A New Day
For Building ENERGY STAR

2021 ENERGY STAR
Residential New Construction Partner Meeting
Dean Gamble & Elliot Seibert
September 30, 2021
Agenda

- Introduction
- What does ENERGY STAR require?
- Conclusion
Introduction
We’ve come a long way..

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

• Reducing CO₂ 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

Two million homes and apartments, and counting
We’ve come a long way..

ENRYG STAR ERI targets from 85 to 50

35 ERI points!
But we’re not done yet..

> 20% of all homes in 2050 will be built after today
But we’re not done yet..

Residential sector responsible for 20% of CO₂ 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.

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. For example, the 11-inch iPad Pro introduced in fall 2018 is 60 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.


~5-year life

~50-year life

Home Builders Sustainability Accounting Standard
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)

- ENERGY STAR: 81%
- LEED for Homes: 24%
- HERS (Home Energy Rating System): 22%
- WaterSense: 21%
- NGBS (National Green Building Standard): 15%
- Indoor AirPLUS: 14%
- ZERH (Zero Energy Ready Homes): 13%
- Green Globes: 11%
- Living Building Challenge: 10%
- PHIUS (Passive House Institute US): 8%

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

<table>
<thead>
<tr>
<th>Typical ENERGY STAR ERI Target for v3.1:</th>
<th>~55-65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average ERI for all rated homes in 2020:</td>
<td>58</td>
</tr>
</tbody>
</table>

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

Rated 16 SEER

Properly installed:
- 100% of rated efficiency
- Performs like 16 SEER

Improperly installed:
- 90% of rated efficiency
- Performs like 14.4 SEER

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
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**

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

Standard Wall

Reduce Framing Fraction
From 23% to 18%

(Batt insulation)

(Wood)

(Wood representing up to 25% of the wall surface)
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-Balanced Bedrooms

- Comfort
- Balancing the room for comfort

Diagram showing ventilation and air flow through a room, indicating the importance of balanced air flow for comfort.
Why comfort-balanced bedrooms are important

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

- 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.
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?

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>• Good energy rating with features locked in</th>
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<tbody>
<tr>
<td>Comfort</td>
<td>• Complete thermal enclosure system</td>
</tr>
<tr>
<td></td>
<td>• Bedroom comfort vents</td>
</tr>
<tr>
<td>Air Quality</td>
<td>• Whole-house fresh air system</td>
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<tr>
<td></td>
<td>• Kitchen and bath fans that work well</td>
</tr>
<tr>
<td></td>
<td>• MERV 6+ filter, properly installed</td>
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<tr>
<td></td>
<td>• Combustion safety</td>
</tr>
<tr>
<td>Durability</td>
<td>• Complete water management system</td>
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Discussion
ENERGY STAR Residential New Construction

Program website & email:
Single Family:  www.energystar.gov/newhomesrequirements
Multifamily:  www.energystar.gov/mfnc
Email:  energystarhomes@energystar.gov

Direct contact info:
Dean Gamble  gamble.dean@epa.gov
Elliot Seibert  seibert.elliot@epa.gov