

# ENERGY STAR<sup>®</sup>

## Residential New Construction Programs

### Historical Document

This document is provided for reference because it has been superseded by a more recent Version or Revision. Please find current program documents on the [Program Requirements](#) webpage.

Use of older Versions and Revisions, such as this document, are typically limited to homes and buildings with a permit date (or, for manufactured homes, a production date) prior to a specified date. Consult the [Implementation Timeline](#) table to assess whether a home or apartment is still eligible to be certified using this document.

For questions or more information, contact us at [energystarhome@energystar.gov](mailto:energystarhome@energystar.gov).



# ENERGY STAR Single-Family New Homes National Program Requirements, Version 3.1 (Rev. 13)

## Eligibility Requirements

Site-built or modular <sup>1</sup> detached Dwellings <sup>2</sup> (e.g., single-family homes and duplexes) and Townhouses <sup>3</sup> are eligible to participate in the ENERGY STAR Single-Family New Homes (SFNH) program. To determine the applicable SFNH program requirements, including the minimum Version and Revision, to which a home is eligible to be certified, visit [www.energystar.gov/SFNHversions](http://www.energystar.gov/SFNHversions).

Dwelling Units in certain low-rise multifamily buildings are also eligible to participate in the ENERGY STAR SFNH program if permitted prior to July 1, 2021. See Footnote 4 for details. <sup>4</sup>

While primarily intended for new construction, existing homes (e.g., undergoing a gut rehabilitation) are also eligible to participate in the ENERGY STAR SFNH program, with guidance available at: [www.energystar.gov/GutRehabGuidance](http://www.energystar.gov/GutRehabGuidance).

For information about other ENERGY STAR residential new construction programs, visit [www.energystar.gov/newhomesrequirements](http://www.energystar.gov/newhomesrequirements).

Note that compliance with these requirements is not intended to imply compliance with all local code requirements. <sup>5</sup>

## Partnership, Training, and Credentialing Requirements

The following requirements must be met prior to certifying homes:

- Builders are required to sign an ENERGY STAR Partnership Agreement and complete the online Version 3 Builder Orientation, which can be found at [www.energystar.gov/homesPA](http://www.energystar.gov/homesPA).
- HVAC installing contractors are required to be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO) for homes certified using Track B in Exhibit 2. An explanation of this process can be found at [www.energystar.gov/newhomesHVAC](http://www.energystar.gov/newhomesHVAC).
- Energy Rating Companies (e.g., rater companies and Providers <sup>6</sup>) are required to sign an ENERGY STAR Partnership Agreement, which can be found at [www.energystar.gov/homesPA](http://www.energystar.gov/homesPA).
- Raters <sup>7</sup> are required to complete EPA-recognized training, which can be found at [www.energystar.gov/newhomestraining](http://www.energystar.gov/newhomestraining), and be credentialed by a Home Certification Organization (HCO) <sup>8</sup> prior to completing inspections. Learn more at [www.energystar.gov/hco](http://www.energystar.gov/hco).

## ENERGY STAR Certification Process

1. The certification process provides flexibility to select a custom combination of measures for each home that is equivalent in performance to the minimum requirements of the ENERGY STAR Reference Design Home, Exhibit 1, as assessed through energy modeling. An EPA-recognized HCO's Approved Software Rating Tool shall automatically determine the ENERGY STAR ERI Target, which is the highest ERI value that each rated home may achieve to earn the ENERGY STAR. <sup>9</sup>

2. Using the same software program, configure the preferred set of efficiency measures for the home to be certified and verify that the resulting ERI meets or exceeds the ENERGY STAR ERI Target, as determined in Step 1.

Note that, regardless of the measures selected, the Mandatory Requirements for All Certified Homes in Exhibit 2 are also required and impose certain constraints on the efficiency measures selected (e.g., insulation levels, insulation installation quality, window performance, duct leakage). Furthermore, on-site power generation may not be used to meet the ENERGY STAR ERI Target.

3. Construct the home using the measures selected in Step 2 and the Mandatory Requirements for All Certified Homes, Exhibit 2.
4. Using a Rater, verify that all requirements have been met in accordance with the Mandatory Requirements for All Certified Homes and with the inspection procedures for minimum rated features in ANSI / RESNET / ICC 301, Appendix B. <sup>7</sup> This will require a minimum of two inspections: one at pre-drywall and the other at final. All items shall be verified for each certified home and sampling protocols shall not be used. For modular homes, a Rater must verify any requirement in the plant not able to be verified on-site because a feature will be concealed prior to shipment. Finally, submit the home to the HCO for final certification and follow the HCO's certification and oversight procedures (e.g., quality assurance, recordkeeping, and reporting). The Rater is required to keep electronic or hard copies of the completed and signed National Rater checklists and either an HVAC design report compliant with ANSI / RESNET / ACCA / ICC 310, and the National HVAC Design Supplement to Std. 310 for Dwellings & Units, for homes using Track A, or the National HVAC Design Report for homes using Track B.

The Rater must review all items on the National Rater checklists to verify that each inspection checklist item has been met within program-defined tolerances. In the event that a Rater determines that a program requirement has not been met, the home cannot earn the ENERGY STAR until the item is corrected. If correction of the item is not possible, the home cannot earn the ENERGY STAR. In the event that an item on a National Rater checklist cannot be inspected by the Rater, the home also cannot earn the ENERGY STAR. The only exceptions to this rule are in the Thermal Enclosure System Section of the National Rater Field Checklist, where the builder may assume responsibility for verifying a maximum of eight items. This option shall only be used at the discretion of the Rater. When exercised, the builder's responsibility will be formally acknowledged by the builder signing the checklist for the item(s) that they verified.

In the event that a Rater is not able to determine whether a program requirement has been met (e.g., an alternative method of meeting a checklist requirement has been proposed), then the Rater shall consult their Provider. If the Provider also cannot make this determination, then the Rater or Provider shall report the issue to EPA prior to project completion at: [energystarhomes@energystar.gov](mailto:energystarhomes@energystar.gov) and will receive an initial response within 5 business days. If EPA believes the current program requirements are sufficiently clear to determine whether the item in question has been met, then this guidance will be provided to the partner and enforced beginning with the house in question. In contrast, if EPA believes the program requirements require revisions to make the intent clear, then this guidance will be provided to the partner but only enforced for homes permitted after a specified transition period after the release of the revised program requirements, typically 60 days in length.

This will allow EPA to make formal policy decisions as partner questions arise and to disseminate these policy decisions through the [Policy Record](#) and the periodic release of revised program documents to ensure consistent application of the program requirements.



# ENERGY STAR Single-Family New Homes National Program Requirements, Version 3.1 (Rev. 13)

## Exhibit 1: ENERGY STAR Reference Design Home <sup>10</sup>

The ENERGY STAR Reference Design Home is the set of efficiency features modeled to determine the ENERGY STAR ERI Target for each home pursuing certification. Therefore, while the features below are not mandatory, if they are not used then other measures will be needed to achieve the ENERGY STAR ERI Target. In addition, note that the Mandatory Requirements for All Certified Homes, Exhibit 2, contain additional requirements such as total duct leakage limits, minimum allowed insulation levels, and minimum allowed fenestration performance. Therefore, EPA recommends that partners review the documents in Exhibit 2 prior to selecting measures.

Hot Climates (2012 IECC Zones 1,2,3) <sup>11</sup>	Mixed and Cold Climates (2012 IECC Zones 4,5,6,7,8) <sup>11</sup>																							
<b>Cooling Equipment (Where Provided)</b>																								
<ul style="list-style-type: none"> <li>Cooling equipment modeled at the applicable efficiency levels below:</li> </ul>																								
<ul style="list-style-type: none"> <li>15 SEER AC,</li> <li>Heat pump (See Heating Equipment)</li> </ul>	<ul style="list-style-type: none"> <li>13 SEER AC,</li> <li>Heat pump (See Heating Equipment)</li> </ul>																							
<b>Heating Equipment</b>																								
<ul style="list-style-type: none"> <li>Heating equipment modeled at the applicable efficiency levels below, dependent on fuel and system type:</li> </ul>																								
<ul style="list-style-type: none"> <li>80 AFUE gas furnace,</li> <li>80 AFUE oil furnace,</li> <li>80 AFUE boiler,</li> <li>8.2 HSPF / 15 SEER air-source heat pump with electric or dual-fuel backup</li> </ul>	<ul style="list-style-type: none"> <li>95 AFUE ENERGY STAR gas furnace,</li> <li>85 AFUE ENERGY STAR oil furnace,</li> <li>90 AFUE ENERGY STAR gas boiler,</li> <li>86 AFUE ENERGY STAR oil boiler,</li> <li>Heat pump, with efficiency as follows:               <ul style="list-style-type: none"> <li>CZ 4: 8.5 HSPF / 15 SEER air-source w/ electric or dual-fuel backup,</li> <li>CZ 5: 9.25 HSPF / 15 SEER air-source w/ electric or dual-fuel backup,</li> <li>CZ 6: 9.5 HSPF / 15 SEER air-source w/ electric or dual-fuel backup,</li> <li>CZ 7-8: 9.2 HSPF / 16 SEER air-source w/ electric or dual-fuel backup</li> </ul> </li> </ul>																							
<b>Envelope, Windows, &amp; Doors</b>																								
<ul style="list-style-type: none"> <li>Insulation levels modeled to 2012 IECC levels and Grade I installation per ANSI / RESNET / ICC 301.</li> <li>Infiltration rates modeled as follows:           <table border="1" style="margin-left: 40px; margin-right: 40px;"> <tr> <td style="text-align: center;">4 ACH50 in CZs 1,2</td> <td style="text-align: center;">3 ACH50 in CZs 3,4,5,6,7,8</td> </tr> </table> </li> <li>ENERGY STAR windows and doors modeled, as illustrated below:           <table border="1" style="margin-left: 40px; margin-right: 40px;"> <tr> <td>Window U-Value:</td> <td style="text-align: center;">0.40 in CZs 1,2</td> <td style="text-align: center;">0.30 in CZ 3</td> <td style="text-align: center;">0.30 in CZ 4</td> <td style="text-align: center;">0.27 in CZs 5,6,7,8</td> </tr> <tr> <td>Window SHGC:</td> <td style="text-align: center;">0.25 in CZs 1,2</td> <td style="text-align: center;">0.25 in CZ 3</td> <td style="text-align: center;">0.40 in CZ 4</td> <td style="text-align: center;">Any in CZs 5,6,7,8</td> </tr> </table>   <table border="1" style="margin-left: 40px; margin-right: 40px;"> <tr> <td>Door U-Value:</td> <td style="text-align: center;">Opaque: 0.17</td> <td style="text-align: center;">≤½ lite: 0.25</td> <td style="text-align: center;">&gt;½ lite: 0.30</td> </tr> <tr> <td>Door SHGC:</td> <td style="text-align: center;">Opaque: Any</td> <td style="text-align: center;">≤½ lite: 0.25</td> <td style="text-align: center;">&gt;½ lite: 0.25 in CZs 1,2,3; 0.40 in CZs 4,5,6,7,8</td> </tr> </table> </li> </ul>				4 ACH50 in CZs 1,2	3 ACH50 in CZs 3,4,5,6,7,8	Window U-Value:	0.40 in CZs 1,2	0.30 in CZ 3	0.30 in CZ 4	0.27 in CZs 5,6,7,8	Window SHGC:	0.25 in CZs 1,2	0.25 in CZ 3	0.40 in CZ 4	Any in CZs 5,6,7,8	Door U-Value:	Opaque: 0.17	≤½ lite: 0.25	>½ lite: 0.30	Door SHGC:	Opaque: Any	≤½ lite: 0.25	>½ lite: 0.25 in CZs 1,2,3; 0.40 in CZs 4,5,6,7,8	
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<b>Water Heater</b>																								
<ul style="list-style-type: none"> <li>DHW equipment modeled with the following efficiency levels as applicable:</li> </ul> <table border="1" style="margin-left: 40px; margin-right: 40px;"> <tr> <td>Gas:</td> <td style="text-align: center;">30 Gal = 0.63 EF</td> <td style="text-align: center;">40 Gal = 0.61 EF</td> <td style="text-align: center;">50 Gal = 0.59 EF</td> <td style="text-align: center;">60 Gal = 0.57 EF</td> <td style="text-align: center;">70 Gal = 0.55 EF</td> <td style="text-align: center;">80 Gal = 0.53 EF</td> </tr> <tr> <td>Electric:</td> <td style="text-align: center;">30 Gal = 0.94 EF</td> <td style="text-align: center;">40 Gal = 0.93 EF</td> <td style="text-align: center;">50 Gal = 0.92 EF</td> <td style="text-align: center;">60 Gal = 0.91 EF</td> <td style="text-align: center;">70 Gal = 0.90 EF</td> <td style="text-align: center;">80 Gal = 0.89 EF</td> </tr> <tr> <td>Oil:</td> <td style="text-align: center;">30 Gal = 0.55 EF</td> <td style="text-align: center;">40 Gal = 0.53 EF</td> <td style="text-align: center;">50 Gal = 0.51 EF</td> <td style="text-align: center;">60 Gal = 0.49 EF</td> <td style="text-align: center;">70 Gal = 0.47 EF</td> <td style="text-align: center;">80 Gal = 0.45 EF</td> </tr> </table>				Gas:	30 Gal = 0.63 EF	40 Gal = 0.61 EF	50 Gal = 0.59 EF	60 Gal = 0.57 EF	70 Gal = 0.55 EF	80 Gal = 0.53 EF	Electric:	30 Gal = 0.94 EF	40 Gal = 0.93 EF	50 Gal = 0.92 EF	60 Gal = 0.91 EF	70 Gal = 0.90 EF	80 Gal = 0.89 EF	Oil:	30 Gal = 0.55 EF	40 Gal = 0.53 EF	50 Gal = 0.51 EF	60 Gal = 0.49 EF	70 Gal = 0.47 EF	80 Gal = 0.45 EF
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<b>Thermostat &amp; Ductwork</b>																								
<ul style="list-style-type: none"> <li>Programmable thermostat modeled.</li> <li>All ducts and air handlers modeled within conditioned space.</li> </ul>																								
<b>Lighting &amp; Appliances</b>																								
<ul style="list-style-type: none"> <li>ENERGY STAR refrigerators, dishwashers, and ceiling fans modeled.</li> <li>ENERGY STAR light bulbs modeled in 90% of ANSI / RESNET / ICC 301-defined Qualifying Light Fixture Locations.</li> </ul>																								



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Two tracks are provided for satisfying the mandatory requirements for all certified homes, Exhibit 2. Track A - HVAC Grading utilizes ANSI / RESNET / ACCA / ICC 310 <sup>12</sup>, a standard for grading the installation of HVAC systems. Track B - HVAC Credential utilizes an HVAC contractor credentialed by an EPA-recognized H-QUITO. Either track may be selected, but all requirements within that track must be satisfied for the home to be certified.

## Exhibit 2: Mandatory Requirements for All Certified Homes

Party Responsible	Mandatory Requirements
<b>Requirements Applicable to Track A &amp; B</b>	
<b>Rater</b>	<ul style="list-style-type: none"> <li>• Completion of SFNH National Rater Design Review Checklist, Version 3 / 3.1 / 3.2</li> <li>• Completion of SFNH National Rater Field Checklist, Version 3 / 3.1 / 3.2</li> </ul>
<b>Builder</b>	<ul style="list-style-type: none"> <li>• Completion of SFNH National Water Mgmt. System Builder Reqs., Version 3 / 3.1 / 3.2</li> </ul>
<b>Requirements Only Applicable to Track A - HVAC Grading <sup>12</sup></b>	
<b>HVAC System Designer</b>	<ul style="list-style-type: none"> <li>• Completion of an HVAC design report compliant with ANSI / RESNET / ACCA / ICC 310, plus the SFNH / MFNC National HVAC Design Supplement to Std. 310 for Dwellings &amp; Units, All Versions.</li> </ul>
<b>HVAC Installing Contractor</b>	<ul style="list-style-type: none"> <li>• While the HVAC contractor plays a critical role in properly installing and commissioning a system, the Rater is the party responsible for assessing its installation quality, per ANSI / RESNET / ACCA / ICC 310. However, the installing contractor may be required to provide documentation to support the Rater's assessment (e.g., regarding the refrigerant system).</li> </ul>
<b>Requirements Only Applicable to Track B - HVAC Credential</b>	
<b>HVAC System Designer</b>	<ul style="list-style-type: none"> <li>• Completion of SFNH National HVAC Design Report, Version 3 / 3.1 / 3.2</li> </ul>
<b>HVAC Installing Contractor</b>	<ul style="list-style-type: none"> <li>• Completion of SFNH National HVAC Commissioning Checklist, Version 3 / 3.1 / 3.2</li> </ul>

### Footnotes:

1. A modular home is a prefabricated home that is made of multiple modules or sections that are manufactured and substantially assembled in a manufacturing plant. These pre-built sections are transported to the building site and constructed by a builder to meet all applicable building codes for site-built homes.
2. A Dwelling, as defined by ANSI / RESNET / ICC 301, is any building that contains one or two Dwelling Units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes. ANSI / RESNET / ICC 301 defines a Dwelling Unit as a single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.
3. A Townhouse, as defined by ANSI / RESNET / ICC 301, is a single-family Dwelling Unit constructed in a group of three or more attached units in which each unit extends from the foundation to roof and with open space on at least two sides. Townhouses are also eligible to participate in the ENERGY STAR Multifamily New Construction Program.
4. If permitted prior to July 1, 2021, the following are also eligible to participate in the ENERGY STAR SFNH program:
  - Dwelling units <sup>2</sup> in any multifamily building with 4 units or fewer; OR
  - Dwelling units in multifamily buildings with 3 stories or fewer above-grade; OR
  - Dwelling units in multifamily buildings with 4 or 5 stories above-grade where dwelling units occupy 80% or more of the occupiable square footage of the building. When evaluating mixed-use buildings for eligibility, exclude commercial / retail space when assessing whether the 80% threshold has been met.

Any above-grade story with 20% or more occupiable space, including commercial space, shall be counted towards the total number of stories for the purpose of determining eligibility to participate in the program. The definition of an 'above-grade story' is one for which more than half of the gross surface area of the exterior walls is above-grade. All below-grade stories, regardless of type, shall not be included when evaluating eligibility.

Per ASHRAE 62.2-2010, occupiable space is any enclosed space inside the pressure boundary and intended for human activities or continual human occupancy, including, but not limited to, areas used for living, sleeping, dining, and cooking, toilets, closets, halls, storage and utility areas, and laundry areas.

5. While certification will result in compliance with many code requirements, a Rater is not responsible for ensuring that all code requirements have been met prior to certification. For more information about how these program requirements help satisfy code requirements, visit: [www.energystar.gov/newhomesguidance](http://www.energystar.gov/newhomesguidance). In the event that a code requirement, a manufacturer's installation instructions, or an engineering document conflicts with a requirement of the ENERGY STAR program (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these program requirements shall not be met. Certification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the conflicting requirement (e.g., switching from exterior to interior slab edge insulation). Note that a home must still meet its ENERGY STAR ERI Target. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.



# ENERGY STAR Single-Family New Homes National Program Requirements, Version 3.1 (Rev. 13)

6. The term 'Provider' refers to an Approved Rating Provider, as defined by ANSI / RESNET / ICC 301, that is approved by an HCO.
7. The term 'Rater' refers to the person(s) completing the third-party verification required for certification. The person(s) shall: a) be a Certified Rater or Approved Inspector, as defined by ANSI / RESNET / ICC 301, or an equivalent designation as determined by an HCO; and, b) have attended and successfully completed an EPA-recognized training class. See [www.energystar.gov/newhomestraining](http://www.energystar.gov/newhomestraining).
8. HCOs are independent organizations recognized by EPA to implement an ENERGY STAR certification program for single-family and multifamily homes and apartments using an Energy Rating Index (ERI) compliance path. Learn more and find a current list of HCOs at [www.energystar.gov/hco](http://www.energystar.gov/hco).
9. The software program shall automatically determine (i.e., without relying on a user-configured ENERGY STAR Reference Design) this target for each rated home by following the National ERI Target Procedure, Version 3.1 (Rev. 13), available at [www.energystar.gov/newhomesrequirements](http://www.energystar.gov/newhomesrequirements).
10. Note that the efficiency levels of ENERGY STAR certified products aligned with these product specifications when this Version was first released. These efficiency features form the basis of the ENERGY STAR ERI target, regardless of any subsequent revisions to ENERGY STAR certified product specifications. EPA recommends, but does not require, that current ENERGY STAR products be included in ENERGY STAR homes. For current ENERGY STAR products, visit [www.energystar.gov/products](http://www.energystar.gov/products).
11. 2012 IECC Climate Zone designations, as defined and illustrated in [Section R301](#) of the code, are used to configure the ENERGY STAR Reference Design Home.
12. Track A – HVAC Grading shall use ANSI / RESNET / ACCA / ICC 310 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the schedule defined by the HCO that the home is being certified under.