### ***Implementation Timeline***

13	<ul style="list-style-type: none"> <li>Two commenters supported an implementation date as early as January 1, 2023, but no later than the draft’s proposal of May 31, 2023.</li> <li>Two commenters supported an implementation date of May 31, 2023, as proposed.</li> <li>Two commenters proposed explicitly tying the implementation date to the enforcement of the new Energy Conservation Standards for Manufactured Housing.</li> <li>Three commenters requested a later implementation date to allow additional time to prepare, with one specifically suggesting January 1, 2024.</li> </ul>	<ul style="list-style-type: none"> <li>When the new Energy Conservation Standards for Manufactured Housing become effective, these code requirements will exceed the performance required by the current ENERGY STAR Manufactured New Homes program, Version 2, especially for multi-section units. To deliver on ENERGY STAR’s brand promise to save homebuyers on energy costs compared to code-built homes, it is necessary to promptly implement Version 3 and maintain a performance advantage compared to the baseline code. For this reason, EPA is making the ENERGY STAR Manufactured New Homes Version 3 Program Requirements effective as of January 1, 2023, with a transition period of 150 days. Manufactured homes produced on or after January 1, 2023 are permitted to be certified using either Version 2 or Version 3 of the program requirements. Manufactured homes produced on or after May 31, 2023 must be certified using Version 3 of the program requirements.</li> <li>Should the new code enforcement be delayed, EPA will evaluate at that time whether an extension to the Version 3 transition period is warranted.</li> </ul>
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