

**Version Tracking Document for  
ENERGY STAR Certified Homes for the Tropics, Version 3 (Rev. 09)  
09/01/18**

In the time since Revision 08 of the Version 3 ENERGY STAR Certified Homes Program Requirements for the Tropics were released, EPA has modified, clarified, and refined various aspects of the program documents, primarily in response to partner questions and comments. This document is a summary of these edits, organized by the program document containing the change. EPA has also posted the revised program documents, labeled Version 3 (Rev. 09), on its [Website](#).

All revisions are categorized as a Change, Clarification, or Refinement. These are defined as follows:

**Change** – The addition, deletion, or modification of a program requirement. A change will typically result from a partner question or feedback indicating that EPA’s original intent is not being met or due to changes in relevant standards (e.g., ENERGY STAR labeled product requirements, NAECA standards, ICC codes). A change is the most significant type of edit for partners because it is likely to change the way that partners comply with the program.

**Clarification** – The clarification of a program requirement, typically resulting from a partner question indicating confusion or ambiguity. Clarifications are not intended to significantly change the scope of the program guidelines, but rather to clarify the original intent of the requirement. A clarification is secondary in importance to a change; it should not significantly alter the way that most partners comply with the program.

**Refinement** – A minor revision, such as an improved choice of words, a grammatical correction, or a correction to a typographical error. A refinement is the least important type of edit; it should have no impact on the way that partners comply with the program.

## **Tropics Program Requirements**

### **1. Refinement – Updating document titles for consistent naming format**

To avoid potential confusion, and use a consistent naming format, the title of this document has been updated to “Tropics Program Requirements”. Additionally, the title of and references to the Rater Checklists and other mandatory requirements, namely the “Rater Field Checklist for the Tropics”, “Rater Design Review Checklist for the Tropics”, “HVAC Design Report”, “HVAC Commissioning Checklist”, and “Water Management System Builder Requirements”, have been updated to “Tropics Rater Field Checklist”, “Tropics Rater Design Review Checklist”, “National HVAC Design Report”, “National HVAC Commissioning Checklist”, and “National Water Management System Builder Requirements”, respectively.

### **2. Change – Elimination of plant-certification pathway for modular homes**

The plant-certification path for modular homes has been eliminated because it is not frequently utilized and may be causing confusion among partners.

To further clarify the remaining certification process for modular homes, the first line of the Eligibility Requirements section has been updated to explicitly encompass modular homes as follows:

“The following site-built or modular homes are eligible to earn the ENERGY STAR:”

To indicate that 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, the following sentence has been added to Step 4 of the ENERGY STAR Certification Process section:

“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.”

And a new Footnote has been added as follows:

“A modular home is a prefabricated home that is made of multiple modules or sections that are manufactured and substantially assembled in a manufacturing plant. These pre-built sections are

transported to the building site and constructed by a builder to meet all applicable building codes for site-built homes.”

Finally, the Version of the program requirements applicable to a modular home, which was based upon the home’s “sale date”, has been changed to be based upon the “permit date”, to align with the policy for other site-built homes.

**3. Change – Eligibility Requirements: Criteria for dwelling units in four and five story buildings**

To address the challenge that partners experienced meeting eligibility requirements for four and five story buildings, criteria related to heating, cooling, and hot water systems has been removed.

The eligibility requirement in the fourth bullet of the Eligibility Requirements section has been revised as follows:

“Dwelling units in multifamily buildings with 4 or 5 stories above-grade where dwelling units occupy 80% or more of the occupiable square footage of the building. When evaluating mixed-use buildings for eligibility, exclude commercial / retail space when assessing whether the 80% threshold has been met.”

Footnote 4 has been revised as follows:

“These units may earn the ENERGY STAR through either the Certified Homes Program or the Multifamily High Rise (MFHR) Program. If participating in the Certified Homes Program and the dwelling unit is served by a central heating, cooling, or hot water system, use the RESNET Guidelines for Multifamily Ratings for modeling the specified central system(s) is recommended.”

Footnote 5 has been revised as follows:

“If permitted prior to July 1, 2012, units in multifamily buildings with 4 or 5 stories above-grade may earn the ENERGY STAR through either the Certified Homes Program or the Multifamily High Rise (MFHR) Program, without assessing whether the 80% threshold has been met.”

**4. Refinement – Replacement of references to “RESNET” and “HERS” with industry-standard terms**

Because EPA has a process by which additional VOO’s can operate using ANSI / RESNET / ICC Std. 301, the terms RESNET and HERS have been replaced in all program documents with the industry-standard terms “EPA-Approved Verification Oversight Organization” and “ERI” respectively.

**5. Clarification – Explicit requirement for homes to be registered and receive rating**

To ensure that ENERGY STAR certified homes are encompassed by a VOO’s quality assurance protocols, ENERGY STAR Certified Homes are now explicitly required to receive a rating and be registered with an EPA-approved VOO. The first paragraph under Step 4 of the ENERGY STAR Certification Process has been updated as follows:

“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 VOO. 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 VOO. The Rater is required to keep electronic or hard copies of the completed and signed Tropics Rater checklists and the National HVAC Design Report.”

**6. Refinement – Footer: Removal of implementation date**

To reduce unnecessary complexity and avoid potential confusion, the implementation dates for Revisions and their associated Footnotes have been removed from the footers of program documents. Furthermore, these dates have been integrated into the Effective Date Sections of the program requirements documents

The first sentence of Footnote 11 has also been removed as it has been integrated into the Effective Date Sections of the program requirements documents.

**7. Refinement – Exhibit 1: ENERGY STAR certified products specification versions**

To clarify that efficiency levels of products described as “ENERGY STAR” in the Reference Design Home aligned with the specifications for the ENERGY STAR certified product when this Version was first released, a new Footnote has been added to Exhibit 1 as follows:

“Note that the efficiency levels of ENERGY STAR certified products aligned with these product specifications when this Version was first released. These efficiency features form the basis of the ENERGY STAR ERI target, regardless of any subsequent revisions to ENERGY STAR certified product specifications. EPA recommends, but does not require, that current ENERGY STAR products be included in ENERGY STAR homes. For current ENERGY STAR products, visit [www.energystar.gov/products](http://www.energystar.gov/products).”

**8. Refinement - Exhibit 1: References updated to latest RESNET standard**

To account for the newly released ANSI standard version of the RESNET standard, references to “RESNET Standard” have been updated to “ANSI / RESNET / ICC Standard 301”.

Additionally, a new Footnote has been added to these updated references as follows:

“The version of ANSI / RESNET / ICC Std. 301 utilized by RESNET for HERS ratings is used to model this parameter.”

**9. Refinement - Effective Date Section: Revised structure and format of Implementation Timeline**

To help ensure partners are aware of the implementation timeline(s) applicable to the homes that they certify, the Effective Date section has been revised as follows:

**Effective Date**

To determine the program Version and Revision that a home is required to be certified under, look up the location and permit date of the home in Exhibit 4. Program requirements for other locations can be found at [www.energystar.gov/newhomesrequirements](http://www.energystar.gov/newhomesrequirements).

This Exhibit contains all implementation timelines applicable on or after September 1, 2016. Implementation timelines applicable prior to this date can be obtained by contacting [energystarhomes@energystar.gov](mailto:energystarhomes@energystar.gov)

**Exhibit 4: ENERGY STAR Certified Homes Implementation Timeline for the Tropics**

State / Territory	Homes Permitted On or After This Date Must Meet the Adjacent Version & Revision	Version	Revision
HI	07-01-2016	Tropics v3	Rev. 08
	01-01-2019	Tropics v3	Rev. 09
PR	07-01-2016	Tropics v3	Rev. 08
	01-01-2019	Tropics v3	Rev. 09
GU	07-01-2016	Tropics v3	Rev. 08
	01-01-2019	Tropics v3	Rev. 09
NMI, USVI	07-01-2016	Tropics v3	Rev. 08
	01-01-2019	Tropics v3	Rev. 09

**10. Refinement – Footnote 9: References updated to latest RESNET standard**

To account for the newly released ANSI standard version of the RESNET standard and to clarify the version of the standard to be used, Footnote 9 has been modified in part as follows:

“...A bedroom is defined by ANSI / RESNET / ICC Standard 301-2014 as...”

**11. Change – Exhibit 4: Continued Use of Rev. 08 HVAC Design Report**

To reflect that previously collected Rev. 08 HVAC Design Reports are permitted to be used after the release of the next Revision of the program requirements, so long as no aspect of the system design changes, a new Footnote has been added to Exhibit 4, as follows: “Homes certified under Rev. 09 of the program requirements are permitted to use either Rev. 08 or 09 of the National HVAC Design Report.”

**Tropics Rater Design Review Checklist**

**1. Refinement – Updating document titles for consistent naming format**

To address inconsistency across titles for various program documents, this document title has been updated to “Tropics Rater Design Review Checklist”. Additionally, the title of and references to the other mandatory requirements, namely the “HVAC Commissioning Checklist” and the “HVAC Design Report” have been updated to “National HVAC Commissioning Checklist”, “National HVAC Design Report”, respectively.

**2. Refinement – Checklist separated into standalone document**

To avoid any confusion between this checklist and the Tropics Rater Field Checklist, the Checklists have been separated into their own individual documents.

**3. Refinement – Item 2.2.1: Design temperature limits added for US Territories**

The reference to ‘State and County’ in Item 2.2.1 has been updated to read ‘State and County, or US Territory’ to reflect the inclusion of territories in the Design Temperature Limit Reference Guide.

**4. Change – Item 2.2.3: Increased tolerance for Conditioned Floor Area used in HVAC Design Report**

To allow the conditioned floor area used in the loads to be smaller than the home to be certified, Item 2.2.3 has been revised as follows:

“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.”

**5. Change – Item 2.2.4: Increased tolerance for window area used in HVAC Design Report**

To (1) increase the low-end tolerance to allow the window area used in the loads to be slightly smaller than the home to be certified; and (2) add a percent-based tolerance, Item 2.2.4 has been revised as follows:

“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.”

**6. Refinement – Footer: Removal of implementation date**

To reduce unnecessary complexity and avoid potential confusion, the implementation dates for Revisions and their associated Footnotes have been removed from the footers of program documents. Furthermore, these dates have been integrated into the Effective Date Sections of the program requirements documents.

Footnote 16 has also been removed as it has been integrated into the Effective Date Sections of the program requirements documents.

**7. Refinement – Footnote 5: References updated to latest RESNET standard**

To account for the newly released ANSI standard version of the RESNET standard and to clarify the version of the standard to be used, Footnote 5 has been modified in part as follows:

“...A bedroom is defined by ANSI / RESNET / ICC Standard 301-2014 as...”

**Tropics Rater Field Checklist**

**1. Refinement – Updating document titles for consistent naming format**

To address inconsistency across titles for various program documents, this document title has been updated to “Tropics Rater Field Checklist”. Additionally, the title of and references to the other mandatory requirements, namely the “HVAC Commissioning Checklist” and the “HVAC Design Report” have been updated to “National HVAC Commissioning Checklist”, “National HVAC Design Report”, respectively.

**2. Refinement – Checklist separated into standalone document**

To avoid any confusion between this checklist and the Tropics Rater Design Review Checklist, the Checklists have been separated into their own individual documents.

**3. Clarification – Item 2.2: Low-end limit for bedroom pressure differential, test configuration, and other strategies for meeting pressure limit**

To clarify the intent and ensure more consistent enforcement of bedroom pressure-balancing limits and door configuration while testing and to clarify that any strategy or combination of strategies may be used to meet the Rater-measured pressure limit, Item 2.2 has been revised as follows:

“Bedrooms pressure-balanced (e.g., using transfer grilles, jump ducts, dedicated return ducts, undercut doors) to achieve a Rater-measured pressure differential  $\geq -3$  Pa and  $\leq +3$  Pa with respect to the main body of the house when all air handlers are operating. See Footnote 7 for test configuration and an alternative compliance option.”

Additionally, Footnote 7 has been revised as follows:

“Item 2.2 does not apply to ventilation or exhaust ducts. For an HVAC system with a multi-speed fan, the highest design fan speed shall be used when verifying this requirement. When verifying this requirement, doors separating bedrooms from the main body of the house (e.g., a door between a bedroom and a hallway) shall be closed and doors to rooms that can only be entered from the bedroom (e.g., a closet, a bathroom) shall be open. As an alternative to the  $\pm 3$  Pa limit, a Rater-measured pressure differential  $\geq -5$  Pa and  $\leq +5$  Pa is permitted to be used for bedrooms with a design airflow  $\geq 150$  CFM. The Rater-measured pressure shall be rounded to the nearest whole number to assess compliance.”

**4. Refinement – Item 2.4 and Footnote 14: Clarification of units for duct leakage tolerances**

To address the inconsistency in how duct leakage tolerance units were identified, all instances of the term “CFM” in Item 2.4 and Footnote 14 have been replaced with “CFM25.”

**5. Change – Item 3.2: In multifamily, override control not required to be readily-accessible**

To clarify that in multi-family dwelling units override control of the ventilation system is not required to be readily accessible, a new Footnote has been added to Item 3.2 as follows:

“In a multi-family dwelling unit, the override control is not required to be readily accessible to the occupant. However, in such cases, EPA recommends but does not require that the control be readily accessible to others (e.g., building maintenance staff) in lieu of the occupant.”

**6. Refinement – Item 3.7.2: Air inlet distance from dryer exhaust**

The distance that air inlets must be from dryer exhausts was inadvertently left out of Item 3.7.2 during the transition to Revision 08. To clarify that air inlets must be  $\geq 3$  ft. from dryer exhausts, Item 3.7.2 has been revised as follows:

"Inlet is  $\geq 2$  ft. above grade or roof deck;  $\geq 10$  ft. of stretched-string distance from known contamination sources (e.g., stack, vent, exhaust, vehicles) not exiting the roof, and  $\geq 3$  ft. distance from dryer exhausts and sources exiting the roof."

**7. Change – Item 4.1: Alternative kitchen exhaust rate for Passive House (PHI) and select homes**

To avoid discouraging participation in the ENERGY STAR certified homes program by highly efficient homes, the alternative provided to homes certified through the Passive House Institute US (PHIUS+) has been extended to homes certified by Passive House Institute (PHI) and to homes that meet an equivalent infiltration limit and provide both whole-house ventilation and local mechanical kitchen exhaust using a balanced system. Footnote 23 has been modified in part to reflect this, as follows:

"...As an alternative to Item 4.1, homes are permitted to use a continuous kitchen exhaust rate of 25 CFM per 2009 IRC Table M1507.3, if they are either a) PHIUS+ or PHI certified, or b) provide both whole-house ventilation and local mechanical kitchen exhaust using a balanced system, and have a Rater-verified whole-building infiltration rate  $\leq 0.05$  CFM50 per sq. ft. of Enclosure Area, and a Rater-verified dwelling unit compartmentalization rate  $\leq 0.30$  CFM50 per sq. ft. of Enclosure Area if multiple dwelling units are present in the building. 'Enclosure Area' is defined as the area of the surfaces that bound the volume being pressurized / depressurized during the test."

**8. Refinement – Item 6.3 and Footnote 29: Updating Combustion Safety Testing RESNET Reference**

To correctly refer to the new section number for testing of unvented combustion appliances in RESNET's Standard, Item 6.3 has been revised as follows:

"If unvented combustion appliances other than cooking ranges or ovens are located inside the home's pressure boundary, the Rater has followed Section 802 of RESNET's Standards, encompassing ANSI / ACCA 12 QH-2014, Appendix A, Section A3 (Carbon Monoxide Test), and verified the equipment meets the limits defined within."

Similarly, Footnote 29 has been revised as follows:

"Naturally drafted equipment is allowed within the home's pressure boundary in Climate Zones 1-3 if the Rater has followed Section 802 of RESNET's Standards, encompassing ANSI/ACCA 12 QH-2014, Appendix A, Sections A3 (Carbon Monoxide Test) and A4 (Depressurization Test for the Combustion Appliance Zone), and verified that the equipment meets the limits defined within."

**9. Clarification – Item 5.1 and Footnote 25: MERV 6 filters not mandatory for ERV / HRV systems, ducted and ductless mini-splits**

Because it is difficult to obtain MERV-rated filters for ERV's and HRV's and because both ASHRAE Standard 62.2-2010 and its user guide lack any definitive guidance regarding ERV's and HRV's, Footnote 25 has been modified in part to clarify that such systems are exempted from Item 5.1, as follows:

"... While filters are recommended for mini-split systems, HRV's, and ERV's, these systems , ducted or not, typically do not have MERV-rated filters available for use and are, therefore, also exempted under this version of the requirements..."

**10. Change – Reference added to 2016 version of ASHRAE 62.2 alongside 2010 and 2013 versions**

Because of the significant differences to the ASHRAE 62.2 standard that can occur due to the release of new addenda and new versions, it has been clarified that partners are permitted to, but are not required to, use the latest version (i.e., ASHRAE 62.2-2016) of the standard.

To reflect this change, the following updates have been made:

- Footnote 1 has been revised in part as follows: "...designed to meet the requirements of ASHRAE 62.2-2010 / 2013 / 2016..."

- Footnote 23 has been revised in part as follows: “...the prescriptive duct sizing requirements in Table 5.3 of ASHRAE 62.2-2010 / 2013 / 2016 are permitted to be used...”

#### 11. **Change** – Footnotes 9 and 15: Updated references to Standard 380

To direct Raters to the appropriate test protocols, reduce potential confusion, and ensure that tests are being done consistent with the industry standard, Footnotes 9 and 15 have been updated to refer to ANSI / RESNET / ICC Standard 380.

To reflect this change, Footnote 9 has been revised as follows:

“Items 2.4 and 2.5 only apply to heating, cooling, and balanced ventilation ducts. Duct leakage shall be determined and documented by a Rater using the same version of ANSI / RESNET / ICC Std. 380 that is utilized by RESNET for HERS ratings. Leakage limits shall be assessed on a per-system, rather than per-home, basis. For balanced ventilation ducts that are not connected to space heating or cooling systems, a Rater is permitted to visually verify, in lieu of duct leakage testing, that all seams and connections are sealed with mastic or metal tape and all duct boots are sealed to floor, wall, or ceiling using caulk, foam, or mastic tape.”

Footnote 15 has been revised as follows:

“The whole-house ventilation air flow and local exhaust air flows shall be determined and documented by a Rater using the same version of ANSI / RESNET / ICC Std. 380 that is utilized by RESNET for HERS ratings.”

#### 12. **Clarification** – Footnote 22: Updated kitchen volume definition and minimum kitchen exhaust rate

To ensure that kitchen local mechanical exhaust meets the program’s intent, and to ensure that it does not drop below the requirements of the 2009 IRC, Footnote 22 has been revised as follows:

“Kitchen volume shall be determined by drawing the smallest possible rectangle on the floor plan that encompasses all cabinets, pantries, islands, peninsulas, ranges / ovens, and the kitchen exhaust fan, and multiplying by the average ceiling height for this area. In addition, the continuous kitchen exhaust rate shall be  $\geq 25$  CFM, per 2009 IRC Table M1507.3, regardless of the rate calculated using the kitchen volume. Cabinet volume shall be included in the kitchen volume.”

#### 13. **Change** – Footnote 25: Alternative compliance option for filter access in attics

To address the challenge of meeting the filter access requirement in certain homes where the HVAC equipment is located in the attic, an alternative compliance option has been added to Footnote 25 as follows:

“...HVAC filters located in the attic shall be considered accessible to the occupant if either: 1) drop-down stairs provide access to attic and a permanently installed walkway has been provided between the attic access location and the filter or 2) the filter location enables arm-length access from a portable ladder without the need to step into the attic and the ceiling height where access is provided is  $\leq 12$  ft.”

#### 14. **Clarification** – Footnote 25: Definition of ducted mechanical system dependent on total supply duct length

To clarify that the program’s definition of a ducted mechanical system is dependent on whether the total length of all supply ductwork exceeds 10 ft., the first sentence of Footnote 25 has been modified as follows:

“Based upon ASHRAE 62.2-2010, ducted mechanical systems are those that supply air to an occupiable space with a total amount of supply ductwork exceeding 10 ft. in length and through a thermal conditioning component, except for evaporative coolers...”

### Tropics ERI Target Procedure

#### 1. **Refinement** - Updating document title for consistent naming format

To address inconsistency across titles for various program documents, this document title has been updated to “Tropics ERI Target Procedure”

**2. Refinement – Replacement of references to “RESNET” and “HERS” with industry-standard terms**

Because EPA has a process by which additional VOO’s can operate using ANSI / RESNET / ICC Std. 301, the terms RESNET and HERS have been replaced in all program documents with the industry-standard terms “EPA-Approved Verification Oversight Organization” and “ERI” respectively.

**3. Refinement – Removal of steps for manual calculation of HERS Index Target**

In order to remove any ambiguity regarding the requirement of determining the ERI Target using a RESNET-accredited rating software program and to align with the National Version 3.1 ENERGY STAR ERI Target Procedure, the following edits have been made:

- The word ‘detailed’ has been removed from the first sentence of the document.
- The phrase “a home can achieve and be certified” has been replaced with “each rated home may achieve to earn the ENERGY STAR” in the first sentence of the document.
- The second sentence of the document which reads “The Certification Process provides flexibility to select a custom combination of measures through energy modeling that achieves the required ENERGY STAR HERS Index Target” has been removed.
- The third sentence of the document has been refined to read: “Note that, in addition to meeting the ENERGY STAR ERI Target, homes shall also meet all Mandatory Requirements for All Certified Homes in Exhibit 2 of the ENERGY STAR Certified Homes Version 3 Tropics Program Requirements.”
- The second paragraph, which introduces the steps for calculating the ENERGY STAR ERI Target, has been refined as follows: “A Home Energy Rating Software program accredited by an EPA-Approved Verification Oversight Organization shall automatically determine (i.e., without relying on a user configured ENERGY STAR Reference Design) this target for each rated home using the following procedure:”
- The first two sentences of Step 1 have been reworded and condensed as follows: “The software shall configure the ENERGY STAR Reference Design Home in accordance with Exhibit 2, the Expanded ENERGY STAR Reference Design Definition, and calculate its associated ERI value.” The remaining language has been removed from Step 1.
- The phrase “the software shall” has been inserted before all three instances of the word “calculate” in Steps 2 and 3.
- Step 4 has been removed.

**4. Clarification - References updated to latest RESNET standard and various parameters clarified**

To account for the newly released ANSI standard version of the RESNET standard, references to “RESNET’s 2006 Mortgage Industry National Home Energy Rating Systems Standard” have been updated to “ANSI / RESNET / ICC Standard 301”. Additionally several parameters have been clarified as to how they should be configured in the ENERGY STAR Reference Design Home. To reflect this the following edits have been made:

- The first sentence after the equation in Step 2 has been updated as follows: “For the purposes of this step, the software shall calculate the number of bedrooms and the CFA of the home to be built in accordance with the definitions in ANSI / RESNET / ICC Std. 301 with the following exception...”
- The Glazing: Interior Shade Coefficient Section has been updated to “Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301”



- The Service Water Heating Systems: Use (Gallons per Day) Section has been updated to “Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301, except for reduced usage resulting from the dishwasher specified in the Lighting, Appliances, & Internal Gains Section.”

In addition, this has been associated with a new Footnote as follows: “That is to say, representative of standard-flow plumbing fixtures, reference clothes washer gallons per day, standard distribution system water use effectiveness, a hot water piping ratio of 1.0, no pipe insulation, and no drainwater heat recovery.”

- The Service Water Heating Systems: Tank Temperature Section has been updated to “Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301”.
- The Thermostat: Temperature Setpoints Section has been updated to “Same as Energy Rating Reference Home, but with offsets for a programmable thermostat, as defined by ANSI / RESNET / ICC Std. 301”
- The Lighting, Appliances, & Internal Gains: Internal Gains Section has been updated to “Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301, except for adjustments for the lighting, refrigerator, dishwasher, and ceiling fans specified in this Section.”
- The Internal Mass Section has been updated to “Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301”.
- The final sentence of Footnote 1 has been updated to: “The full conditioned floor area should be used when rating the home (e.g., determining compliance with duct leakage requirements).”
- The second sentence of Footnote 2 has been updated to: “A bedroom is defined by ANSI / RESNET / ICC Std. 301-2014 as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping.”
- Footnote 10 contained the reference to the outdated version of the RESNET standard and has been deleted.
- In addition to these edits, a new Footnote has been associated with Step 2 and all parameters included above, as follows: “The version of ANSI / RESNET / ICC Std. 301 utilized by RESNET for HERS ratings shall be used to configure this parameter.”

##### 5. **Change – Exhibit 2: Heating Systems and Cooling Systems: Equipment capacity and EAE**

Several changes have been made to clarify how to configure the capacity of the heating and cooling equipment and the Electric Auxiliary Energy (EAE) of non-electric warm furnaces and non-electric boilers of the ENERGY STAR Reference Design.

In the Heating Systems Section, the first row has been revised as follows:

“Heating capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual J, Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure”.

In the Heating Systems Section, a new row has been added at the bottom of this section with the following language:

“For non-electric warm furnaces and non-electric boilers, the Electric Auxiliary Energy shall be determined in accordance with the methodology for the Energy Rating Reference Home in ANSI / RESNET / ICC Std. 301, using the capacity determined in this Section”.

This has been associated with a new Footnote as follows:

“The version of ANSI / RESNET / ICC Std. 301 utilized by RESNET for HERS ratings shall be used to configure this parameter.”

In the Cooling Systems Section, the first row has been revised as follows:

“Cooling capacity shall be selected in accordance with ACCA Manual S based on building heating and cooling loads calculated in accordance with ACCA Manual J, Eighth Edition, ASHRAE Handbook of Fundamentals, or an equivalent computation procedure”.

**6. Clarification – Exhibit 2: Lighting, Appliances, and Internal Gains: % qualifying lighting and Tier I lighting**

To clarify that the percent of qualifying lighting in this Section is intended to refer to the interior lighting and to clarify that the lighting in this Section is intended to refer to Tier I lighting, the lighting portion of this Section has been revised as follows:

“Lighting: Fraction of qualifying fixtures to all fixtures in qualifying light fixture locations: 80% for interior; 0% for exterior and garage”

**7. Clarification – Exhibit 2: Lighting, Appliances, & Internal Gains: Dishwasher place setting capacity**

To clarify the dishwasher place setting capacity of the ENERGY STAR Reference Design, this Section has been revised as follows:

“Dishwasher: 0.66 EF, Place Setting Capacity Same as Rated Home”

**8. Clarification – Exhibit 2: Clothes washer and dryer configured with same efficiency as Energy Rating Reference Home**

To clarify the clothes washer and dryer inputs of the ENERGY STAR Reference Design, the Lighting, Appliances & Internal Gains section of Exhibit 2, Expanded ENERGY STAR Reference Design Definition, has been updated to include a new cell with the following language:

“Clothes Washer and Dryer: Same as Energy Rating Reference Home, as defined by ANSI / RESNET / ICC Std. 301”

A new Footnote has also been added to this cell as follows:

“The version of ANSI / RESNET / ICC Std. 301 utilized by RESNET for HERS ratings shall be used to configure this parameter.”

**9. Refinement - Footnote 9: Alignment of window area terminology with Standard 301**

To align the terminology in Footnote 9, used when calculating the Reference Home’s total window area for homes with conditioned basements and attached homes, with Footnote (b) of Table 4.2.2(1) of ANSI / RESNET / ICC Standard 301-2014 the footnote has been updated.

The equation has been updated as follows:

“ $AG = 0.15 \times CFA \times FA \times F$ ”

The first set of bullet points has been updated as follows:

- “AG = Total glazing area
- CFA = Total conditioned floor area
- $FA = (\text{Gross above-grade thermal boundary wall area}) / (\text{Gross above-grade thermal boundary wall area} + 0.5 \times \text{Gross below-grade thermal boundary wall area})$
- $F = 1 - 0.44 \times (\text{Gross common wall area}) / (\text{Gross above-grade thermal boundary wall area} + \text{Gross common wall area})$ ”

The second set of bullet points has been updated as follows:

- “Thermal boundary wall is any wall that separates Conditioned Space from Unconditioned Space, outdoor environment, or the surrounding soil;

- Above-grade thermal boundary wall is any portion of a thermal boundary wall not in contact with soil;
- Below-grade thermal boundary wall is any portion of a thermal boundary wall in soil contact; and
- Common wall is the total wall area of walls adjacent to another conditioned living unit, not including foundation walls.”