

## **ENERGY STAR Residential New Construction Roadmap Comments**

This is a compilation of all comments received by EPA during the second ENERGY STAR Residential New Construction Roadmap comment period.

*The following comments have been compiled from the ENERGY STAR SFNH Version 3.2 and MFNC Version 1.2 – Draft 2 Comment Forms submitted by respondents. The Environmental Protection Agency is not responsible for any typographical errors or omissions.*



# ENERGY STAR Residential New Construction Roadmap Comments

## Section 1: Feedback Received During the Comment Period

American Chemistry Council's Plastics Building and Construction Team.....	3
American Council for an Energy-Efficient Economy (ACEEE) .....	4
Alliance to Save Energy .....	6
Building Efficiency Resources (BER) .....	8
Energy Efficient Codes Coalition (EECC) .....	9
Greengurus LLC .....	10
Huntsman Building .....	11
Home Ventilating Institute (HVI) .....	12
Leading Builders of America (LBA) .....	14
Leading Raters of America (LRA) .....	15
National Association of Home Builders (NAHB) .....	16
North American Insulation Manufacturers Association (NAIMA) .....	17
National Association of State Energy Officials (NASEO) .....	18
New Buildings Institute (NBI) .....	19
Natural Resources Defense Council (NRDC) .....	21
Responsible Energy Codes Alliance .....	23
U.S. Green Building Council (USGBC) .....	24



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** American Chemistry Council's Plastics Building and Construction Team

**Respondent Last Name:** Schmidt

**Respondent First Name:** Amy

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

The American Chemistry Council's Plastics Building and Construction Team applauds EPA for creating a draft that prioritizes thermal envelope efficiency and therefore maximizes the energy saving potential of Energy Star Homes built to Version 3.2. The inclusion of thermal envelope requirements of the 2021 IECC will ensure that every Energy Star Home building envelope will be at least as efficient that the minimum energy code. The 2021 IECC has been determined to be cost effective by the Department of Energy (DOE). Energy Savings Analysis: 2021 IECC for Residential Buildings ([energycodes.gov](http://energycodes.gov)) Robust building envelopes save energy and mitigate greenhouse gas emissions. DOE estimates 56% of energy used in a home goes to heating and cooling. Energy Data Facts | Residential Program Guide Therefore, Insulating and air sealing is essential to the energy performance, comfort, and resilience of our nation's housing stock. Strong building envelopes are already common place for many high performance builders and they will provide the performance that Energy Star Home owners should not only wish for but expect.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** American Council for an Energy-Efficient Economy

**Respondent Last Name:** Ungar

**Respondent First Name:** Lowell

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

Thank you for the opportunity to comment on Draft 2. Energy Star is very important to achieving decarbonization of buildings, and the thermal backstop is an essential component. A [review](#) of the RESNET National Registry by NAIMA suggests that builders of Energy Star homes rarely meet the IECC prescriptive envelope levels, preferring to achieve the ERI requirement with equipment upgrades. But we believe buyers of Energy Star homes expect a well-built and well-sealed home, not just one with efficient appliances. Efficient equipment typically does not last as long as insulation and windows, it does not provide the same comfort and health benefits, and electric equipment without an efficient envelope can lead to high winter peak electricity demand that is hard to meet with zero-carbon sources.

So we support using the 2021 IECC/Standard 90.1-2019 prescriptive requirements as the thermal backstop. Analysis suggests these levels are life-cycle cost-effective. We are not aware of problems meeting the prescriptive tables, but if there are, the tradeoffs allowed in an overall UA calculation should both help ensure implementability and reduce costs.

If EPA sees a need for a transition period with further backstop flexibility, we would suggest limiting the scope to homes with an identifiable issue or for which this update would be a major change. Further analysis by Charlie Haack suggests that for the Department of Energy’s prototype single-family homes the total UA under the 2021 IECC is virtually unchanged from the 2018 IECC in five climate zones, and improved less than 5% in a sixth, leaving only climate zones 4 and 5 with large jumps:

Total UA for 2018 IECC compared to 2021 IECC

CZ	2018 IECC
1	100%
2	101%
3	104%
4	115%
5+4C	113%
6	101%
7+8	101%

The 2012 and 2015 IECC versions are very similar as well—for six of the climate zones 5% above the 2021 IECC UA value is higher than, or within 1% of, the 2012 IECC UA values, three code cycles back.

2) [Do you have additional general feedback on the changes proposed in Draft 2?](#)

Mandatory requirements: Small changes to the requirements would help ensure buyers get homes with the quality and environmental attributes they expect from Energy Star. If either of these requires a further opportunity for comment, it could be added in a Draft 3, if there is one, or in the next revision.



# ENERGY STAR Residential New Construction Roadmap Comments

- Cold climate heat pumps: We recommend that for Energy Star homes in cold climates that use heat pumps, the heat pumps should be required to be cold climate certified under the Energy Star product specification (version 6.1 as of January 2023). The proposed Energy Star Homes draft differentiates between warmer and colder climates in the reference efficiency levels for gas heating equipment though not for heat pumps. In the proposed specification, climate zone 4B and warmer are “warm” and climate zone 4C and colder are “cold.” EPA now has a product specification for Energy Star Cold Climate Heat Pumps. Cold climate certification will help to make sure that adequate heat is provided by the heat pump when temperatures get cold. Heat pumps that are not cold climate certified will often not provide adequate heat when temperatures get below about 20 degrees F, requiring use of electric resistance or other backup heat, raising heating expenses and contributing to growing winter peak electricity demand. By requiring heat pumps in cold climates to be cold climate certified, these problems can be avoided or at least reduced.
- Readiness for future upgrades: Homes built today should have the design and wiring needed to be ready for improvements we know are likely (if builders choose not to install them today). This includes efficient heat pumps and heat pump water heaters, electric vehicle charging, and solar power. The amendments approved by voters for the 2021 IECC that were subsequently declared to be out of scope for that code, also reflected in the New Buildings Institute’s Building Decarbonization Code, are a model for elements that should be part of new Energy Star homes.

Reference design efficiency: Recent advances appear to provide a number of cost-effective opportunities for improvements to the Reference Design Homes that could benefit residents and the climate. If it is not timely to incorporate these changes, EPA should consider incorporating them in the next revision. Such improvements include:

- Energy Star heating equipment: The proposed reference home meets Energy Star furnace criteria in the North (95% AFUE) but not in the South (80% AFUE for climate zones 1-3 vs 90% AFUE in the furnace criteria and 87% for oil boilers). Energy Star’s own analysis suggests the initial cost for a 90% vs 80% furnace is only \$235, and DOE estimates the installed cost of a 90% condensing furnace in new construction is about \$400 less than that of an 80% furnace (in fact their installed cost in a new home for a 98% AFUE furnace is still lower than for an 80% furnace). We recommend the reference design for fuel-heated homes use at least an Energy Star furnace.
- Energy Star windows: The new Energy Star Windows version 7.0 should be finalized this spring or summer and take effect next year. The second draft offers significant savings compared to version 6, which appears to be the basis for the reference design windows, and we expect version 7 will also achieve high market share, which should further reduce costs. We recommend the reference design incorporate version 7 windows when that version is in use.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Alliance to Save Energy

**Respondent Last Name:** Leos

**Respondent First Name:** Olivia

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

The Alliance thanks the EPA for its rigorous focus on SFNH 3.2 and MFNC 1.2. Energy efficiency in new home construction is important and essential to overall carbon reduction goals, energy savings, and consumer energy affordability, and if not solved now, will seal in decades of energy waste and higher energy costs. The residential built environment equals 20% of all U.S. carbon emissions and according to the U.S Energy Information Administration (EIA) consumers paid \$1,409.52 in energy costs annually in 2021. By forwarding strong efficiency standards through SFNH 3.2 and MFNC 1.2, consumers will be better aligned to save on energy costs, up to 10% of their energy bill, and create a pathway for energy savings and carbon reduction.

In October 2021, EPA released its ENERGY STAR Residential New Construction Program Roadmap, which sought to expand the ENERGY STAR Residential New Construction programs through three important proposals, (1) transitioning all states where ENERGY STAR SFNH Version 3.0 is still in effect to Version 3.1 and MFNC Version 1.0 to Version 1.1; (2) introducing new versions of SFNH National Version 3.2 and MFNC National Version 1.2 (promising to be at least 10% more stringent than the 2021 IECC); and (3) introducing a new companion certification label to the current ENERGY STAR program for residential new construction.

In response, some preferred a weakened mandatory building envelope requirement for the SFNH National Version 3.2 and MFNC National Version 1.2, stating that setting the 2021 IECC as the thermal backstop would be too aggressive and expensive. These advocates instead sought a thermal backstop set to the 2015 or 2018 IECC. The Alliance and others responded, concerned about the implications of a less effective thermal backstop, and provided comments in support of the proposed 2021 IECC backstop as the minimum requirement, voicing that if dropped, Energy Star would forfeit a substantial lifetime of building envelope efficiency improvements, ultimately sealing in decades of energy waste and higher energy costs.

On March 21, 2022, the EPA proposed a new version of SFNH 3.2 and MFNC 1.2, containing a revision to the proposed thermal backstop. The new proposal added a 5-year transition period toward the 2021 IECC adoption. Energy Star commented that this period would allow homes and apartments permitted before January 1, 2025, to be certified with a total building thermal envelope UA of 105% of the total UA outlined in the 2021 IECC. This addition would give the industry and market a reasonable amount of time to develop solutions to achieve the full 2021 IECC enclosure levels.

By setting the 2021 IECC as the minimum thermal requirement, after the 5-year transition period, average annual cost savings will increase by a comparative \$191/dwelling unit when compared to the 2018 IECC requirements – which accumulates to a life cycle cost savings of \$2,320/dwelling unit (National Cost Effectiveness of the Residential Provisions of the 2021 IECC, Pacific Northwest National Lab - June 2021). Moreover, the 2021 IECC could save states a total estimated \$74.61 billion in energy cost savings and 424.20 MMT of avoided CO2 emissions in



## ENERGY STAR Residential New Construction Roadmap Comments

residential buildings (cumulative 2010 through 2040), or \$3.24 billion in annual energy cost savings and 18.50 MMT in annual avoided CO<sub>2</sub> emissions (annually by 2030) (Analysis Regarding Energy Efficiency Improvements in the 2021 International Energy Conservation Code, DOE – 2021).

The Alliance to Save Energy supports the new proposal, as it would continue to position the ENERGY STAR Residential New Construction Program as one of the most impactful volunteer programs for saving homeowners money and for meeting the administration's ambitious climate goals. At a time when energy security, costs, and climate are leading the national agenda, now is the time to push forward with higher efficiency outcomes, and greater consumer savings. We thank you for your continued leadership on these issues, and for the opportunity to provide comment.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Building Efficiency Resources

**Respondent Last Name:** Noah

**Respondent First Name:** Lawrence

**Comments:**

- 1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

We have made a big move forward with the proposed backstop and believe that this is appropriate for a program like ENERGY STAR to set a high bar for the energy efficiency industry.





# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Energy Efficient Codes Coalition (EECC)

**Respondent Last Name:** Boyce

**Respondent First Name:** Amy

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

Thank you for the opportunity to comment on ENERGY STAR SFNH Version 3.2 and MFNC Version 1.2 – Draft 2. EECC strongly supports using the 2021 IECC prescriptive requirements as the thermal backstop in ENERGY STAR SFNH Version 3.2. ENERGY STAR homes should be comprised of an efficient envelope in addition to high performance appliances and equipment. Utilizing high efficiency HVAC equipment without an efficient envelope leads to the need for larger equipment as well as to a higher peak electricity demand, which will be a critical factor as we move towards electrification. In addition, equipment life is far shorter than that of the building envelope, so allowing a weaker envelope deprives the owner of the lifetime benefits that come from a robust thermal envelope.

The 2021 Residential IECC is up to 10 percent more stringent than the 2018 residential IECC and has been found to be cost-effective by analyses performed by the U.S. Department of Energy and ICF, an independent research firm (see links below). DOE's analysis indicated an average simple payback period of 10.5 years and an average of 4 years for the homeowner to be cash flow positive. The most significant efficiency improvements in the 2021 IECC are in the form of building envelope improvements.

The Draft 2 proposal provides flexibility to home builders by allow them to meet the thermal envelope requirement by meeting a building envelope total UA as opposed to component specific prescriptive requirements, as well as by providing a transition period for the update to take effect. We support finding ways in which to provide flexibility while working towards the goal of high performing homes. The previous thermal backstop referenced the 2009 IECC, leaving significant savings opportunities on the table. The thermal backstop in Draft 2 for Version 3.2 eliminates this issue, resulting in ENERGY STAR homes that are actually built to deliver energy efficiency for the life of the building.

DOE Analysis: [https://www.energycodes.gov/sites/default/files/2021-07/2021\\_IECC\\_Final\\_Determination\\_AnalysisTSD.pdf](https://www.energycodes.gov/sites/default/files/2021-07/2021_IECC_Final_Determination_AnalysisTSD.pdf)

ICF Analysis: <https://energyefficientcodes.org/wp-content/uploads/ICF-2021-IECC-Cost-effectiveness-Analysis.pdf>



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Greengurus LLC, Severna Park, MD

**Respondent Last Name:** Marston

**Respondent First Name:** Thomas

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

I recognize the importance of requiring long-term, built-in energy performance and thermal features are presented as the primary means to ensure that new homes include this attribute. If v.3.2 obligates builders spend funds on thermal as the first measure, UA x 1.05, you may prevent their ability or willingness to invest in HVAC design and performance. Duct design and performance is just as effective at creating long-term, built-in energy performance as the UA x 1.05 proposed thermal package.

Consider that upgrades in the future can improve both UA and HVAC performance:

Insulated siding will gain market share as the remodeling industry applies Government incentives for energy improvements. Thus the 2023 built home could improve wall insulation in the future with insulated siding.

Window energy improvements in existing buildings is advancing now that many 15 year old homes have tilt-in glazing. The belief that glass efficiency is static is unrealistic. 2023 homes will benefit from this when resale homeowners consider window energy performance as a desired energy investment.

HVAC efficiencies will improve through market acceptance of highest performing systems and Government mandates that move least efficient products out of the market. Changing out systems in 2023 built homes will benefit from duct systems that are performance tested to provide optimum airflow and balancing capabilities..

2) [Do you have additional general feedback on the changes proposed in Draft 2?](#)

The movement towards highly efficient buildings is continuing to focus on lower UA results. We know that UA is subject to the law of diminishing returns, which influences cost-effectiveness. Energy modeling, which is part of most Energy Star submittals enables us to prepare optimized value engineering and introduce builders to energy improvements not currently part of their building standards.

HVAC performance testing described in ACCA 310 Standard is a tool that is rarely used today by builders. Proving airflow performance will lower operating costs and optimize occupant comfort, which are the benefits that additional insulation espousing. Builders will adopt HVAC performance testing when the building industry is shown this path to have an equal or greater value.

Offering builders an alternative UA x 1.10 when combined with version 11, Track B in HVAC System review should provide comparable real savings and homeowner benefits as the current recommendation of UA x 1.05.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Huntsman Building Solutions

**Respondent Last Name:** Wieroniey

**Respondent First Name:** Stephen

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

Huntsman Building Solutions (HBS) is a leading manufacturer of spray polyurethane foam (spray foam) and coatings for roof, attic, and wall applications. Spray foam is a unique product used to improve the energy efficiency and resiliency of the building envelope. Spray foam products are the only energy efficiency solution that can insulate and air seal the building envelope without the use of additional products. Because only one product is required to meet efficiency standards, selecting spray foam building products can help minimize the greenhouse gas emissions (GHG) associated with manufacturing, distributing, transporting, and applying insulation and air barriers. Further, spray foam products provide a practical solution to exceeding the code required insulation and air tightness levels. In many cases, homes insulated and air sealed with spray foam can achieve an airtightness between 1.0 and 1.5 ACH50. This additional reduction of air leakage can significantly decrease energy demand from residential homes and maximize GHG emission reductions. While fighting climate change through GHG emissions reductions is an immediate necessity, mitigating the impacts of climate change cannot be ignored. Enabling the construction of more resilient homes will help homeowners shelter in place longer and return home faster after experiencing a climate related disaster. Homes built with spray foam building products can withstand high-wind events and flooding. More information on spray foam and energy efficiency and resiliency can be found at [www.whysprayfoam.org](http://www.whysprayfoam.org), [here](#), and [here](#). HBS supports EPA's latest draft of Energy Star. HBS believes it is imperative for EPA to prioritize the energy efficiency of the thermal envelope. Implementing version 3.2 without the thermal envelope requirements of the 2021 IECC will allow homes to be built without modern levels of energy efficiency. Residential buildings must be properly insulated and air-sealed upon initial construction in order to maximize energy efficiency. Building envelopes are rarely renovated due to the intensive nature and cost of such projects. Ideally envelopes should be constructed as efficiently as possible from the very beginning or homes will likely be under-insulated and less airtight for generations. The Biden Administration has set ambitious goals for fighting climate change. Energy Star provides an opportunity to make an immediate and meaningful impact on GHG emissions from residential buildings. Accordingly, HBS strongly supports EPA's proposal to implement Energy Star Version 3.2 with the building envelope requirements outlined in the 2021 IECC as a minimum mandatory requirement.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Home Ventilating Institute

**Respondent Last Name:** Donner

**Respondent First Name:** Jacki

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

No

2) [Do you have additional general feedback on the changes proposed in Draft 2?](#)

The Home Ventilating Institute (HVI) appreciates the Energy Star team taking the time to respond to our comments submitted during the first public review draft. We also appreciate the unique pressures faced by an above code program attempting to find balance between reasonable strategies that are broadly achievable in the market, and the desire to push the homebuilding industry to improve home performance. The Energy Star response to our original comments can be found below:

*“The primary intent of the new program requirements is to be responsive to the more stringent efficiency requirements of the 2021 IECC rather than update or advance the non-energy mandatory requirements of the program. EPA agrees in principle, however, that references to more recent editions of ASHRAE 62.2 should be considered when the next major version of the program is developed, which will encompass the non-energy mandatory requirements. Improvements to the ventilation termination requirements will also be considered at that time. In the interim, EPA allows and encourages partners to use the latest edition of ASHRAE 62.2. It also notes that any dwelling-unit mechanical ventilation systems, with or without heat and energy recovery, are already exempted from the sone rating requirement if they are mounted outside the habitable spaces, bathrooms, toilets, and hallways and have  $\geq 4$  ft. ductwork between the fan and intake grill. Habitable spaces are intended for continual human occupancy; such space generally includes areas used for living, sleeping, dining, and cooking but does not generally include bathrooms, toilets, hallways, storage areas, closets, or utility rooms.”*

HVI would like to recommend reconsideration of our comments from the first round. We note that, since the first public comment period, the current administration has announced a significant focus on IAQ.<sup>1</sup> Understanding that your priority on this program update is efficiency, HVI would like to reiterate, in short form, our earlier comments:

**Single Family Home Ventilation Standards:** While we understand the desire to focus on efficiency for this version due to the major increases in stringency in the 2021 IECC and new national focus on improving efficiency, we still think that updating the ASHRAE 62.2 reference to the most recent standard would be the best course of action. We appreciate that you have acknowledged the importance of this step, but recommend against waiting for the next major version, which may be several years away. The program already uses a standard reference that is 9-12 years old. This reference will be close to 20 years out of date by the time the next Energy Star version is introduced. As home efficiency increases, the importance of ventilation becomes more significant. Increased focus on indoor air quality due to the COVID pandemic improves the value proposition of a comprehensive ventilation strategy. Consumer awareness of the need for ventilation is high, and it seems like an opportune time to make sure all Energy Star homes are delivering leading ventilation performance.

**Multifamily Ventilation Standards:** In addition to our comments above regarding updating ASHRAE 62.2 references, there is an even more problematic issue in the Multifamily New Construction V1.2 draft. Any references to ASHRAE 62.2 prior to the 2016 edit creates a compliance conflict for some multifamily buildings. The 2016 edition was the first edition to cover multifamily buildings of any height in its scope. Earlier editions split multifamily buildings between 62.2 and 62.1 based on building height. For this reason, it is inappropriate to reference ASHRAE 62.2-2010, which does not cover multifamily buildings of taller heights in its scope. At a minimum, the program should reference standards that apply to the building types being covered.

**Ventilation Termination Requirements:** Recognizing EPA's desire to focus on efficiency for this version, clarified language recommended in our comments relating to ventilation terminations would not add stringency or complication to your requirements, but would rather allow greater flexibility already established in both ASHRAE 62.2 and the International

<sup>1</sup> [Clean Air in Buildings Challenge \(epa.gov\)](https://www.epa.gov/clean-air-in-buildings)



# ENERGY STAR Residential New Construction Roadmap Comments

Mechanical Code. This change would improve the specification by giving flexibility to your builder partners to allow them to use valid approaches already allowed by code. Added flexibility, wherever it can be reasonably adopted, is complementary to a program update that mainly increases stringency.

**Sound Ratings for HRV, ERV, and other remote mounted fans:** HRVs and ERVs are not rated for sound.<sup>2</sup> While we agree that the referenced footnote does exempt most HRVs and ERVs, verifiers inspecting the home sometimes miss exceptions in footnotes. It also requires additional verification, measuring feet of ductwork separating the system from the living space. Ideally, there should be an explicit exception for sound ratings for HRVs and ERVs, as well as other remote mounted fans. At a minimum, HVI recommends that Energy Star include an interpretation in the policy record stating that HRVs and ERVs, as well as other remote mounted fans, are interpreted to be exempt based on the language in the footnote. This interpretation could then be presented by any builder wanting to use an HRV or ERV in the case that their verifier does not interpret the footnote in the same way that Energy Star staff has in their comment response.

**HVI Listing in the Certified Products Directory:** requiring ventilation products, to be listed in the HVI Certified Product Directory ensures that products have met 3<sup>rd</sup> party product certification requirements. It is especially important that ventilation systems perform as advertised in efficient homes.

Thank you for reconsideration of these comments. HVI is happy to answer any questions.

---

<sup>2</sup>[https://www.hvi.org/HVIORG/assets/File/public/publications/Residential\\_Ventilating\\_Products\\_Not\\_Rated\\_for\\_Sound\\_Performance\\_by\\_HVI\\_05202016.pdf](https://www.hvi.org/HVIORG/assets/File/public/publications/Residential_Ventilating_Products_Not_Rated_for_Sound_Performance_by_HVI_05202016.pdf)



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** LBA

**Respondent Last Name:** Hickman

**Respondent First Name:** Amanda

**Comments:**

3) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

Leading Builders of America (LBA) is a long-standing supporter of the Energy Star program.

The 2021 IECC includes very aggressive envelope requirements. Many states will not update to the 2021 IECC for many years to come and may still be using older editions of the energy code when Energy Star 3.2 goes into effect.

Given this fact, the currently proposed sunset date is unfeasible. To provide a smoother transition for Energy Star partners throughout the US, we strongly urge the EPA to consider the following recommendations:

1. Include a more reasonable sunset date. Allow states a 2-year window from the effective date of Energy Star 3.2.
2. Increase the 5% allowance to 10% to better harmonize with energy code requirements.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Leading Raters of America

**Respondent Last Name:** Cooper

**Respondent First Name:** Matthew

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

The member companies of the Leading Raters of America support the proposed revision to the thermal backstop contained in Draft 2. In support of the largest volume builders in America, we believe that the proposed flexibility in adoption timing is critical to keeping builders engaged in the Energy Star Certified New Homes program. At a time when challenges such as labor shortage, supply chain limitation and the cost associated with residential new construction are at near historic levels, we must have flexibility in finding the most effective compliance path for our builders and this includes time.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** NAHB

**Respondent Last Name:** Kochkin

**Respondent First Name:** Vladimir

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

The proposed transition timeline with a single national sunset date of January 1, 2025 is inconsistent with the state-by-state implementation format of the Energy Star program. Most states will not begin their transition to the 2021 IECC (or similar) until some date in the future and therefore will not be afforded the same opportunity to transition more gradually to the very aggressive envelope requirements. These new envelope requirements leapfrog several code cycles and break with the Energy Star long-standing policy of setting backstops consistent with the energy code. EPA is encouraged to develop a more even-handed strategy to help ease the transition for all Energy Star partners across the country. We recommend that the sunset date be set on the first occurrence of January 1<sup>st</sup> two years after the date of Energy Star 3.2 going into effect in the specific state. Furthermore, it's recommended that the 5% allowance be increased to 10% to closer align with the 2021 IECC energy code.

2) [Do you have additional general feedback on the changes proposed in Draft 2?](#)

It's noted that NAHB remains unresolved regarding our comments previously submitted to EPA on the issue of setting envelope backstops in a manner that's inconsistent with the underlying energy code.





# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** North American Insulation Manufacturers Association

**Respondent Last Name:** Rich

**Respondent First Name:** Curt

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

NAIMA strongly supports requiring compliance with the 2021 IECC thermal envelope prescriptive requirements as a component of ENERGY STAR SFNH Version 3.2. The 2021 residential IECC is, depending on climate zone, up to 10 percent more stringent than the 2012/2015/2018 residential IECC. Virtually all of the efficiency improvements made in the 2021 IECC are in the form of building envelope improvements. Contrary to both the submitted comments of LBA and NAHB, and a flawed analysis prepared by the Home Innovation Research Lab for NAHB, the 2021 IECC building envelope requirements are cost effective. The U.S. Department of Energy found the 2021 residential IECC improvements to have an average simple payback period of 10.5 years and an average of 4 years to homeowner cash flow positive ( [https://www.energycodes.gov/sites/default/files/2021-07/2021\\_IECC\\_Final\\_Determination\\_AnalysisTSD.pdf](https://www.energycodes.gov/sites/default/files/2021-07/2021_IECC_Final_Determination_AnalysisTSD.pdf) ). An independent analysis conducted by ICF reached a similar conclusion ( <https://energyefficientcodes.org/wp-content/uploads/ICF-2021-IECC-Cost-effectiveness-Analysis.pdf> ).

The proposal to allow builders to meet the thermal envelope requirement by meeting a building envelope total UA as opposed to component specific prescriptive requirements gives builders flexibility without trading-off a high-performing thermal envelope. Analysis conducted by NAIMA on ENERGY STAR rated homes in the RESNET Registry reveals that builders have overwhelmingly built to the minimum building envelope insulation standard required by the ENERGY STAR program ( <https://information.insulationinstitute.org/blog/energy-star-falls-behind-in-thermal-envelope-performance> ). The current ENERGY STAR envelope backstop for both Version 3 and 3.1 is the 2009 IECC prescriptive building envelope requirements, so that's what is being built. Building to the lowest allowable standard unfortunately means that purchasers of ENERGY STAR rated homes are short-changed on the life of the building efficiency that the building envelope provides. The draft 2 revised thermal backstop for Version 3.2 reverses this weakness in the ENERGY STAR program and will deliver to home purchasers homes that are actually built to deliver energy efficiency for the life of the building.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** National Association of State Energy Officials (NASEO)

**Respondent Last Name:** Carley

**Respondent First Name:** Ed

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

Thank you for the opportunity to provide additional comments on the proposed ENERGY STAR SFNH Version 3.2 program. The National Association of State Energy Officials and our 56 State and Territory Members have supported the ENERGY STAR program since its creation. We strongly support continued program innovation to ensure that the voluntary ENERGY STAR recognition programs, including the ENERGY STAR SFNH and MFNC, assist Americans with identifying the most energy efficient products on the market in order maximize their energy cost savings.

NASEO supports the revised thermal backstop using the 2021 IECC as proposed by U.S. EPA in draft 2. The voluntary, above code ENERGY STAR New Homes program recognizes the highest performing homes. Use of the newest building energy code edition, the 2021 IECC, best supports the program goals, especially as U.S. EPA has indicated that it believes this standard will be in place for some time. The new thermal backstop will only impact states where the 2021 IECC has been adopted, and the phase-in period for builders allows time for adoption. This voluntary, above code program may be used as the basis for state, federal, and local tax credits in the future, and should rely on high energy efficiency in return for recognition of the property and potential tax benefits for the builder.

The 2021 IECC was determined by the Pacific Northwest National Laboratory and U.S. Department of Energy to be cost effective. Many State Energy Offices were involved in the development of the 2021 IECC and use building energy codes as a tool to achieve the energy efficiency, resilience, and energy affordability goals of their states. Use of older building energy codes for the baseline would be inappropriate for the voluntary ENERGY STAR SFNH v3.2 in states that have adopted the 2021 IECC.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** New Buildings Institute (NBI)

**Respondent Last Name:** Kim

**Respondent First Name:** Cheslak

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

NBI strongly supports requiring compliance with the 2021 International Energy Conservation Code (IECC) thermal envelope prescriptive requirements as a component of ENERGY STAR Single-Family New Homes (SFNH) Version 3.2. The 2021 IECC results in 9.4% site energy savings compared to the 2018 IECC and 33% more energy savings than the 2009 IECC. According to a third-party analysis conducted by the U.S. Department of Energy and ICF consulting, the 2021 IECC requirements are cost effective with an average simple payback period of 10.5 years and an average of 4 years to homeowner cash flow.

The proposed revised thermal backstop contained in Draft 2 allow builders to weaken the 2021 IECC thermal envelope requirements by 5% for buildings permitted before January 1, 2025 and requires builders to at least meet the 2021 IECC insulation values for buildings permitted after January 1, 2025. The building thermal envelope is the longest lived component of buildings and requiring ENERGY STAR homes to have a strong thermal envelope is critical. Without this backstop, it is inevitable that ENERGY STAR would continue to certify buildings that are much less efficient than the latest model energy code. The Draft 2 revised thermal backstop for Version 3.2 reverses this weakness in the ENERGY STAR program.

2) [Do you have additional general feedback on the changes proposed in Draft 2?](#)

While NBI supports the revision to the revised thermal backstop, we believe the ENERGY STAR program could do more to strengthen requirements for certification. As an above code program, NBI believes that ENERGY STAR homes or multifamily buildings should be more efficient than the 2021 IECC or ASHRAE 90.1-2019 in all states regardless whether or not the state adopts the 2021 IECC or ASHRAE 90.1-2019 as its base energy code. By instituting similar requirements across similar climate zones, the quality of an ENERGY STAR home will not depend on the local politics or adoption cycle of a particular state. These homes will also result in cost savings for homeowners and reduce carbon emissions and improve local air quality.

NBI also believes that to address the climate crisis, the new ENERGY STAR certification label should require connected space conditioning heat pumps, connected heat pump water heaters, electric cooking and electric vehicle (EV) charging capability in all ENERGY STAR rated buildings. If this is not feasible, then all ENERGY STAR rated homes should be made electric-ready and EV-ready. In this way, homeowners or multifamily building owners can install heat pumps, heat pump water heaters, electric cooking and EV chargers without having to pay expensive retrofit costs in the future. NBI is a member of both the Residential and Commercial IECC Consensus Committees and electric-ready and EV-ready requirements are being considered for the next version of the 2024 IECC. NBI believes that ENERGY STAR requirements should be equivalent or stronger than the next version of the energy code.



## ENERGY STAR Residential New Construction Roadmap Comments

Finally, NBI believes that ENERGY STAR certification should also consider either renewable energy or solar-ready requirements. The U.S. Department of Energy has submitted several proposals to the 2024 IECC to mandate renewable energy on both new residential and commercial buildings because even without tax incentives or net metering, these systems can cost effectively reduce a buildings energy use and carbon emissions in almost every state. Recently the commercial committee approved a proposal to make renewables mandatory for all new multifamily buildings 4-stories and more. If ENERGY STAR does not choose to require renewable energy systems on homes, then ENERGY STAR homes should be at least solar-ready to reduce expensive future retrofit costs.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** NRDC (Natural Resources Defense Council)

**Respondent Last Name:** Urbanek

**Respondent First Name:** Lauren

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

On behalf of our more than three million members and activists, NRDC (Natural Resources Defense Council) appreciates the opportunity to comment on the ENERGY STAR SFNH Version 3.2 and MFNC Version 1.2. NRDC strongly supports the ENERGY STAR program and appreciates the ENERGY STAR team's attention to the important issue of the thermal envelope backstop. While appliances and equipment are an important component of achieving an energy efficient home, the building thermal envelope is crucial to get right at the time of construction. The thermal envelope has a longer lifespan than equipment, and is significantly more difficult to retrofit in the future. Furthermore, a fully decarbonized home will require high levels of efficiency to reduce carbon emissions and energy consumption while avoiding high peak demand.

NRDC strongly supports aligning ENERGY STAR SFNH Version 3.2 with the 2021 International Energy Conservation Code thermal envelope requirements. These requirements have been found through Department of Energy analysis to be cost-effective. As an above-code program, an ENERGY STAR new home must provide better performance than a home built to the minimum code, both to ensure that consumers have homes that are efficient and comfortable, and to maintain the integrity of the ENERGY STAR program. Given the longevity of the building envelope, and its importance for energy efficiency, carbon emissions reduction, and occupant comfort, it would be unacceptable to require a less efficient envelope than the 2021 IECC base code requirements.

We recognize that building to the 2021 thermal envelope requirements will require a transition for some builders. The proposal to phase in these requirements so that they take effect for homes permitted after January 1, 2025, is a reasonable compromise and gives builders a predictable date by which they will need to meet the updated requirements. We strongly support this proposal.

2) [Do you have additional general feedback on the changes proposed in Draft 2?](#)

Given the increasing urgency to address the climate crisis, the ENERGY STAR program should take the lead on phasing out fossil fuel appliances in rated homes and buildings. As discussed in our October 18, 2021 comments, NRDC strongly supports the ENERGY STAR draft new certification program, which promotes efficient, electrified homes. However, some of these improved technologies should be incorporated into the current version 3.2. In areas of colder climates, all heat pumps should be required to meet the ENERGY STAR Cold Climate Heat Pump specification. This will ensure that this equipment functions optimally in these climate zones, reducing or eliminating the need for less efficient backup heating sources.

The efficiency of gas equipment in the reference design home should be increased in the hot and mixed climate zones. While the baseline requirement in cold climates is an ENERGY STAR gas furnace or gas boiler, in hot and mixed climates the reference case heating equipment is permitted to be less efficient than ENERGY STAR. We



## ENERGY STAR Residential New Construction Roadmap Comments

encourage the program to increase the efficiency of the reference design home such that any gas equipment is at least ENERGY STAR level. This is a cost-effective change that will result in less waste of fossil fuels.

In addition, NRDC encourages ENERGY STAR to take steps now to promote efficient electrification. This could include requiring electrification-readiness and additional efficiency measures for builders who choose to use fossil fuel equipment in their homes. Homes with fossil fuel appliances or equipment could be required to have the needed electrical infrastructure (conduit, branch circuits, pre-wiring, etc.) to easily convert those end uses to electric in the future. This is a minimal added cost at the time of construction, but would “future-proof” an ENERGY STAR new home to be easily upgraded to electric end uses at a later date, without the need to cut into the walls to run conduit. Homes using fossil fuels could also be required to reach an additional amount of modeled efficiency, as compared to a home that did not use fossil fuels, which would help to promote decarbonized buildings while still maintaining the choice to use fossil fuel equipment.

Similarly, all homes could be constructed to be ready for electric vehicles and photovoltaic solar panels. The cost to include these readiness measures at the time of construction is significantly lower than after the home is built. We know that the market for electric vehicles is growing rapidly, and an ENERGY STAR home should be equipped to enable efficient home vehicle charging.

For more information about incorporating electrification readiness, EV readiness, and PV readiness, please see the Building Decarbonization Code developed by NRDC and the New Buildings Institute, found here:  
<https://newbuildings.org/resource/building-decarbonization-code/>

We appreciate the opportunity to comment.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** Responsible Energy Codes Alliance

**Respondent Last Name:** Lacey

**Respondent First Name:** Eric

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

The Responsible Energy Codes Alliance supports the adoption and implementation of the latest edition of the International Energy Conservation Code in every state. At present, we are participating in over a dozen state processes in which the 2021 IECC is under consideration as a mandatory statewide residential energy code. We support EPA's proposed designation of the 2021 IECC envelope requirements as the minimum thermal envelope in the National Rater Design Review Checklist for Energy Star Homes Version 3.2. The 2021 IECC has been determined to be cost-effective to consumers in multiple analyses, and it will bring about substantial energy savings and greenhouse gas reductions in the years ahead. We expect that the 2021 IECC will be the statewide minimum code for several states by the time Energy Star Homes Version 3.2 is fully implemented, and setting the minimum envelope at the 2021 IECC level will help ensure that projects that are certified to Energy Star Version 3.2 are not in conflict with codes in these states. We generally believe that any program that purports to be "above code" should require compliance with the model code as a starting point, and we support EPA's to update its baseline requirements and mandatory minimums for the Energy Star Homes program.



# ENERGY STAR Residential New Construction Roadmap Comments

**Organization Name:** U.S. Green Building Council

**Respondent Last Name:** Evans

**Respondent First Name:** Ben

**Comments:**

1) [Do you have feedback on the revised thermal backstop contained in Draft 2?](#)

Thank you for the opportunity to provide feedback on the Draft 2 proposal for ENERGY STAR SFNH Version 3.2 and MFNC Version 1.2. ENERGY STAR must play a prominent role in improving the performance of residential homes and buildings, which account for 22% of U.S. energy consumption (<https://www.eia.gov/energyexplained/use-of-energy/>) and nearly 16% of U.S. greenhouse gas emissions (<https://www.epa.gov/system/files/documents/2022-02/us-ghg-inventory-2022-chapter-2-trends.pdf>). As a voluntary label signifying energy efficiency excellence, ENERGY STAR must remain ahead of the market and require energy performance that meets consumer expectations for affordability and comfort while also delivering on national climate and sustainability goals. This proposal achieves those objectives.

We supported the 2021 IECC/ASHRAE 90.1-2019 envelope requirements included as the thermal backstop in the initial Draft 1 proposal. While we continue to support that, we believe the revised thermal backstop provision phasing in the full 2021 IECC envelope requirements in 2025 represents a reasonable compromise that allows builders a multi-year transition period from the current requirements. Robust building envelopes are critical for long-term energy efficiency and homeowner benefits, providing more lasting benefits than appliances and equipment. Improved envelopes also allow for “right-sized” heating and cooling equipment that operates more efficiently, with lower energy bills.

This proposal strikes a proper balance between encouraging ambitious improvement in the nation’s housing stock while also implementing achievable construction requirements that builders in every state of the country can and should meet. As a result, the U.S. Green Building Council strongly supports the Draft 2 proposal.

2) [Do you have additional general feedback on the changes proposed in Draft 2?](#)

With respect to the trajectory for more homes to transition to electric heating, cooling, and appliances, EPA should consider including in the standard key electrification-readiness measures, such as electrical infrastructure (conduit, branch circuits, pre-wiring, etc.) to enable and reduce the cost of future conversion to electric appliances. In addition, the agency should consider allowing a state the option to designate all-electric appliances as a component of ENERGY STAR SFNH Version 3.2 as applied in that state. We suggest the EPA consider a unique ENERGY STAR mark and/or marketing materials to highlight homes that both meet the full program requirements and are all-electric.