



# Overview of Rev. 10 & Planning for Rev. 11

2019 Residential New Construction Partner Meeting

Dean Gamble

September 11, 2019

# What is a Revision?

1

It clarifies

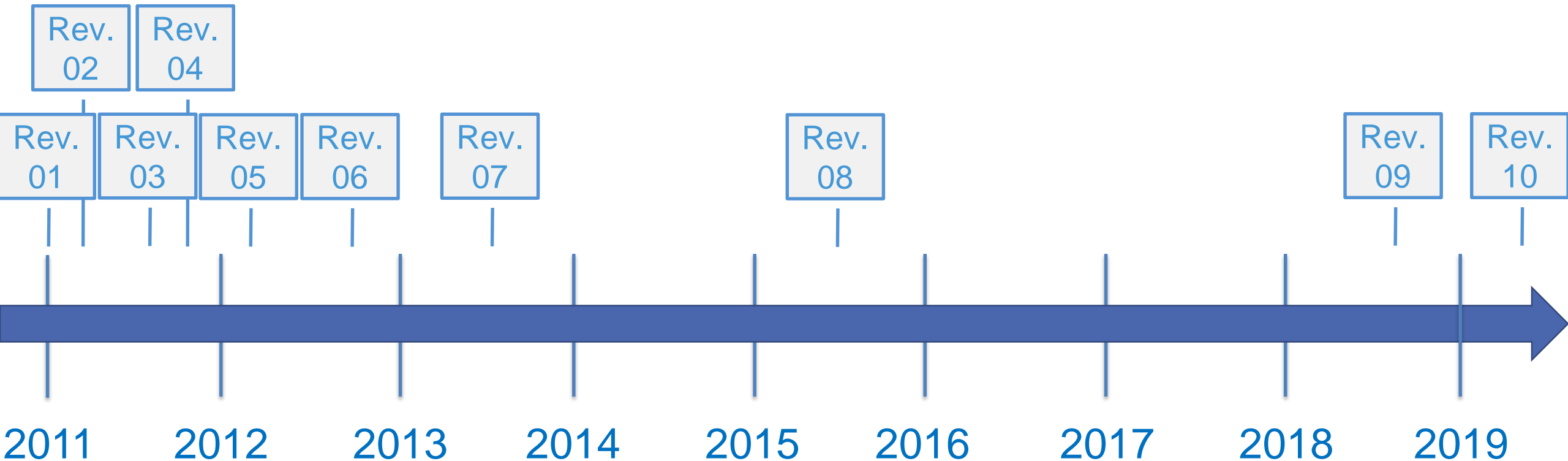
2

It simplifies

3

It improves

# What is a Revision?



**1/3 reduction in rater tasks!**

# Pop quiz: What is a Revision?

- A. Maintenance release that clarifies, simplifies, & improves the program?
- B. Major overhaul that increases the stringency of the program?
- C. When Dean gets new glasses and notices a typo in the program docs?





# Overview of Rev. 10

# Revision themes

- **Rev. 08** - Is Great
- **Rev. 09** - It's Fine
- **Rev. 10** - Here comes 310 (aka ANSI/RESNET/ACCA 310 - HVAC grading)

# #1. Integration of HVAC grading

- [See prior presentation!]
- Rev. 10 will include two paths and you can use either one:
  - Path A – HVAC Grading, based on Std. 310
  - Path B – HVAC Credential, based on the existing ENERGY STAR program
- Std. 310 and associated components need to be finished before Path A can be used.
- Key benefits of Path A:
  - Potential for extra points in the rating.
  - Use of credentialed contractor is not mandatory.
  - Better aligned with a standard energy rating (fewer ES-specific reqs.)

# Program Requirements Document Mockup



## National Program Requirements ENERGY STAR Certified Homes, Version 3.1 (Rev. 10)


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

### Exhibit 2: Mandatory Requirements for All Certified Homes

Party Responsible	Mandatory Requirements
Rater	<ul style="list-style-type: none"> <li>• Completion of National Rater Design Review Checklist</li> <li>• Completion of National Rater Field Checklist</li> </ul>
Builder	<ul style="list-style-type: none"> <li>• Completion of National Water Management System Builder Requirements</li> </ul>
<b>If pursuing <a href="#">Path A</a> - HVAC Grading:</b>	
HVAC System Designer	<ul style="list-style-type: none"> <li>• Completion of an HVAC design report compliant with ANSI / ACCA / RESNET Std. 310, plus the ENERGY STAR Supplement. <sup>x</sup></li> </ul>
HVAC Installing Contractor	<ul style="list-style-type: none"> <li>• None. 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 in accordance with ANSI / RESNET / ACCA Std. 310.</li> </ul>
<b>If pursuing <a href="#">Path B</a> - HVAC Credential:</b>	
HVAC System Designer	<ul style="list-style-type: none"> <li>• Completion of National HVAC Design Report</li> </ul>
HVAC Installing Contractor	<ul style="list-style-type: none"> <li>• Completion of National HVAC Commissioning Checklist.</li> </ul>



# Rater Design Review Checklist Mockup



## National Rater Design Review Checklist ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 10)

**If pursuing Path A (HVAC Grading) complete this page.**

Home Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Permit Date: \_\_\_\_\_

	Must Correct	Rater <sup>1</sup> Verified
<b>1. Partnership Status</b>		
1.1 Rater has verified that builder is an ENERGY STAR partner using <a href="http://energystar.gov/partnerlocator">energystar.gov/partnerlocator</a> .	<input type="checkbox"/>	<input type="checkbox"/>
<b>2. High-Performance Fenestration</b>		
2.1 Specified fenestration meets or exceeds 2009 IECC requirements. <sup>3</sup>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. High-Performance Insulation</b>		
3.1 Specified ceiling, wall, floor, and slab insulation levels comply with one of the following options:	<input type="checkbox"/>	<input type="checkbox"/>
3.1.1 Meets or exceeds 2009 IECC levels <sup>4, 5, 6</sup> OR;	-	-
3.1.2 Achieves ≤ 133% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3, per guidance in Footnote 4d, AND specified home infiltration does not exceed the following: <sup>5, 6</sup> 3 ACH50 in CZs 1, 2    2.5 ACH50 in CZs 3, 4    2 ACH50 in CZs 5, 6, 7    1.5 ACH50 in CZ 8	-	-
<b>4a. Review of ANSI / RESNET / ACCA Std. 310 HVAC Design Report with ENERGY STAR Supplement<sup>7</sup></b>		
4a.1 HVAC design report compliant with ANSI / RESNET / ACCA Std. 310, with the ENERGY STAR supplement, collected for records, with no items left blank.	<input type="checkbox"/>	<input type="checkbox"/>
4a.2 ANSI / RESNET / ACCA Std. 310 Rater Design Review Checklist completed for applicable housing type, with all items marked, "Rater Verified".	<input type="checkbox"/>	<input type="checkbox"/>
4a.3 Cooling sizing % is within the cooling sizing limit selected by the HVAC designer.	<input type="checkbox"/>	<input type="checkbox"/>

Rater Name: \_\_\_\_\_ Date of Review: \_\_\_\_\_  
Rater Signature: \_\_\_\_\_ Rater Company Name: \_\_\_\_\_



## National Rater Design Review Checklist ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 10)

**If pursuing Path B (HVAC Credential) complete this page.**

Home Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Permit Date: \_\_\_\_\_

	Must Correct	Rater <sup>1</sup> Verified
<b>1. Partnership Status</b>		
1.1 Rater has verified that builder is an ENERGY STAR partner using <a href="http://energystar.gov/partnerlocator">energystar.gov/partnerlocator</a> .	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Rater has verified that HVAC contractor holds credential required to complete National HVAC Commissioning Checklist. HVAC Contractor Company Name: _____ Exception 1: If all equipment installed in home to be certified is an exempted type, then check "N/A". <sup>2</sup> <input type="checkbox"/> N/A	<input type="checkbox"/>	<input type="checkbox"/>
<b>2. High-Performance Fenestration</b>		
2.1 Specified fenestration meets or exceeds 2009 IECC requirements. <sup>3</sup>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. High-Performance Insulation</b>		
3.1 Specified ceiling, wall, floor, and slab insulation levels comply with one of the following options:	<input type="checkbox"/>	<input type="checkbox"/>
3.1.1 Meets or exceeds 2009 IECC levels <sup>4, 5, 6</sup> OR;	-	-
3.1.2 Achieves ≤ 133% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3, per guidance in Footnote 4d, AND specified home infiltration does not exceed the following: <sup>5, 6</sup> 3 ACH50 in CZs 1, 2    2.5 ACH50 in CZs 3, 4    2 ACH50 in CZs 5, 6, 7    1.5 ACH50 in CZ 8	-	-
<b>4b. Review of ENERGY STAR National HVAC Design Report<sup>7</sup></b>		
4b.1 National HVAC Design Report collected for records, with no items left blank.	<input type="checkbox"/>	<input type="checkbox"/>
4b.2 National HVAC Design Report reviewed by Rater for the following parameters (National HVAC Design Report Item # in parenthesis):		
4b.2.1 Cooling season and heating season outdoor design temperatures used in loads (3.3) are within the limits defined for the State and County, or US Territory, where the home will be built, or the designer has provided an allowance from EPA to use alternative values. <sup>8</sup>	<input type="checkbox"/>	<input type="checkbox"/>
4b.2.2 Number of occupants used in loads (3.4) is within ± 2 of the home to be certified. <sup>9</sup>	<input type="checkbox"/>	<input type="checkbox"/>
4b.2.3 Conditioned floor area used in loads (3.5) is between 100 sq. ft. smaller and 300 sq. ft. larger than the home to be certified. <sup>10</sup>	<input type="checkbox"/>	<input type="checkbox"/>
4b.2.4 Window area used in loads (3.6) is between 15 sq. ft. smaller and 60 sq. ft. larger than the home to be certified, or, for homes to be certified with > 500 sq. ft. of window area, between 3% smaller and 12% larger. <sup>11</sup>	<input type="checkbox"/>	<input type="checkbox"/>
4b.2.5 Predominant window SHGC used in loads (3.7) is within 0.1 of predominant value in the home to be certified. <sup>10</sup>	<input type="checkbox"/>	<input type="checkbox"/>
4b.2.6 Sensible, latent, & total heat gain are documented (3.10 - 3.12) for the orientation of the home to be certified. <sup>11</sup>	<input type="checkbox"/>	<input type="checkbox"/>
4b.2.7 The variation in total heat gain across orientations (3.13) is ≤ 6 kBTU. <sup>11</sup>	<input type="checkbox"/>	<input type="checkbox"/>
4b.2.8 Cooling sizing % (4.13) is within the cooling sizing limit (4.15) selected by the HVAC designer.	<input type="checkbox"/>	<input type="checkbox"/>

Rater Name: \_\_\_\_\_ Date of Review: \_\_\_\_\_  
Rater Signature: \_\_\_\_\_ Rater Company Name: \_\_\_\_\_

# Rater Field Checklist Mockup



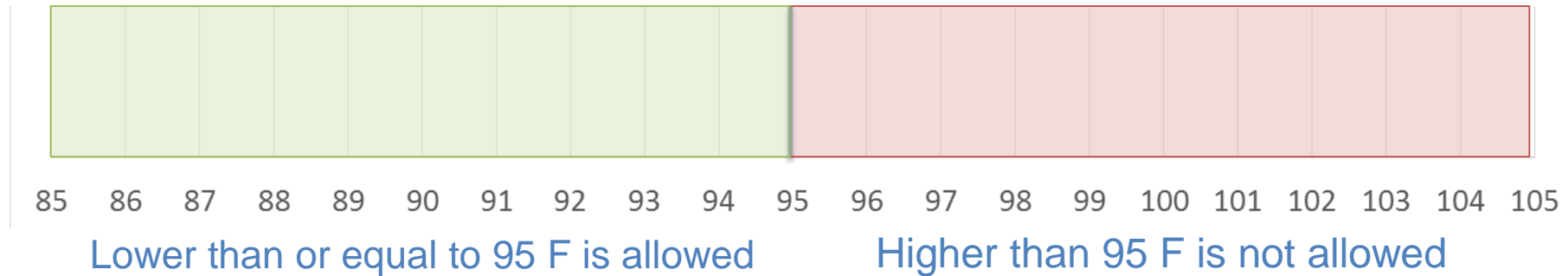
## National Rater Field Checklist ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 10)

HVAC System <sup>30</sup> (National HVAC Design Report Item # in parenthesis)		Must Correct	Rater Verified <sup>2</sup>	N/A <sup>3</sup>
<b>5. Heating &amp; Cooling Eqpt. – Complete Path A - HVAC Grading or Path B - HVAC Credential</b>				
Path A	5a.1 Blower fan airflow is Grade I or II per ANSI / RESNET / ACCA Std. 310	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5a.2 Blower fan watt draw is Grade I or II per ANSI / RESNET / ACCA Std. 310	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5a.3 Refrigerant charge is Grade I per ANSI / RESNET / ACCA Std. 310. See Footnote xx for exemptions. <sup>xx</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Path B	5b.1 HVAC manufacturer & model number on installed equipment matches either of the following <input type="checkbox"/> National HVAC Design Report (4.3, 4.4, & 4.17) <input type="checkbox"/> Written approval received from designer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5b.2 External static pressure measured by Rater at contractor-provided test locations and documented below: Return-Side External Static Pressure: _____ IWC    Supply-Side External Static Pressure: _____ IWC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5b.3 Permitted, but not required: National HVAC Commissioning Checklist collected, with no items left blank.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



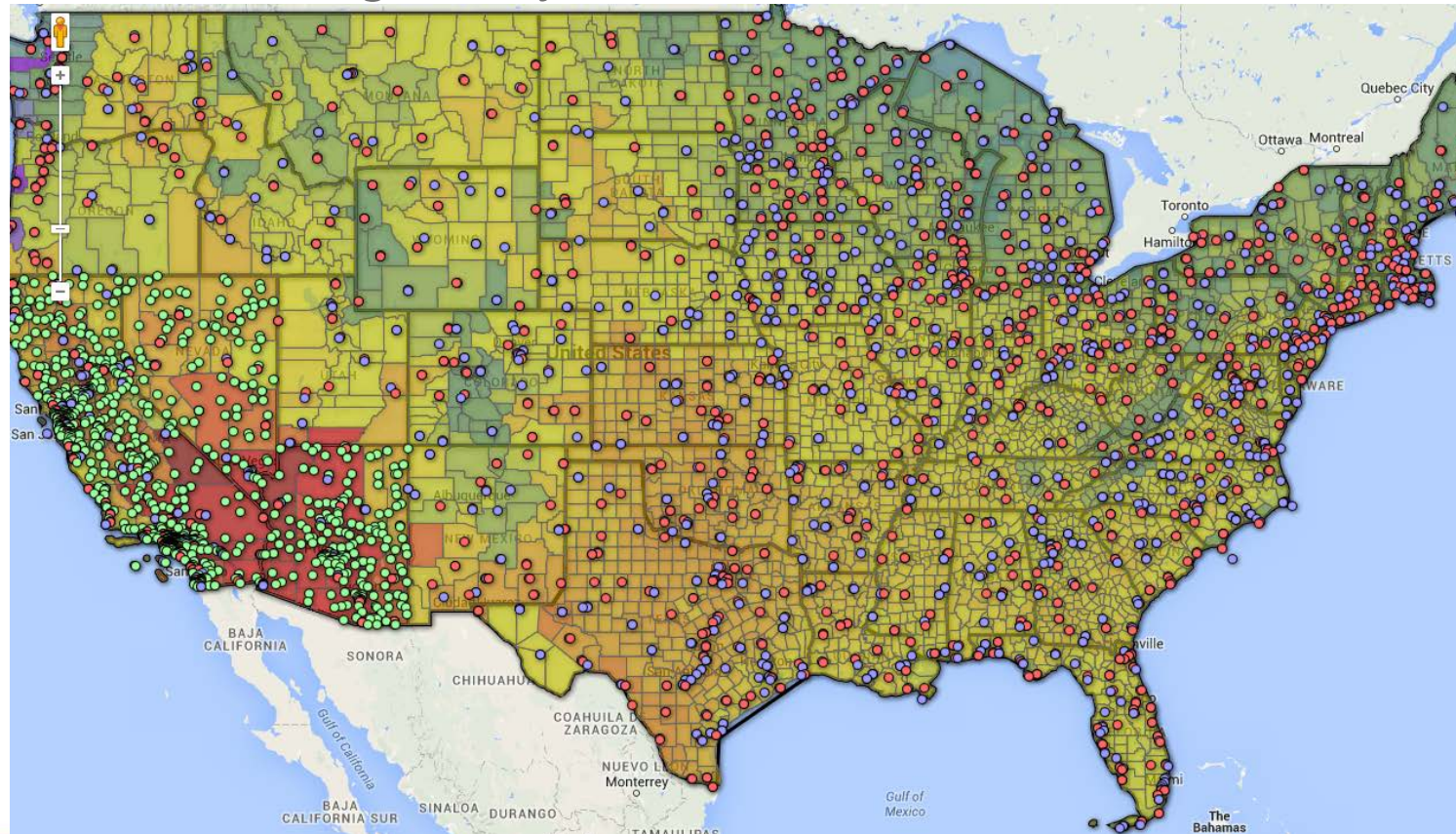
## #2. Updated HVAC Design Outdoor Temp Limits

Example for a county with a cooling limit of 95 F



## #2. Updated HVAC Design Outdoor Temp Limits

- 1st improvement: Using newly released weather data.



## #2. Updated HVAC Design Outdoor Temp Limits

- 2nd improvement: Improved methodology for selecting limits:
  - Now use all weather stations within 40 miles of the center of each county.
  - This eliminates the ‘island’ effect in many cases.



## #2. Updated HVAC Design Outdoor Temp Limits

- 95% of new cooling temperature limits are equal or less stringent.
- For example, Harris Co., TX went from 95F to 97F.
- For a home using the Path A - HVAC Grading:
  - These new limits will be used.
- For a home using the existing Path B - HVAC Credential:
  - An ENERGY STAR HVAC Design Report created after the Rev. 10 release date is **allowed** to use these new limits.
  - An ENERGY STAR HVAC Design Report created after the Rev. 10 implementation date is **required** to use these new limits.

## #3. Alignment of duct leakage exemptions

- Two program-specific exemptions to duct leakage to outside testing will be aligned with ANSI/RESNET/ICC 301 and 380.
- Will reduce the number of program-specific policies.
- Will improve clarity.

# #3. Alignment of duct leakage exemptions

6.5 Rater-measured duct leakage to outdoors the greater of  $\leq 4$  CFM25 per 100 sq. ft. of CFA or  $\leq 40$  CFM25 <sup>38, 39</sup> **41**

- **Fn. 41:** Testing of duct leakage to the outside can be waived if:
  1. All ducts & air handling equipment are located within the home's air and thermal barriers AND infiltration does not exceed the following:

CZ 1-2:	3.0 ACH50
CZ 3-4:	2.5 ACH50
CZ 5-7:	2.0 ACH50
CZ 8:	1.5 ACH50

2. Alternatively, testing of duct leakage to the outside can be waived if total duct leakage is  $\leq 4$  CFM25 per 100 sq. ft. of conditioned floor area or 40 CFM25, whichever is larger.

# #3. Alignment of duct leakage exemptions

6.5 Rater-measured duct leakage to outdoors the greater of  $\leq 4$  CFM25 per 100 sq. ft. of CFA or  $\leq 40$  CFM25 <sup>38, 39</sup> **41**

- **Revised Fn. 41**: Testing of duct leakage to the outside can be waived if:
  1. The 2nd alternative of Std. 301, Table 4.2.2 (1), footnote (w), is met.
  2. The 3rd alternative of Std. 301, Table 4.2.2 (1), footnote (w), is met.
  3. In accordance with Section 5.5.2 of ANSI / RESNET / ICC Std. 380, the total duct leakage, at rough-in or final, is  $\leq 4$  CFM25 per 100 sq. ft. of conditioned floor area or 40 CFM25, whichever is larger.

## ENERGY STAR Exemption 1 (Aligned with Std. 301, Table 4.2.2 (1), Fn. w, 2<sup>nd</sup> Exception)

Applicable House Types:	Dwellings and Townhouses						
Duct Test Required:	Total duct leakage test at pre-drywall or final						
Duct Test Exemption:	No leakage to outside duct test required						
Prerequisites:	<p>1) At a pre-drywall stage of construction, 100% of the ductwork and air handler shall be visible and visually verified to be <a href="#">contained inside the Infiltration Volume</a>.</p> <hr style="border-top: 1px dashed #000;"/> <p>2) At a pre-drywall stage of construction, the ductwork shall be visually verified to be <a href="#">100% fully ducted, with no building cavities used as supply or return ducts</a>.</p> <hr style="border-top: 1px dashed #000;"/> <p>3) At either a pre-drywall stage of construction or a final stage of construction, airtightness of the duct system shall be tested in accordance with requirements of Standard ANSI/RESNET/ICC 380 Total Duct Leakage Test (Section 4.4.1). <a href="#">The total leakage shall be:</a></p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th style="padding: 5px;"># Returns</th> <th style="padding: 5px;">Leakage Limit</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">&lt; 3</td> <td style="padding: 5px;">Larger of 4 CFM per 100 sq. ft. of CFA or 40 CFM</td> </tr> <tr> <td style="padding: 5px;">≥ 3</td> <td style="padding: 5px;">Larger of 6 CFM per 100 sq. ft. of CFA or 60 CFM</td> </tr> </tbody> </table> <hr style="border-top: 1px dashed #000;"/> <p>4) At a final stage of construction, ductwork that is visible and the air handler shall again be verified to be <a href="#">contained in the Infiltration Volume</a>.</p> <hr style="border-top: 1px dashed #000;"/> <p>5) At a final stage of construction, airtightness of the Rated Home shall be tested in accordance with requirements of Standard ANSI/RESNET/ICC 380 and shall be <a href="#">≤ 3 ACH50</a>.</p>	# Returns	Leakage Limit	< 3	Larger of 4 CFM per 100 sq. ft. of CFA or 40 CFM	≥ 3	Larger of 6 CFM per 100 sq. ft. of CFA or 60 CFM
# Returns	Leakage Limit						
< 3	Larger of 4 CFM per 100 sq. ft. of CFA or 40 CFM						
≥ 3	Larger of 6 CFM per 100 sq. ft. of CFA or 60 CFM						
Modeling Impact:	Leakage to outside shall be assigned 1/2 of the measured total duct leakage						



## ENERGY STAR Exemption 2 (Aligned with Std. 301, Table 4.2.2 (1), Fn. w, 3<sup>rd</sup> Exception)

Applicable House Types:	Attached Dwelling Units, excluding Dwellings and Townhouses
Duct Test Required:	Total duct leakage test at pre-drywall or final
Duct Test Exemption:	No leakage to outside duct test required
Prerequisites:	None
Modeling Impact:	Software shall calculate the energy impact using the total duct leakage results and prorating based on the percent of duct surface area that is not in Rated Home Conditioned Space Volume, plus a contribution from the associated air handler if located outside the Rated Home Conditioned Space Volume. The air handler contribution shall be a minimum of 2.5% of the supply airflow, where supply airflow is calculated as 400 cfm per 12,000 Btu/h of output capacity of the heating or cooling equipment. The sum of the duct leakage associated with duct surface area outside the Conditioned Space Volume and the air handler leakage shall not exceed the measured duct leakage from the entire duct system.

### ENERGY STAR Exemption 3 (Aligned with Std. 380, Section 5.5.2)

Applicable House Types:	All Dwellings and Dwelling Units
Duct Test Required:	Total duct leakage test at pre-drywall or final
Duct Test Exemption:	No leakage to outside duct test required
Prerequisites:	None from RESNET, but ENERGY STAR will still require that the total duct leakage be $\leq 4$ CFM25 per 100 sq. ft. of conditioned floor area or 40 CFM25, whichever is larger.
Modeling Impact:	Leakage to outside shall be equal to the measured total duct leakage

## #4. Clarified overlap between ENERGY STAR & code



## #4. Clarified overlap between ENERGY STAR & code

Does an ENERGY STAR home meet code?



No?



Kinda?



Yes?

## #4. Clarified overlap between ENERGY STAR & code

- Program requirements already state:

“Note that compliance with these requirements is not intended to imply compliance with all local code requirements that may be applicable to the home to be built.”
- Footnote 7, regarding code overlap, will be revised to state:

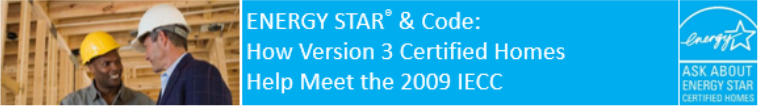
“While certification will result in compliance with many code requirements, a Rater is not responsible for ensuring that all code requirements have been met prior to certification. For more information about how these program requirements help satisfy code requirements, visit: [www.energystar.gov/newhomesguidance](http://www.energystar.gov/newhomesguidance).”

## #4. Clarified overlap between ENERGY STAR & code

- Footnote 7 continues:
  - “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, 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 intent of the conflicting requirement.
  - 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.”


# #4. Clarified overlap between ENERGY STAR & code

- Factsheets available at:  
[www.energystar.gov/newhomesguidance](http://www.energystar.gov/newhomesguidance)
- One page front and back
  - Front: Relevant code language and background.
  - Back: Listing of all mandatory requirements compared to ENERGY STAR.
- Created for:
  - Version 3 vs the 2009 IECC
  - Version 3.1 vs the 2012 and 2015 IECC



Homes that earn the ENERGY STAR label meet strict requirements set by the U.S. EPA, including a high-efficiency performance target. Homes that are certified under Version 3 of the ENERGY STAR program requirements are designed to perform above code and satisfy many of the requirements of the 2009 IECC. This factsheet details how ENERGY STAR certification can help demonstrate code compliance.

**What is an ENERGY STAR Certified Home?**  
ENERGY STAR certified new homes are designed and built to standards well above most other new homes on the market today, delivering energy efficiency savings of up to 30%. A new home that has earned the ENERGY STAR label has undergone a process of inspections, testing, and verification to meet strict requirements set by the U.S. EPA, delivering better quality, comfort, and durability.



**How does ENERGY STAR intersect with code?**  
Both the IECC and the ENERGY STAR Certified Homes program include efficiency requirements. By certifying a home under Version 3 of the program, many of the 2009 IECC code requirements are also met or exceeded.  
To demonstrate compliance with code, Section 102.1.1 of the 2009 IECC states that *“the code official or other Authority Having Jurisdiction (AHJ) shall be permitted to deem a national, state or local energy efficiency program to exceed the energy efficiency required by this code. Buildings approved in writing by such an energy efficiency program shall be considered in compliance with this code. The requirements identified as ‘mandatory’ in Chapters 4 and 5 of this code, as applicable, shall be met.”*  
Therefore, to use ENERGY STAR certification to demonstrate code compliance, the following criteria must be met: (1) the code official recognizes ENERGY STAR as an above-code program, (2) the home is ENERGY STAR certified, and (3) the home meets all of the mandatory requirements in Chapter 4. The following page lists these requirements and indicates whether ENERGY STAR certification satisfies each of them.

**How can a Code Official or other AHJ use this information?**  
A code official or other AHJ considering recognition of certification under Version 3 of the ENERGY STAR Certified Homes program as one path towards code compliance should ensure that the home receives the ENERGY STAR label and meets the mandatory items in the following table.

For more information, visit: [www.energystar.gov/newhomes](http://www.energystar.gov/newhomes)  
Questions? Write to [energystarhomes@energystar.gov](mailto:energystarhomes@energystar.gov)

## #5. Guidance on conditioned floor area and window area

- Designers report the conditioned floor area and window area used in their design on the HVAC Design Report.
- Then, Raters compare the design values to the actual home.
- To determine these values:
  - Raters are required to use ANSI / RESNET / ICC 301.
  - For designers, there's no industry standard and no guidance provided.
- New footnotes will be added to clarify these terms.

## #5. Guidance on conditioned floor area and window area

- For Raters, on the Rater Design Review Checklist:
  - Conditioned Floor Area for the home to be certified shall be calculated in accordance with the definition in ANSI / RESNET / ICC Standard 301-2019.
  - Window area for the home to be certified shall be calculated in accordance with the on-site inspection protocol provided in Normative Appendix B of ANSI / RESNET / ICC Standard 301-2019.

## #5. Guidance on conditioned floor area and window area

- For designers, on the HVAC Design Report, for CFA:
  - The difference between the Conditioned Floor Area (CFA) used in the design and the actual home to be certified must fall within the tolerance specified in Footnote 2, as verified by a Rater.
  - Be advised, the Rater will calculate CFA using the definition in ANSI / RESNET / ICC Standard 301-2019, which defines this value, in part, as the floor area of the Conditioned Space Volume within a building or Dwelling Unit, not including the floor area of attics, crawlspaces, and basements below air sealed and insulated floors.
  - See <https://codes.iccsafe.org/content/chapter/16185/> for the complete definition.

## #5. Guidance on conditioned floor area and window area

- For designers, on the HVAC Design Report, for window area:
  - The difference between the window area used in the design and the actual home to be certified must fall within the tolerance specified in Footnote 2, as verified by a Rater.
  - Be advised, the Rater will calculate window area using the on-site inspection protocol provided in Normative Appendix B of ANSI / RESNET / ICC Standard 301-2019, which instructs the Rater to measure the width and height of the rough opening for the window and round to the nearest inch, and then to use these measurements to calculate window area, rounding to the nearest tenth of a square foot.
  - See <https://codes.iccsafe.org/content/chapter/16191/> for the complete protocol.

## #6. Minor clean-up and formatting changes

- Removing date dependent requirements if older than 3 years.
  - ~~If permitted prior to July 1, 2012...~~
  - ~~For homes permitted through 12/31/2012...~~
  - ~~For a home certified in the State of ID, MT, OR, or WA that is permitted before 01/01/2016...~~
- Homes are unlikely to need these date-dependent policies, but if applicable they may still be used.

## #6. Minor clean-up and formatting changes

- Revised several terms to align with ANSI / RESNET/ ICC Std. 301 definitions:

<b>Provider:</b>	<u>“The term ‘Provider’ refers to an Approved Rating Provider that is a designee of a VOO such as RESNET.”</u>
<b>Rater:</b>	<p><del>“Rater”</del> <del>“Home Energy Rater”</del> <del>“Rating Field Inspector”</del></p> <p>“The term ‘Rater’ refers to the person(s) completing the third-party verification required for certification. The person(s) shall: a) be a <u>Certified Rater</u>, <u>Approved Inspector</u>, or an equivalent designation as determined by a VOO such as RESNET...”</p>
<b>Software:</b>	<p><del>“Home Energy Rating Software”</del></p> <p>“...EPA-Recognized Verification Oversight Organization (VOO)’s <u>Approved Software Rating Tool</u>...”</p>

# #6. Minor clean-up and formatting changes

- Last but not least!



## National Water Management System Builder Requirements<sup>1</sup> ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 09)

### Builder Responsibilities:

- It is the exclusive responsibility of builders to ensure that each certified home is constructed to meet these requirements.
- While builders are not required to maintain documentation demonstrating compliance for each individual certified home, builders are required to develop a process to ensure compliance for each certified home (e.g., incorporate these requirements into the Scope of Work for relevant sub-contractors, require the site supervisor to inspect each home for these requirements, and / or sub-contract the verification of these requirements to a Rater).
- In the event that the EPA determines that a certified home was constructed without meeting these requirements, the home may be decertified.

### 1. Water-Managed Site and Foundation

- 1.1 Patio slabs, porch slabs, walks, and driveways sloped  $\geq 0.25$  in. per ft. away from home to edge of surface or 10 ft., whichever is less.<sup>2</sup>
- 1.2 Back-fill has been tamped and final grade sloped  $\geq 0.5$  in. per ft. away from home for  $\geq 10$  ft. Alternatives in Footnote.<sup>2</sup>
- 1.3 Capillary break beneath all slabs (e.g., slab on grade, basement slab) except crawlspace slabs using either:  $\geq 6$  mil polyethylene sheeting, lapped 6-12 in., or  $\geq 1$  in. extruded polystyrene insulation with taped joints.<sup>3, 4, 5</sup>
- 1.4 Capillary break at all crawlspace floors using  $\geq 6$  mil polyethylene sheeting, lapped 6-12 in., & installed using one of the following:<sup>3, 4, 5</sup>
  - 1.4.1 Placed beneath a concrete slab; OR
  - 1.4.2 Lapped up each wall or pier and fastened with furring strips or equivalent; OR



## National Rater Field Checklist ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 10)

Home Address: _____ City: _____ State: _____ Permit Date: _____				
Thermal Enclosure System	Must Correct	Builder Verified <sup>1</sup>	Rater Verified <sup>2</sup>	N/A <sup>3</sup>
<b>1. High-Performance Fenestration &amp; Insulation</b>				
1.1 Fenestration meets or exceeds specification in Item 2.1 of the National Rater Design Review Checklist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
1.2 Insulation meets or exceeds specification in Item 3.1 of the National Rater Design Review Checklist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
1.3 All insulation achieves Grade I install, per ANSI / RESNET / ICC Std. 301. Alternatives in Footnote 4, 4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
<b>2. Fully-Aligned Air Barriers<sup>6</sup></b> At each insulated location below, a complete air barrier is provided that is fully aligned as follows:				
Ceilings: At interior or exterior horizontal surface of ceiling insulation in Climate Zones 1-3; at interior horizontal surface of ceiling insulation in Climate Zones 4-8. Also, at exterior vertical surface of ceiling insulation in all climate zones (e.g., using a wind baffle that extends to the full height of the insulation in every bay or a tabbed baffle in each bay with a soffit vent that prevents wind washing in adjacent bays). <sup>7</sup>				
2.1 Dropped ceilings / soffits below unconditioned attics, and all other ceilings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walls: At exterior vertical surface of wall insulation in all climate zones; also at interior vertical surface of wall insulation in Climate Zones 4-8 <sup>8</sup>				
2.2 Walls behind showers, tubs, staircases, and fireplaces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 Attic knee walls and skylight shaft walls <sup>9</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4 Walls adjoining porch roofs or garages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5 Double-walls and all other exterior walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
Floors: At exterior vertical surface of floor insulation in all climate zones and, if over unconditioned space, also at interior horizontal surface				



# Release of Revision 10

- Released in October 2019:
  - Updated program documents.
  - Updated Policy Record.
  - Tracked-changes documents.
  - Overview webinar.



## National Program Requirements ENERGY STAR Certified Homes, Version 3.1 (Rev. 09)

### Eligibility Requirements

The following site-built or modular <sup>1</sup> homes are eligible to earn the ENERGY STAR:

- Detached dwelling units <sup>2</sup> (e.g. single family homes); OR
- Dwelling units <sup>2</sup> in any multifamily building with 4 units or fewer; OR
- Dwelling units <sup>2</sup> in multifamily buildings with 3 stories or fewer above-grade <sup>3,4</sup>; OR
- Dwelling units <sup>2</sup> in multifamily buildings with 4 or 5 stories above-grade <sup>3,4</sup> where dwelling units occupy 80% or more of the occupiable <sup>4</sup> square footage of the building <sup>5,6</sup>. When evaluating mixed-use buildings for eligibility, exclude commercial / retail space when assessing whether the 80% threshold has been met.

Dwelling units <sup>2</sup> in multifamily buildings that are not eligible to earn the ENERGY STAR through the Certified Homes Program may be eligible through the Multifamily High Rise Program. For more information, visit [www.energystar.gov/mfr/eligibility](http://www.energystar.gov/mfr/eligibility). 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 that may be applicable to the home to be built. <sup>7</sup>

### Partnership, Training, and Credentialing Requirements

Builders, Raters, and HVAC contractors must meet: 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). An explanation of this process can be found at [www.energystar.gov/newhomesHVAC](http://www.energystar.gov/newhomesHVAC).
- Raters, Certified Raters, and Field Approved Inspectors <sup>8</sup> are required to complete training, which can be found at [www.energystar.gov/newhomestraining](http://www.energystar.gov/newhomestraining).

### ENERGY STAR Certification Process <sup>9</sup>

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 Verification Oversight Organization (VOO)'s Approved Software Rating Tool shall automatically use a Home Energy Rating Software program accredited by an EPA-Approved Verification Oversight Organization (AVOO) to 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 on-site inspection procedures for minimum rated features of an EPA-Approved-Recognized VOO. <sup>10</sup> 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, register the rated home with the same EPA-Approved-Recognized VOO. The Rater is required to keep electronic or hard copies of the completed and signed National Rater checklists and the National HVAC Design Report.

# Implementation of Revision 10

- Implementation date of 10/01/2020.
- What does this mean for you?
  - You can use Rev. 10 upon release for any home.
  - You must use Rev. 10 for any home permitted after October 1, 2020.
- When certifying a home under Rev. 10:
  - Under the HVAC Credential path, you may use a Rev. 08, 09, or 10 ENERGY STAR HVAC Design Report.
  - The HVAC Grading path can only be used once Std. 301 and 310 is complete.

# Summary of Rev. 10: Here Comes 310

- Top six changes in Rev. 10:
  1. Addition of HVAC Grading pathway
  2. Revised HVAC design temperature limits
  3. Alignment of duct leakage test exemptions with RESNET standards
  4. Clarification of overlap between ENERGY STAR and code
  5. Guidance on conditioned floor area and window area
  6. Minor formatting and editorial changes
- Available for use in October 2019:
  - Existing HVAC Credential path can be used immediately
  - New HVAC Grading path can be used once Std. 301 and 310 are ready



# Planning for Rev. 11

# To-do's from 2018 Partner Meeting exercise

## Report Out: Heating & Cooling Equipment

			Item	Description
-	1	-	5.1	HVAC manufacturer & model matches design
-	3	2	5.2	External static pressure measured by Rater
-	2	1	5.3	National HVAC Commissioning Checklist collected

- Top issues for possible refinement:
  - ~~1. Rater measured static pressure~~
  - ~~2. Completion of the HVAC Commissioning Checklist~~
  3. Grade II insulation installation allowances
  4. Ventilation requirements
  5. Reduce complexity of duct leakage limits

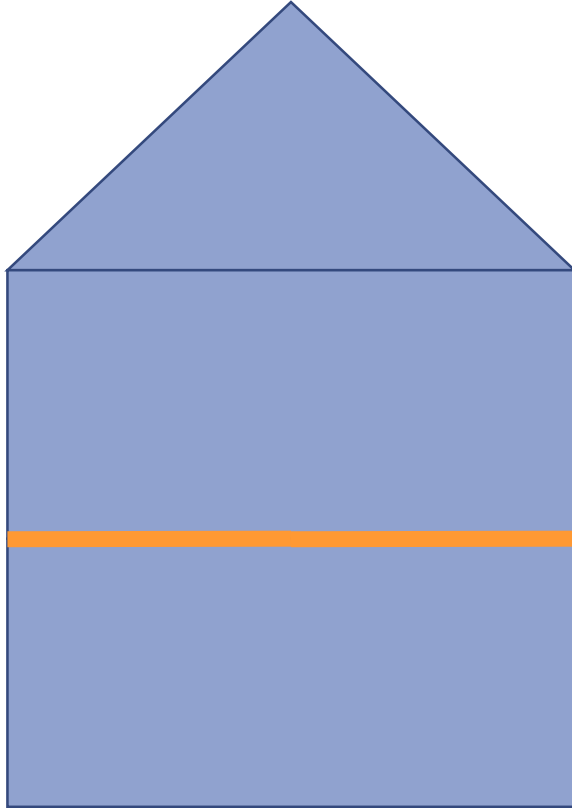
# To-do's from partner questions

1. Address several insulation details:
  - Ceiling assemblies with RC channels,
  - 'Blind' wall assemblies, like foam-filled CMU block walls,
  - Alignment with updated insulation grading criteria in Std. 301-2019
2. Address several ventilation details:
  - Spacing requirements for passive or secondary vent. inlets
  - Consider eliminating height requirement for ventilation inlets on roofs, since Raters can't typically inspect them.

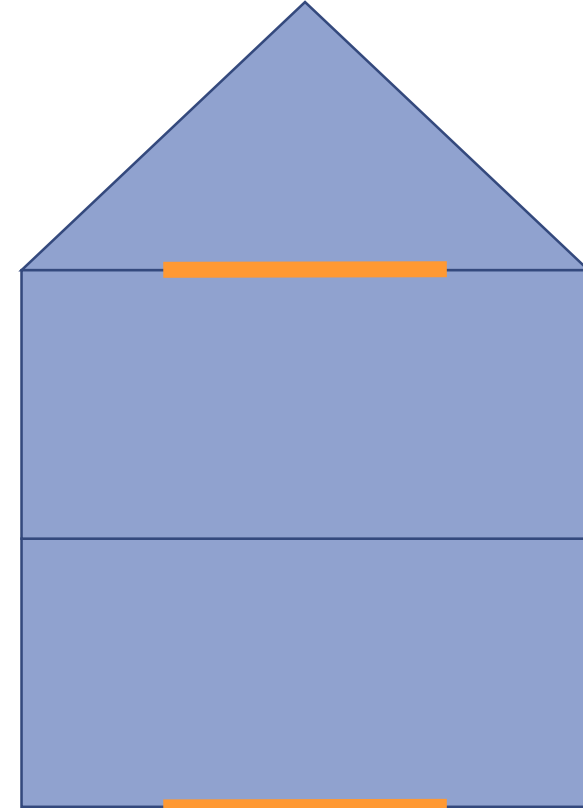
# To-do's from internal discussions

1. Simplification of mandatory air sealing details in exchange for a mandatory infiltration rate.

# To-do's from internal discussions

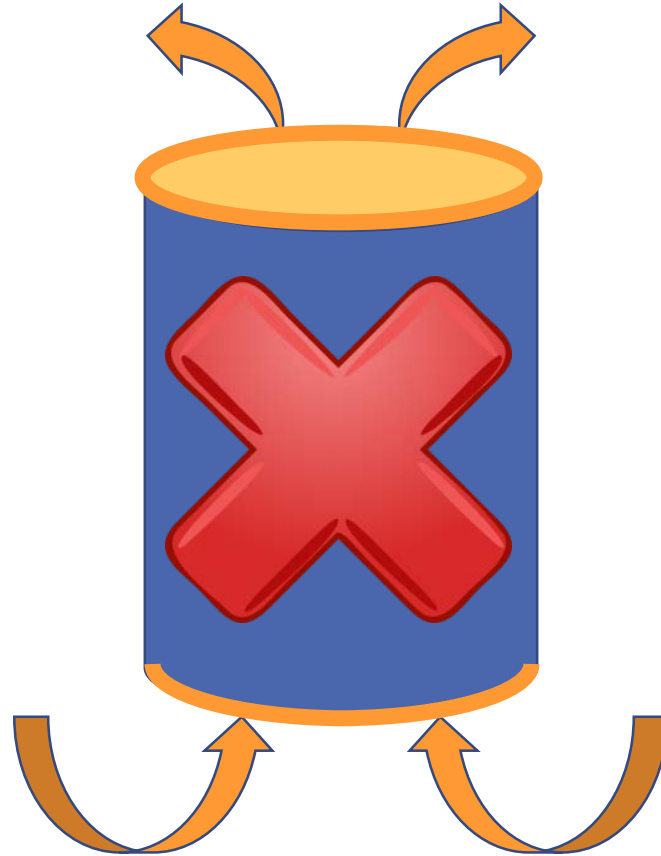


3 ACH50



3 ACH50

# To-do's from internal discussions



# Infiltration takeaways

- Not all holes contribute equally to infiltration.
- To improve performance, you need to both:
  - Reduce the total amount of holes
  - Pay particular attention to sealing ones at the top and bottom of the home.

# Concept for improved infiltration policy

- Mandatory air sealing limit in exchange for streamlined sealing details:
  1. Recessed lighting fixtures adjacent ICAT labeled and gasketed.
  2. Attic access panels, drop-down stairs, & whole-house fans equipped with durable  $\geq R-10$  cover that is gasketed.
  3. Continuous top plate and drywall sealed to it at all attic / wall interfaces.
  4. Above-grade sill plates sealed to foundation or sub-floor. Gasket also placed beneath above-grade sill plate if atop concrete / masonry.
  5. Walls that separate attached garages from occupiable space sealed
  6. In multifamily, the gap between the common wall and structural framing between units sealed at all exterior boundaries.

# Poll: Concept for improved infiltration policy

- A. No – leave the policy as is.
- B. Yes – this concept is worth exploring further.
- C. Yes – but this concept is not the right one.

# Streamline advanced framing details

- a) Corners insulated  $\geq$  R-6 to edge
- b) Headers above windows & doors insulated  $\geq$  R-3 for 2x4 framing or equivalent cavity width, and  $\geq$  R-5 for all other assemblies
- c) Framing limited at all windows & doors to one pair of king studs, plus one pair of jack studs per window opening to support the header and sill
- d) Interior / exterior wall intersections insulated to same R-value as rest of exterior wall
- e) Minimum stud spacing of 16 in. o.c. for 2x4 framing in all Climate Zones and, in CZ 6-8, 24 in. o.c. for 2x6 framing

# Poll: Concept for reduced thermal bridging

- A. No – leave the policy as is.
- B. Yes – this concept is worth exploring further.
- C. Yes – but this concept is not the right one.



# Q & A