

Summary of Comments, EPA Responses, and Resulting Policy Changes on Draft 1 ENERGY STAR NextGen Homes and Apartments, Version 1.0

On October 18, 2021, EPA's ENERGY STAR Residential New Construction program released a Program Roadmap and Framework Document for stakeholder feedback. The document consisted of three proposed initiatives to advance and expand the ENERGY STAR Residential New Construction programs to keep pace with advancing building energy codes, foster a clean energy economy, and further reduce greenhouse gas emissions associated with the residential sector. The comment period concluded on November 15, and EPA received comments from over 25 organizations representing a spectrum of interests. Overall, stakeholder feedback on all of the proposals was extremely positive.

EPA has posted a compilation on its website of all comments received during the stakeholder feedback period. This document summarizes the major themes of stakeholder comments and EPA's responses regarding Proposal 3, *Introducing a new certification to provide additional recognition for new homes and apartments that include efficient electric technologies and EV charging capability*. 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 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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ID	Comment Summary	EPA's Response
Program Goals and Market Positioning		
1	<ul style="list-style-type: none"> Stakeholders were generally supportive of EPA's proposed optional certification, although some were unclear regarding the specific goals of the program, and others expressed concern about the potential for market confusion with DOE's Zero Energy Ready Homes (ZERH) Program. Stakeholders also encouraged EPA to choose a name for the program that accurately portrayed its goals. 	<ul style="list-style-type: none"> As stated in the ENERGY STAR Residential New Construction Program Roadmap, EPA's goal for the new program is to accelerate activity in the residential construction sector to expand beyond increasing the energy efficiency of homes and apartments to making more significant strides in the decarbonization of end uses. This new whole-house certification program, above and beyond the current ENERGY STAR New Construction programs, is intended to inspire the residential new construction industry and demonstrate that it is possible to build the homes and apartments we need for tomorrow, today. Specifically, EPA envisions the new program as an opportunity to: <ul style="list-style-type: none"> ➤ Provide recognition for decarbonized homes and apartments and the builders and developers that construct them; ➤ Help create a national platform for training, tools, & support for decarbonization in homes and apartments; ➤ Provide state & local policymakers with a national reference for emerging policies; ➤ Provide a basis for incentives as utilities begin to develop more sophisticated residential demand response programs; and ➤ Offer a new opportunity for builders to demonstrate progress toward their environmental, social, and governance (ESG) goals. The new program will be called "ENERGY STAR NextGen Homes and Apartments," which EPA believes captures the forward-looking and technology-focused nature of the certification. With the program requirements now finalized, EPA will begin to develop new program-specific educational/training resources and marketing materials in preparation for a program launch in 2023. While the goal of the new ENERGY STAR NextGen program is specifically focused on accelerating the use of technologies that promote operational decarbonization, DOE's Zero Energy Ready Homes (ZERH) program has historically focused on achieving levels of energy efficiency even higher than ENERGY STAR requirements and promoting additional healthy, durable features based on building science best practices. EPA is aware that DOE is developing Version 2 of the ZERH program, which is expected to require homes to be at least 20% more efficient than those built to the 2021 International Energy Conservation Code (IECC), compared to 10% for ENERGY STAR v3.2 and ENERGY STAR NextGen. After achieving ENERGY STAR v3.2 certification, builders may choose to pursue DOE's Zero Energy Ready certification, ENERGY STAR NextGen, or both. Neither program is proposed to be a prerequisite for the other, and both require certification to ENERGY STAR v3.2. EPA and DOE are

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		<p>committed to continuing to work together to ensure that the Federal certification programs evolve towards a shared vision of zero-emission homes while providing value to both builders and homebuyers in the market.</p>
Minimum Energy Efficiency Requirements		
2	<ul style="list-style-type: none"> • Some stakeholders recommended that EPA not require ENERGY STAR v3.2/v1.2 as the energy efficiency prerequisite for the new program, noting that this requirement might impede early builder participation, especially as few states have adopted the 2021 IECC. Some commenters specifically recommended that EPA allow v3.1/v1.1 homes and apartments to be eligible for the new certification. At the same time, other stakeholders encouraged EPA to require energy efficiency levels above what was originally proposed. 	<ul style="list-style-type: none"> • EPA appreciates the breadth of stakeholder feedback on this topic. While EPA recognizes the proposed energy-efficiency prerequisite may limit program adoption for some builders in the short term, we believe that as a forward-looking program, it is important for homes and apartments that earn the new NextGen certification to meet ENERGY STAR's most rigorous program requirements. As a result, EPA is maintaining the minimum energy efficiency requirements from the draft proposal, which are National v3.2 and National MFNC v1.2 (and, in California, CA v3.3 and CA MFNC v1.3).
Equipment Requirements		
3	<ul style="list-style-type: none"> • Some stakeholders recommended that EPA allow gas heat pumps and/or tankless gas water heaters to be installed in homes and apartments that earn the new certification, while other stakeholders recommended that the program expressly prohibit fossil fuel equipment entirely (e.g., fireplaces, clothes dryers). 	<ul style="list-style-type: none"> • The new certification is intended to help accelerate decarbonization in the residential new construction sector by expanding beyond energy efficiency. Space and water heating are primary areas where decarbonization is needed in the residential sector to support building emissions reduction targets, and EPA notes that ENERGY STAR certified heat pumps and heat pump hot water heaters deliver significant efficiency benefits. Therefore, EPA believes that the requirement to include ENERGY STAR certified heat pumps for space and water heating is essential to meeting the program's goals. EPA's current assessment is that there are no other technologies available on the market today that deliver comparable performance; however, we will continue to monitor emerging technologies for possible future inclusion in the program. • EPA's goal for the program is to maximize decarbonization of the residential new construction sector while minimizing complexity for builders and developers. As a result, EPA is not specifically excluding all gas-fired features in homes and multifamily buildings that earn the new certification at this time but rather requiring electrification of the largest end-uses coupled with key enabling technologies. Specifically, the program will allow for the use of natural gas (or other fuel) for space heating backup, indoor fireplaces, outdoor uses, pool heaters, backup generators, preheating outdoor ventilation supply air in large multifamily buildings, non-dwelling unit appliances, and commercial kitchens in mixed-use buildings. In the future, EPA may consider revising the program requirements to begin to phase out these allowances.

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4	<ul style="list-style-type: none"> There was broad support for the exclusion of specific equipment requirements for common spaces of multifamily buildings, although some stakeholders expressed concern regarding the potential installation of gas-fired equipment in common spaces. 	<ul style="list-style-type: none"> Given the variety of multifamily common space types and the space and water heating technologies that serve them, EPA is not defining requirements for common spaces at this time. EPA may incorporate additional requirements for common spaces in future updates to the program requirements.
<i>Cold Climate Heat Pump Requirement</i>		
5	<ul style="list-style-type: none"> Most stakeholders supported EPA's proposal to require heat pumps that meet the 'Cold Climate' designation in Climate Zones 5-8; however, one stakeholder encouraged EPA to consider requiring them in Climate Zone 4 as well. 	<ul style="list-style-type: none"> EPA appreciates commenters' support for this key technology. Because many locations in Climate Zone 4 experience relatively few hours below 17°F, EPA believes that a heat pump that meets the 'Cold Climate' designation may not always be warranted in this Climate Zone. As a result, EPA has maintained the requirement only in Climate Zones 5-8 in the final program requirements but notes that partners are free to go above and beyond the minimum requirements of the program. In addition, EPA may revisit this in future updates to the program requirements.
<i>HVAC Grading Requirement</i>		
6	<ul style="list-style-type: none"> Several stakeholders expressed concern with EPA's proposed requirement to employ HVAC grading, which is currently optional in the base ENERGY STAR program, citing the lack of experience and learning curve required of the energy rating community, and expressed support for making this element optional until there is a broader familiarity in the market. Other stakeholders supported mandatory HVAC grading in the new program. 	<ul style="list-style-type: none"> EPA appreciates stakeholders' varied perspectives on this topic. EPA believes that ensuring the quality installation of HVAC equipment in homes and apartments that earn the new certification, as specified in ANSI / RESNET / ACCA / ICC 310, is an important feature that will help to ensure high levels of homeowner satisfaction. These protocols have been available since 2020 and are becoming increasingly used by leaders in the industry. EPA is committed to providing both builders and raters with the training and education needed for them to effectively deliver the program's HVAC Grading requirement. As a result, EPA is maintaining the requirement to use HVAC Grading protocols in the final program requirements.
<i>Sound Rating Requirement and Minimum Tank Sizes for Heat Pump Water Heaters</i>		
7	<ul style="list-style-type: none"> Stakeholders were generally supportive of EPA's proposed sound rating and minimum tank sizing requirements for heat pump water heaters. One stakeholder encouraged EPA to specify a sound rating testing method and consider changing the sound rating to 65 dBA. 	<ul style="list-style-type: none"> EPA notes that a majority of ENERGY STAR certified heat pump water heaters meet the 55 dBA requirement and believes that this is an appropriate sound rating threshold for the new program. Further, EPA is not aware of an industry-standard water heater sound rating testing method and thus is relying on manufacturer-provided sound ratings in the final program requirements. EPA may revisit this issue if an industry-standard testing method is developed.
8	<ul style="list-style-type: none"> Some stakeholders suggested that tank sizing should be a recommendation rather than a requirement of the program. Several stakeholders recommended that EPA adjust the proposed tank sizes to better align with standard sizes offered by manufacturers. 	<ul style="list-style-type: none"> EPA believes it is important to require specific minimum tank sizes in the new program requirements rather than provide only recommended sizing. Properly sizing heat pump water heaters helps to ensure sufficient hot water to meet occupant demand without requiring excessive use of the electric resistance backup coil.

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		<p>Proposed Change: EPA agrees that aligning the program's tank size requirements with sizes commonly offered by manufacturers is appropriate and has adjusted the final program requirements accordingly:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">Bedrooms:</td> <td style="padding-right: 10px;">1</td> <td style="padding-right: 10px;">2</td> <td style="padding-right: 10px;">3</td> <td>4+</td> </tr> <tr> <td>Minimum Tank Capacity:</td> <td>36</td> <td>45</td> <td>59</td> <td>72</td> </tr> </table>	Bedrooms:	1	2	3	4+	Minimum Tank Capacity:	36	45	59	72
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Minimum Tank Capacity:	36	45	59	72								
<i>Allowances for Heat Pump Water Heaters in Multifamily New Construction</i>												
9	<ul style="list-style-type: none"> Several stakeholders expressed concern about the current availability of heat pump water heaters that could be successfully installed in multifamily units and townhouses and recommended that EPA allow other types of water heaters (such as electric resistance or tankless gas models) until more products become available. Other stakeholders encouraged EPA to maintain the requirement for ENERGY STAR certified heat pump water heaters. 	<ul style="list-style-type: none"> EPA appreciates stakeholders' varied perspectives on this topic. The ENERGY STAR NextGen program is intended to be forward-looking and market-enabling, but EPA believes that this technology can be successfully incorporated into many projects through careful planning and implementation (e.g., using ducting kits for exhaust and intake air from adjacent spaces). By increasing the market demand for these technologies, EPA hopes that this program will help them to reach scale. EPA is also monitoring the development of split systems and central heat pumps, which should provide even more options for compliance in the future. 										
<i>Requiring Connected Functionality for Heat Pump Space and Water Heaters</i>												
10	<ul style="list-style-type: none"> Stakeholders were generally supportive of the connected requirements for heat pump space and water heaters, although there was some concern expressed that there are not currently enough products that meet EPA's connected criteria, especially with current supply chain constraints. 	<ul style="list-style-type: none"> EPA appreciates the perspectives of stakeholders on this topic. As previously mentioned, the ENERGY STAR NextGen program is intended to be forward-looking and market-enabling. Demonstrating to product manufacturers that there is growing market demand for equipment that meets EPA's connected requirements is part of the value proposition of the program. 										
11	<ul style="list-style-type: none"> Some stakeholders expressed concern about the value of requiring connected equipment in areas where high-speed internet is not available. 	<ul style="list-style-type: none"> EPA understands that homes and apartments in all areas of the country may not have access to high-speed internet, but this is not necessarily a prerequisite for making use of the connected features, which can utilize a variety of communication protocols (e.g., cellular, FM radio). Demand-responsive heat pumps are a core part of this specification because they will enable additional emission savings that would otherwise be difficult and costly to realize. EPA believes that it is important for the new program to help to facilitate these activities and has maintained the connected elements in the program requirements. 										
12	<ul style="list-style-type: none"> One stakeholder expressed concern about the logic algorithm used in smart thermostats. 	<ul style="list-style-type: none"> Smart thermostats that have earned the ENERGY STAR undergo an independent certification process, as well as ongoing reporting, to verify that they generate energy savings. EPA is confident that allowing such products to be used to meet the connected criteria will enhance the savings and value delivered by the program. 										

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Induction Cooktops		
13	<ul style="list-style-type: none"> Several stakeholders raised concerns about cost premiums associated with the proposed induction cooktop requirement (for market-rate, as well as affordable housing projects), noting that the energy savings of induction cooktops compared to conventional electric models are minimal, and recommended that EPA allow conventional electric cooktops for all projects until the cost of induction units comes down. Several stakeholders noted that cooking appliances fueled by natural gas emit pollutants that adversely impact indoor air quality and expressed support for excluding this equipment; however, one commenter encouraged EPA to allow gas cooktops if paired with an automatic smart exhaust system. 	<ul style="list-style-type: none"> As noted earlier, the new program is intended to be forward-looking and technology-focused, and the adoption of electric cooking appliances has been identified as a key component of the overall decarbonization of residential new construction. Induction cooktops deliver efficiency benefits and consumer amenities that help accomplish this goal, yet many home buyers are unfamiliar with this technology. EPA believes that incorporating this technology into homes and apartments that earn the new certification can help to demonstrate to product manufacturers that there is increasing market demand for these high-performance products, which will, in turn, help drive down prices. As a result, EPA has maintained the requirement to include induction cooking in the final program specification (except for affordable housing projects that receive government funding). Gas cooktops with smart exhaust systems do not provide the energy efficiency and consumer amenity benefits of induction cooktops that were noted in the Framework document. Therefore, EPA will maintain the requirement for induction cooktops in market-rate projects.
14	<ul style="list-style-type: none"> There was broad support for not requiring induction cooktops for projects that received government funding (i.e., affordable housing), although some stakeholders encouraged EPA to avoid creating different standards for ENERGY STAR certified market-rate and subsidized affordable housing. 	<ul style="list-style-type: none"> EPA appreciates stakeholders' sentiments that a differentiated set of requirements for market-rate and affordable housing projects should generally be avoided. However, for induction cooking, we believe that maintaining an allowance for conventional electric cooking in projects that receive government funding is appropriate. EPA expects to revisit this allowance as the price premium for induction cooking is reduced.
EV Charging Infrastructure Requirements		
15	<ul style="list-style-type: none"> Stakeholders were overall supportive of EPA's proposed EV charging infrastructure requirements. Some stakeholders encouraged EPA to expand the requirement of including EV chargers to all homes, while others expressed concern that the market is not yet ready for any requirement for EV charging infrastructure, especially for low/moderate-income households. Regarding EPA's proposed cap of 5 EV chargers for shared parking, some commenters agreed that 5 was a reasonable limit, while others encouraged EPA to remove the cap. 	<ul style="list-style-type: none"> EPA appreciates the breadth and depth of perspectives on this topic. EPA believes that the specification defines reasonable and achievable minimum requirements and recognizes that local entities may establish more stringent requirements where appropriate for their market. Regarding the types of EV chargers required, EPA believes that it is reasonable for buildings/communities with shared parking to provide a minimum number of fast-charging level 2 chargers to meet occupant needs and that slower level 1 chargers alone are not sufficient for shared parking scenarios. As a result, EPA has not made any changes to the EV Capable requirements in the final program requirements.

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	<ul style="list-style-type: none"> One stakeholder recommended adding a compliance pathway for projects that install level 1 chargers. Most stakeholders were supportive of EPA's proposal not to exempt affordable housing from the EV Charging Infrastructure requirements. 	
16	<ul style="list-style-type: none"> Stakeholders commented that there were not likely to be many new single-family homes impacted by the proposed exemption from these requirements where the addition of an EV charging circuit would require an upgrade from 200-amp to 400-amp service. 	<ul style="list-style-type: none"> EPA thanks stakeholders for sharing their experiences on this topic. EPA believes that the exemption is appropriate for the initial program requirements but may revisit the policy as more is learned about the applicability of and possible alternatives to this exemption.
Further Analysis		
17	<ul style="list-style-type: none"> Some stakeholders recommended that EPA provide a cost-effectiveness analysis for the proposed new program. Additional stakeholders also encouraged EPA to provide a detailed analysis of the emissions impact of heat pumps based on location-specific grid mixes. 	<ul style="list-style-type: none"> Unlike the base ENERGY STAR program, where EPA does extensive analysis of cost-effectiveness when developing new program versions, the ENERGY STAR NextGen program is not designed to meet a particular cost-effectiveness threshold. While EPA has completed an analysis to ensure that the energy efficiency prerequisite (i.e., v3.2/v1.2) is cost-effective, EPA recognizes that the market for the advanced electric technologies that are included in the ENERGY STAR NextGen program is rapidly evolving and may not be cost-effective at this time for every project. EPA expects that prices for the features included in the ENERGY STAR NextGen program will continue to decrease as market demand increases and these technologies come to scale. EPA is currently conducting emissions modeling on the ENERGY STAR NextGen program requirements and will share the results with partners once completed.
Eligibility for Retrofit Projects		
18	<ul style="list-style-type: none"> Some stakeholders were unclear whether substantial rehabilitations and deep energy retrofit projects would be eligible for certification through the new program. 	<ul style="list-style-type: none"> While EPA's requirements for the ENERGY STAR NextGen program are primarily designed for new construction, renovation projects are not precluded from being certified. However, EPA recognizes that certain requirements within the base ENERGY STAR certification are challenging for renovation projects to meet and, therefore, may preclude their participation. EPA looks forward to working with stakeholders to remove any unnecessary technical barriers to certification.
Additional Requirements		
19	<ul style="list-style-type: none"> Some stakeholders encouraged EPA to include requirements for rooftop solar installation and address the embodied carbon of materials in the new program requirements. 	<ul style="list-style-type: none"> EPA carefully considered including a requirement for rooftop solar in the new program. However, several barriers were identified, among them the lack of a standardized framework to track and verify residential renewable energy credits, which limits the ability of the program to recognize their environmental benefit at this time. EPA may revisit this issue if a market-ready tracking and verification solution emerges.

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| | | <ul style="list-style-type: none">• While operational carbon is still the primary driver for the average new home's total carbon emissions today, as the emissions intensity of the electric grid is reduced, embodied carbon will become a larger contributor. While reducing embodied carbon is beyond the scope of the initial program requirements, EPA is tracking the development of tools and standards that calculate the embodied carbon of building materials and may decide to incorporate requirements that address this goal in future versions of the program.• EPA anticipates that the requirements for the new certification program will be modified more frequently than those of the base ENERGY STAR program. As new tools and metrics are released, and new technologies come to market that are viable for national use, EPA will look for opportunities to incorporate them into future versions of the new certification program requirements. This includes methodologies that quantify hourly carbon emissions to reward the load-shifting benefits of technologies, such as RESNET's CO2 Rating Index. |
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