



# **A New Day For Building ENERGY STAR**

2021 ENERGY STAR

Residential New Construction Partner Meeting

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September 30, 2021

# Agenda

- Introduction
- What does ENERGY STAR require?
- Conclusion



# Introduction



# We've come a long way..



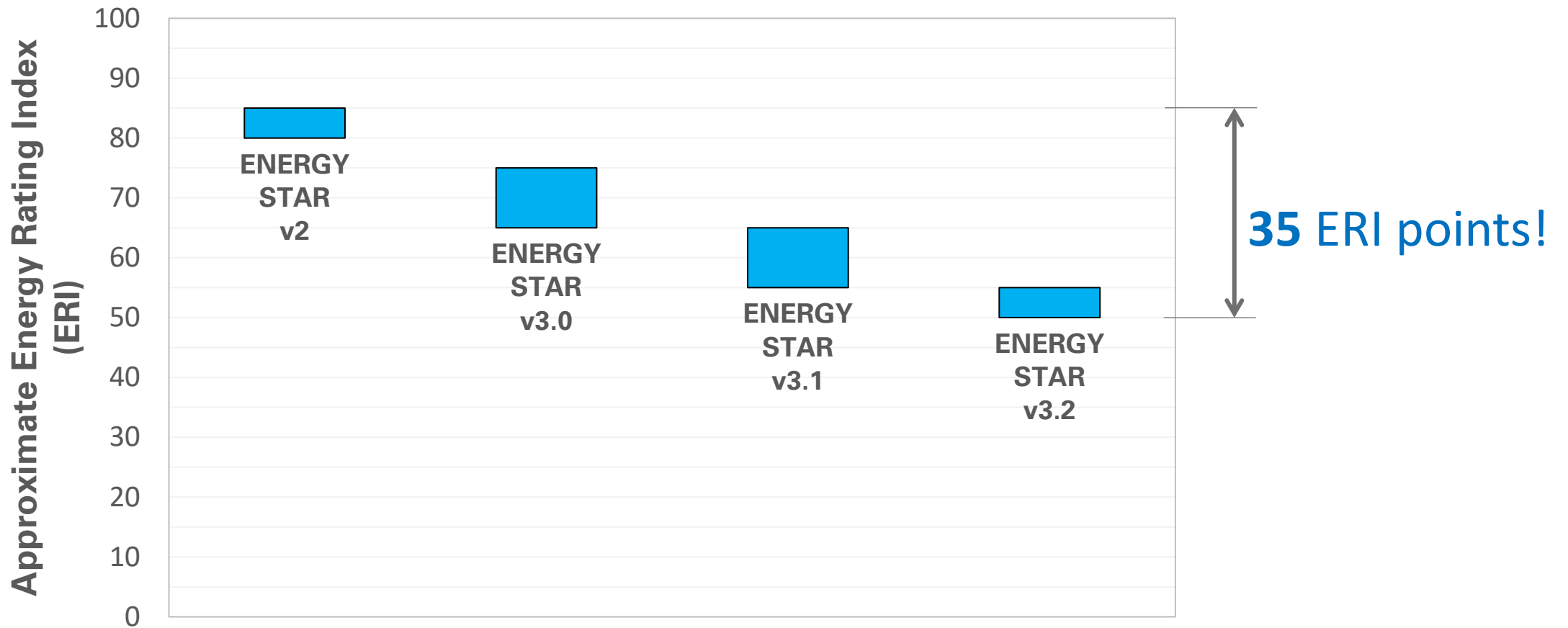
**2 million homes certified.  
2 million reasons to celebrate.**

## Two million homes and apartments, and counting

**National program impact equivalents for ENERGY STAR certified homes and apartments in 2020:**

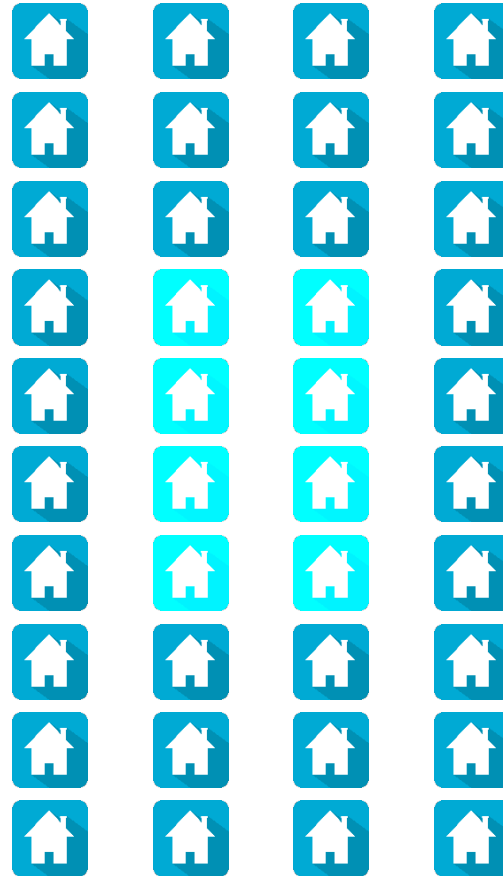
- Reducing CO<sub>2</sub> emissions by **3,354,498 tons**
- Growing **55,563,902 tree seedlings** for 10 years
- Avoiding the consumption of **7,806,499 barrels of oil**
- Removing **725,545 passenger vehicles** from the road

# We've come a long way..



ENERGY STAR ERI targets from 85 to 50

# But we're not done yet..

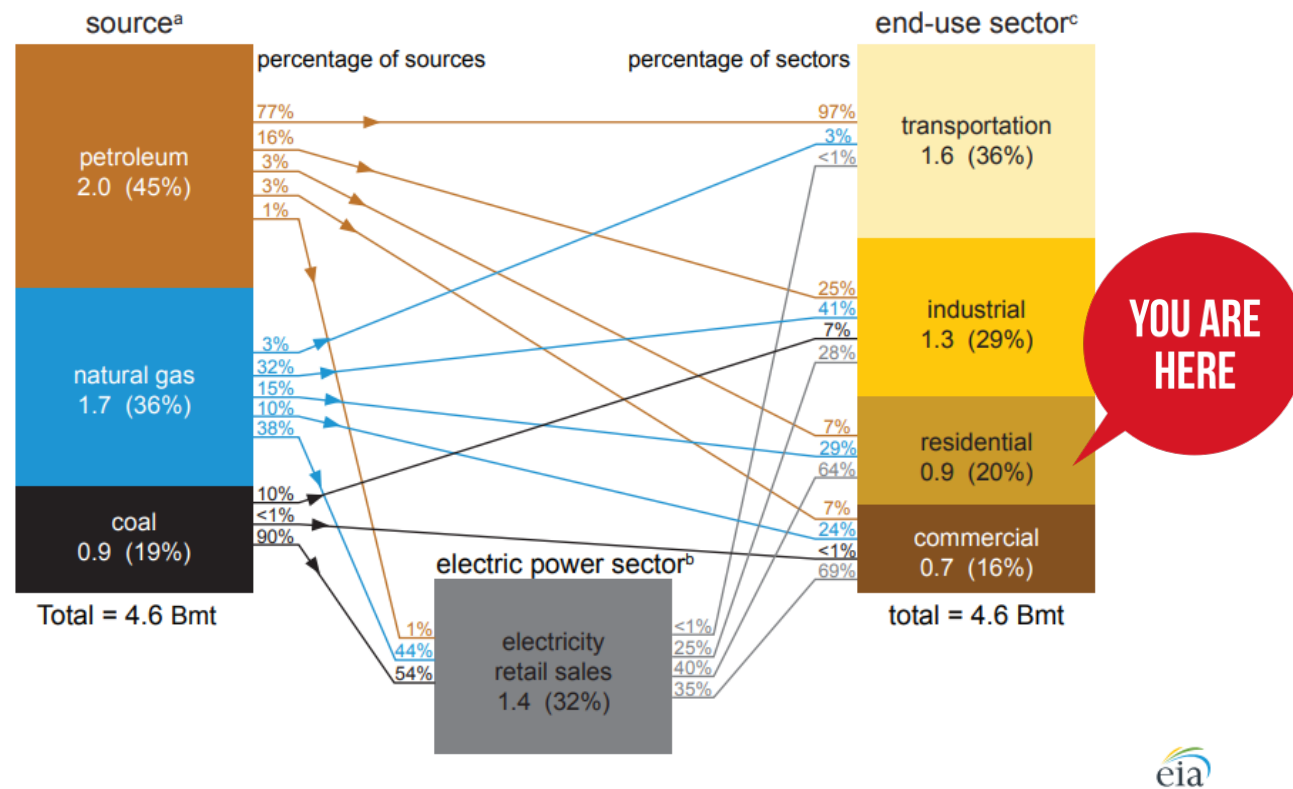


> 20% of all homes in 2050 will be built after today

# But we're not done yet..

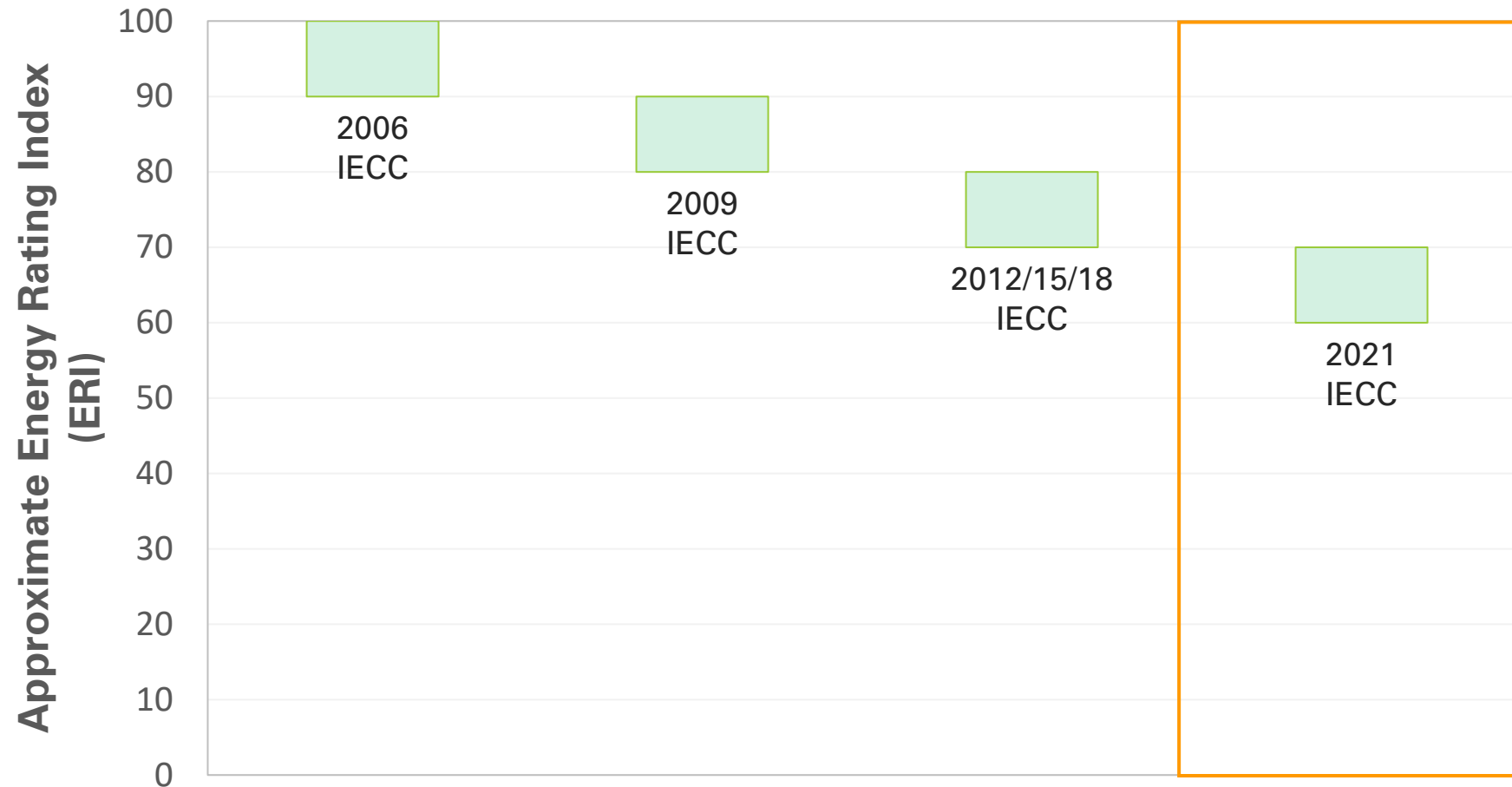
## U.S. CO<sub>2</sub> emissions from energy consumption by source and sector, 2020

billion metric tons (Bmt) of carbon dioxide (CO<sub>2</sub>)



Residential sector responsible for 20% of CO<sub>2</sub> emissions

# But we're not done yet..



Codes continue to ramp up stringency



## But we're not done yet..

### *Shareholder Value Is No Longer Everything, Top C.E.O.s Say*

Chief executives from the Business Roundtable, including the leaders of Apple and JPMorgan Chase, argued that companies must also invest in employees and deliver value to customers.

<https://www.nytimes.com/2019/08/19/business/business-roundtable-ceos-corporations.html>

Breaking with decades of long-held corporate orthodoxy, the Business Roundtable issued a statement on “the purpose of a corporation,” arguing that companies should no longer advance only the interests of shareholders. Instead, the group said, they must also invest in their employees, **protect the environment** and deal fairly and ethically with their suppliers.

## Corporate expectations are rising

# Corporate expectations are rising

## Low-Carbon Design

### Lowering emissions through product design.

We design our products with great care to reduce their carbon footprint. We think about how to make them powerful while using as little energy as possible. We use materials efficiently, and we source from materials that have a low-carbon profile.

### Designing our products to use less energy.

Energy efficient products not only maximize battery life, but they're better for the environment, too. We establish aggressive efficiency targets early in the design phase, and we consistently outperform ENERGY STAR, which sets the standard across commercial products in the U.S. In the last 10 years, we've decreased average product energy use by 70 percent across all Apple's major product lines.<sup>4</sup> For example, the 11-inch iPad Pro introduced in fall 2018 is 69 percent more efficient than the ENERGY STAR standard. MacBook Air with Retina display consumes three times less power in sleep mode than the previous-generation MacBook Air. When you multiply these reductions by all the Apple devices in the world, the impact on our carbon footprint really adds up.

[https://www.apple.com/environment/pdf/Apple\\_Environmental\\_Responsibility\\_Report\\_2019.pdf](https://www.apple.com/environment/pdf/Apple_Environmental_Responsibility_Report_2019.pdf)



~5-year life



~50-year life



Home Builders  
Sustainability Accounting Standard

Corporate expectations are rising

# ENERGY STAR is more relevant than ever



Foundation to build on

# ENERGY STAR is more relevant than ever

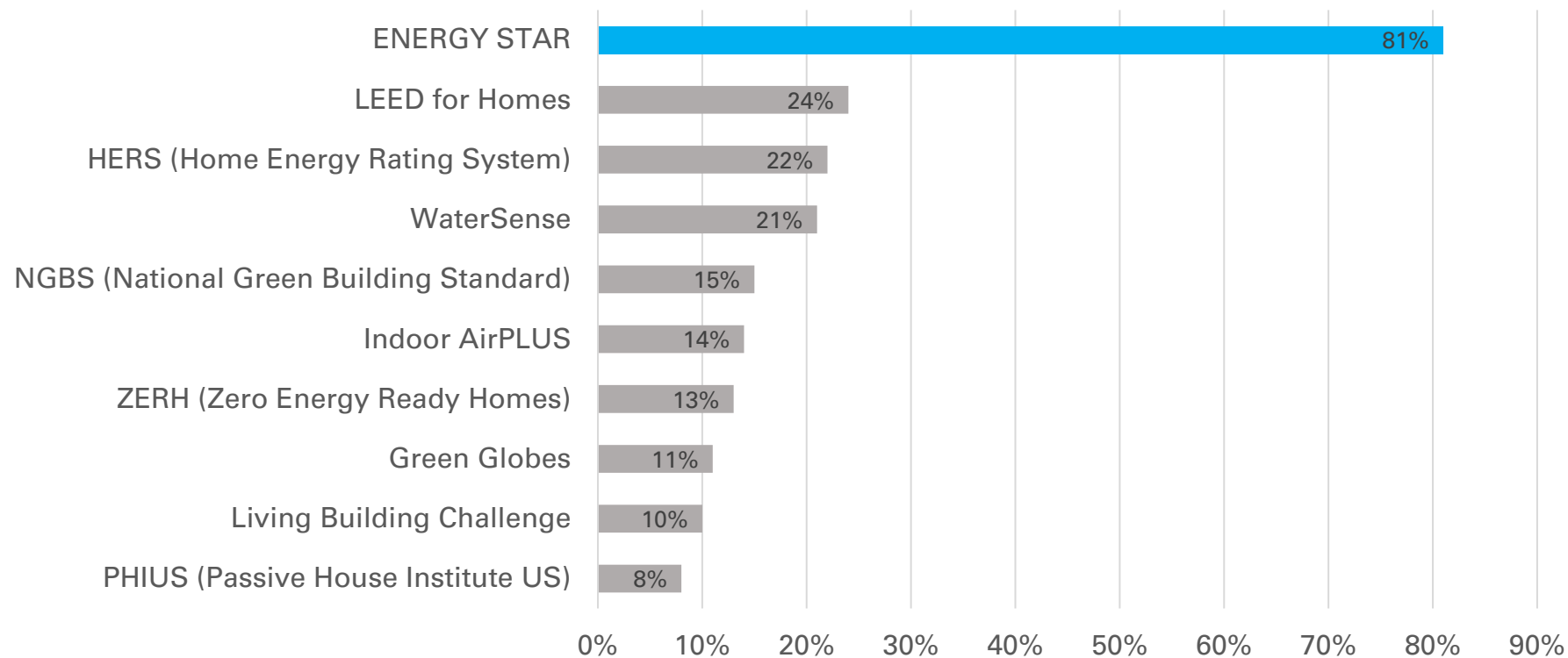


Government-backed label



# ENERGY STAR is more relevant than ever

Buyers Who Are Aware of Green Certification Programs for Homes  
(% of Respondents)



Source: What Home Buyers Really Want, 2019 Edition

Top brand awareness

# ENERGY STAR is more relevant than ever



Can help unlock incentives and tax credits



What does ENERGY STAR require?

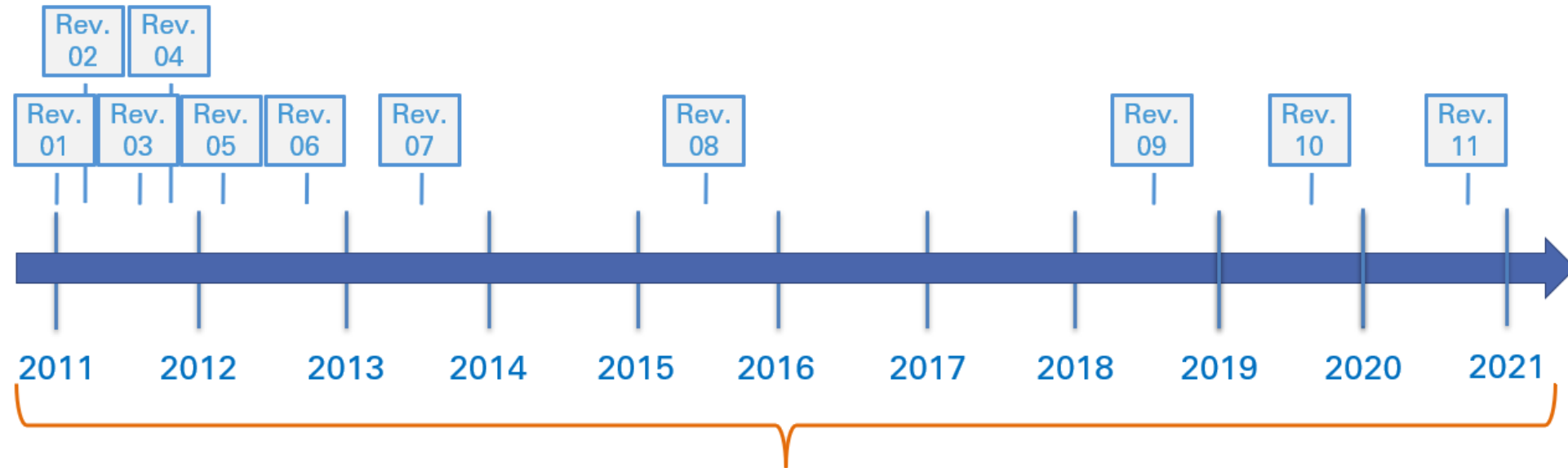
# Builders need your help getting to ENERGY STAR



Builders wear a lot of hats



# A lot has changed since the launch of Version 3



Revisions have reduced rater tasks by ~1/3!

# A lot has changed since the launch of Version 3



Efficiency technologies have advanced

# A lot has changed since the launch of Version 3



## HVAC grading makes it easier to certify homes:

1. Integrates most ENERGY STAR HVAC requirements into an ERI rating
2. Does not require the use of a credentialed HVAC contractor
3. Does not require the contractor to complete the HVAC Comm. Checklist
4. Rewards proper installs with ERI points and helps meet the 45L tax credit

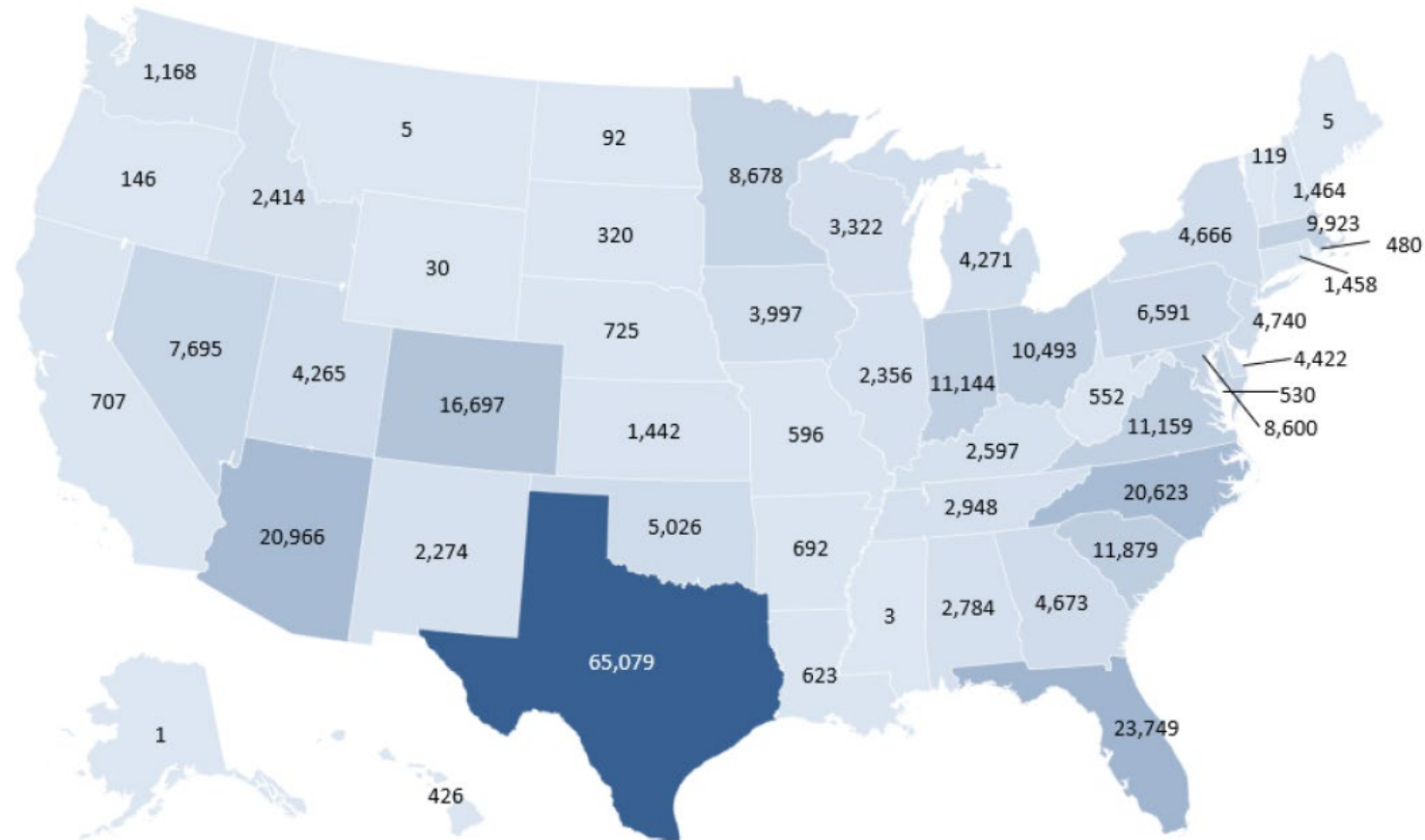
## Step 1. Do an energy rating



You don't know what you don't inspect



## Step 1. Do an energy rating



~300,000 homes are already meeting this first step

## Step 2. Make it a good energy rating



**ERI of 130?**

## Step 2. Make it a good energy rating

Typical ENERGY STAR ERI Target for v3.1:	~55-65
Average ERI for all rated homes in 2020:	58

A good rating means.. a decent ERI

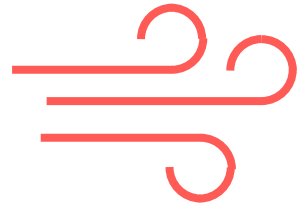
## Step 2. Make it a good energy rating



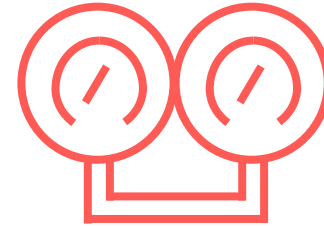
A good rating means.. Grade I insulation



## Step 2. Make it a good energy rating



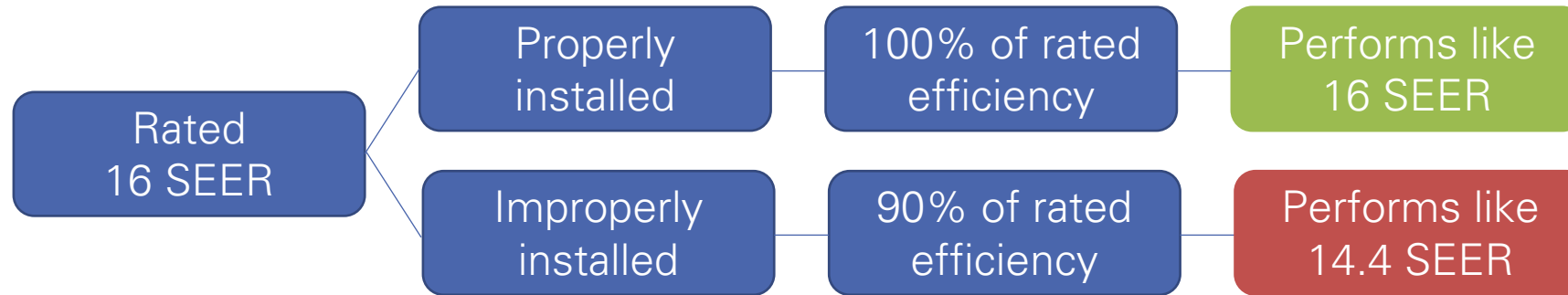
Improper airflow  
in nearly **50%** of  
systems



Incorrect charge  
in **60-80%** of  
systems

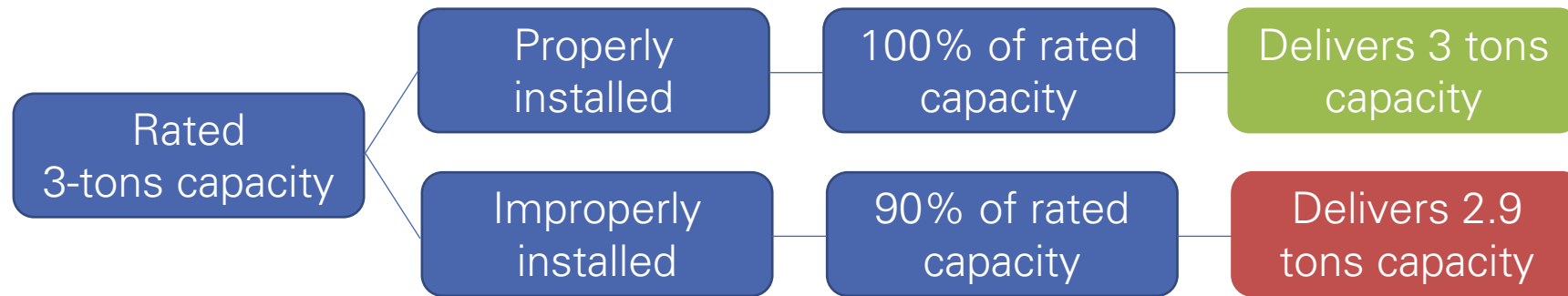
A good rating means.. Grade I or II HVAC

## Step 2. Make it a good energy rating



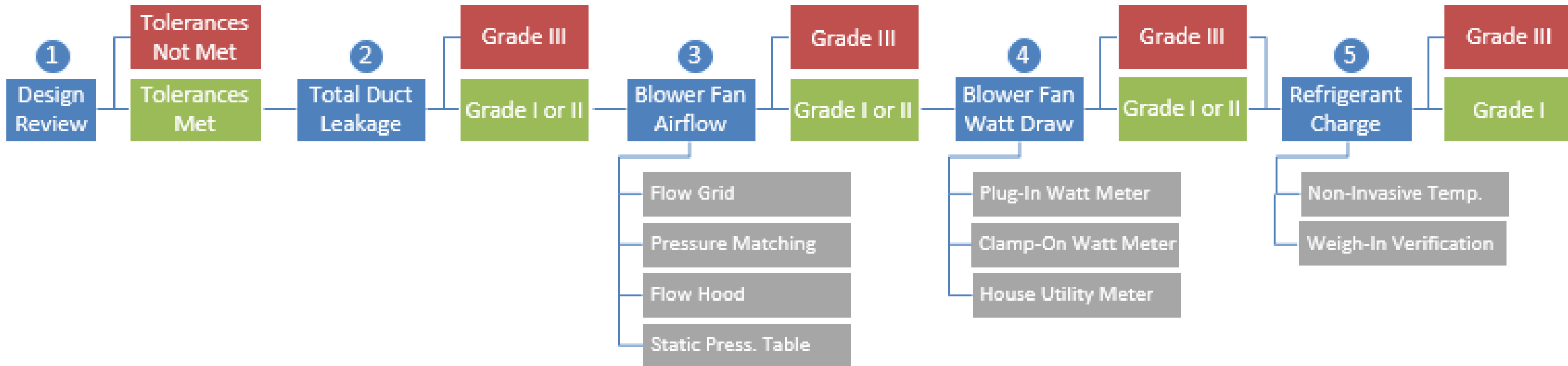
HVAC installation quality impacts efficiency

## Step 2. Make it a good energy rating



HVAC installation quality impacts capacity

## Step 2. Make it a good energy rating



A good rating means.. Grade I or II HVAC

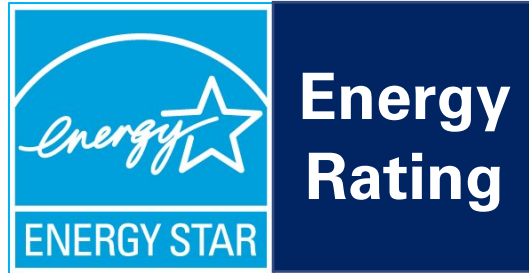


## POLL #1

What percentage of homes do you think could hit the ENERGY STAR ERI target and get Grade I insulation (set aside HVAC grading for now):

- A. 10%
- B. 15%
- C. 20%
- D. 25%
- E. 30%

## Step 3. Include 7 Essential Features



### Efficiency

- Good energy rating with features locked in

## Step 3. Include 7 Essential Features



## Step 3. Include 7 Essential Features



- **Fact 1:** ENERGY STAR allows ducts in the attic
- **Fact 2:** ENERGY STAR provides flexibility for the infiltration rate
- **Fact 3:** ENERGY STAR certified bath fans are not required in every bathroom
- **Fact 4:** ENERGY STAR does not require raised heel trusses

### Technical Bulletin: Four Misunderstood Facts About ENERGY STAR Homes



[www.energystar.gov/partner\\_resources/residential\\_new/educational\\_resources/technical\\_bulletins](http://www.energystar.gov/partner_resources/residential_new/educational_resources/technical_bulletins)



## Step 3. Include 7 Essential Features

**Air Quality**

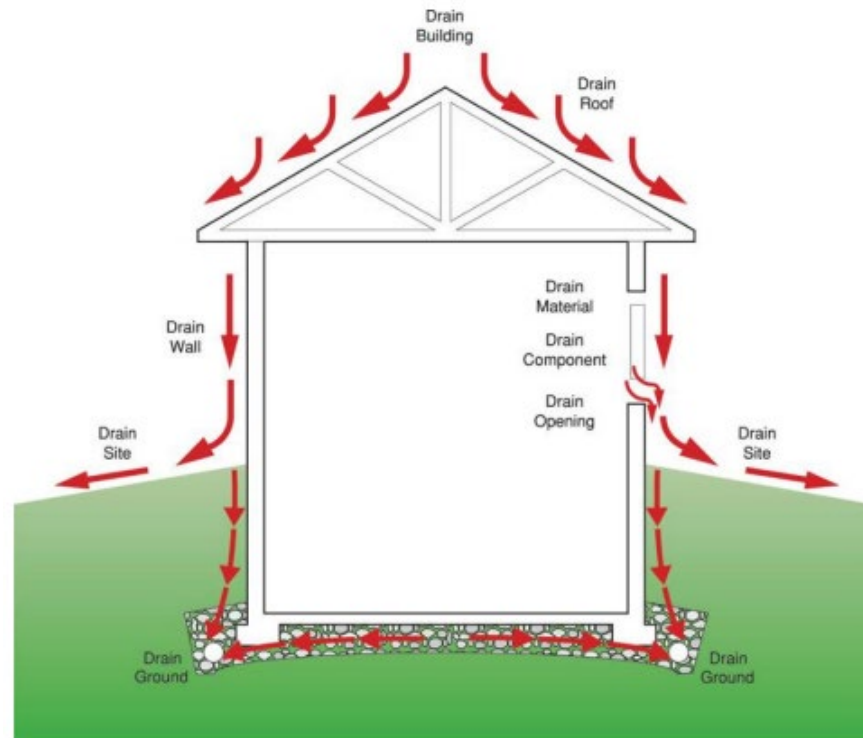
**MERV 6+ Filter, Properly Installed**



## Step 3. Include 7 Essential Features

**Durability**

**Water Management System**



## Step 3. Include 7 Essential Features

Air Quality

Combustion Safety



## POLL #2

Do you agree that the first three features are included in most of your (or your clients') homes? Select all that apply.

- A. Yup – doing them already
- B. No, not MERV 6+ filters
- C. No, not the Water Management System
- D. No, not Combustion Safety
- E. I'm not sure



## Step 3. Include 7 Important Features

Comfort

Complete Thermal Enclosure System



## Step 3. Include 7 Essential Features

Comfort

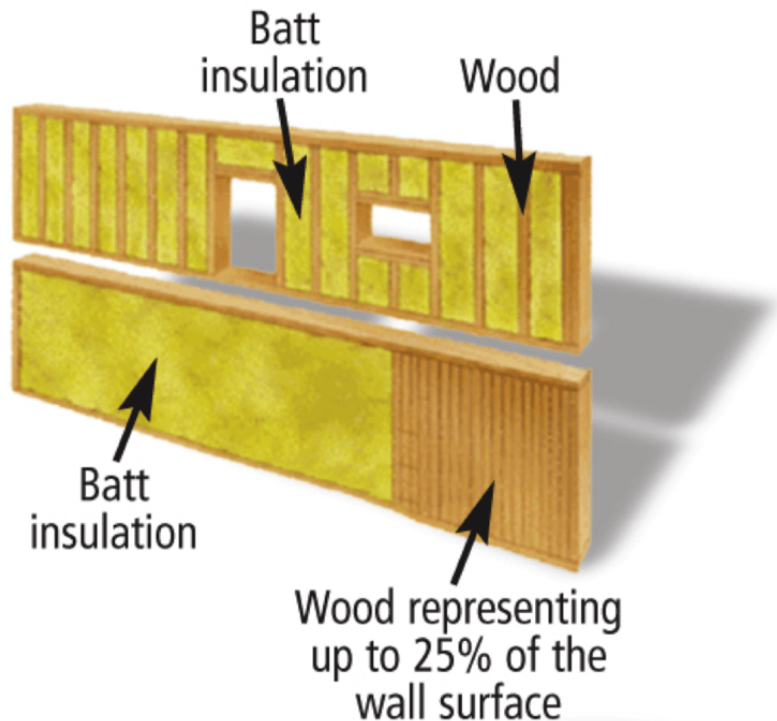
Complete Thermal Enclosure System



## Step 3. Include 7 Essential Features

Comfort

Complete Thermal Enclosure System



Standard Wall

- Consistent on-center spacing
- 2 or 3-stud corners
- Ladder blocking
- Optimized king/jack studs at windows and doors



**Reduce Framing Fraction  
From 23% to 18%**

## Step 3. Include 7 Essential Features

**Air Quality**

**Whole-House Fresh Air System**





## Step 3. Include 7 Essential Features

Air Quality

Kitchen and Bath Fans that Work Well

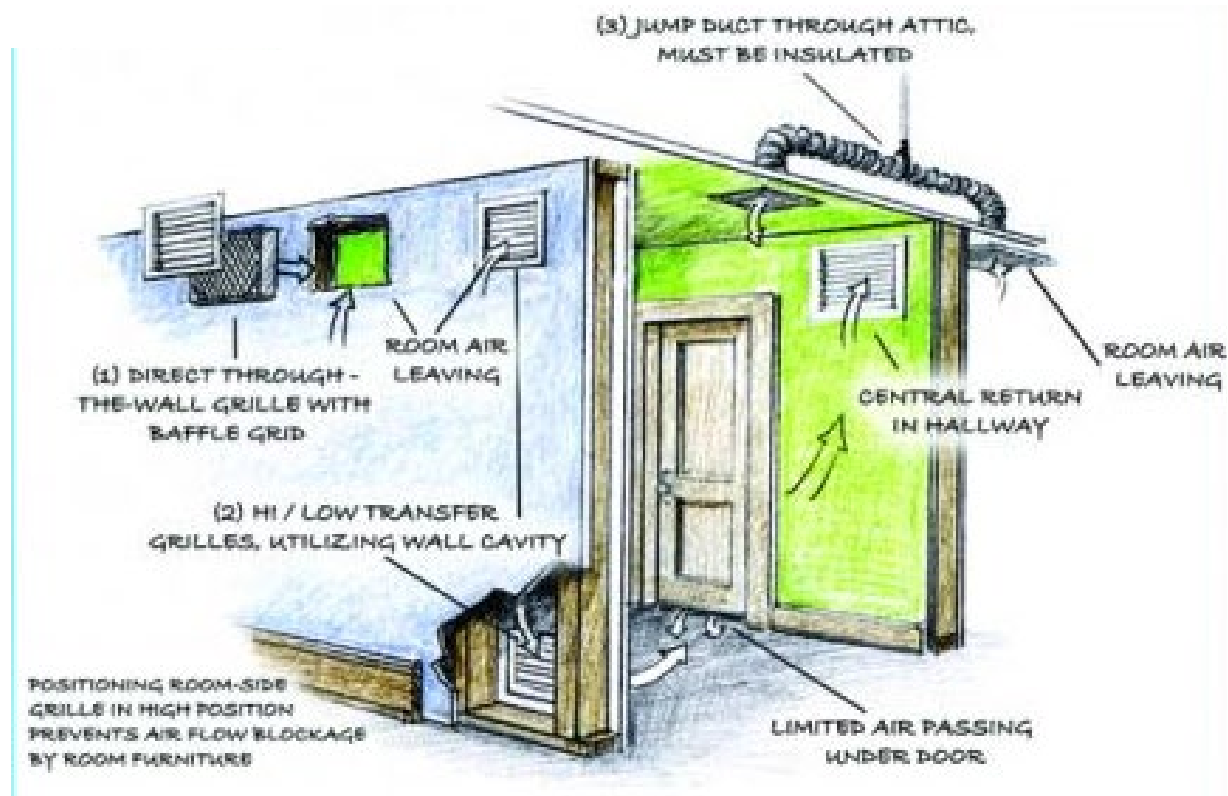




## Step 3. Include 7 Essential Features

Comfort

Comfort-Balanced Bedrooms



# Builder & Developer Fact Sheets

ENERGY STAR® Homes and Apartments Builder & Developer Fact Sheet

## Why **comfort-balanced bedrooms** are important

Did you know that homeowners spend more time in their bedrooms than all other rooms combined?

**Renew stale air** with a return air pathway in each bedroom



- With bedroom doors closed, air can become trapped. It's not enough to supply conditioned air to each bedroom. That air also needs a path back to the return-side of the HVAC system.
- There are a variety of options to create return air pathways without compromising privacy, such as transfer grilles, jump ducts, or dedicated returns.
- Whichever strategy you choose, pressure balancing creates comfortable bedrooms with even temperatures and good air circulation.

**This is why all bedrooms in ENERGY STAR homes and larger bedrooms in ENERGY STAR apartments are balanced for comfort.**

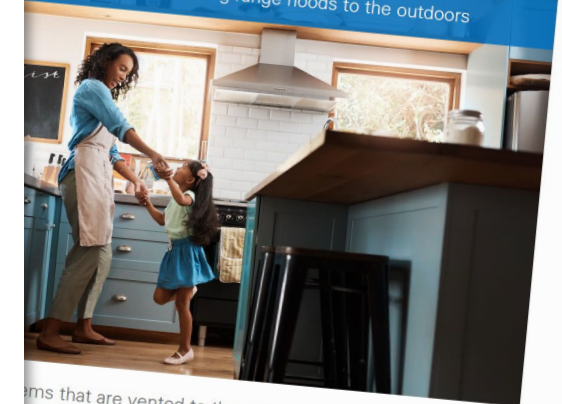


Homes and Apartments Builder & Developer Fact Sheet

## **kitchen range hoods** is important

produces contaminants that are not healthy for your families?

**Buyers' health** by venting range hoods to the outdoors



Systems that are vented to the outdoors remove harmful pollutants like formaldehyde, ultrafine particles, fine particulate matter, and water vapor.

Range hoods in recirculation mode, rather than being vented, are not effective at simply dispersing the contaminants back into the home.

Installing a vented range hood, many new and existing homes can benefit from an expensive upgrade to add to an existing home.

**ENERGY STAR homes and apartments include a vented range hood that exhausts to the outdoors.**

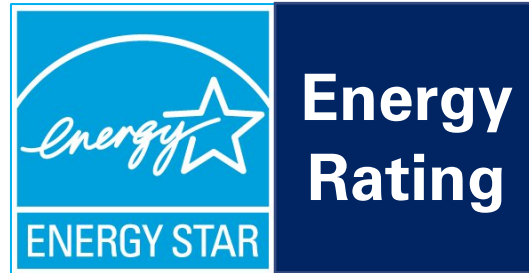


## POLL #3

Which features are significant barriers to participation in your (or your clients') homes? Select all that apply.

- A. Complete thermal enclosure
- B. Whole-house ventilation system
- C. Venting kitchen exhaust to outdoors
- D. Bedroom comfort balancing
- E. Other (put in chat)

# What does ENERGY STAR Require?



<b>Efficiency</b>	<ul style="list-style-type: none"><li>• Good energy rating with features locked in</li></ul>
<b>Comfort</b>	<ul style="list-style-type: none"><li>• Complete thermal enclosure system</li><li>• Bedroom comfort vents</li></ul>
<b>Air Quality</b>	<ul style="list-style-type: none"><li>• Whole-house fresh air system</li><li>• Kitchen and bath fans that work well</li><li>• MERV 6+ filter, properly installed</li><li>• Combustion safety</li></ul>
<b>Durability</b>	<ul style="list-style-type: none"><li>• Complete water management system</li></ul>





# Discussion



# ENERGY STAR Residential New Construction

## Program website & email:

Single Family: [www.energystar.gov/newhomesrequirements](http://www.energystar.gov/newhomesrequirements)

Multifamily: [www.energystar.gov/mfnc](http://www.energystar.gov/mfnc)

Email: [energystarhomes@energystar.gov](mailto:energystarhomes@energystar.gov)

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