# ENERGY STAR Residential New Construction Programs: The Year in Review/Year Ahead

Presented on September 21, 2021


EPA United States Environmental Protection Agency

# Welcome

**Jon Passe**

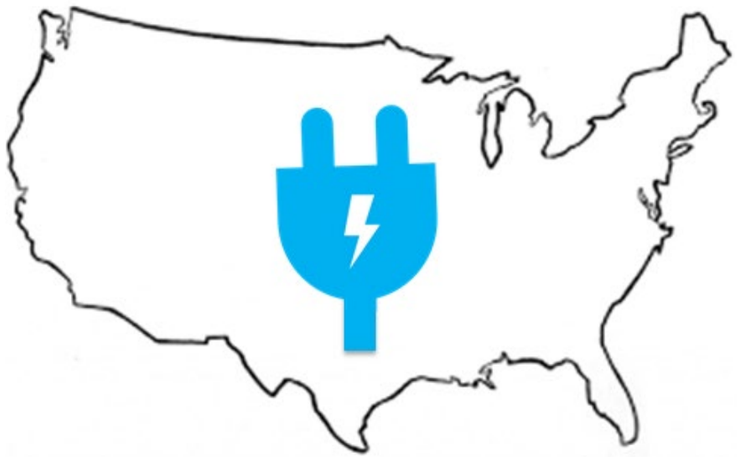
Chief

ENERGY STAR Residential Branch

# The Future is Now

**Look at ES Savings**

**Raise the Bar**



**Address decarbonization**

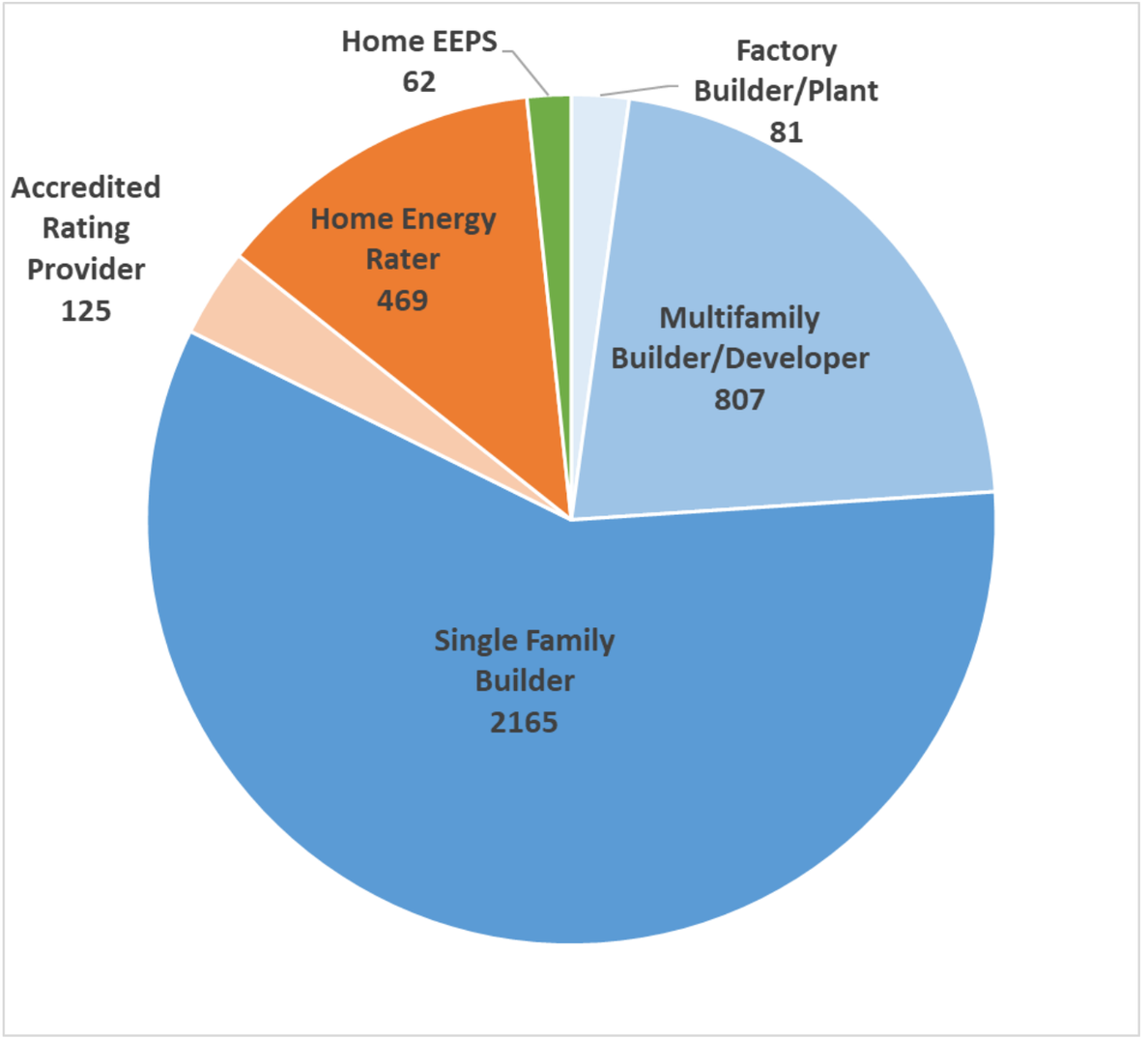
**Zak Shadid**

Partner Support Manager

ENERGY STAR Residential Branch

# Partners by Organization Type

- Over 3,000 active Builder and Developer Partners
- Over 450 active Energy Rating Companies
- 62 Program Sponsor Partners

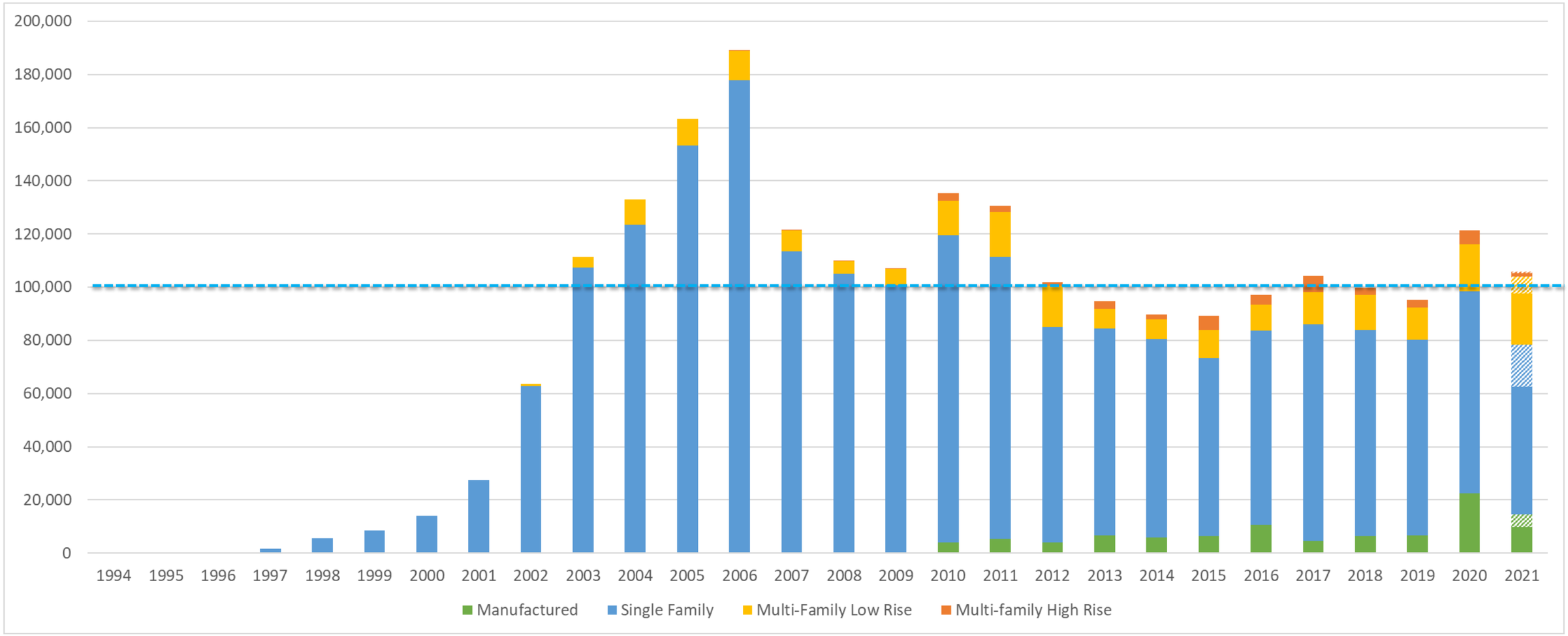


# Top 25 Builders, 2021

| Rank | Active ENERGY STAR Partner? | Company | 2020 Total Closings |
|---|---|---|---|
| ☆100% 1 | ENERGY STAR PARTNER | D.R. Horton | 71,292 |
| ☆100% 2 | ENERGY STAR PARTNER | Lennar Corp. | 53,376 |
| 3 | ENERGY STAR PARTNER | PulteGroup | 24,624 |
| ☆100% 4 | ENERGY STAR PARTNER | NVR | 19,766 |
| 5 | ENERGY STAR PARTNER | Taylor Morrison | 12,524 |
| ☆100% 6 | ENERGY STAR PARTNER | Meritage Homes | 11,834 |
| ☆100% 7 | ENERGY STAR PARTNER | KB Home | 10,672 |
| 8 | ENERGY STAR PARTNER | Clayton Properties | 9,475 |
| 9 | ENERGY STAR PARTNER | Century Communities | 9,453 |
| 10 | ENERGY STAR PARTNER | LGI Homes | 9,339 |
| 11 | ENERGY STAR PARTNER | Toll Brothers | 8,496 |
| 12 | ENERGY STAR PARTNER | M.D.C Holdings | 8,158 |
| 13 | ENERGY STAR PARTNER | M/I Homes | 7,709 |

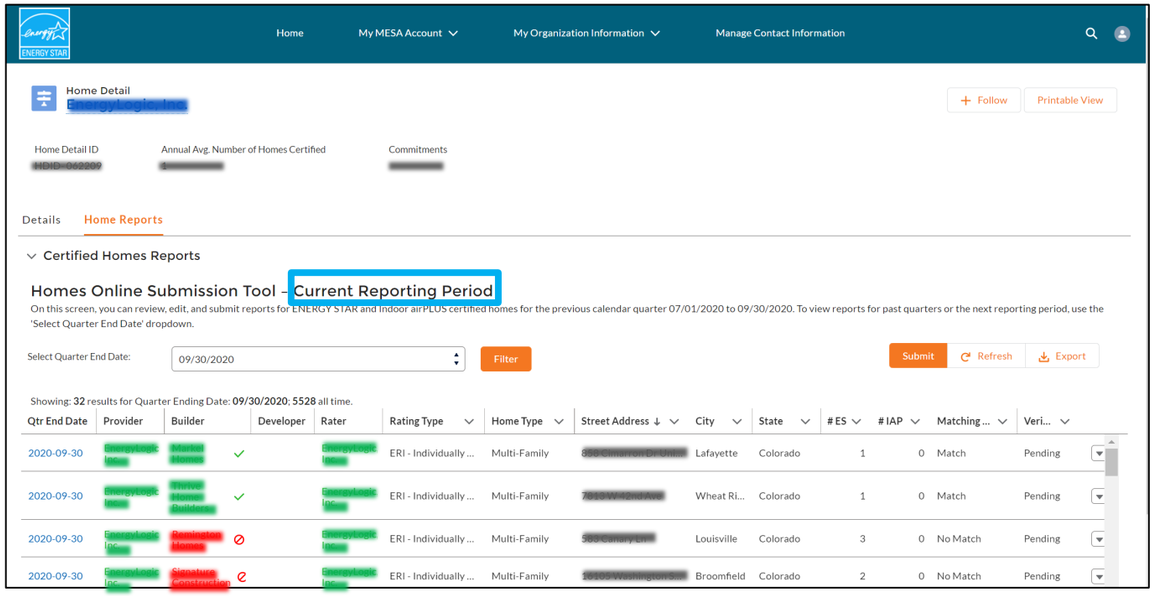
| Rank | Active ENERGY STAR Partner? | Company | 2020 Total Closings |
|---|---|---|---|
| 14 | ENERGY STAR PARTNER | Hovnanian Enterprises | 6,414 |
| 15 | ENERGY STAR PARTNER | Ashton Woods Homes | 5,998 |
| ☆100% 16 | ENERGY STAR PARTNER | David Weekley Homes | 5,560 |
| ☆100% 17 | ENERGY STAR PARTNER | Beazer Homes | 5,492 |
| ☆100% 18 | ENERGY STAR PARTNER | Tri Pointe Homes | 5,123 |
| ☆100% 19 | ENERGY STAR PARTNER | Mattamy Homes | 4,228 |
| ☆100% 20 | ENERGY STAR PARTNER | Habitat for Humanity Int. | 3,466 |
| 21 | ENERGY STAR PARTNER | Stanley Martin Homes | 3,436 |
| 22 | | Highland Homes | 3,361 |
| 23 | ENERGY STAR PARTNER | Perry Homes | 3,261 |
| 24 | ENERGY STAR PARTNER | Dream Finders Homes | 3,154 |
| 25 | ENERGY STAR PARTNER | Gehan Homes | 3,053 |

# ENERGY STAR Certifications By Year



# New Homes Online Submittal Tool (HOST)

- Uses an API to transmit specific data directly from the RESNET Registry
- Providers perform data quality/matching to org names in ES database
- Reduces manual data entry and improves data quality
- Increases consistency with RESNET Registry




## Improvements Coming Soon

- Integration with Indoor airPLUS Reporting
- Improved 'matching' on names populated from the Registry
- Improved multifamily building roll-ups using the Building Name field

# Communications Toolkit & Website

**Marta Montoro**
Communications

# Marketing & Communications - Updated Program Materials released in April


We are proud to offer new homes that have earned the ENERGY STAR® label. ENERGY STAR certified new homes are designed and built to provide superior comfort and savings compared to most new homes currently on the market. Offering more than just efficient appliances, certified homes integrate energy efficiency from the ground up.

## Get comfortable in an ENERGY STAR certified new home.

**The right choice, for today and tomorrow.**

ENERGY STAR certified new homes are energy efficient by design, with savings that start now and continue into the future. Better systems and construction features make all the difference throughout your home.

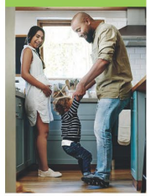
- Advanced air sealing, high-quality insulation, and high-performance windows for reduced leaks and drafts provide more consistent temperatures and minimize dust, pollen, and other allergens.
- High-efficiency heating and cooling system for improved comfort.
- Comprehensive water management techniques protect against moisture damage.

**Built on a foundation of trust.**

For more than 25 years, ENERGY STAR certified new homes have set the standard for quality, efficiency, and lasting value.

- Meet strict requirements set by the U.S. Environmental Protection Agency.
- Tried-and-true best building practices.
- Third-party tested, inspected, and certified.

**Join the 2+ MILLION families who have made their home a star.**



EPA United States Environmental Protection Agency

GY STAR certified new homes at energystar.gov/newhomes.

**ily can be proud of.**

ENERGY STAR certified new home.
it's built to a high standard of
—and a lifetime of memories.

efficient than standard new homes
mpared to existing homes.

he ground up.

value now and into the future.

**rts inside the house.**

high-performance filter improves

- Contributes to a cleaner, healthier environment—inside and out.


ASK ABOUT ENERGY STAR CERTIFIED HOMES

**A better home for a better tomorrow.**

ENERGY STAR certified new homes are just built better. More comfort. Increased savings. A better, healthier world. That's what you can expect from your ENERGY STAR certified new home.

Learn more about ENERGY STAR certified new homes at **energystar.gov/newhomes**.

EPA United States Environmental Protection Agency

ESCNH 04/15/21



increase efficiency, and keep you more comfortable. High-efficiency systems also provide better indoor air quality, moisture control, and quieter operation.

ENERGY STAR builder partners meet all the requirements of EPA's comprehensive HVAC Quality Installation to ensure:

- Equipment and associated ductwork are sized and installed correctly to **maximize comfort and performance**.*
- Ducts are properly sealed to **reduce air leakage**, **ensure comfort**, and **safeguard indoor air quality**.
- Ventilation and filtration systems are calibrated correctly to **reduce indoor air pollutants**.

inspected and tested by a professional Home Energy Rater.** Home Energy Raters work with ENERGY STAR builder partners throughout the construction process to ensure:

- Your new home has the appropriate energy efficient features that **fit your climate region**.
- Critical **requirements are verified** at each phase of construction.
- Key systems in your new home are working properly to deliver **better efficiency, durability, and comfort**.

*Applies to installation of ventilating systems and the most common types of heating and cooling systems in new homes.

**A home may be certified as part of a sample set of homes that have undergone random testing and inspections.

Learn more about ENERGY STAR certified new homes at **energystar.gov/newhomes** or scan the QR code.

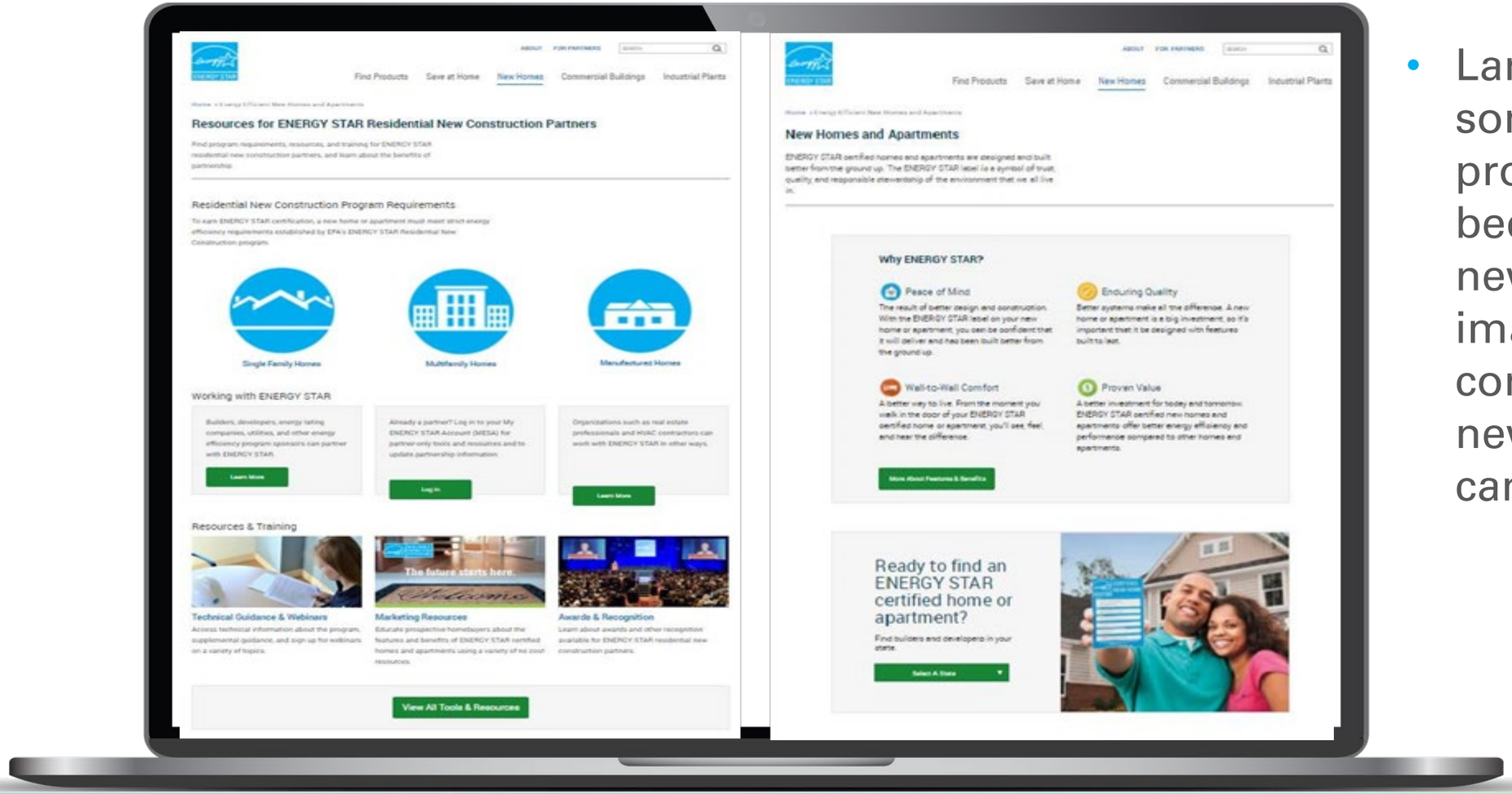
# It’s Time to CELEBRATE!

We’re celebrating the major milestone of building over 2 million ENERGY STAR certified homes and counting.  We’re excited about this major accomplishment by our partners.

But not only are we excited–every family in America that has made a choice to live in an ENERGY STAR certified home has something to celebrate, too. They’re creating a better future for their families and for their communities.

So join in the celebration!

# Website Updates – Partner Resources & Consumer Landing Page




- Landing pages and some internal program pages have been updated with a new look and feel; imagery is consistent with the new media campaign.

# Fall Communications Kit for Partners

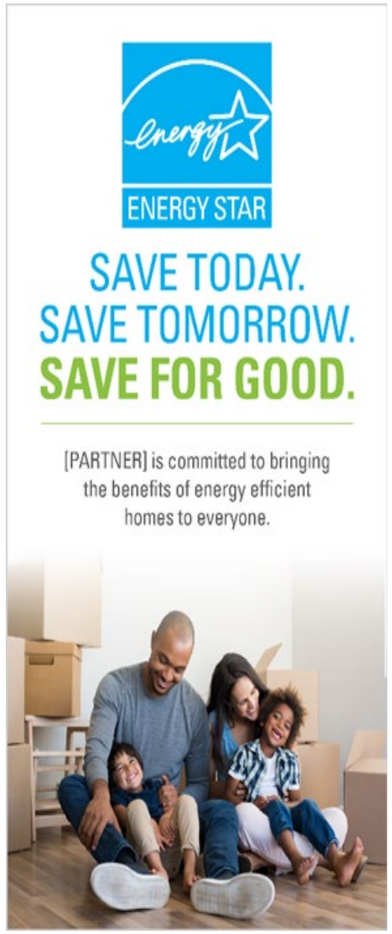
EPA is creating a Fall Partner Communications Kit with ads and other assets. Materials will include:

- **Variety of digital ads** for Partners based upon the updated messaging pillars and design strategies.
  - Multiple images and dimensions
  - Multilingual versions (Spanish)
- **Seasonal social media post content**
- **Co-brandable postcard**

SNEAK PEEK!!


# ENERGY STAR Day 2021

- **Tuesday, October 26**
- Highlighting partner efforts to bring the benefits of energy efficiency to underserved communities
- EPA will be promoting these efforts across multiple media channels


## Multifamily New Construction (MFNC)

# Transition Highlights

**Rebecca Hudson**

Technical Manager

ENERGY STAR Multifamily New Construction

# July 2021 Transition to Multifamily New Construction



SFNH




MFNC

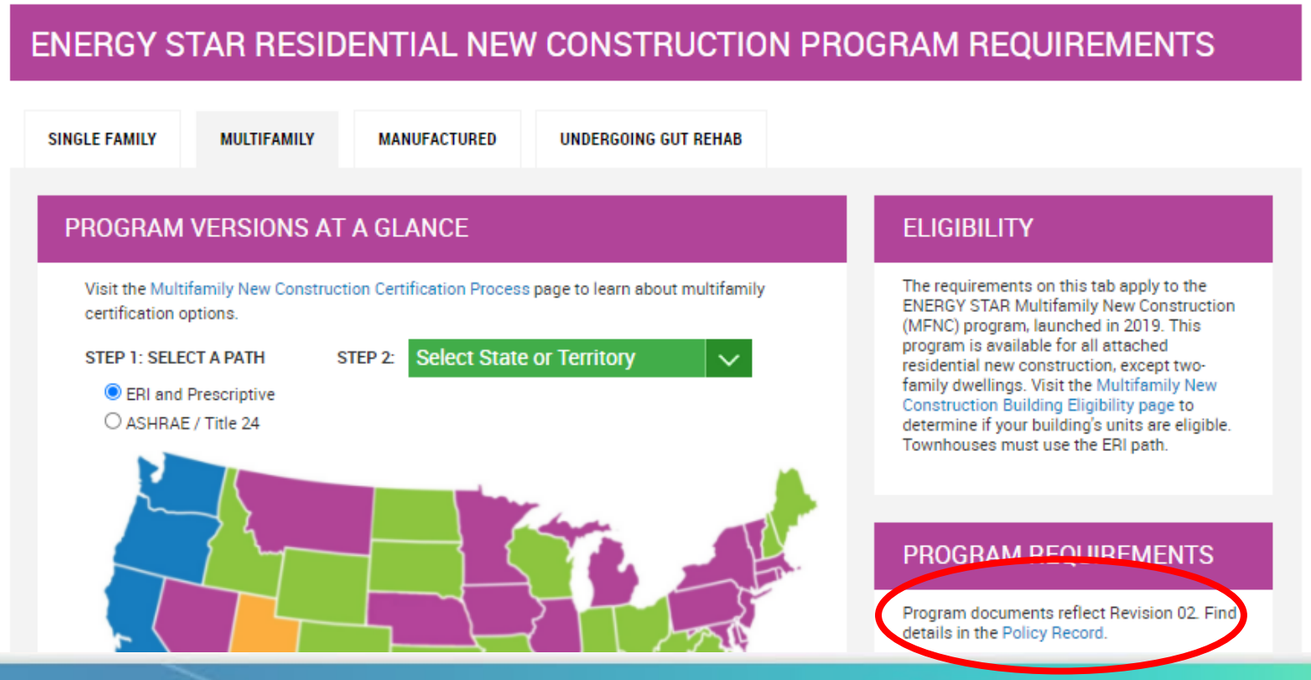
# First MFNC Certified Building

# Expanding the option to use Advanced Framing

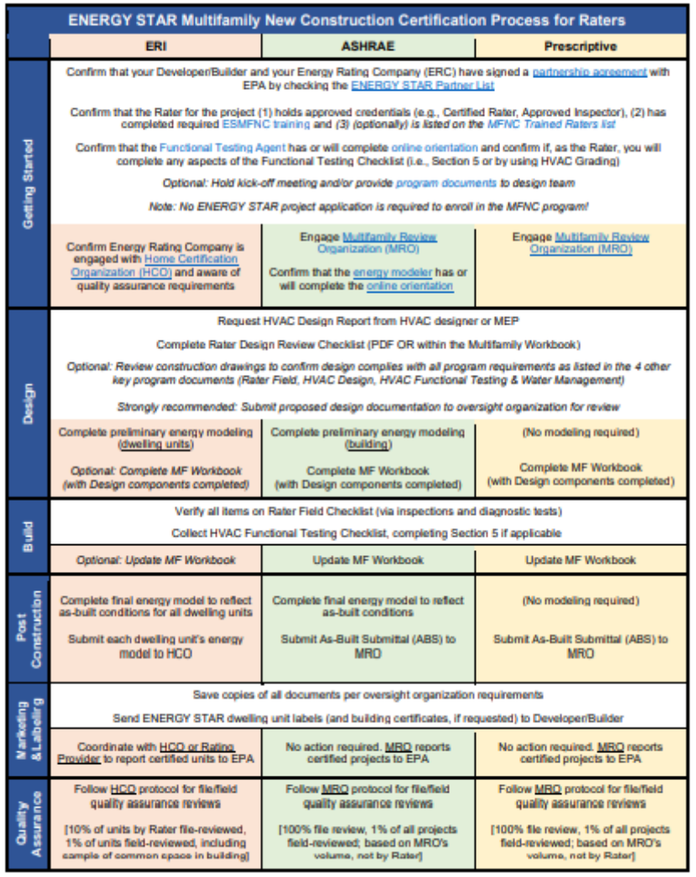
| 3. Reduced Thermal Bridging | | | | |
|---|---|---|---|---|
| 3.7 At above-grade walls and rim / band joists separating conditioned space from the exterior, one of the following options used: [23, 26] | | | | |
| 3.7.1 Continuous rigid insulation, insulated siding, or combination of the two is: ≥ R-3 in CZ 1-4; ≥ R-5 in CZ 5-8 [24, 25, 26, 27], **OR**; | ☐ | ☐ | ☐ | ☐ |
| 3.7.2 Structural Insulated Panels **OR**; Insulated Concrete Forms **OR**; Double-wall framing **OR**; [24, 26, 28] | ☐ | ☐ | ☐ | ☐ |
| 3.7.3 Option only for wood-framed walls either in CZ 1-5 OR ≤ 3 stories: 'advanced framing' details including all of the Items below: [26, 29] | | | | |
| 3.7.3a Corners insulated ≥ R-6 to edge [30], **AND**; | ☐ | ☐ | ☐ | ☐ |
| 3.7.3b Headers above windows & doors insulated ≥ R-3 for 2x4 framing or equivalent cavity width, and ≥ R-5 for all other assemblies (e.g., with 2x6 framing) [31], **AND**; | ☐ | ☐ | ☐ | ☐ |
| 3.7.3c Interior / exterior wall intersections insulated to same R-value as rest of exterior wall. [32] | ☐ | ☐ | ☐ | ☐ |
| 3.7.3d In Climate Zone 5, for > 3 stories, ≥ 5.5" framing depth used with wall cavity insulated ≥R-20.0. | ☐ | ☐ | ☐ | ☐ |

# Key Improvements and Clarifications

- Expanding the option to use advanced framing to CZ4 & CZ5
- Creating flexibility when meeting code-based minimum insulation requirements
- Coordinating with phius 2021 to create new source energy targets
- Requiring hot water delivery temperature measurement just at faucet, not showerhead
- Clarifying insulation requirements for concrete floors & perimeter edges



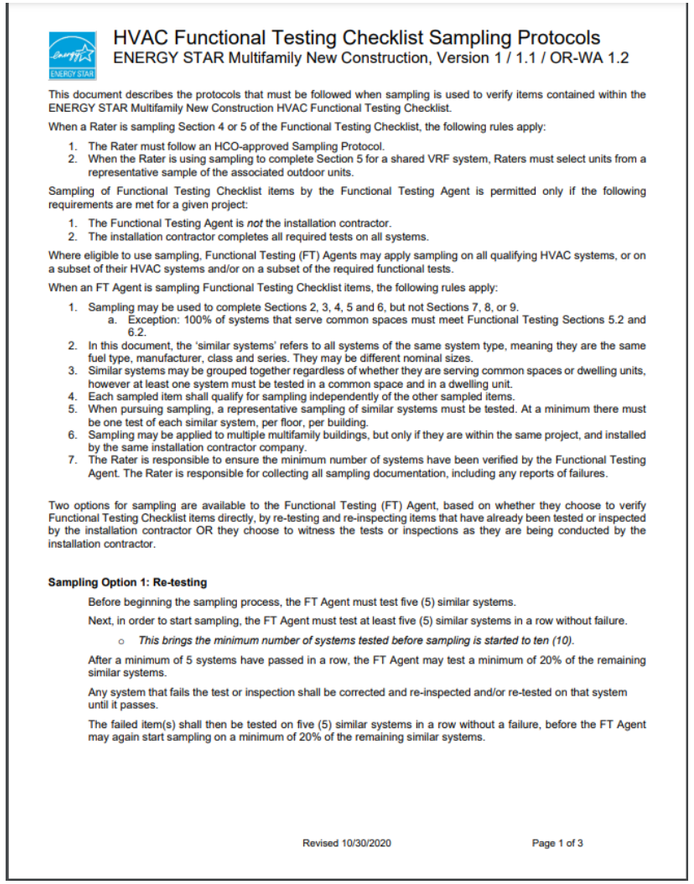
# MFNC Resources



**ENERGY STAR Multifamily New Construction Certification Process for Raters**

| | ERI | ASHRAE | Prescriptive |
|---|---|---|---|
| Getting Started | Confirm that your Developer/Builder and your Energy Rating Company (ERC) have signed a partnership agreement with EPA by checking the ENERGY STAR Partner List<br>Confirm that the Rater for the project (1) holds approved credentials (e.g., Certified Rater, Approved Inspector), (2) has completed required ESMFNC training and *(3) (optionally) is listed on the MFNC Trained Raters list*<br>Confirm that the Functional Testing Agent has or will complete online orientation and confirm if, as the Rater, you will complete any aspects of the Functional Testing Checklist (i.e., Section 5 or by using HVAC Grading)<br>*Optional: Hold kick-off meeting and/or provide program documents to design team*<br>*Note: No ENERGY STAR project application is required to enroll in the MFNC program!* | | |
| | Confirm Energy Rating Company is engaged with Home Certification Organization (HCO) and aware of quality assurance requirements | Engage Multifamily Review Organization (MRO)<br>Confirm that the energy modeler has or will complete the online orientation | Engage Multifamily Review Organization (MRO) |
| Design | Request HVAC Design Report from HVAC designer or MEP<br>Complete Rater Design Review Checklist (PDF OR within the Multifamily Workbook)<br>*Optional: Review construction drawings to confirm design complies with all program requirements as listed in the 4 other key program documents (Rater Field, HVAC Design, HVAC Functional Testing & Water Management)*<br>*Strongly recommended: Submit proposed design documentation to oversight organization for review* | | |
| | Complete preliminary energy modeling (dwelling units)<br>*Optional: Complete MF Workbook (with Design components completed)* | Complete preliminary energy modeling (building)<br>Complete MF Workbook (with Design components completed) | (No modeling required)<br>Complete MF Workbook (with Design components completed) |
| Build | Verify all items on Rater Field Checklist (via inspections and diagnostic tests)<br>Collect HVAC Functional Testing Checklist, completing Section 5 if applicable | | |
| | *Optional: Update MF Workbook* | Update MF Workbook | Update MF Workbook |
| Post Construction | Complete final energy model to reflect as-built conditions for all dwelling units<br>Submit each dwelling unit's energy model to HCO | Complete final energy model to reflect as-built conditions<br>Submit As-Built Submittal (ABS) to MRO | (No modeling required)<br>Submit As-Built Submittal (ABS) to MRO |
| Marketing & Labeling | Save copies of all documents per oversight organization requirements<br>Send ENERGY STAR dwelling unit labels (and building certificates, if requested) to Developer/Builder | | |
| | Coordinate with HCO or Rating Provider to report certified units to EPA | No action required. MRO reports certified projects to EPA | No action required. MRO reports certified projects to EPA |
| Quality Assurance | Follow HCO protocol for file/field quality assurance reviews<br>[10% of units by Rater file-reviewed, 1% of units field-reviewed, including sample of common space in building] | Follow MRO protocol for file/field quality assurance reviews<br>[100% file review, 1% of all projects field-reviewed; based on MRO's volume, not by Rater] | Follow MRO protocol for file/field quality assurance reviews<br>[100% file review, 1% of all projects field-reviewed; based on MRO's volume, not by Rater] |

**Certification Process Technical Bulletin**



## HVAC Functional Testing Checklist Sampling Protocols

ENERGY STAR Multifamily New Construction, Version 1 / 1.1 / OR-WA 1.2

This document describes the protocols that must be followed when sampling is used to verify items contained within the ENERGY STAR Multifamily New Construction HVAC Functional Testing Checklist.

When a Rater is sampling Section 4 or 5 of the Functional Testing Checklist, the following rules apply:

1. The Rater must follow an HCO-approved Sampling Protocol.
2. When the Rater is using sampling to complete Section 5 for a shared VRF system, Raters must select units from a representative sample of the associated outdoor units.

Sampling of Functional Testing Checklist items by the Functional Testing Agent is permitted only if the following requirements are met for a given project:

1. The Functional Testing Agent is *not* the installation contractor.
2. The installation contractor completes all required tests on all systems.

Where eligible to use sampling, Functional Testing (FT) Agents may apply sampling on all qualifying HVAC systems, or on a subset of their HVAC systems and/or on a subset of the required functional tests.

When an FT Agent is sampling Functional Testing Checklist items, the following rules apply:

1. Sampling may be used to complete Sections 2, 3, 4, 5 and 6, but not Sections 7, 8, or 9.
   a. Exception: 100% of systems that serve common spaces must meet Functional Testing Sections 5.2 and 6.2.
2. In this document, the 'similar systems' refers to all systems of the same system type, meaning they are the same fuel type, manufacturer, class and series. They may be different nominal sizes.
3. Similar systems may be grouped together regardless of whether they are serving common spaces or dwelling units, however at least one system must be tested in a common space and in a dwelling unit.
4. Each sampled item shall qualify for sampling independently of the other sampled items.
5. When pursuing sampling, a representative sampling of similar systems must be tested. At a minimum there must be one test of each similar system, per floor, per building.
6. Sampling may be applied to multiple multifamily buildings, but only if they are within the same project, and installed by the same installation contractor company.
7. The Rater is responsible to ensure the minimum number of systems have been verified by the Functional Testing Agent. The Rater is responsible for collecting all sampling documentation, including any reports of failures.

Two options for sampling are available to the Functional Testing (FT) Agent, based on whether they choose to verify Functional Testing Checklist items directly, by re-testing and re-inspecting items that have already been tested or inspected by the installation contractor OR they choose to witness the tests or inspections as they are being conducted by the installation contractor.

**Sampling Option 1: Re-testing**

Before beginning the sampling process, the FT Agent must test five (5) similar systems.

Next, in order to start sampling, the FT Agent must test at least five (5) similar systems in a row without failure.

- *This brings the minimum number of systems tested before sampling is started to ten (10).*

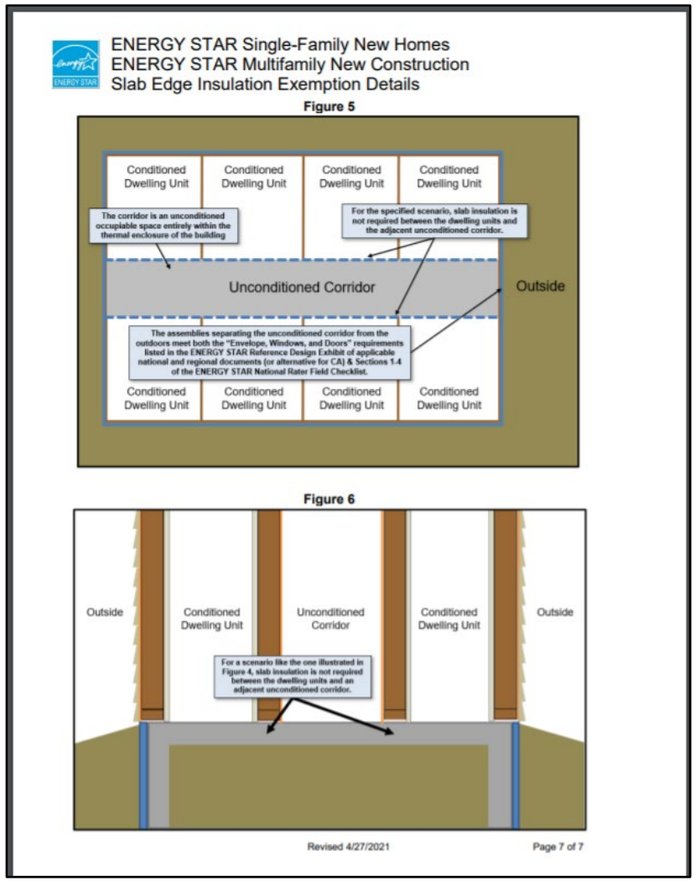
After a minimum of 5 systems have passed in a row, the FT Agent may test a minimum of 20% of the remaining similar systems.

Any system that fails the test or inspection shall be corrected and re-inspected and/or re-tested on that system until it passes.

The failed item(s) shall then be tested on five (5) similar systems in a row without a failure, before the FT Agent may again start sampling on a minimum of 20% of the remaining similar systems.

Revised 10/30/2020 Page 1 of 3

**Functional Testing Sampling Protocols**



ENERGY STAR Single-Family New Homes
ENERGY STAR Multifamily New Construction
Slab Edge Insulation Exemption Details

**Figure 5**



**Figure 6**



Revised 4/27/2021 Page 7 of 7

**Slab Edge Exemption Details**

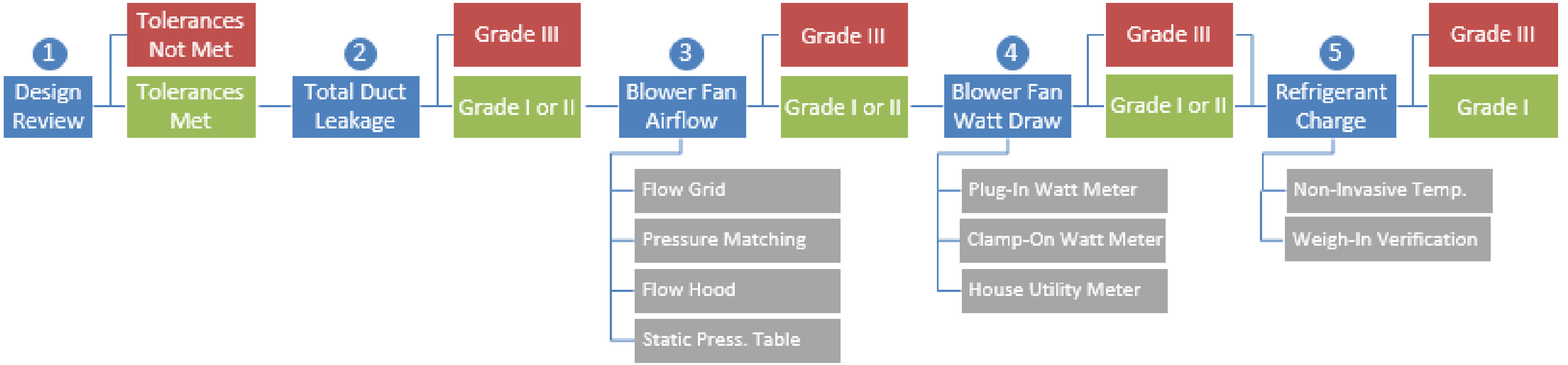
# HVAC Grading Roll Out

**Dean Gamble**

Technical Manager

ENERGY STAR Single-Family New Homes

# HVAC Grading Update



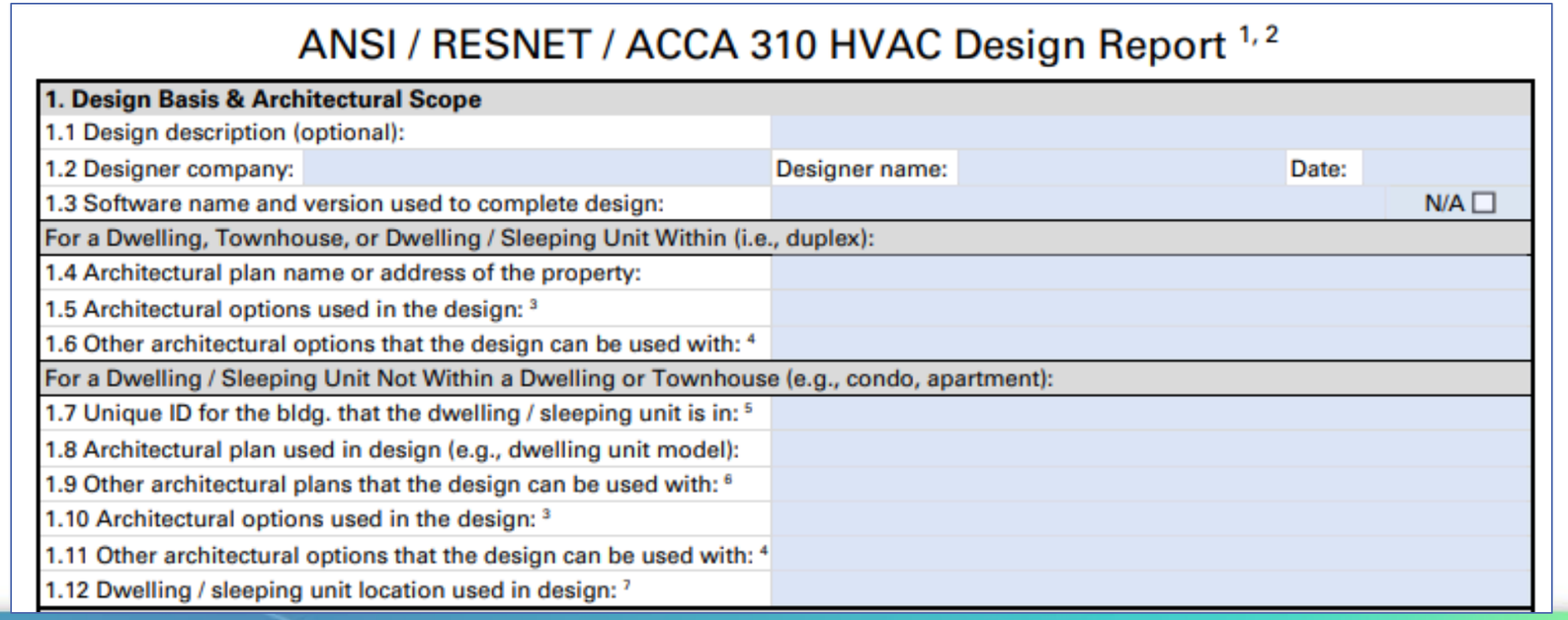
## HVAC Grading Update

1. ERI points can now be earned for HVAC grading in all rating software programs.



# HVAC Grading Update

2. Std. 310 HVAC Design Report template has been completed:
   - Go to: www.resnet.us/about/standards/resnet-ansi/ under Calculators & Tools.
   - Being programmed into design software, so designer can complete with ease:
     - Wrightsoft has completed this!
     - EnergyGauge USA will be adding it very soon.
     - Elite RHVAC has committed to adding it and is assessing their timeline.



ANSI / RESNET / ACCA 310 HVAC Design Report [1, 2]

| | | | |
|---|---|---|---|
| **1. Design Basis & Architectural Scope** | | | |
| 1.1 Design description (optional): | | | |
| 1.2 Designer company: | Designer name: | Date: | |
| 1.3 Software name and version used to complete design: | | | N/A ☐ |
| For a Dwelling, Townhouse, or Dwelling / Sleeping Unit Within (i.e., duplex): | | | |
| 1.4 Architectural plan name or address of the property: | | | |
| 1.5 Architectural options used in the design: [3] | | | |
| 1.6 Other architectural options that the design can be used with: [4] | | | |
| For a Dwelling / Sleeping Unit Not Within a Dwelling or Townhouse (e.g., condo, apartment): | | | |
| 1.7 Unique ID for the bldg. that the dwelling / sleeping unit is in: [5] | | | |
| 1.8 Architectural plan used in design (e.g., dwelling unit model): | | | |
| 1.9 Other architectural plans that the design can be used with: [6] | | | |
| 1.10 Architectural options used in the design: [3] | | | |
| 1.11 Other architectural options that the design can be used with: [4] | | | |
| 1.12 Dwelling / sleeping unit location used in design: [7] | | | |

# HVAC Grading Update

3. ENERGY STAR Supplement to Std. 310 template has been completed:
   - Go to: www.energystar.gov/newhomesrequirements.
   - When using HVAC grading for ENERGY STAR, collect:
     a) Std. 310 design report + this supplement, or,
     b) Std. 310 design report + ENERGY STAR HVAC Design Report
   - Supplement can be used for SFNH and dwelling / sleeping units in MFNC. MFNC has an additional design supplement for common spaces.

ENERGY STAR Single-Family New Homes, All Versions (Rev. 11)
ENERGY STAR Multifamily New Construction, All Versions (Rev. 02)
National HVAC Design Supplement to Std. 310 for Dwellings & Units [1]

| | | | | |
|---|---|---|---|---|
| **1. Design Basis** | | | | |
| 1.1 Design description (optional): | | | | |
| 1.2 Designer company: | | Designer name: | Date: | |
| **2. Dwelling Unit Mechanical Ventilation System Design ("Vent System") & Inlets in Return Duct** [2, 3, 4] | | | Verified [5] | N/A |
| **Airflow:** | | | | |
| 2.1 Ventilation airflow design rate & run-time for each Vent System meets ASHRAE 62.2-2010 or later edition. [6] | | | ☐ | |
| 2.2 Access point is specified for Rater to measure ventilation airflow rate and inspect any motorized / shutoff dampers. [4, 7] | | | ☐ | |
| **System Controls**: | | | | |
| 2.3 Specified controls for each Vent System allow it to operate automatically, without occupant intervention. | | | ☐ | |

## HVAC Grading Update

3. ENERGY STAR Supplement to Std. 310 (cont.):
   - This supplement is also being programmed into design software:
     - Wrightsoft has committed to add this by the end of the year.
     - EnergyGauge USA has committed to add this and is assessing timeline.
     - Elite RHVAC has committed to add this and is assessing timeline.

# HVAC Grading Update

4. HVAC grading tech bulletin and fact sheets for both SFNH and MFNC coming soon:

ENERGY STAR®
Residential New Construction

## Technical Bulletin:
## Track A - HVAC Grading Now Available for Use!

Track A - HVAC Grading is a collection of requirements built upon ANSI / RESNET / ACCA / ICC Standard 310 that can be used to satisfy many of the HVAC design and commissioning components of the ENERGY STAR Single-Family New Homes program.

**And now, with the release of updates for Ekotrope and EnergyGauge USA (and with the expected updates to REM/Rate coming soon), Track A - HVAC Grading, can now be used.**

While this new track is available for use, partners are free to continue using Track B - HVAC Credential. Track B is a collection of requirements built upon the use of a credentialed HVAC contractor. While the name "Track B - HVAC Credential" is new, this is the familiar set of requirements that partners have been using to date.

### Key Benefits of Track A - HVAC Grading

**HVAC grading makes it easier to certify ENERGY STAR single-family new homes:**

- Integrates most ENERGY STAR HVAC requirements into a standard energy rating
- Does not require the use of a credentialed HVAC contractor
- Does not require the contractor to complete the HVAC Commissioning Checklist
- Rewards proper installation with ERI points and helps meet the 45L tax credit

ENERGY STAR® Single-Family New Homes
HVAC Grading for Builders

ENERGY STAR® Single-Family New Homes
HVAC Grading for HVAC Contractors

ENERGY STAR® Single-Family New Homes
HVAC Grading for HVAC Designers

ENERGY STAR® Single-Family New Homes
HVAC Grading for Raters

Overview

An exciting new option for meeting ENERGY STAR HVAC design and commissioning requirements is here. This option, called "Track A - HVAC Grading," leverages ANSI / RESNET / ACCA / ICC Standard 310 for grading the installation of HVAC systems. Standard 310 integrates an HVAC design review and four sequential field tasks into a standard energy rating. Properly installed HVAC systems will be rewarded with better scores, which can help meet the ENERGY STAR ERI target.

The Five Key Sequential Tasks in Standard 310

Task 1 | Task 2 | Task 3 | Task 4 | Task 5

# HVAC Grading Update

- To-do list:
  1. RESNET Raters and RFI's, complete mandatory Std. 310 training.
  2. Model potential ERI impacts.
  3. Explore handy Excel "Std. 310 Data Tool" on RESNET's site.

**Standard 310 Data Tool:**
**Evaluation of the Design**

1) This tab encompasses all required design review criteria, divided into a Plan Review section, which contains all of the criteria, and the Field Review section, which contains the subset that can only be fully verified in the field. Ultimately, the Home as constructed must meet the required criteria. However, completing the Plan Review section will ensure the project is on track and will fully satisfy the subset of criteria that can be fully verified prior to construction.
2) The term "Home" is shorthand for the Dwelling, Townhouse, Dwelling Unit, or Sleeping Unit being rated. For the Plan Review section, this is represented by the architectural plan, spec sheets, and/or the energy model; for the Field Review section, this is represented by the actual constructed structure.
3) Note that two sections must be completed - 1) the section applicable to the specific home type being rated and 2) the section applicable to all home types.

Home Type: Dwelling or townhouse or unit within

| For A Dwelling or Townhouse, or Dwelling / Sleeping Unit Within (e.g. Duplex) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Complete this section? | Yes | |
| | | | | | Required data inputs provided? | No | |
| | Plan Review | | | Field Review | | | |
| **Architectural Plan & Options** | | | | | | | |
| Does the name of the plan or address for the Home match the HVAC design? | | | Yes | | | Yes | |
| Do the options used in the Home match those in the HVAC design, or are they listed in the options the HVAC design can be used with? | | | Yes | | | Yes | |
| **Conditioned Floor Area of Heating / Cooling Zones** | Zone 1 | Zone 2 | Zone 3 | Zone 1 | Zone 2 | Zone 3 | |
| HVAC Design | | | | | | | Sq. Ft. |
| Home | | | | | | | Sq. Ft. |
| Home is between 300 sq. ft. smaller & 100 sq. ft. larger than HVAC design? | Yes | Yes | Yes | Yes | Yes | Yes | |
| **Window Area of Heating / Cooling Zones** | Zone 1 | Zone 2 | Zone 3 | Zone 1 | Zone 2 | Zone 3 | |
| HVAC Design | | | | | | | Sq. Ft. |
| Home | | | | | | | Sq. Ft. |
| Home is between 60 sq. ft. smaller & 15 sq. ft. larger than HVAC design, or for zones with > 500 sq. ft. of windows, between 12% smaller and 3% larger? | Yes | Yes | Yes | Yes | Yes | Yes | |

**Standard 310 Data Tool:**
**Evaluation of the Blower Fan Volumetric Airflow**

| | | |
|---|---|---|
| **Prerequisites** | | |
| Did total duct leakage achieve Grade I or II designation? | No | |
| HVAC equipment is operational & matches specification? | Yes | |
| If specified, mech. vent. system is operational & matches specification? | Yes | |
| If specified, distribution system installed, including registers & grilles? | Yes | |
| If specified, filter installed & matches specified performance rating? | Yes | |
| Have prerequisites been met? | No | |
| **Information from HVAC Design Report** | | |
| Enter design-specified blower fan airflow (Qdesign) | | CFM |
| **Test Method Selection** | | |
| Does the system have a total amount of supply ductwork or distribution building cavities that is > 10 total linear feet? | Yes | |
| Is the system entirely in Conditioned Space Volume? | No | |
| Is testing required? | Yes | |
| Was blower fan airflow test exemption taken? | No | |
| What Grade designation did total duct leakage achieve (I or II)? | Grade III | |
| If testing is required and pre-reqs met, select one airflow test method. | Flow Hood | |
| **Dwelling and Forced-Air HVAC System Set Up** | | |
| Dwelling and forced-air HVAC system set up per Section 6.4? | Yes | |
| Enter mode that forced-air HVAC system was tested in | Cooling | |

4. Try out Std. 310 by assessing different test methods on several homes.

# Program Requirements

# Forthcoming Revisions to SFNH and MFNC program

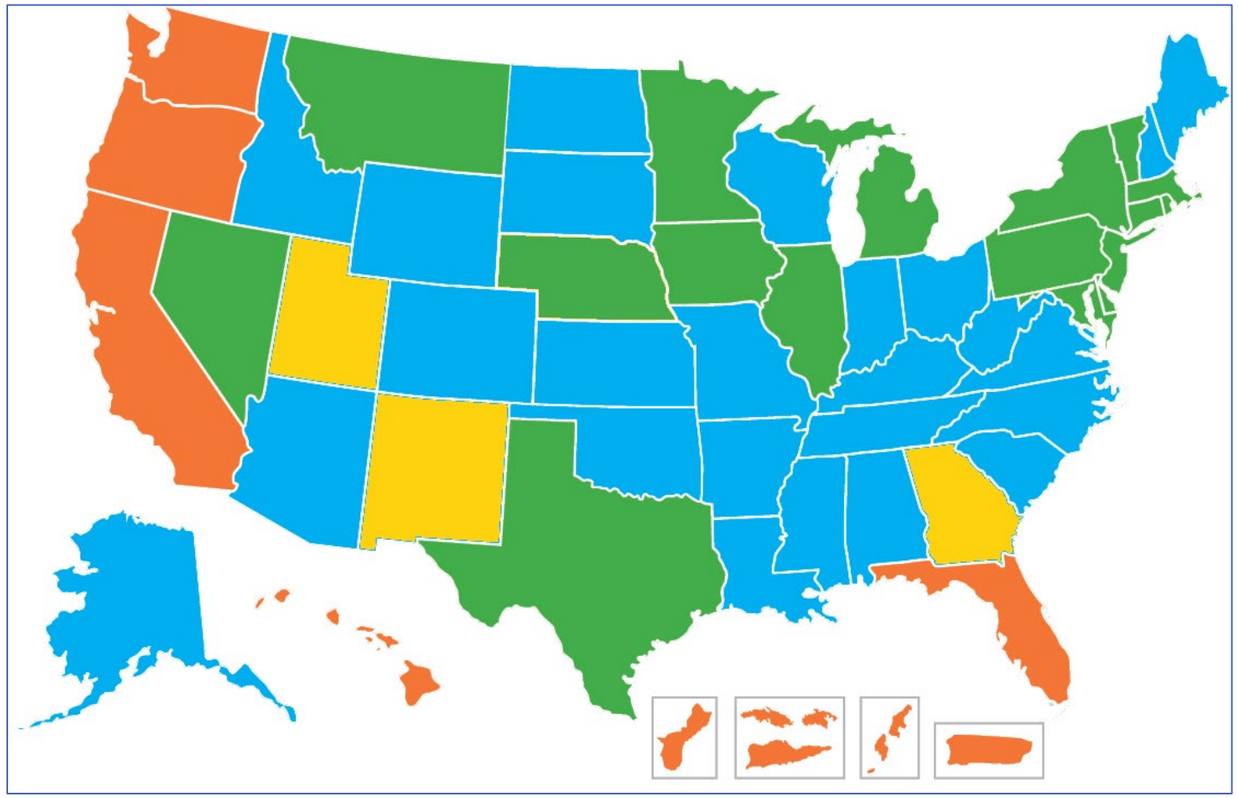
## A Revision…

1. Clarifies
2. Simplifies
3. Improves

- SFNH Rev. 12 and MFNC Rev. 03 arriving this winter.
- Already covered the highlights for the MNFC program.
- For the SFNH program, not anticipating many / any significant changes.

# Current Implementation of Program Requirements

## SFNH Program



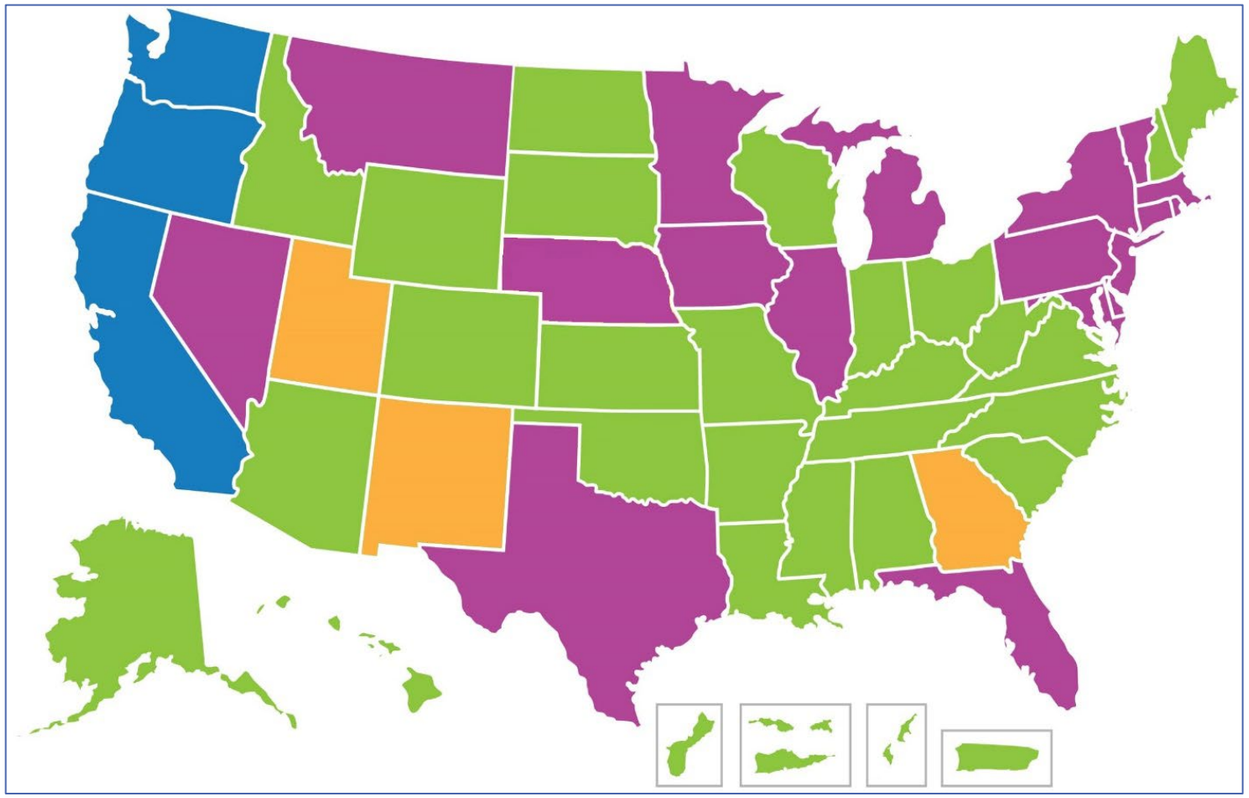
25 National v3 in effect

17 National v3.1 in effect

3 National v3.1 date defined

5 Regional Version in effect

## MFNC Program



26 Version 1 in effect

18 Version 1.1 in effect

3 Version 1.1 date defined

3 Regional v1.2 in effect

## National program Version updates

- New states implementing SFNH National Version 3.1 / MFNC National 1.1:
  - Georgia implementation date: 07/01/2022
  - New Mexico implementation date: 07/01/2022
  - Utah implementation date: 07/01/2022

# State, Region, & Sector-Specific Program Modifications

- Modifications to our base program requirements are needed in several situations, continuing past practice of having differentiated versions:
  - **CA (SFNH & MFNC):**
    - Code exceeds 2021 IECC and uses a unique state-specific compliance metric.
    - Stakeholder comment period for new version before end of year.
  - **WA (SFNH & MFNC):**
    - Code exceeds 2021 IECC and sets higher bar for gas homes than electric homes.
    - Stakeholder comment period for new version before end of year.
  - **Caribbean (SFNH & MFNC) & Pacific (SFNH):**
    - Due to unique climate & building practices, region-specific versions have been developed.
    - SFNH is developing a new version for the Pacific in response to new HI code.
  - **Manufactured Homes:**
    - New HUD code has been proposed for comment (via DOE).
    - Developing a new version in response.

# Program Roadmap Preview

## Three New Initiatives

**Elliot Seibert**

Implementation Manager

ENERGY STAR Single-Family New Homes

# RaterPRO Retirement

- RaterPRO is being retired
- We are working with users for smooth transition
- Open-Source code is available
- EPA remains strong advocate for digital data collection

## Three New Initiatives

In early October, we'll have a stakeholder feedback period on:

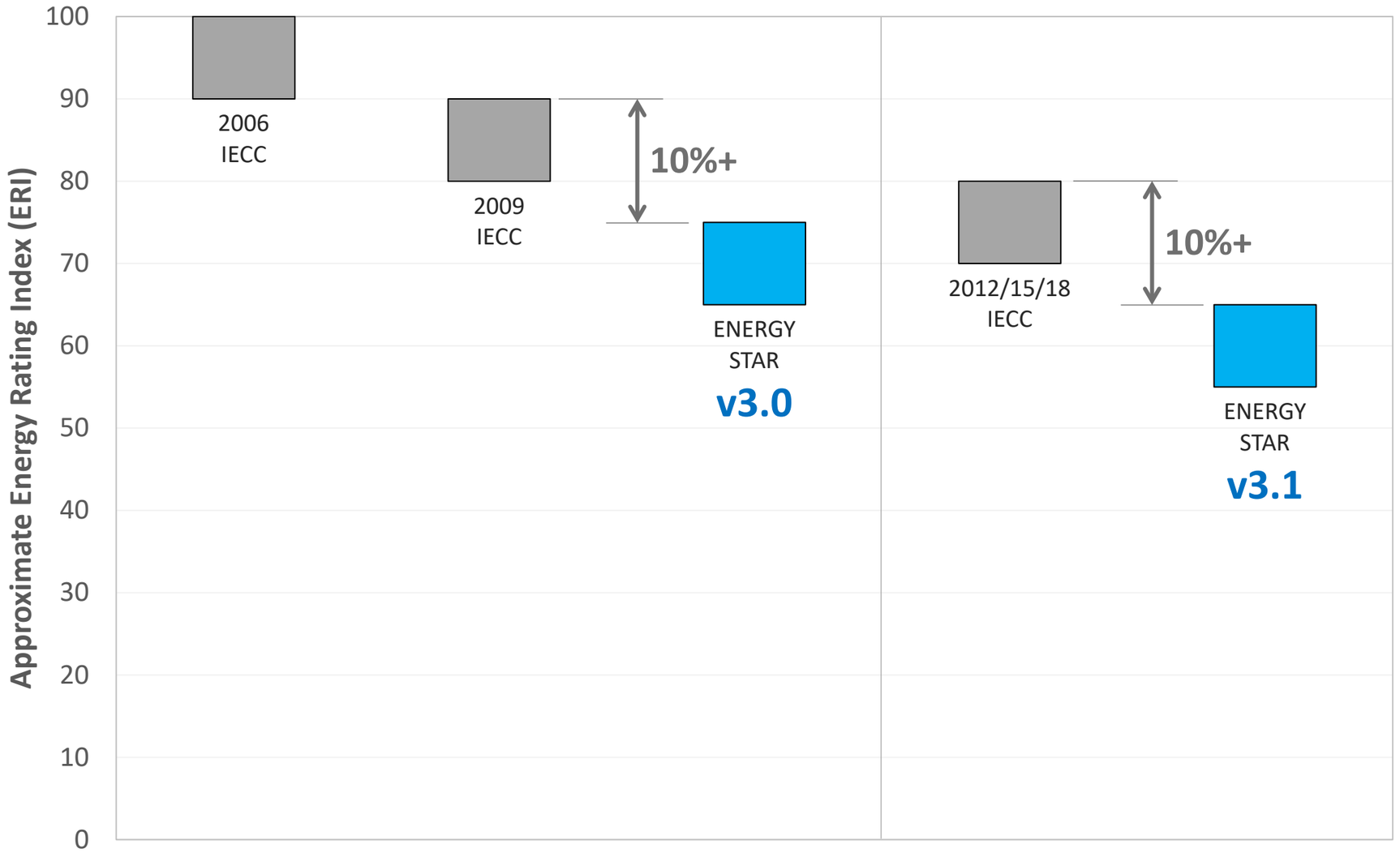
1. **National Transition** to Version 3.1 and Version 1.1.
2. **Definition** of Version 3.2 and Version 1.2 for states that adopt the 2021 IECC.
3. **Introduction** of a new certification, above and beyond the current ENERGY STAR new construction programs, encompassing five forward-looking features.

# # 1

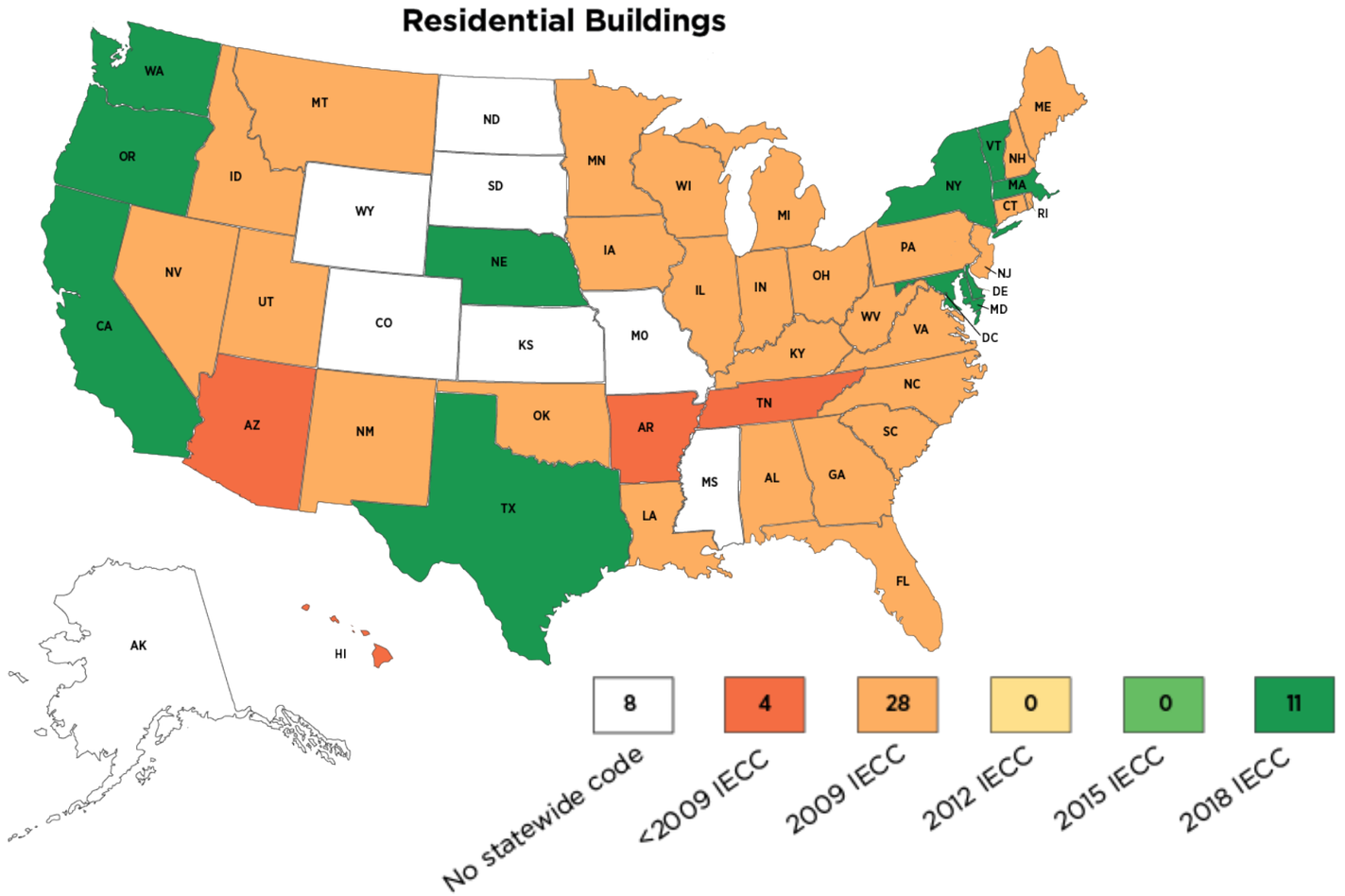
# National Transition to Version 3.1 and Version 1.1

(SFNH v3.1 & MFNC v1.1)

# Modern code evolution

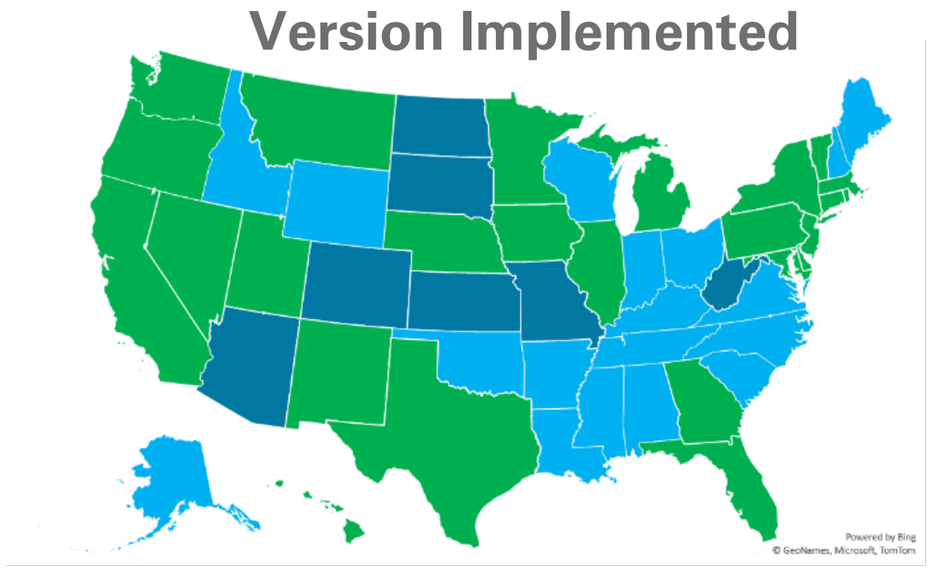


# Adoption of state energy codes




**Source:** DOE/EERE https://www.energycodes.gov/status/residential

# National Transition to Version 3.1 and MFNC v1.1




**25** **Version 3.1+** (national or regional), including 4 states with upcoming transition dates defined*

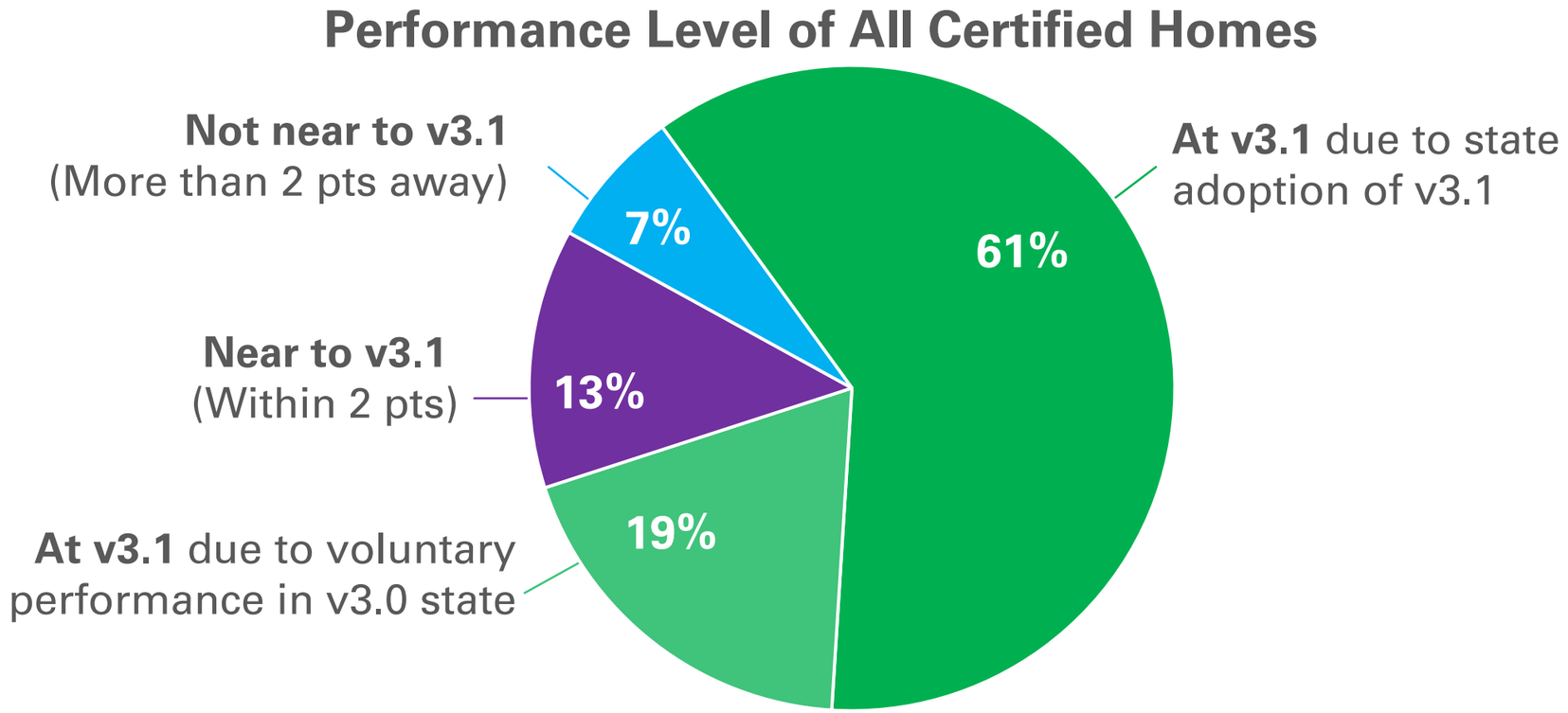
**7** **Version 3.0** due to home rule

**18** **Version 3.0** due to code ≤ IECC 2009

*Includes GA, UT and NM, for which EPA has already announced a transition to Version 3.1 based on state code updates.

# National Transition to Version 3.1 and MFNC v1.1

- **93%** of single-family homes certified as ENERGY STAR between 08/2019 and 08/2020 were already **at or near the v3.1 level**:



## What are we proposing?

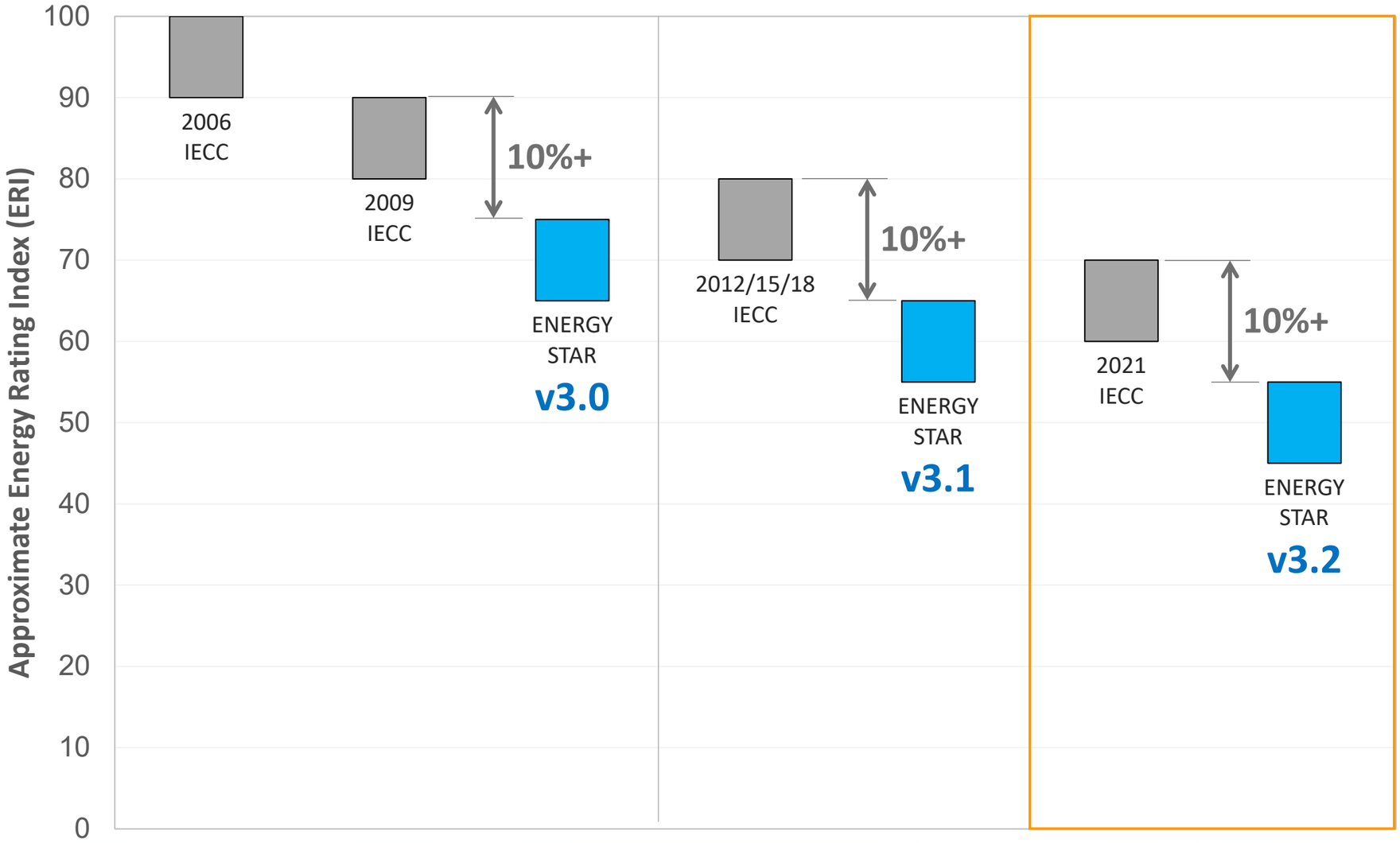
- Transitioning all states still using Version 3.0 to **Version 3.1**.
- For MFNC, similar transition of states using Version 1.0 to **Version 1.1**.
- Transition date of January 1, 2023 (based on permit date).
- Pending stakeholder feedback, final determination anticipated by the end of the year.

# # 2

# Definition of Version 3.2 and Version 1.2

(SFNH v3.2 & MFNC v1.2)

# Modern code evolution



# Process for developing new Versions

- Performance target determined by defining a ‘Reference Design.’


**Home / Apartment To Be Built** + **Reference Design Measures** = **Performance Target**

- Iterative energy modeling used to identify a package of measures that:
  - Generate at least 10% savings
  - Are practical for a builder to incorporate

## What are we proposing?

New Versions of the ENERGY STAR program requirements to be implemented in states that adopt the 2021 IECC or equivalent; implementation date one year after enforcement of new state code.

**ENERGY STAR Single-Family New Homes – National Version 3.2**

- The only differences between National v3.1 and v3.2 are a more stringent ERI target (~50-55) and a new thermal backstop. No other changes.

**ENERGY STAR Multifamily New Construction – National Version 1.2**

- Again, more stringent ERI target and a new thermal backstop.
- In common spaces for the ERI Path, or in all spaces for the Prescriptive Path, higher efficiencies for central/commercial systems.
- ASHRAE Path performance target based on ASHRAE 90.1-2019.

# # 3

# Introduction of a New Certification Program

**Asa Foss**
Program Development Manager

## Program Vision

To help decarbonize the residential sector, we are proposing to introduce a new whole-house certification program, above and beyond the ENERGY STAR new construction programs, to inspire the industry and demonstrate that it is possible to build the homes we need for tomorrow, today.

- This new program is an opportunity to:
  - Provide recognition for decarbonized homes & the builders that construct them
  - Create a national platform for training, tools, & support for decarbonization in homes
  - 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
  - Offer a new opportunity for builders to demonstrate progress towards their environmental, social, and governance (ESG) goals

# Proposed Requirements for the New Certification Program

1. Highly energy-efficient construction (ENERGY STAR v3.2/v1.2)
2. Multi-stage ENERGY STAR certified connected heat pump
3. ENERGY STAR certified connected heat pump water heater
4. Induction cooktop and electric oven
5. Electric vehicle charging capability

# Rater Field Checklist

ENERGY STAR *New Whole-House Certification Program*
National Rater Field Checklist, Public Comment Draft

Home/Building Address: _____ City: _____ State: _____ Permit Date: _____

| 1. ENERGY STAR Certification Baseline | Must Correct | Rater Verified | N/A |
|---|---|---|---|
| 1.1 Home or building certified under one of the following ENERGY STAR New Construction programs (check box):<br>Single Family New Homes (SFNH) — Multifamily New Construction (MFNC)<br>☐ SFNH National Version 3.2 — ☐ MFNC National Version 1.2<br>*California Projects Only:* ☐ SFNH California Version 3.3 — ☐ MFNC California Version 1.3 | ☐ | ☐ | - |
| **2. Dwelling Unit Space Heating** | | | |
| 2.1 ENERGY STAR certified two-speed or variable-speed heat pump(s) installed and sized in accordance with the HVAC Design Report | ☐ | ☐ | - |
| 2.1.1 Blower fan volumetric airflow, blower fan watt draw, and refrigerant charge are Grade I per ANSI / RESNET / ACCA Std. 310 | ☐ | ☐ | ☐ |
| 2.1.2 In CZ 5-8, installed heat pumps are ENERGY STAR Cold Climate certified | ☐ | ☐ | ☐ |
| 2.2 Each heat pump meets EPA's 'connected' criteria or is controlled by an ENERGY STAR certified smart thermostat | ☐ | ☐ | - |
| **3. Dwelling Unit Water Heating** | | | |
| 3.1 ENERGY STAR certified heat pump water heater that meets EPA's 'connected' criteria is installed | ☐ | ☐ | ☐ |
| 3.2 Each heat pump water heater is 240 volts, with minimum tank capacity as follows:<br>**Bedrooms:** 1 — 2 — 3 — 4+<br>**Minimum Tank Capacity:** 40 — 50 — 65 — 80 | ☐ | ☐ | ☐ |
| 3.3 Each heat pump water heater located within occupiable space has a sone rating ≤ 55 dBA | ☐ | ☐ | ☐ |
| **4. Cooking** | | | |
| 4.1 Cooktops and range elements/burners use induction technology, and ovens are electric | ☐ | ☐ | ☐ |
| **5. Electric Vehicle Charging Infrastructure** - For one and two-family dwellings with a private driveway or garage, comply with Item 5.1<br>For all other dwellings and dwelling units, comply with either Item 5.1 or 5.2 | | | |
| 5.1 EV-Ready: One parking space is provided per dwelling unit that includes all of the items below: | - | - | ☐ |
| 5.1.1 A powered 208/240 receptacle is installed in garage or within 3 feet of driveway or dedicated parking space | ☐ | ☐ | - |
| 5.1.2 The electric service panel includes a 40-amp breaker and panel directory identifies the branch circuit as "Electric vehicle charging" | ☐ | ☐ | - |
| 5.2 EV-Chargers and EV-Capable parking spaces are installed, including all of the items below: | - | - | ☐ |
| 5.2.1 EV-Charger: Install (at a minimum) the following number of ENERGY STAR certified EV-Chargers that meet EPA's 'connected' criteria as follows:<br>**Parking Spaces:** 1-10 spaces — 11-20 spaces — 21-30 spaces — 31-40 spaces — 41+ spaces<br>**EV Chargers:** 1 — 2 — 3 — 4 — 5 | ☐ | ☐ | - |
| 5.2.2 EV-Capable: Conduit is installed that runs continuously from the electrical panel to a junction box that terminates within 3 feet of at least 20% of the development's parking spaces | ☐ | ☐ | - |

Rater Name: _____ Rater Inspection Date: _____ Rater Initials: _____

# Next Steps and Timeline

Stakeholder feedback

Final specification release
(Expected: Q1 2022)

Full deployment
(Expected: January 1, 2023)

- Branding
- Supplemental Materials
- Training

# Upcoming Partner Meeting Webinar Series Sessions

- **ENERGY STAR Marketing & Communications**

  Thursday, September 23, 2021

- **Raising the Bar: Advancing the Versions of ENERGY STAR Residential New Construction**

  Monday, September 27, 2021

- **ENERGY STAR: The Decade Ahead Starts Now**

  Wednesday, September 29, 2021

- **A New Day for Building ENERGY STAR**

  Thursday, September 30, 2021

- **Office Hours**

  Tuesday, October 5, 2021

- **DOE Zero Energy Ready Homes and the Year Ahead**

  Thursday, October 7, 2021 (DOE presenting)

# Q&A