



# Standard Revision

## MINHERS Addendum 45

### Chapters 1 and 2 and Appendix B 2020 Updates

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Proponent:	SDC 200
Organization:	RESNET

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#### **Purpose:**

Addendum 45 amends Chapters 1 and 2 and Appendix B of the MINHERS to update MINHERS Chapter 2 for clarity and alignment with current changes to RESNET Standards.

#### **Amendment:**

***Revise Chapter 1, Chapter 2 and Appendix B as follows:***

**Chapter 1- RESNET NATIONAL STANDARD FOR Rating QUALITY ASSURANCE PROVIDERS**

## 101.1 Purpose

The purpose of these Standards is to ensure that accurate and consistent home energy ratings are assured by RESNET accredited Rating Quality Assurance Providers (Provider) through their ~~certified~~ Certified HERS Raters nationwide; to increase the credibility of the Rating Quality Assurance Providers and to promote voluntary participation in an objective, cost-effective, sustainable home energy rating process.

Leaders in both the public and private sectors have identified the need for an accreditation process for Rating Quality Assurance Providers. This accreditation process may be used by these stakeholders to accept home energy ratings and to assure accurate, independent information upon which the mortgage industry may accept home energy ratings for the purposes of issuing energy efficient mortgage, or similar, products; a state may recognize the home energy ratings as a compliance method for state building energy codes; as qualification for public and private sector energy programs designed to reach specific energy saving goals; and as a way to provide housing markets the ability to differentiate residences based on their estimated energy efficiency.

These Standards have been developed to satisfy the above purposes.

### 101.1.1 Relationship to State Law

These Standards specifically recognize the authority of states that have laws requiring certification or licensing of Rating Quality Assurance Providers. To the extent that state laws differ from these Standards, state laws shall govern.

## 102 Accreditation Criteria for ~~Home Energy~~ Rating Quality Assurance Providers

### 102.1 Rating Quality Assurance Provider Responsibilities

All accredited ~~Home Energy~~ Rating Quality Assurance Providers shall have the following minimum responsibilities:

102.1.1 Perform sufficient quality assurance oversight of Certified HERS Raters~~and~~, Rating Field Inspectors (RFI<sup>2</sup>s), and HERS Modelers to ensure compliance with these Standards and the minimum quality assurance requirements outlined in Chapter 9. This oversight is in addition to the oversight performed by RESNET and quality assurance performed by Quality Assurance Designees of RESNET defined in Chapter 9 of these Standards.

102.1.2 Assess, certify, and recertify HERS Raters~~and~~, RFI<sup>2</sup>s, and HERS Modelers as required in Chapter 2 of these Standards.

102.1.3 Ensure Certified HERS Raters and HERS Modelers under their providership use the latest version of RESNET accredited software tools as required in section 105 to produce ratings and provide ~~raters~~ Certified HERS Raters and HERS Modelers notification within 30 days of any software changes.

102.1.4 Submit Confirmed or Sampled Ratings conducted by their ~~certified~~ Certified HERS Raters ~~are submitted~~ to the National RESNET Registry. Submittal of ratings to the Registry shall be completed within 90 calendar days of the rating date, or certification of the rated home in an EEP, whichever is longer.

102.1.5 Require that Rated Home Registration ID's provided by the National RESNET Registry are prominently displayed on all Rating Certifications.

102.1.6 Resolve Certified HERS Rater, RFI, and/or HERS Modeler compliance complaints.

102.1.7 Undertake disciplinary action on Certified HERS Raters~~and~~, RFI<sup>2</sup>s, and HERS Modelers when required.

102.1.8 Ensure that HERS Rater~~and~~, RFI, and HERS Modeler candidates meet the minimum certification requirements of Chapter 2 prior to certification by the Rating Quality Assurance Provider.

102.1.9 Ensure that the only individuals involved in the HERS rating process, including plan review, takeoffs, data collection, energy modeling, rating software data inputs, field data collection, field testing, minimum rated feature data collection, and EEP verification are fully certified RESNET professionals holding the appropriate certification for the work they are performing. Rating Quality Assurance Providers shall not allow any individuals that are not either certified HERS Raters, HERS Modelers or RFIs to perform any portion of the HERS rating.

102.1.10 Ensure Certified HERS Raters utilizing HERS Modelers and/or RFIs maintain sufficient personal involvement in modeling and field data collection supervision and review, to certify their knowledge that the resulting HERS Ratings meet the standards of the profession. Rating Quality Assurance Providers and

Certified HERS Raters shall not allow the Certified HERS Rater's ID to be affixed to any HERS Rating not reviewed by the Certified HERS Rater or prepared under the Certified HERS Rater's supervisory control.

***Note to reviewers: Addendum 52f, Rater and RFI Eligibility Requirements for HVAC Installation Grading, is adding sections 102.2.11 and 102.1.12 which establish criteria for individuals providing grading for HVAC equipment installations pursuant to Standard ANSI/RESNET/ACCA/ICC 310-2020. Follow the development of Addendum 52f for specifics.***

## 102.2 Minimum Standards for Rating Quality Assurance Provider Accreditation

Rating Quality Assurance Providers must meet the following minimum standards for accreditation.

102.2.1 Prior to submitting an application for accreditation, applicants must participate in a current RESNET training for new Providers.

102.2.2 To apply for accreditation as a RESNET Rating Quality Assurance Provider, applicants must complete an accreditation application developed by RESNET and include a certificate of completion from the RESNET training for new Providers referenced in 103.4.1.

102.2.3 Submit a written Quality Assurance Process that conforms to Chapter 9 of these Standards.

102.2.4 Utilize a Quality Assurance Designee to oversee the Provider's compliance with Chapter 9 of these Standards and any specific Quality Assurance requirements for other Provider categories that may apply to a particular organization.

102.2.5 Rating Quality Assurance Providers shall maintain documentation that their eCertified HERS Raters ~~and~~ RFI's, and HERS Modelers meet the certification provisions contained in Chapter Two of these Standards.

102.2.6 Rating Quality Assurance Providers shall provide a due process for appeals which allows their eCertified HERS Raters, RFI's, and HERS Modelers to appeal a probation, suspension, or revocation action taken against them by their Provider. The due process shall comply with RESNET procedures contained in Section 910.5 "Probation/ Suspension/Revocation Due Process" of these Standards.

102.2.7 Certified HERS Rater, RFI, and HERS Modeler Agreements.

102.2.7.1 As a condition of HERS Rater certification, each Rating Quality Assurance Provider shall ensure that a ~~e~~Certified HERS Rater who has met the requirements of Chapter 2, ~~Rater Training Requirements~~Section 206, Certification Candidates, has entered into a written agreement with the Rating Quality Assurance Provider to provide home energy rating, field verification, and testing services in compliance with these standards.

102.2.7.2 As a condition of Rating Field Inspector certification, each Rating Quality Assurance Provider shall ensure that a certified Rating Field Inspector who has met the requirements of Chapter 2, Section 206, Certification Candidates, has entered into a written agreement with the Rating Quality Assurance Provider to provide field verification and testing services in compliance with these standards.

102.2.7.3 As a condition of HERS Modeler certification, each Rating Quality Assurance Provider shall ensure that a certified HERS Modeler who has met the requirements of Chapter 2, Section 206, Certification Candidates, has entered into a written agreement with the Rating Quality Assurance Provider to provide energy modeling services in compliance with these standards.

~~102.2.7.2~~102.2.7.4 A copy of the Rating Quality Assurance Provider's standard Certified HERS Rater, RFI, and HERS Modeler written agreements shall be provided to RESNET with the Rating Quality Assurance Provider's accreditation application, as part of the Provider's annual Quality Assurance submission to RESNET, and within 60 days of making changes to the agreement. The written Certified HERS Rater agreement shall at a minimum require Certified HERS Raters to:

~~102.2.7.2.1~~102.2.7.4.1 Provide accurate ratings, field verification and testing in compliance with these Standards and RESNET Standards Management Board interpretations;

~~102.2.7.2~~102.2.7.4.2 Submit only those models, field data collection, and testing results reviewed by or conducted by them, which are determined to be in conformity with these Standards.

~~102.2.7.2.2~~102.2.7.4.3 Comply with the "RESNET Code of Ethics". The RESNET Code of Ethics is posted on the RESNET website. The Code of Ethics shall be attached to the written Certified HERS Rater agreement.

~~102.2.7.2.3~~102.2.7.4.4 Provide any information requested by the Rating Quality Assurance Provider.

~~102.2.7.2.4~~102.2.7.4.5 Participate in training activities that address

changes to the RESNET Standards when required.

102.2.7.3 The Certified HERS Rater Agreements shall include a copy of the Rating Quality Assurance Provider's due process for appeals.

102.2.8 A Rating Quality Assurance Provider shall ensure that the HERS Rating Software Program used to produce energy ratings has been properly accredited by RESNET. The directory of RESNET accredited HERS Rating Software Programs are posted on the RESNET web site.

102.2.9 Minimum Standards for Rating Quality Assurance Provider Operation Policies and Procedures must be written and provide for the following:

102.2.9.1 Field and file verification of Minimum Rated Features and labeling of all homes shall comply with Chapter 3 and Appendix A of these Standards.

102.2.9.2 Written conflict of interest provisions.

102.2.9.2.1 Written conflict of interest provisions prohibit undisclosed conflicts of interest but allow for a waiver with advance disclosure. The RESNET "Home Energy Rating Standard Disclosure" (Standard Disclosure) form shall be completed for each home that receives a home energy rating.

102.2.9.2.2 Home builders and their employees are not allowed to conduct ratings on the homes they build or for which they have a financial interest.

102.2.9.2.3 A RESNET Standard Disclosure form shall be provided to

the rating client. 102.2.9.2.4 For multi-family projects and production

home communities, the RESNET Standard

Disclosure form is not required for each home or unit that receives a home energy rating, but instead shall

be provided to the rating client prior to the start of construction and list the name of the project or community. For production home communities, each base floor plan covered by the Standard Disclosure form shall also be listed on the form.

102.2.9.3 Written Certified HERS Rater, ~~and RFI~~, and HERS Modeler Disciplinary Procedures that include provisions for Probation, Suspension, and Revocation of Certified HERS Rater, ~~and RFI~~, and HERS Modeler certification. These provisions at a minimum shall include the defined thresholds for each disciplinary category listed in this Section. The Provider shall update the Certified HERS Rater/RFI/HERS Modeler's status in the National RESNET Registry within twenty (20) business days of any change.

The following represent minimum provisions for each Certified HERS Rater/RFI/HERS Modeler disciplinary category. A Provider's policies and

procedures may be more stringent than the following requirements.

102.2.9.3.1 Probation - A Certified HERS Rater/RFI/HERS Modeler found to have committed one or more violations of RESNET standards discovered by a Rating Quality Assurance Provider's Quality Assurance Designee and/or through a Rating Quality Assurance Provider's complaint resolution process, RESNET quality assurance monitoring, or through the RESNET complaint resolution process, may be placed on probation by the Provider. The Provider shall notify the Certified HERS Rater/RFI/HERS Modeler in writing of the specified deficiencies and shall require that specific corrective action, set forth in the notification, be agreed upon and, if possible, implemented, not later than twenty (20) business days after the date set forth in such notification.

Violations include, but are not limited to, the following:

102.2.9.3.1.1 Noncompliance with annual requirements for

quality assurance; 102.2.9.3.1.2 Noncompliance with equipment

calibration requirements;

102.2.9.3.1.3 Discovered violations of one or more provisions of the RESNET Standards that result in four or more non-compliant ratings for a calendar year, i.e. the twelve month period from January 1st through December 31st;

102.2.9.3.1.4 Discovered violations of one or more provisions of the RESNET Standards involving requirements for disclosure, professional conduct, record keeping, and/or reporting;

102.2.9.3.1.5 Misrepresentation of a certification status in marketing materials or services offered or actually provided, for which the Certified HERS Rater/RFI/HERS Modeler does not possess the appropriate RESNET certification from the Provider.

102.2.9.3.2 Suspension - Any Certified HERS Rater/RFI/HERS Modeler certified by a Provider may have their certification suspended for circumstances including, but not limited to, any of the following:

102.2.9.3.2.1 For non-compliance with the terms of probation;

102.2.9.3.2.2 Continued discovery of violations through increased quality assurance reviews in accordance with section 904.3.5;

102.2.9.3.2.3 Two Probations

within a twelve month period;

102.2.9.3.2.4 Willful misconduct;

102.2.9.3.2.5 Misrepresentation of a certification status in marketing materials, or services offered or actually provided, for which the Certified HERS Rater/RFI/HERS Modeler does not possess the appropriate RESNET certification from the Provider.

102.2.9.3.2.6 Provisions for Certified HERS Rater/RFI/HERS Modeler suspension shall include:

102.2.9.3.2.6.1 Written notification to the Certified HERS Rater/RFI/HERS Modeler which includes the cause, terms, restrictions, and notifications to third-parties of the suspension of the Certified HERS Rater's/RFI's/HERS Modeler's ability to complete, submit or acquire any new rating projects or new rating business recognized by any RESNET Accredited Rating Quality Assurance Provider as of the date of suspension. Written notification shall inform the Certified HERS Rater/RFI/HERS Modeler of their right to appeal under Section 911 of these Standards;

102.2.9.3.2.6.2 After the allowable period of time for appeal, and/or an unsuccessful appeal of suspension, notification of suspension to RESNET through the National RESNET Registry, known Certified HERS Rater's clients (i.e. builders or other organizations with repeat business with a Certified HERS Rater or Rating Company), EPA or other known EEP's;

102.2.9.3.2.6.3 Removal of the Certified HERS Rater's/RFI's/HERS Modeler's name and, in cases of a single Certified HERS Rater company, the company name from any promotional website or lists maintained by Provider.

102.2.9.3.2.7 At the Provider's discretion, a Certified HERS Rater/RFI/HERS Modeler may be allowed to complete rating work identified as in progress at the time of the suspension provided the following conditions are met:



102.2.9.3.2.7.1 The Certified HERS Rater/RFI/HERS Modeler shall submit to the Provider copies of any previously completed site visit documentation for the home(s) in question;

102.2.9.3.2.7.2 The Provider and the Certified HERS Rater/RFI/HERS Modeler agree to complete the rating work within a defined minimum timeframe (maximum of 90 days) in compliance with RESNET Standards;

102.2.9.3.2.7.3 The Provider shall complete, and Certified HERS Rater/RFI/HERS Modeler agrees to be subject to, QA File review for 100% of the identified ratings completed under this Section. Certified HERS Rater/RFI/HERS Modeler agrees to pay any associated Provider fees for the additional required QA File reviews;

102.2.9.3.2.7.4 The Provider shall complete, and the Certified HERS Rater/RFI agrees to be subject to, QA Field review for a minimum 25% of the identified ratings completed under this Section. Certified HERS Rater/RFI agrees to pay any associated Provider fees for the additional required QA Field reviews;

102.2.9.3.2.7.5 The HERS Rating client is informed the terms and conditions of Certified HERS Rater/RFI/HERS Modeler suspension.

102.2.9.3.2.8 At a minimum, the duration of a suspension shall be -90 days from notification. After successful compliance with the terms of suspension, a Certified HERS Rater/RFI/HERS Modeler shall be eligible to have their certification re-instated under terms for disciplinary probation agreed upon by the Certified HERS Rater/RFI/HERS Modeler and the Provider.

102.2.9.3.3 Revocation - Any Certified HERS Rater/RFI/HERS Modeler certified by a Provider shall have their certification revoked for circumstances including, but not limited to, any of the following:

102.2.9.3.3.1 A Certified HERS Rater/RFI/HERS Modeler chooses to not renew their certification;

102.2.9.3.3.2 For non-compliance with the progressive terms of probation or suspension;

102.2.9.3.3.3 Failure to reach an agreement on terms of probation or suspension;

102.2.9.3.3.4 The continued discovery of violations through the mandatory RESNET Quality Assurance requirements;

102.2.9.3.3.5 Fraud;

102.2.9.3.3.6 Failure to complete additional training required by the most recent version of the RESNET Standards

102.2.9.3.4 Provisions for revocation of Certified HERS Rater/RFI/HERS Modeler certification shall include:

102.2.9.3.4.1 Written notification to the Certified HERS Rater/RFI/HERS Modeler which includes the cause for revocation and explanation of notifications to third-parties of the Certified HERS Rater's/RFI's/HERS Modeler's inability to complete, submit or acquire any new rating projects or new rating business recognized by any RESNET Accredited Rating Quality Assurance Provider as of the date of revocation. Written notification shall inform the Certified HERS Rater/RFI/HERS Modeler of their right to appeal under Section 911 of these Standards;

102.2.9.3.4.2 After the allowable period of time for appeal, and/or an unsuccessful appeal of revocation, notification of termination to known Certified HERS Rater clients (i.e. builders or other organizations with repeat business with a Certified HERS Rater or Rating Company), RESNET, EPA or other known EEP;

102.2.9.3.4.3 Removal of the Certified HERS Rater's/RFI's/HERS Modeler's name and in cases of a single Certified HERS Rating Rater Company, company name from any promotional website or lists maintained by the Provider;

102.2.9.3.4.4 Indicate the Certified HERS Rater/RFI/HERS Modeler's revocation and the reason for revocation in the National RESNET Registry.

102.2.9.3.5 Certified HERS Rater's/RFI's/HERS Modeler's who have their certification revoked may at their initiative re-apply for certification to any Rating Quality Assurance Provider as a Certified HERS Rater, RFI, or HERS Modeler candidate after a period of no less than 12 months from the date of revocation provided the following conditions found in Chapter 2, Section 207, Recertification are met.:

~~102.2.9.3.5.1 The HERS Rater completes a minimum of three (3) probationary ratings, deemed acceptable in demonstrating the HERS Rater's technical and administrative skills in completing accurate ratings, under the supervision of a Provider's Quality Assurance Designee;~~

~~102.2.9.3.5.2 The RFI completes a minimum of three (3) rating field inspections observed by a certified Quality Assurance Designee or a RESNET~~

~~Candidate Field Assessor using the RESNET graded field evaluation to document results;~~

~~102.2.9.3.5.3 The HERS Rater agrees to File QA by the Provider's Quality Assurance Designee of a minimum of 20% for twelve (12) months from the date of re-instatement;~~

~~102.2.9.3.5.4 The HERS Rater/RFI agrees to Field QA by the Providers Quality Assurance Designee of a minimum of 5% for twelve (12) months from the date of re-instatement.~~

~~102.2.9.3.5.5 The HERS Rater/RFI meets all other certification requirements.~~

102.2.9.4 Rating and Tax Credit Verification recordkeeping. Rating Quality Assurance Providers and/or their eCertified HERS Raters shall maintain the Quality Assurance Data File for each registered rating and tax credit verification for a minimum of three (3) years.

102.2.9.5 Complaint Response System. Each Rating Quality Assurance Provider shall have a system for receiving complaints. The Rating Quality Assurance Provider shall respond to and resolve complaints related to ratings, field verification, diagnostic testing services, and reports. Rating Quality Assurance Providers shall ensure that Certified HERS Raters inform purchasers and recipients of ratings and field verifications about the complaint system. Each Rating Quality Assurance Provider shall retain records of complaints received and responses to complaints for a minimum of three years after the date of the complaint.

102.2.9.6 Site data collection manual. All Rating Quality Assurance Providers shall provide their eCertified HERS Raters/RFIs/HERS Modelers with a manual containing procedures for the on-site collection of data that at a minimum shall include the on-site inspection procedures for minimum rated features for new and existing homes provided in appendix A.

## 103 Provider Accreditation and Renewal Process

### 103.1 National Registry of Accredited Providers

RESNET shall maintain a national registry of organizations accredited as Providers in each Provider accreditation category and will post the registry on its web site. The registry for each Provider accreditation shall serve as the current and definitive list of RESNET accredited Providers.

### 103.2 Provider Accreditation Process

103.2.1 The organization seeking accreditation must file an application for the

specific Provider category in which they seek accreditation with RESNET. RESNET shall create the applications for each accreditation category.

103.2.2 Rating Quality Assurance Provider Accreditation shall be in accordance with Section 103.

103.2.3 Confidentiality of Information. All applicants for Provider accreditation shall have all information in their application treated as confidential throughout the application process. Upon acceptance of the accreditation application, all governing documents shall be made public. Proprietary information relating to internal HERS Rating procedures, processes and policies will not be considered governing documents and will not be made public.

103.2.4 Review and Notification.

103.2.4.1 RESNET staff action. Within twenty (20) business days of receipt of an application, RESNET staff will review the application to determine whether the applicant is eligible for accreditation in accordance with the specific requirements for each Provider category. Upon completion of the review, RESNET staff shall do one of the following:

103.2.4.1.1 Request additional information. If additional information is required in order to complete the review of the application, the application shall be returned to the applicant along with a written request for additional information. Upon receipt of additional information, RESNET staff shall have fifteen (15) business days to take action in accordance with 102.2.4.1.2 or 102.2.4.1.3.

103.2.4.1.2 Recommend approval. If RESNET staff is satisfied that an application is complete and meets all the requirements for accreditation, they shall make a recommendation to the Accreditation Committee that the application be approved.

103.2.4.1.3 Recommend denial. If RESNET staff is not satisfied that an application is worthy of approval for accreditation, they shall make a recommendation to the Accreditation Committee that the application be denied and provide an explanation of the reasons for the recommendation (i.e. incompleteness, failure to meet/comply with a specific accreditation requirement, etc.).

103.2.4.2 Accreditation Committee action. Within fifteen (15) business days of receipt of a recommendation for approval or denial from RESNET staff, the Committee shall do one of the following:

103.2.4.2.1 Request additional information. If the Committee requires additional information, the application shall be returned to the applicant along with a written request for additional information. Upon receipt of additional information, the

Committee shall have fifteen (15) business days to render a decision in accordance with 102.2.4.2.2 or 102.2.4.2.3.

103.2.4.2.2 Approve the application.

103.2.4.2.3 Deny the application. If an application is denied, RESNET staff shall inform the applicant in writing of the reasons for denial. Additionally, the applicant shall be informed of their right to appeal in Chapter 9 of these Standards.

103.2.4.3 Within ten (10) business days of a decision by the Committee, RESNET staff shall inform the applicant in writing of the status of their application.

103.2.5 For each approved Provider accreditation application, RESNET shall issue a unique Accreditation Identification Number (AIN) to the Provider. In accordance with 102.1, the accredited Provider will be incorporated into the respective national registry of accredited Providers.

103.2.6 Term of accreditation.

103.2.6.1 All Provider accreditations shall be valid for a term of one calendar year and shall be renewed annually on January 1st upon successful completion and approval by RESNET of an application for renewal in accordance with Section 102.3.

103.2.6.2 For first time applications any in Provider category approved after September 1st, shall not be required to renew for the calendar year in which the application was approved.

### 103.3 Provider Accreditation Renewal Process

103.3.1 Accredited Providers must submit an "application for renewal" (renewal application) with RESNET no later than October 1st of each calendar year. By September 1st, RESNET shall send to each Provider a renewal application and reminder of the deadline for submission.

103.3.2 Program element changes. At the time of submitting a renewal application, it is the accredited Provider's responsibility to inform RESNET staff of any substantive changes in the Provider's operating policies and procedures or other information that may affect the Provider meeting the minimum accreditation criteria for each Provider category for which it is seeking renewal. Changes will be evaluated by RESNET following the procedures outlined in section 102.2.

103.3.3 Rating Quality Assurance Provider Accreditation Renewal. To qualify for annual accreditation renewal, Rating Quality Assurance Providers must participate

| in an annual RESNET training. Attendee must be the individual listed as the RESNET primary point of contact for the providership. The training would cover, at a minimum, the following:

103.3.3.1 Updates to the RESNET ANSI and Non-ANSI Standards;

103.3.3.2 Effective support and communication with Certified HERS Raters, RFIs, and HERS Modelers;

103.3.3.3 RESNET Quality Assurance updates and overview of critical findings from the year;

103.3.3.4 Updates for National RESNET Registry use;

103.3.4 Successful renewals. Successful renewals will be posted on the national registry and communicated to the applicant by RESNET.

### 103.3.5 Late applications.

103.3.5.1 Renewal applications received after the deadline for submission are not guaranteed to be approved prior to the end of the calendar year. Should an accreditation with a late renewal application expire prior to approval, the RESNET Accreditation Committee, at its sole discretion, may grant an extension with a grace period not to exceed twenty (20) business days.

103.3.5.2 Renewal applications not given an extension or not approved prior to the end of the grace period shall be noted as "pending" on the national registry and the applicant will be advised to cease representing themselves as accredited until the application receives approval.

103.3.6 Accreditation not renewed. Accredited Providers that elect not to renew or fail to meet renewal requirements will be removed from the national registry and be so advised in writing. Providers have the right to appeal a non-renewal decision in accordance with Chapter 9 of these Standards.

## 104 National RESNET Registry

The National RESNET Registry shall be maintained by RESNET and made available for use by RESNET accredited Rating Quality Assurance Providers, their eCertified HERS Raters and other parties in accordance with RESNET Board policy. The following information shall be required in the National RESNET Registry:

104.1 Each accredited ~~Home Energy~~ Rating Quality Assurance Provider shall be included in the National RESNET Registry.

104.2 Rating Quality Assurance Providers are responsible for maintaining a current and accurate listing of their Certified HERS Raters, ~~and~~ RFI's, and HERS Modelers using the National RESNET Registry.

104.3 The Rating Quality Assurance Provider will register ratings and maintain the National RESNET Registry in accordance with the policies and procedures established by RESNET. Information required for each rated home entered into the National RESNET Registry shall include, at a minimum, the following:

104.3.1 The Rated Home characteristics, including but not limited to the following:

104.3.1.1 Physical location of the home, including street address, city, state and zip code

104.3.1.2 IECC climate zone of the home

104.3.1.3 Certified HERS Rater ~~and~~, RFI, and HERS Modeler RESNET assigned identification numbers.

104.3.1.4 Accredited Rating Quality Assurance Provider ID

104.3.1.5 Date of the Rating

104.3.1.6 Status of the Rated Home (new or existing)

104.3.1.7 Rating Type for the home (as defined in ANSI/RESNET 301-2014)

104.3.1.8 Home Type (single-family, duplex, low-rise Multi-family)

104.3.1.9 Conditioned Floor Area of the home

104.3.1.10 Number of bedrooms in the home

104.3.1.11 The name and version number of the accredited software rating tool that created the Rating

104.3.2 The Rating results, including but not limited to the following:

104.3.2.1 Registration ID (provided by the National RESNET Registry)

104.3.2.2 HERS Index Score

104.3.2.3 Annual Rated Home energy end uses for heating, cooling, hot water and lighting and appliance energy end uses by fuel type

104.3.2.4 Annual Rated Home on-site power production

104.3.2.5 Energy prices used to calculate costs by fuel type

104.3.2.6 Annual total cost to operate the Rated home

104.3.2.7 Annual Rated Home normalized Modified End Use Loads

104.3.2.8 Annual HERS Reference Home End Use Loads

104.3.2.9 Annual HERS Reference Home energy end uses for heating, cooling, hot water and lighting and appliance energy end uses by fuel type

104.3.3 An executable copy of the building input file used by the accredited software rating tool to generate the Home Energy Rating.

## 105 HERS Rating Software

### 105.1 Accreditation



All HERS Software Tools shall be accredited by RESNET based on compliance with the test criteria specified in the most current version of RESNET Publication 002 and Chapter 3 of MINHERS

105.1.1 Changes to the requirements of publication 002 shall be governed by RESNET's Standards Development Committee 300.

## 105.2 Version Requirement

For the purposes of conducting Home Energy Ratings, as defined in these Standards, all users of RESNET Accredited Software shall use the most current version of one of the RESNET Accredited Software Tools listed in the "National Registry of Accredited Rating Software Programs" posted on the RESNET website.

## 105.3 Rating Software Changes

When a new version of an Approved Software Rating Tool is released, the new version shall be used for Ratings on Dwelling Units or Sleeping Units with a Building Permit Date on and after the following timelines:

- i. The 6-month anniversary of the software release date,
- ii. If the software version was released in response to an amendment, the Mandatory Compliance Date determined pursuant to section 502.5,
- iii. A date specified by the RESNET Board of Directors.

Alternatively, the date of the Certified HERS Rater's or RFI's first site visit, the date of the application of the permit, or the date of the contract on the home, is permitted to be used as the Building Permit Date.

## 105.4 Software Technical Appeals

105.4.1 Technical appeals for software tools shall be submitted to the RESNET Standing Software Consistency Committee (SCC) for resolution. Software accreditation shall not be delayed due to a Software Technical Appeal.

## 106 Ratings Provided for Third-Party Energy Efficiency Programs

106.1 See Appendix B- Glossary of Terms for definition of Third Party Energy Efficiency Program (EEP)

106.2 When working with EEP's, Certified HERS Raters may be required to perform tests, inspections, verifications and reporting that require skills related to energy efficiency not specific to Home Energy Ratings as defined in these Standards and/or are required to become a Certified HERS Rater. However, it is the responsibility of Certified HERS Raters to perform all of the stipulated tests, inspections, verifications and reporting related to energy efficiency required by the EEP when agreeing to work with their program, including proper completion of any

and all checklists, certificates, or other documentation. Where a Certified HERS Rater/RFI/HERS Modeler does not possess the proper skill or knowledge of a particular test, inspection, verification or reporting requirement, they shall be responsible for obtaining sufficient training from the EEP, or trainer approved by the EEP, to properly fulfill the requirement. An exception may be made in cases where portions of an EEP's testing, inspection, verification or reporting process are completed by another company or individual who holds the required training or certifications.

106.3 See Section 906 for QA Requirements for EEP's

## Chapter 2 - RESNET NATIONAL STANDARD FOR INSTRUCTION, ASSESSMENT AND CERTIFICATION

*Revise the following sections as shown below.*

### 201 Purpose and Scope

#### 201.1 Purpose

The purpose of ~~these~~ this standards is to ensure that ~~Home Energy~~ RESNET Certified Rater Training is consistent and robust; to increase the credibility of the Training and Quality Assurance Providers with consumers, ~~the~~ housing and mortgage finance industry, federal government, state governments, local governments, utility companies, and the private sector; ~~and to~~ Credibility promotes voluntary participation in an objective, cost-effective, sustainable home energy rating process.

#### 201.2 Scope

This document defines the requirements of Accredited Training Providers, RESNET Certified Rater Instructors, Candidate Field Assessors, and Certification Candidates. RESNET shall confirm that the requirements defined in this standard have been met when accrediting Training Providers and certifying ~~Rater~~ Instructors. Accredited Training Providers ~~and Certified-Candidate Field Assessors~~ shall confirm that the requirements defined in this standard have been met when certifying individuals. This enhances the goal of producing a nationally recognized and uniform program.

### 202 General Provisions

#### 202.1 Definitions and Acronyms

See Appendix B- Glossary of Terms.

### 203 Accredited Training Providers

#### 203.1 Achieving Accreditation

Training Providers are accredited in accordance with the Accreditation Process specified in Section 910.2 Provider Accreditation Process. Training Providers shall complete the RESNET ~~Rater~~ Training Provider Application.

#### 203.2 Maintaining Accreditation

In order to maintain their accreditation in good standing, all Accredited Training Providers shall fully ~~discharge~~ execute the following duties and responsibilities. Failure to properly ~~discharge~~ perform any of these duties and responsibilities constitutes grounds for disciplinary action in accordance with Section 910+ Probation, Suspension, and Revocation of Accreditation.

- 203.2.1 Renew their accreditation in accordance with the renewal process found in Section ~~910.3103~~ – Provider Accreditation and Renewal Process.
- 203.2.2 Maintain RESNET Certified Rater Instructors. Only RESNET Certified ~~Rater~~ Instructors can offer HERS Rater and HERS Modeler training through a RESNET Accredited Training Provider.
- 203.2.3 Hold the exam questions administered by RESNET in strictest confidence. The examination and the items contained therein are the exclusive property of RESNET.
- 203.2.4 Maintain records for three years of all training materials and trainee data, training schedules, curricula, attendance records, examinations, and individual examination results. This information shall be made available to RESNET upon request by RESNET.
- 203.2.5 Provide candidates with a certificate or letter of completion, which accurately includes the candidate's legal name and completion dates of any items required for the candidate's certification.
- 203.2.6 Maintain curricula that align with the most ~~up to date~~up to date RESNET standards.
- 203.2.7 Provide training facilities and equipment appropriate ~~to~~ for the training being delivered.

### 203.3 Privileges and rights

Accredited Training Providers in good standing have the following privileges and rights:

- 203.3.1 The privilege to make and use any materials trademarked, copyrighted, or otherwise restricted by RESNET (other than the tests developed by RESNET) for marketing Training Courses or Training Providers or for recruiting HERS Rater, Rating Field Inspector, and/or HERS Modeler trainees, instructors, or trainers.
- 203.3.2 The right to present evidence, arguments and a vigorous defense ~~in~~for any action brought under these standards by any party against an Accredited Training Provider.

### 203.4 Revocation of Accreditation

See Chapter 9- RESNET National Standard for Quality Assurance, Section 911

## 204 Certification of ~~Rater~~ Instructors

### 204.1 Achieving Certification

Individuals shall meet the following requirements to be certified as a RESNET Certified Rater Instructor. Only RESNET Certified instructors may conduct HERS Rater and HERS Modeler training under the auspices of RESNET Accredited Training Providers.

- 204.1.1 Demonstrate the ability to effectively communicate with adults in a training environment. This ability is demonstrated through completion of a minimum sixteen (16) hour RESNET approved adult education program.
- 204.1.2 Demonstrate mastery of the ~~Home Energy Rating System~~ RESNET standards knowledge and ~~the abilities~~ ability sets provided in Section 208 - Capabilities. Mastery is demonstrated by completing the following RESNET tests with a minimum (passing) score to be determined by RESNET.
  - 204.1.2.1 National ~~Rater~~ RESNET Instructor Competency Test
  - 204.1.2.2 RESNET Combustion Appliance Simulation Test
  - 204.1.2.3 RESNET Rater Simulation Practical Test

## 204.2 Professional Development (PD)

RESNET Certified ~~Rater~~ Instructors shall complete a two-hour annual RESNET Roundtable each year. Every three years, RESNET Certified ~~Rater~~ Instructors shall complete; and also every three years

- 204.2.1 Document twelve (12) hours of attendance at RESNET conferences or other conferences approved by RESNET; and
- 204.2.2 Complete eighteen (18) hours of RESNET approved Professional Development courses delivered by RESNET Accredited Training Providers or other events or venues approved by RESNET. Additional documented hours of attendance at RESNET Conferences qualify under this provision.

An individual that is both a RESNET Certified ~~Rater~~ Instructor and Quality Assurance Designee shall complete both the two-hour RESNET roundtable for RESNET Certified ~~Rater~~ Instructors and the two-hour roundtable for Quality Assurance Designees.

## 204.3 Revocation

The following items are grounds for revocation of the RESNET Certified Instructor designation.

- 204.3.1 Compromising the security or integrity of any RESNET certification test. This examination and the items contained therein are the exclusive property of RESNET.
- 204.3.2 Intentionally misrepresenting their Accredited Training Provider by training to curricula that differ from that submitted.
- 204.3.3 Violation of RESNET defined test-proctoring procedures.
- 204.3.4 Failure to complete required Professional Development. Non-payment of RESNET provider accreditation fees.

## 205 Certification of Candidate Field Assessors

### 205.1 Achieving Certification

Individuals shall meet the following requirements to be a certified as a RESNET Candidate Field Assessor.

205.1.1 RESNET Certified HERS ~~HERS~~ Rater in good standing.

205.1.2 As a Certified HERS Rater ~~certified Home Energy Rater~~, complete confirmed ratings on a minimum of twenty-five (25) homes prior to becoming a Candidate Field Assessor. These 25 homes shall ~~have met~~ meet the minimum quality assurance processes defined in Section 903.4 – Quality Assurance of Raters and Ratings.

205.1.3 RESNET Accredited Rating Quality Assurance Providers shall:

205.1.3.1 Confirm eligibility prior to allowing Candidate Field Assessors within their Providership to perform mentoring of Graded Field Evaluations.

205.1.3.2 Maintain, and make available to RESNET upon request, a listing of qualified RESNET Candidate Field Assessors performing mentoring duties within their providership.

## 206 Certification Candidates

### 206.1 General Provisions

#### 206.1.1 Examinations

Examinations allow a candidate to demonstrate the knowledge required appropriate to their desired certification. RESNET online examinations are time-limited and open-book allowing any reference materials but excluding any form of communication with other individuals during the examination session. Examinations are administered by RESNET, set up by a RESNET Accredited Training Provider and overseen by a RESNET approved proctor. Approved proctors include BPI exam proctors, faculty and staff of libraries, trade schools, colleges, independent testing institutions, or others as approved by RESNET. Approved proctors shall adhere to RESNET's defined test proctoring procedures.

#### 206.1.2 Simulated Practical Examinations

Simulated practical examinations allow a candidate to demonstrate their ability to perform certain tasks appropriate to their desired certification. Rater practical examinations shall be administered by RESNET and will include:

206.1.2.1 Rater Simulation Practical Test.

206.1.2.2 RESNET Combustion Appliance Simulation Test

## 206.2 Certification

Prior to issuing a candidate's certification, a RESNET Accredited Rating Quality Assurance Provider shall confirm that the candidate has completed at a minimum, all of the following tasks appropriate to their desired certification within a ~~15~~2-month period (unless otherwise indicated). Only RESNET Accredited Rating Quality Assurance Providers may certify candidates. ~~Certified Accredited Rating Quality Assurance~~ Providers may require candidates ~~have to~~ successfully completed additional instruction beyond these requirements as needed to address their specific program, climate, software, or administrative requirements.

### 206.2.1 Rating Field Inspector (RFI)

206.2.1.1 Pass the following RESNET Tests with a minimum (passing) score to be determined by RESNET:

206.2.1.1.1 The RESNET Combustion Appliance Simulation Test

206.2.1.1.2 RESNET Approved Ggraded Field Evaluation

206.2.1.1.2.2 The RESNET graded field evaluation shall be performed under the observation of a Candidate Field Assessor or Quality Assurance Designee.

206.2.1.2 Complete at least three mentored rating field inspections observed by a Ceertified HERS ~~HERS-rater~~ Rater, or a RESNET Candidate Field Assessor, or Quality Assurance Designee. The Ceertified HERS ~~HERS~~ Rater or, RESNET Candidate Field Assessor, or Quality Assurance Designee shall use the RESNET Ggraded Field Evaluation Form to document the results of mentored inspections. The mentored Rating Field Inspections shall comprise the following tasks at a minimum ~~the following tasks~~.

206.2.1.2.1 Follow the inspection protocols as specified in ANSI/RESNET/ICC 301 Normative Appendix B for all minimum rated features present in the subject dwelling unit.

206.2.1.2.2 Use pressure differential diagnostics to identify intermediate buffer zones including (but not limited to) attics, garages, or crawlspaces.

206.2.1.2.3 Identify insulation defects and ~~account for them in energy analysis tool inputs~~ demonstrate the application of appropriate insulation grading per ANSI/RESNET/ICC 301 Normative Appendix A.

206.2.1.2.4 Identify insulation types, thickness, and alignment with air barriers.

206.2.1.2.5 Measure pressure differences across the building envelope imposed by the operation of the home's HVAC equipment.

206.2.1.2.6 Perform envelope leakage testing in accordance with the airtightness testing protocols contained in ANSI/RESNET/ICC ~~380-2016~~.

206.2.1.2.7 Perform duct leakage testing in accordance with the duct testing protocols contained in ANSI/ RESNET/ICC 380-2016 and interpret results.

206.2.1.2.8 Perform mechanical ventilation airflow testing in accordance with the mechanical ventilation airflow testing protocols contained in ANSI/RESNET/ICC 380.

206.2.1.2.9 Identify room and zone pressure imbalances caused by lack of ducted return air or pressure relief mechanisms such as transfer grilles or jumper ducts.

206.2.1.2.10 Perform CAZ, spillage, and CO testing in accordance with Carbon Monoxide (CO) Test and Depressurization Test for the Combustion Appliance Zone (CAZ) protocols contained in ~~ANSI/ACCA 12-QH, Appendix A, Sections A4 and A5~~ Chapter 8.

206.2.1.3 RFI's shall not complete independent field testing and inspections until they have satisfactorily completed the requisite three mentored rating field inspections per 206.2.1.2 and passed the RESNET Ggraded Field Evaluation.

206.2.1.4 After successfully completing the mentored rating field inspections and passing the RESNET Ggraded Field Evaluation, RFI's may be permitted to conduct all rating tasks ~~contained under Appendix A~~ found in section 206.2.1.2 under the direct supervision of a Certified HERS Rater without having a Certified HERS Rater on site.

## 206.2.2 ~~Home Energy Rater (HERS Rater)~~ Certified HERS Rater

206.2.2.1 Successfully complete a Certified HERS Rater training course provided through a RESNET Accredited Training Provider that meets the minimum standards as defined in Section 2032 - Accredited Training Providers.

206.2.2.2 Complete the following National RESNET Certified HERS Rater HERS series of tests with the minimum (passing) scores to be determined by RESNET:

206.2.2.2.1 ~~Pass the national HERS Rater Test(s)~~ The RESNET National Rater Test

206.2.2.2.2 The RESNET Combustion Appliance Simulation Tests

206.2.2.2.3 RESNET Rater Simulation Practical Test

206.2.2.3 After passing the ~~all of the~~ RESNET tests, but prior to being certified, the candidate shall complete five probationary ratings with a Rating Quality Assurance Provider overseen by a RESNET certified Candidate Field Assessor or Quality Assurance Designee. At least three of the five probationary ratings shall be accomplished using field verification of all rated features of the home in accordance with ANSI/RESNET/ICC 301 ~~and~~, ANSI/RESNET/ICC 380 and Chapter 8-2016 and shall be completed in the presence of a RESNET Certified



Field Assessor or Quality Assurance Designee. At least one of which the three shall be completed one-on-one. Probationary ratings shall not be considered Confirmed Ratings.

206.2.2.4 A ~~HERS Certified HERS~~ Rater Candidate who does not complete, to the satisfaction of a Rating Quality Assurance Provider, a minimum of three (3) of the five (5) required probationary ratings within fifteen (15) months of passing the National RESNET ~~HERS Certified HERS Rater~~ series of tests as defined in ~~205.2.3.1~~ 206.2.2.2, or otherwise does not achieve certification within the allowed fifteen month time frame, must at a minimum, complete the original requirements and do the following in order to maintain eligibility for certification:

206.2.2.4.1 Pass the RESNET ~~National~~ Certified HERS Rater series of tests again; and

206.2.2.4.2 Complete three (3) additional probationary ratings. One of the three (3) additional probationary ratings shall be accomplished using field verification of all rated features of the home in accordance with ~~Section 303.8 and~~ ANSI/RESNET/ICC 301, ANSI/RESNET/ICC 380, and Chapter 8, with the exception that the work is not being performed by a currently Certified HERS Rater and shall be completed in the presence of a RESNET certified Candidate Field Assessor or Quality Assurance Designee. Probationary ratings shall not be considered Confirmed Ratings.

## 207 Recertification

### 207.1 Certification Renewal:

RESNET Certified Rating Field Inspectors, and Certified HERS ~~HERS~~-Raters, shall renew their certification every three years. They shall complete the following:

#### 207.1.1 Rating Field Inspectors

207.1.1.1 Pass the RESNET Graded Field Evaluation overseen by a RESNET certified Candidate Field Assessor or Quality Assurance Designee once in a three-year period, OR

207.1.1.2 Attend a RESNET approved conference once every three years.

207.1.1.3 Certified Rating Field Inspectors who have not completed field work on any Confirmed, Sampled, or Threshold ratings within the three-year certification period shall be required to successfully complete one RESNET graded-field evaluation overseen by a RESNET certified Candidate Field Assessor or Quality Assurance Designee.

#### 207.1.2 Certified HERS ~~Home Energy~~-Raters

207.1.2.1 Attend a RESNET approved conference once every three years, OR

207.1.2.2 Complete 18 hours of RESNET approved professional development from a RESNET Accredited Training Provider every three years, ~~OR~~

207.1.2.3 Certified ~~HERS Home Energy~~ Raters who have not completed any Confirmed, Sampled, or Threshold ratings within the three-year certification period shall successfully complete one RESNET graded-field evaluation overseen by a RESNET certified Candidate Field Assessor or Quality Assurance Designee, in addition to satisfying either 207.1.2.1 or 207.1.2.2.

## 207.2 Failure to Achieve Recertification Criteria

207.2.1 RESNET certified Rating Field Inspectors and Certified HERS ~~HERS~~ Raters that fail to meet the requirements for recertification shall be placed on "Suspension - Administrative" status in the RESNET Registry by their affiliated RESNET Rating Quality Assurance Provider on the date of the expiration of their certification, and shall be barred from conducting rating inspection or certification activities until they have successfully met the criteria for recertification.

207.2.2 RESNET certified Rating Field Inspectors and ~~HERS~~ Certified HERS Raters ~~that~~ who fail to successfully meet the criteria for recertification by 180 days past the date of expiration of their certification shall ~~be~~ have their certification revoked by their affiliated RESNET Rating Quality Assurance Provider per Section 102.1.4.7.31.

207.2.3 RESNET Certified HERS Raters who have had their certification revoked and wish to become recertified must first satisfy any outstanding disciplinary action requirements, and then have a choice to recertify by completing the same requirements as a new certification candidate (training, testing, and probationary ratings) or completing the following:

207.2.3.1 Take and pass professional development courses that represent the number of hours that would have been required had their certification not lapsed. In calculating the number of hours required, include any hours that were required at what would have been a normal recertification date, then include any partial certification periods as full periods. For example, 18 hours of RESNET approved professional development are required during each three-year certification cycle. A candidate who had completed 15 hours of PD during his/her latest certification period and who had certification revoked for less than three years would be required to complete the additional 3 hours plus 18 hours for a total of 21 hours of training. A candidate who has been revoked for three to six years would be required to complete 3 plus 36 for 39 total hours of professional development.

207.2.3.2 Meet all testing and certification requirements that have been introduced since the candidate's certification was revoked.

207.2.3.3 Complete a minimum of three (3) probationary ratings, deemed acceptable in demonstrating the candidate's technical and administrative skills in completing accurate ratings, with a Rating Quality Assurance Provider under the supervision of the Provider's Quality Assurance Designee. At least two of the three probationary ratings shall be accomplished using field verification of all rated

features of the home in accordance with ANSI/RESNET/ICC 301, ANSI/RESNET/ICC 380 and Chapter 8 and shall be completed in the presence of a RESNET Certified Candidate Field Assessor or Quality Assurance Designee and shall be completed one-on-one. Probationary ratings shall not be considered Confirmed Ratings.

207.2.3.4 The candidate agrees to File QA by the Provider's Quality Assurance Designee of a minimum of 20% for twelve (12) months from the date of re-instatement;

207.2.3.5 The candidate agrees to Field QA by the Providers Quality Assurance Designee of a minimum of 5% for twelve (12) months from the date of re-instatement.

207.2.4 RESNET Certified Rating Field Inspectors who have had their certification revoked and wish to become recertified must first satisfy any outstanding disciplinary action requirements, and then complete the following:

207.2.4.1 Meet all testing and certification requirements that have been introduced since the candidate's certification was revoked.

207.2.4.2 The candidate completes a minimum of three (3) rating field inspections observed by a certified Quality Assurance Designee or a RESNET Candidate Field Assessor using the RESNET graded field evaluation to document results;

207.2.4.3 The candidate agrees to Field QA by the Providers Quality Assurance Designee of a minimum of 5% for twelve (12) months from the date of re-instatement.

207.2.5 RESNET Certified HERS Modelers who have had their certification revoked and wish to become recertified must first satisfy any outstanding disciplinary action requirements, and then complete the following:

207.2.5.1 Meet all testing and certification requirements that have been introduced since the candidate's certification was revoked.

207.2.5.2 The candidate completes a minimum of (3) energy models deemed acceptable in demonstrating the candidate's technical and software skills in completing accurate models utilizing the current version of each approved software utilized by the Rating QA Provider, under the supervision of a Provider's Quality Assurance Designee;

207.2.5.3 The candidate agrees to File QA by the Provider's Quality Assurance Designee of a minimum of 20% for twelve (12) months from the date of re-instatement;

## 208 Capabilities

Certified individuals shall have certain capabilities to perform the work required under their certification. The categories listed in this section are contained in Chapter 3, Chapter 8, – ANSI/RESNET/ICC 301-2014, and ANSI/RESNET/ICC 380-2016, and Appendix 1-A – On Site Inspection Procedures for Minimum Rated Features. Certification candidates shall demonstrate proficiency at these capabilities through successful completion of certification requirements specified in Section 206 Certification Candidates. Accredited Training Providers. ~~Training providers~~ shall ensure that their curricula effectively cover these items.

***Sections 208.1.2 208.1.3 and 208.1.5 were deleted and the remaining sections renumbered sequentially. Revise the following sections as shown below.***

### 208.1 Certified Rating Field Inspector (RFI)

A Certified Rating Field Inspector is permitted to conduct all tasks contained within Chapter 8 Section 802, ANSI/RESNET/ICC 301 Appendix A and ANSI/RESNET/ICC 301 Appendix B. A Certified Rating Field Inspector shall have proficiency ~~at~~ in performing those tasks and in the capabilities listed below.

#### 208.1.1 General

- 208.1.1.1 Have a basic understanding of building performance evaluation.
- 208.1.1.2 Demonstrate proficient customer communication skills, ethics, and privacy per the RESNET Code of Ethics.
- 208.1.1.3 Use Complete field inspection forms ~~to~~ that accurately identify and document the minimum rated features of the ~~Reference Home and~~ Rated Home in accordance with the requirements of Chapter 3, ANSI/RESNET/ICC 301 Appendix A and ANSI/RESNET/ICC 301 Appendix B.
- 208.1.1.4 Identify potential problems with the building such as health and safety concerns, building durability issues, potential comfort problems, and ~~possible~~ sources of elevated energy use in accordance with the requirements of Chapter 8 Section 802.
- 208.1.1.5 Identify basic home construction types and the ramifications ~~of these~~ for energy usage.

#### 208.1.2 Health and Safety

- 208.1.2.1 Identify moisture issues such as condensation, leaks through building components, signs of mold or mildew, insect damage, efflorescence, and stains.
- 208.1.2.2 Identify potential combustion appliance safety hazards.
- 208.1.2.3 Identify evidence in combustion equipment of flame rollout, blocked

chimneys, rust and corrosion, and missing or damaged vent connectors.

208.1.2.4 Identify problems related to poor indoor air quality (IAQ), building durability, and human comfort.

208.1.2.5 Identify potential presence of mold and potential causes.

### 208.1.3 Moisture Principles and Properties

208.1.3.1 Identify potential or existing moisture issues (bulk water intrusion, capillary action, air transport, vapor diffusion).

### 208.1.4 Building Components

208.1.4.1 Identify exterior building components, such as stone or brick veneer, overhangs, roofing types, grade levels, and lighting types.

208.1.4.2 Determine building orientation and shading characteristics.

208.1.4.3 Collect fenestration specific information in enough detail to allow for efficiencies and performance factors to be derived for those windows, doors, and skylights without NFRC labels. This includes the identification of window and skylight types, frame materials, reflective and low-e films and coatings, and permanently installed shading devices.

208.1.4.4 ~~Measure building dimensions and use them to calculate gross and net areas.~~

208.1.4.5 Estimate the approximate age of a building

208.1.4.6 Identify areas of thermal bypasses and thermal bridging.

### 208.1.5 ~~Measuring-Documenting~~ Building Components

208.1.5.1 Use construction documents such as building drawings and specification sheets, or actual measured building dimensions to produce a scaled and dimensioned sketch of a home.

208.1.6 Collect Field Data (including photo documentation) as specified in ANSI/RESNET/ICC 301 Appendix B.

***Subsections 208.1.9.1 through 208.1.22.1 were deleted. Subsections 208.1.14.2 and 208.1.20.3 were retained and renumbered as shown below.***

208.1.6.1 Identify signs of building additions.

208.1.6.2 Identify basic combustion appliance concerns.

### 208.1.7 ~~CAZ~~ Combustion Appliance Zone (CAZ) Testing

208.1.7.1 Perform CAZ depressurization, spillage, and Carbon Monoxide (CO) testing in accordance with ~~Carbon Monoxide (CO)~~ Test and Depressurization Test for the Combustion Appliance Zone (CAZ) protocols contained in ~~ANSI/ACCA 12-QH, Appendix A, Sections A4 and A5~~ Chapter 8, Section 802.

~~Identify room and zone pressures imbalances caused by lack of ducted return air or pressure relief mechanisms such as transfer grilles or jumper ducts.~~

208.1.7.2 Identify gas leaks using combustible gas sensing equipment. If a leak is found, recommend that a certified technician repair the leak.

## 208.1.8 Air Leakage

208.1.8.1 Identify common air leakage sites and indicate likely opportunities for leakage reduction.

208.1.8.2 Identify air leakage mechanisms and drivers, energy and comfort implications, and health and safety issues.

~~Perform single point and multi point building envelope leakage testing in accordance with the airtightness testing protocols contained in ANSI/RESNET/ICC 380-2016.~~

208.1.8.3 Identify potential air sealing using zonal pressure differentials and measurement techniques.

208.1.8.4 Measure pressure differences across the building envelope imposed by the operation of the home's equipment.

## 208.1.9 Conditioned Air Distribution Systems

~~Determine duct type, location, and R-value.~~

208.1.9.1 Identify obvious leakage locations and indications of previous sealing.

208.1.9.2 Identify impacts of designed and imposed flaws (closed interior doors, blocked registers and grilles, air handler filters, etc).

208.1.9.3 Identify duct supply and return types (flexible, rigid metal, building chase, insulated panels) and locations with respect to thermal and air barriers.

208.1.9.4 Identify room and zone pressure imbalances caused by lack of ducted return air or pressure relief mechanisms such as transfer grilles or jumper ducts.

*Subsections 208.1.25.5 through 208.1.27.2 were deleted*

208.2 ~~Home Energy Rating System Rater (HERS)~~ Certified HERS Rater

A Certified ~~Home Energy~~ HERS Rater shall have proficiency at the knowledge and abilities of a Rating Field Inspector in addition to the following.

208.2.1 General

208.2.1.1 Understand and be familiar with local climate conditions, housing stock, and climate-specific practices.

208.2.1.2 Identify summer and winter design temperatures.

208.2.1.3 Understand local utility pricing structures (flat vs. tiered rates, net-metering regulations) and sources for reliable utility information.

208.2.1.4 Prepare a detailed work scope.

208.2.1.5 Develop field inspection forms.

~~208.2.1.6 Interpret results from airtightness testing, duct leakage testing, mechanical ventilation system testing, and combustion safety testing.~~

208.2.1.7 Determine window, door, and skylight efficiencies and performance factors for those fenestrations that do not have an NFRC Label.

208.2.1.8 Identify major U.S. climate zones and energy consumption impacts of local climate zone.

208.2.1.9 Recommend levels of insulation by climate zone.

208.2.1.10 Have a basic understanding of energy improvement measure interactions, expected life, and bundling for optimal performance considering the house-as-a-system and the emerging need for deep energy savings.

208.2.2 RESNET Rating System

208.2.2.1 Communicate the business aspects of being a RESNET ~~HERS~~ Certified HERS Rater.

208.2.2.2 Maintain current knowledge of the HERS Rating method using the Reference Home as defined in ANSI/RESNET/ICC 301-2014.

208.2.2.3 Conduct both projected and confirmed building simulation and performance analysis to provide HERS Ratings in accordance with the requirements in Chapter 3, – ANSI/RESNET/ICC 301 and ANSI/RESNET/ICC 380.

- 208.2.2.4 Use RESNET ~~approved~~ Accredited energy analysis software Software Rating Tool(s) capable of producing a HERS Index, perform data entry procedures, reporting, and analysis of results.
- 208.2.2.5 Calculate HERS ~~Score~~ Index computation using the Normalized Modified End-Use Loads (nMEUL) Rating Method.
- 208.2.2.6 Communicate the benefits of the Home Energy Rating System to homeowners, builders, finance, and real estate agents and cultivate partnerships between those individuals.
- 208.2.2.7 Assist and educate customers and builders with:
- 208.2.2.7.1 ~~Home Energy Surveys and~~ Home Energy Ratings.
  - 208.2.2.7.2 Cost effectiveness of energy efficient building design.
    - 208.2.2.7.2.1 Identify HVAC pros/cons, drivers, and sensitivities for major system
    - 208.2.2.7.2.2 Identify sizing and design issues, control types and their impacts on energy use and humidity control.
    - 208.2.2.7.2.3 Identify cooling and heating system design trade-offs.
    - 208.2.2.7.2.4 Determine need for duct insulation in Unconditioned Space Volumes and specify thickness of retrofit insulation if needed.
    - 208.2.2.7.2.5 Identify potential lighting upgrades.
  - 208.2.2.7.3 Quality assurance.
  - 208.2.2.7.4 Marketing of HERS Rated Homes.
  - 208.2.2.7.5 Qualifications for RESNET recognized energy efficiency programs (EEPs) such as ENERGY STAR®.
  - 208.2.2.7.6 Real estate financing, economic terminology, and energy code compliance.
  - 208.2.2.7.7 Financing advantages of Energy Efficient Mortgages (EEM) and Energy Improvement Mortgages (EIM).
  - 208.2.2.7.8 Adding appraisal value through energy improvements.
- 208.2.2.8 Provide excellent customer service in an ethical and fully disclosed manner in accordance with the RESNET Code of Ethics.
- 208.2.2.9 Produce reports which meet minimum reporting requirements and



improvement analysis.

208.2.2.10 Maintain standard operating procedures and office administration.

208.2.2.11 Maintain knowledge of current technical guidelines.

## 209 Reciprocity

Nationally Accredited ~~Home Energy~~ Rating Quality Assurance Providers shall accept certified training provided by an accredited Training Provider as meeting the core competencies for a ~~Home Energy Certified HERS~~ Rater. Accredited ~~Home Energy Certified~~ Rating Quality Assurance Providers may add additional training requirements needed to address their specific program, climate, software, or administrative requirements.

## 210 Normative References

~~ANSI/ACCA 12-QH-2014, Home Evaluation and Performance Improvement~~

ANSI/RESNET/ICC 301-2019~~2014~~(~~Republished January 2016~~), “Standard for the Calculation and Labeling of the Energy Performance of Dwelling and Sleeping Units ~~Low-Rise Residential Buildings~~ using an Energy Rating Index.”, including addenda and normative appendices.

ANSI/RESNET/ICC 380-~~2019~~2016, “Standard for Testing Airtightness of Building Dwelling Unit and Sleeping Unit Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems”, including addenda and normative appendices.

## Appendix B- Glossary of Terms

### Glossary of Terms

#### Abnormal

Some defect exists in the construction and operation of the building enclosure.

#### ACCA

Air Conditioning Contractors of America

#### ACCA QA Program

A quality assurance recognition program for HVAC contractors, in which participants (1) attest that they have implemented written policies and procedures in the ANSI/ACCA 5 QI-2010 Standard to effect quality on a consistent basis in the field, (2) complete and submit a detailed HVAC system installation checklist, and (3) have specific elements of the installation validated by a 3rd party Rater for compliance to the ENERGY STAR® New Homes Program requirements. More information can be found at <http://www.acca.org/qa>

#### Accreditation Identification Number (AIN)

A unique accreditation number assigned to each Rating Quality Assurance Provider.

#### Accreditation Committee

A Standing Committee of the RESNET organization that is responsible for the review and approval of all Applications for Provider accreditation submitted to RESNET.

#### Accredited Rating Quality Assurance or QA Provider

A Rating Quality Assurance Provider accredited by RESNET in accordance with Chapter 1 and Chapter 9 of the RESNET Standards to certify and perform quality assurance of Certified HERS Raters, Certified Rating Field Inspectors, and Certified HERS Modelers.

#### Accredited ~~Rater~~ Training Provider or Accredited ~~Training~~ Provider or Training Provider

A ~~Rater~~ Training Provider accredited by RESNET in accordance with Chapter 2 and Chapter 9 of RESNET Standards to instruct individuals to become HERS

Raters, Rating Field Inspectors, and/or HERS Modelers certified by Accredited Rating Quality Assurance Providers. Only RESNET Accredited ~~Rater~~ Training Providers may offer HERS Rater and HERS Modeler instruction and set up the national rater tests.

### Acrylic Adhesive Tape

Any tape composed of an acrylic nature used as a sealing material primarily for moisture intrusion for house wraps, around windows, and to seal sheets of polyethylene covering the dirt on the floor of a crawl space or a basement

### Additional Failure

When additional instances of initial failure(s) are identified in one or more of the other homes in the sample set being tested or inspected.

### Air Barrier

Any solid material installed to control air leakage either into or out of the building envelope. The material used shall have an air permeability not to exceed 0.004 cubic feet per minute per square foot under a pressure differential of 0.3 in. water (1.57 psf) (0.02 L/s.m<sup>2</sup> @ 75 Pa.) when tested in accordance with ASTM E 2178-01.

### Air Exfiltration

Air from the Conditioned Space Volume leaking outside of the thermal boundary of a structure.

### Air-free Carbon Monoxide

A unit of measurement designed to compensate for the excess air to the burner and is only used to express CO levels in a flue gas sample as opposed to ambient air testing. The measurement represents the CO levels with no excess air in the sample or with “perfect” combustion (an unrealistic situation). The measurement incorporates an adjustment to the as-measured CO ppm (parts per million) value to simulate oxygen-free conditions in the sample. (See “as-measured carbon monoxide.”)

### Air Infiltration

Air from outside the thermal boundary of a structure, which enters the Conditioned Space Volume.

### Air Leakage Site

A specific location in a structure where the air barrier has irregularities in it allowing both air infiltration and exfiltration depending on the interior pressures of the building.

### Air Pressure Boundary

Any part of the building shell that offers resistance to air leakage. The most effective Air Pressure Boundary consists of a series of air barriers of interior and/or exterior sheeting material that resists airflow through it. An effective air pressure boundary is nearly airtight.

### Air Wash

The movement of air through insulation.

### Annual Fuel Utilization Efficiency or AFUE

A standardized measure of heating system efficiency, based on the ratio of annual output energy to annual input energy that includes any non-heating season pilot input loss.

### Anomaly (defect)

An area of a building where the temperature distribution seen with an infrared imaging system differs by more than 4°F from the temperature distribution expected for the type of construction being viewed, denoting a possible problem area; an inconsistency.

### ANSI

American National Standards Institute

### Approved IDR Approval Authority

Shall mean the RESNET Standards Management Board (SMB).

### Approved IDR Review Authority

Shall mean the RESNET Standards Development Committee 300 (SDC 300).

### Approved Modeler

Shall mean a RESNET Certified HERS Modeler or Certified HERS Rater who has been certified by a RESNET-accredited Quality Assurance Provider and who is listed in good standing in the National RESNET Registry.

### Approved Rating Provider

Shall mean a RESNET-accredited Rating Quality Assurance Provider who is listed in good standing in the National RESNET Registry.

### Approved Software Rating Tool

Shall mean a RESNET-accredited HERS® Rating Tool that has been tested and approved in accordance with RESNET Publication 002 and that is listed in the RESNET National Registry of Accredited Rating Software Programs [http://www.resnet.us/professional/programs/energy\\_rating\\_software](http://www.resnet.us/professional/programs/energy_rating_software)

### Approved Tester

Shall mean a RESNET Certified HERS Rater or Rating Field Inspector (RFI) who has been certified by a RESNET-accredited Quality Assurance Provider and who is listed in good standing in the National RESNET Registry.

### As-measured Carbon Monoxide

A direct measurement of carbon monoxide CO in a sample of air or flue gas, usually measured in ppm (parts per million) units. (See “air-free carbon monoxide.”)

### ASHRAE

American Society of Heating, Refrigerating and Air-Conditioning Engineers

### ASNT

American Society for Nondestructive Testing

### ASTM

ASTM International, originally known as the American Society for Testing and Materials (ASTM)

### Atmospherically-Vented

An appliance using a natural draft venting system.

### Atmospheric Pressure

The weight of air and its contained water vapor on the surface of the earth; at sea level, this pressure is 14.7 pounds per square inch.

### Auxiliary Electric Consumption

The annual auxiliary electrical energy consumption for a fossil fuel fired furnace or boiler in kilowatt-hours per year, derived from the Eae as follows: Auxiliary Electric Consumption (kWh/yr) = Eae \* (HLH) / 2080 where: HLH = annual heating load hours seen by the furnace/boiler. Note: If fan power is needed (kW), it is determined by Eae / 2080.

### Back Draft

Sustained downdraft during burner operation.

### Base Load

An estimate of fuel consumption that does not include cooling or heating fuel consumption.

### Bedroom

A room or space 70 square feet or greater, with egress window and closet, used or intended to be used for sleeping. A “den,” “library,” “home office” with a closet, egress window, and 70 square feet or greater or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

### Biomass Fuel

Non-liquid and non-gaseous combustible substance burned to create energy, such as chunk wood, wood chips, corn husks, etc.

### Biomass System

A biomass fuel combustion device and all associated mechanisms, controls, venting, and heat delivery components designed to provide space heating.

### Blackbody

An object or surface which absorbs all radiant energy, within a specific spectral band, coming into contact with the surface and does not reflect or transmit any. Thus, the surface has an emissivity of 1.

### Boiler

A space heating appliance that heats water with hot combustion gases that pass through a heat exchanger.

### BPI

## Building Performance Institute

### Building Analyst (BA), Certified

An individual who successfully passes the BPI written and field examination requirements for certification in order to evaluate the performance of a home, taking into account systems, physical conditions and other energy and non-energy characteristics of the home.

### Building Envelope

The components of a building (walls, ceilings, windows, doors, floors, and foundations) that separate the conditioned space from the unconditioned spaces or conditioned space from outside.

### Building Permit Date

The date on which the permit authorizing the construction of a building is issued by the authority having jurisdiction to issue such permits.

### CAZ

See “Combustion appliance zone”

### Carbon Monoxide (CO)

An odorless, colorless gas that can cause illness or death.

### Carbon Monoxide Emissions

Carbon monoxide (CO) resulting from combustion as measured in ppm (parts per million). The measurement of CO emissions in flue gas requires a sample to be taken before dilution air enters the venting system. (See “air-free carbon monoxide” and “as-measured carbon monoxide.”)

### Certified HERS Modeler

An individual meeting the minimum training requirements for Certified HERS Modelers set forth in Chapter 2 of these Standards, documented by an Accredited RESNET Training Provider, and certified by an Accredited Rating Quality Assurance Provider to generate computer models reflecting the minimum rated features of Home Energy Ratings using RESNET Accredited Software tools and who is listed in good standing in the National RESNET Registry.

### Certified HERS Rater

An individual meeting the minimum training requirements for Certified HERS Raters set forth in Chapter 2 of these Standards, documented by an Accredited RESNET Training Provider, and certified by an Accredited Rating Quality Assurance Provider to inspect a home to evaluate the minimum rated features and complete Home Energy Ratings ~~Shall mean a RESNET Rater who has become qualified to conduct home energy ratings through certification by a RESNET accredited Quality Assurance Provider~~ and who is listed in good standing in the National RESNET Registry.

### Certified Instructor

See RESNET Certified Instructor

### Climate Zone

A geographical area defined as having similar long-term climate

### Code Approved HVAC Tape

Any tape that is approved by current International Codes (UL181 A or 181 B) used for the air sealing of a heat and air duct system.

### Combustion Appliance Zone (CAZ)

A contiguous air volume within a building that contains a combustion appliance; the zone may include, but is not limited to, a mechanical closet, mechanical room, or the main body of a house, as applicable.

### Complaint Resolution Officer (CRO)

The individual assigned to manage complaint and resolution procedures for the CEQ Provider.

### Compression (insulation)

This condition includes but is not limited to batt insulation compressed behind plumbing, heat and air, electrical, and other in cavity obstructions that results in the loss of R-value of the installed insulation. This condition can also occur within a wall cavity without obstructions. See also "Misalignment".

### Conditioned Floor Area (CFA)

The floor area of the Conditioned Space Volume within a building, minus the floor area of attics, floor cavities, crawlspaces, and basements below air sealed and insulated floors. The following specific spaces are addressed to ensure consistent application of this definition:



- The floor area of a wall cavity that is Conditioned Space Volume shall be included.
- The floor area of a basement shall only be included if the party conducting evaluations has either:

Obtained an ACCA Manual J, S, and either B or D report and verified that both the heating and cooling equipment and distribution system are designed to offset the entire design load of the volume, or,

Verified through visual inspection that both the heating and cooling equipment and distribution system serve the volume and, in the judgment of the party conducting evaluations, are capable of maintaining the heating and cooling temperatures specified by the Thermostat section in Table 4.2.2(1) of ANSI/RESNET/ICC 301-2104.

- The floor area of a garage shall be excluded, even when it is conditioned.
- The floor area of a thermally isolated sunroom shall be excluded.
- The floor area of an attic shall be excluded, even when it is Conditioned Space Volume.
- The floor area of a floor cavity shall be excluded, even when it is Conditioned Space Volume.
- The floor area of a crawlspace shall be excluded, even when it is Conditioned Space Volume.

### Conditioned Space

Any directly conditioned space or indirectly conditioned space, as defined in this standard.

### Conditioned Space Volume

- If the volume both above and below a floor cavity meets this definition, then the volume of the floor cavity shall also be included. Otherwise the volume of the floor cavity shall be excluded.
- If the volume of one or both of the spaces horizontally adjacent to a wall cavity meets this definition, then the volume of the wall cavity shall also be included. Otherwise, the volume of the wall cavity shall be excluded.
- The volume of an attic that is not air sealed and insulated at the roof deck shall be excluded.

- The volume of a vented crawlspace shall be excluded.
- The volume of a garage shall be excluded, even when it is conditioned.
- The volume of a thermally isolated sunroom shall be excluded.
- The volume of an attic that is air sealed and insulated at the roof deck or an unvented crawlspace shall only be included if the party conducting evaluations has obtained an ACCA Manual J, S, and either B or D report and verified that both the heating and cooling equipment and distribution system are designed to offset the entire design load of the volume.
- The volume of a basement shall only be included if the party conducting evaluations has either:

Obtained an ACCA Manual J, S, and either B or D report and verified that both the heating and cooling equipment and distribution system are designed to offset the entire design load of the volume, or,

Verified through visual inspection that both the heating and cooling equipment and distribution system serve the volume and, in the judgment of the party conducting evaluations, are capable of maintaining the heating and cooling temperatures specified by the Thermostat section in Table 4.2.2(1) of ANSI/RESNET/ICC 301-2104.

### Confirmed Rating

A Rating accomplished using data gathered from verification of all rated features of the home in accordance with Chapter 3- National Home Energy Rating Technical Standards and ANSI/RESNET/ICC 380-2016 (e.g., on-site visual inspections, on-site diagnostic test results or default values for envelope air leakage rates and distribution system efficiencies).

### Confirmed Threshold Rating

A type of confirmed ratings for homes where the HERS Index is calculated using Threshold Specifications with field inspections and testing accomplished on every home.

### Contractor, Certified

A contractor accredited by the Building Performance Institute (BPI) or an equivalent certification organization recognized by the Home Performance with ENERGY STAR® Program to complete specific home performance improvement work.

### Contractor Education and Qualification Provider (CEQ Provider)

An organization approved by RESNET in accordance with the requirements of these guidelines to train and prepare individuals to be an Energy Smart Contractor's Designated Qualification Representative and to perform the other duties of a Contractor Education and Qualification Provider established herein.

## COP

Coefficient of Performance, which is the ratio of the rate of heat delivered to the rate of energy input, in consistent units, for a complete heat pump system under designated operating conditions.

## Crawl Space

A shallow unfinished space, beneath the first floor or under the roof of a building allowing access to wiring or plumbing.

## Data Collection

The gathering of information on building energy features, energy use history and other relevant building and building operation information.

## Defect

See Anomaly

## Design Temperature

A high or low outdoor temperature equaled or exceeded 97.5% of the time, used for designing heating and cooling systems.

## Detached One- and Two-Family Dwelling

A building with one or two independent dwelling units with an individual or central HVAC system.

## Dewpoint

The temperature at which a given air/water vapor mixture is saturated with water vapor (i.e. 100% relative humidity). Consequently, if air is in contact with a surface below this temperature, condensation (dew) will form on the surface.

## Diagnostic Testing

The use of building performance-testing equipment (e.g. blower door, duct blaster, flow hood, infrared camera, CO monitor, etc.) to measure, assess and document specific performance characteristics of the building system.

## Dilution Air

Air that enters a draft diverter or draft regulator from the room in which the appliance is located.

## Directly Conditioned Space

An enclosed space having heating equipment with a capacity exceeding 10 Btu/hr-ft<sup>2</sup>, or cooling equipment with a capacity exceeding 10 Btu/hr-ft<sup>2</sup>. An exception is if the heating and cooling equipment is designed and thermostatically controlled to maintain a process environment temperature less than 65 degrees Fahrenheit or greater than 85 degrees Fahrenheit for the whole space the equipment serves.

## Direct Vent Appliance

A combustion appliance for which all combustion gases are vented to the outdoors through an exhaust vent pipe and all combustion supply air is vented to the combustion chamber from the outdoors through a separate, dedicated supply-air vent.

## Distribution System Efficiency

A system efficiency factor, not included in manufacturer's performance ratings for heating and cooling equipment, that adjusts for the energy losses associated with the delivery of energy from the equipment to the source of the load, such energy losses associated with heat transfer across duct or piping walls and air leakage to or from forced air distribution systems.

## Downdraft

Air flow from a chimney or venting system into an enclosed building space.

## Draft

A pressure difference that causes combustion gases or air to move through a vent connector, flue, chimney, or combustion chamber.

## Draft Diverter

A nonadjustable device built into an appliance or a part of a vent connector that is intended to (1) permit the escape of flue gases in the event of a blockage or backdraft; (2) prevent a downdraft of outdoor air from entering the combustion chamber of an appliance; (3) reduce the effect of the chimney's stack action; and (4) lower the dew point temperature of the flue gas by the infusion of room air.

## Draft Regulator

A self-regulating damper attached to a chimney or vent connector for the purpose of controlling draft: A draft regulator can reduce draft; it cannot increase draft.

### Drainage Plane

A seamless or overlapping membrane designed to redirect water away from vulnerable building materials.

### Dwelling

Any building that contains one or two Dwelling Units used, intended, or designed to be built, used, rented leased, let or hired out to be occupied, or that are occupied for living purposes.

### Dwelling Unit

A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

### EAE

The average annual auxiliary electrical energy consumption for a gas furnace or boiler in kilowatt-hours per year as published in the AHRI Consumer's Directory of Certified Efficiency Ratings.

### Emissivity

The ability of a surface to emit radiation, measured as the ratio of the energy radiated within a specific spectral band by a surface to that radiated within that same specific spectral band by a blackbody at the same temperature.

### Energy Efficiency Program, or EEP

See "Third-Party Energy Efficiency Program"

### Energy Efficiency Rating

An unbiased indication of a home's relative energy efficiency based on consistent inspection procedures, operating assumptions, climate data and calculation methods.

### Energy Analysis Tool

A computerized calculation procedure for determining a home's energy efficiency rating and estimating annual purchased energy consumption and cost.

### Energy Efficiency Ratio, or EER

the ratio of net equipment cooling capacity in Btu/h to total rate of electric input in watts under designated operating conditions.

### Energy Efficiency Rating, or Energy Rating

See Home Energy Rating.

### Energy Factor, or EF

A standardized measure of water heater energy efficiency as determined under Department of Energy Regulations, 10 CFR 430.23(e)(2)(ii).

### Energy Saving Measure, or Feature

Any material, component, device, system, construction method, process, or combination thereof that will result in a reduction of energy use.

### Energy Simulation File

The complete set of input data used by a RESNET-accredited rating software tool to determine the Home Energy Rating for the specified home as listed in Section 102.1.4.11 of these Standards.

### Energy Smart Contractor

A home improvement contracting company that has been approved by a CEQ Provider to implement energy-saving work scope recommendation prescribed by a certified CHERS Rater or Building Performance Auditor. A home improvement company from any of the trade categories defined on the Directory, who is compliant with the RESNET training, examination and the program requirements contained herein is eligible for designation as Energy Smart and may be listed on the Directory

### Energy Smart Contractor Directory (Directory)

A listing of approved Energy Smart Contractors that is posted on the RESNET website.

### Energy Smart Contractor Candidate for Recognition (Candidate)

A company with a Designated Qualification Representative who intends to become an Energy Smart Contractor, who shall list itself in the Candidate section, and who shall have 90 days to complete its qualification requirements and receive approval by a CEQ Provider. If the Candidate has not been approved within the time limits, their listing will be removed.

## Energy Smart Contractor Representative (Representative)

An individual employed by or a representative of an Energy Smart Candidate, with the necessary level of authority who shall take the required course, pass the RESNET core exam, and otherwise ensure that the contractor, once approved as an Energy Smart Contractor, complies with the terms and conditions of the Directory.

## Energy Smart Improved Home

A home that has undergone an Energy Smart Project for which the estimated energy savings calculated by an Independent HERS Rater/Auditor using RESNET-approved software amounts to no less than a 30% reduction in estimated energy usage as a result of the improvements. A home that meets these requirements shall be labeled with the language, "This home is designated as an Energy Smart Home. As such, the estimated energy usage of the home has been reduced by XX%. It is estimated that the improvements to this home will save approximately \$XXX per year."

## Energy Smart Project

A home performance improvement project with the goal of achieving a 30% reduction in estimated energy usage. The project shall be completed by an Energy Smart Home Performance Team; as such it must involve at least one Energy Smart Contractor and an Independent RESNET Certified HERS Rater/Auditor, one of which acts as the Project Manager, and in which applicable improvement measures are installed by one or more Energy Smart Contractors based upon the assessment and work scope from a RESNET Certified HERS Rater/Auditor. An Energy Smart project shall include Final Verification of the project post-improvement by an Independent HERS Rater/Auditor, who shall calculate the estimated energy savings using RESNET-approved software.

## Energy Smart Project Manager

The company or individual with whom the homeowner contracts for the coordinated installation of comprehensive energy-saving retrofits prescribed by a Certified HERS Rater/Auditor, and who is responsible for the duties of Project Manager. The Energy Smart Project Manager could be the HERS Rater/Auditor or an Energy Smart Contractor that meets the additional qualification defined in Section 1004.6.

## Energy Smart Home Performance Team (Energy Smart Team)

A team consisting of Energy Smart contracting companies and a RESNET Certified HERS Rater/Auditor who can collectively prescribe, complete and verify an Energy Smart Home Project.

## EPA Act

The U.S. Energy Policy Act of 1992.

Equivalent Electric Energy

The amount of electricity that would be produced from site fossil fuel uses when converted to electrical power using the Reference Electricity Production Efficiency.

Estimated Annual Energy Cost Savings

Positive dollar difference between estimated annual energy costs for an improved existing home as compared with the same home in its original condition or for a new home, as compared with the HERS Reference Home, local code or, for the purposes of Fannie Mae mortgages, the RESNET representation of the 1993 Model Energy Code, whichever is applicable.

Ethics & Appeals Committee

A Committee that is responsible for investigating ethics and consumer complaints and hearing a Provider's appeal of its non-approval or renewal of an application, probation, suspension, or revocation.

Evaluation

An analysis of the data collected from any survey or audit, on-site data collection and performance testing, available energy usage records to determine energy use and potential savings from improvements.

Examination

Test developed by RESNET and administered by an Accredited ~~Rater~~ Training Provider.

Excess Air

Air supplied to a burner in excess of the amount needed for complete combustion.

Exposed Wall

Walls subjected to heat loss or gain.

Failed Item

A "failed item" constitutes a category of failure, such as insulation installation, duct leakage, prescriptive air sealing requirements, insulation enclosure, eave baffles, mechanical system efficiency, window specifications, etc. For the purpose of follow-



up inspections, a “failed item” is not limited to the specific instance in a home but to that category of the minimum rated features as it applies to that home design.

## Failure

When one or more of the threshold specifications is not met during the testing and inspection process.

## Fenestration

A glazed opening and its associated sash and framing that is installed into a building.

## Fan-assisted Combustion

A combustion appliance with an integral fan that draws combustion supply air through the combustion chamber.

## Field-of-View (FOV)

The total area of height by width, normally expressed in either degrees or radians, in which an infrared imaging system is capable of displaying, imaging, and recording objects.

## Final Verifier

The Final Verifier must be an independent RESNET Certified HERS Rater/Auditor that did not conduct the initial Energy Smart Project rating/audit, or that does not have a financial interest in any of retrofit work done for the Energy Smart Project, or that is not employed by a company who performs any part of the retrofit work

## Flame Rollout

A condition in which burner flames discharge from the cabinet of a combustion appliance.

## Flashing

sheet material used to cover building joints to prevent bulk water entry

## Framing Spacing

The distance from center to center of wall studs, ceiling joists, floor joists and roof rafters.

## Furnace

A space heating appliance that heats indoor air with hot combustion gases that pass through a heat exchanger.

### Gaps (insulation)

An insulation defect where installed insulation does not completely fill areas of the building enclosure, which allows for conductive and convective heat loss and a reduced R-value of the overall building enclosure.

### Heat Exchanger

A device built for heat transfer from one medium to another. The medium may be separated by a solid wall, so that they never mix, or they may be in direct contact. Furnaces contain heat exchangers, often referred to as combustion chambers, made from stamped steel. Air is directed around the exchanger while the combustion process is occurring inside the heat exchanger, allowing the exchange of heat into the air medium, which is then transferred into the home.

### Heat Pump

A vapor-compression refrigeration device that includes a reversing valve and optimized heat exchangers so that the direction of heat flow may be reversed in order to transfer heat from one location to another using the physical properties of an evaporating and condensing fluid known as a refrigerant. Most commonly, heat pumps draw heat from the air or from the ground moving the heat from a low temperature heat source to a higher temperature heat sink.

### Heating Seasonal Performance Factor, or HSPF

A standardized measure of heat pump efficiency, based on the total heating output of a heat pump, in Btu, divided by the total electric energy input, in watt-hours, under test conditions specified by the Air Conditioning and Refrigeration Institute Standard 210/240.

### HERS-BESTEST

The Home Energy Ratings System Building Energy Simulation Test published as NREL Report No. NREL/TP-472-7332

### HERS Index

A numerical integer value that represents the relative energy use of a Rated Home as compared with the energy use of the HERS Reference Home and where an Index value of 100 represents the energy use of the HERS Reference Home and an Index value of 0 (zero) represents a home that uses zero net purchased energy.

## Home

A building with one or more dwelling units that has three or fewer stories above grade, or a single dwelling unit within a building of three or fewer stories above grade.

## Home Energy Assessment

Defined by this standard as one of two levels of energy assessment of a home, including Home Energy Survey and Comprehensive Home Energy Audit.

## Home Energy Rater, or HERS Rater or Rater

~~An individual meeting the minimum training requirements for Raters set forth in Chapter 2 of these Standards, documented by an Accredited RESNET Training Provider, and certified by an Accredited Rating Quality Assurance Provider to inspect a home to evaluate the minimum rated features and complete Home Energy Ratings (See also Certified HERS Rater Rating Field Inspector).~~

## Home Energy Rater Candidate, or Rater Candidate

An individual who has received instruction from a RESNET Accredited Training Provider and has passed the required RESNET tests.

## Home Energy Rating, or Rating

An unbiased indication of a home's relative energy performance based on consistent inspection procedures, operating assumptions, climate data and calculation methods in accordance with the "National Energy Rating Technical Standards" (Chapter 3 of this Standard). See also "Rating, Confirmed" and "Rating, Projected".

## Home Energy Rating Quality Assurance Provider, or HERS QA Provider, or Rating Provider

See Accredited Rating Quality Assurance Provider.

## Home Energy Rating (HERS) Software Provider

An organization that develops software accredited by RESNET for use in home energy ratings.

## Home Energy Rating System, or HERS®

The procedures, rules and guidelines by which Home Energy Ratings are conducted by accredited Providers (Rating Quality Assurance, Software, Training, Sampling), as specified in these Standards.

## Home Performance Assessment

A detailed evaluation of the condition of a home as a building system, including evaluation of all materials, components, features, systems and subsystems that affect the energy use of the home.

## Home Performance with ENERGY STAR<sup>®</sup>, or HPwES

A national program developed by the Environmental Protection Agency (EPA) and the Department of Energy (DOE), that offers a comprehensive, whole-house approach to improving energy efficiency and comfort of homes, while maintaining or improving safety.

## House Wrap

A weather-resistant material, intended to serve as an air/moisture barrier if sealed carefully at seams.

## HVAC

Heating, Ventilating and Air Conditioning.

## IECC

International Energy Conservation Code.

## Inches of Water Column (IWC)

A unit of pressure difference; 1 IWC = 250 Pascals (see “Pascal.”)

## Independent Rater/Auditor

A RESNET Certified HERS Rater/Auditor who performs Final Verification of an Energy Smart Project in accordance with these sections and is certified by a RESNET-accredited Rating Quality Assurance Provider in accordance with RESNET Standards. Independent HERS Rater/Auditors shall be independent of the Auditor/HERS Rater or Contractor(s) who installed the recommended measures, and may receive no financial compensation for any of the retrofits performed on the project.

## Induced combustion

See “fan-assisted combustion.”

## Industry Accepted Standards for Chapter 10

Industry recognized standards that include the following:

ACCA - Air Conditioning Contractors of America (2800 Shirlington Road, Suite 300, Arlington, VA, 22206; tel: 703/575-4477; <http://www.acca.org>)

ACCA 4 QM - 2007 Maintenance of Residential HVAC Systems in One- and Two-Family Dwellings Less Than Three Stories

ACCA 5 QI -2010 HVAC Quality Installation Specification

ACCA 6 QR- 2007 Standard for Restoring the Cleanliness of HVAC Systems

ACCA 9 QIvp. 2011 HVAC Quality Installation Verification Protocols

ACCA 12 QH 201X Existing Home Evaluation and Performance Improvement

RESNET - Residential Energy Services Network (P.O. Box 4561, Oceanside, CA, 92052-4561; 1-800-836-7057; <http://www.resnet.us>)

Mortgage Industry National Home Energy Rating Standard, 2009

RESNET National Standard for Home Energy Audits, 2005

Rating and Home Energy Survey Ethics and Standards of Practice, 1996

RESNET Standards for Qualified Contractors and Builders, 2010

### Infiltration Volume

The sum of the Conditioned Space Volume and Unconditioned Space Volume in the dwelling unit, minus the volume of:

- Floor cavities that have Unconditioned Space Volume both above and below,
- Unconditioned wall cavities,
- Attics,
- Vented Crawlspace,
- Garages,
- Basements, where the door between the basement and Conditioned Space Volume is closed during enclosure air leakage testing, and,
- Thermally isolated sunrooms.

### Infrared Imaging System

An instrument that converts radiation differences associated with surface temperature variations into a two dimensional image by assigning specific colors or tones to the differing temperatures.

### Infrared Thermography

The process of using an infrared imaging system to generate thermal images of the surfaces of objects, which can be viewed electronically or printed.

## In-Home Home Energy Survey

A level of the RESNET Home Energy Assessment process defined by this standard intended to assess both the general energy performance of the home and the level of the commitment to action on the part of the homeowner. The survey may include data be collected and reported on-line by the homeowner or by a home energy survey professional for the purpose of further analysis and general identification of home performance problems. The intent of the energy survey is to refer homeowners to the next level if it is determined that the home needs further analysis, and the homeowner is motivated to invest in improvements. The On-Line or In-Home Home Energy Survey is not required if the homeowner wishes to directly pursue a Diagnostic Home Energy Survey or Comprehensive Home Energy Audit.

## Initial Failure

When one or more failure(s) are first identified in a home during the sampling process.

## Instantaneous Field of View (IFOV)

The instantaneous spatial resolutions characteristics of thermal imagers (expressed in angular degrees or radians per side if rectangular and if round, in angular degrees or radians), or the smallest object able to be viewed by the imaging system at a given distance.

## Instantaneous Water Heater

A water heater that initiates heating based on sensing water flow and has a manufacturer's specified storage capacity of less than 2 gallons.

## Internal Gains

The heat gains within a home attributable to lights, people, and miscellaneous equipment.

## International Energy Conservation Code (IECC)

The model code for building energy conservation as promulgated by the International Code Council.

## Isolated Combustion Appliance Zone

A combustion appliance zone that is not a part of, nor directly connected to, habitable space. It is either outdoors, or is a mechanical room or attached garage that is supplied with outdoor combustion air and separated from habitable space, and which complies with the criteria in Section B.3.2 of this standard.

## Interim RESNET Standard or Addendum

A time-critical standard or addendum published by RESNET in accordance with its Standards Development Policy and Procedures Manual or its Standards Development Policy and Procedures Manual for Non-ANSI/RESNET Standards, which requires immediate implementation prior to completion of the final standard development process.

## Knob and Tube Wiring

An early method of electrical wiring in buildings, used from about 1880 to the 1930s. It consisted of single insulated copper conductors run within wall or ceiling cavities, passing through joist and stud drill-holes via protective porcelain insulating tubes, and supported on nailed-down porcelain knob insulators.

## KBtu

1,000 British Thermal Units (Btu)

## Labeled Ceiling Fan

A ceiling fan that has been labeled for efficiency in accordance with EPA guidelines such that the label shows the cfm, cfm/watt and watts of the fan at low, medium and high speeds

## Labeled Ceiling Fan Standardized Watts (LCFSW)

The power consumption in watts of a Labeled Ceiling Fan “standardized” to a medium speed air delivery of 3000 cfm.

## Lead Based Paint

Paint containing the heavy metal lead, that was used as pigment, to speed drying, increase durability, retain a fresh appearance, and resist moisture that causes corrosion. Although the United States has regulation that prohibits the manufacture or use of lead based paints in residential or applications with direct human exposure, lead paint may still be found in older properties painted prior to the introduction of such regulation introduced in 1978. Paint with significant lead content is still used in industry and by the military.

## Light Fixture

A complete lighting unit consisting of a lamp or lamps, and ballasting (when applicable) together with the parts designed to distribute the light, position and protect the lamps, and connect the lamps to the power supply. For built-in valence lighting,

strings of low-voltage halogens, and track lights, each individual bulb shall count as a fixture.

### Living Space -

Any enclosed space inside the primary air enclosure boundary separating indoor and outdoor air and intended for continual human occupancy, including but not limited to living, sleeping, dining, and cooking; or intended for human activities, including but not limited to toilets, closets, halls, storage and utility areas, and laundry areas.

### Low-Volume Raters

Certified HERS Raters which complete less than twenty five (25) ratings per year or less than fifty (50) ratings over a two year period.

### MBtu

One million British thermal units (Btu)

### Metropolitan Area

Metropolitan and micropolitan statistical areas as defined by the United States Office of Management and Budget (OMB) and published by the United States Census Bureau at <http://www.census.gov> (the most current edition). In areas not included in any defined Metropolitan Area, individual counties may be substituted for the purpose of applying the sampling process.

### Misalignment (insulation)

A defect which occurs when installed insulation is not in contact with the air barrier and air intrusion between the insulation and the air barrier seriously compromises the effectiveness of the insulation in framed buildings.

### Model Energy Code: 1993 (MEC '93)

The building energy code as promulgated by the Council of American Building Officials (CABO) in 1992 as amended in 1993. The RESNET representation of MEC '93 is the HERS Reference home as defined in the "Mortgage Industry National Home Energy Rating Standards" dated 1999.

### Mechanical Ventilation



The active process of supplying or removing air to or from an indoor space by powered equipment such as motor-driven fans and blowers but not by devices such as wind-driven turbine ventilators and mechanically operated windows.

### Mechanical Ventilation System

A fan designed to exchange the air in the house with outside air, sized to provide whole-house service per ASHRAE 62.2, and controlled automatically (i.e. not requiring human intervention to turn on and off). The presence of a remote-mounted on-off switch or dedicated circuit breaker labeled “whole house ventilation” (or equivalent) shall not disqualify a system from meeting the requirement of automatic control. The following are three types of mechanical ventilation:

Balanced- One or more fans that supply outdoor air and exhaust building air at substantially equal rates from the space. This makes heat recovery possible via an air to air heat exchanger.

Exhaust-Only- One or more fans that remove air from the building, causing outdoor air to enter by ventilation inlets or normal leakage paths through the building envelope.

Supply-Only- One or more fans that supply outdoor air to the building, causing indoor air to leave by normal leakage paths through the building envelope

### Minimum Rated Features

The characteristics of the building elements which are the basis for the calculation of end use loads and energy consumption for the purpose of a home energy rating, and which are evaluated by ~~Home Energy~~ Certified HERS Raters in to order collect the data necessary to create a home energy rating using accredited simulation tools.

### NFPA

National Fire Protection Association

### NASEO

National Association of State Energy Officials

### National Accreditation Body

The Residential Energy Services Network (RESNET) is the National Accreditation Body for all Providers designated in this Standard.

### National HERS Rater Test

Computer-based examination developed and administered by RESNET.

### National Home Energy Rating Technical Guidelines

Voluntary home energy rating system technical guidelines adopted by the National Association of State Energy Officials (NASEO).

### National RESNET Buildings Registry

The national online registry of all rated homes and Certified HERS Raters, Rating Field Inspectors, HERS Modelers, and Accredited Home Energy Rating Quality Assurance Providers which is maintained by RESNET.

### Natural Draft Venting System

A venting system that relies on buoyancy to move combustion gases to the outdoors.

### NIOSH

National Institute for Occupational Safety and Health.

### Normal

The building shell is functioning as designed.

### NREL

National Renewable Energy Laboratory.

### On-Line Home Energy Survey

A level of the RESNET Home Energy Survey in accordance with this Standard that is a basic energy review of a home using an internet-based tool or software.

### On-site Power Production (OPP)

Electric power produced at the site of a Rated Home. OPP shall be the net electrical power production, such that it equals the gross electrical power production minus any purchased fossil fuel energy, converted to its Equivalent Electric Power, used to produce the on-site power.

### OSHA

Occupational Safety and Health Administration.

### Pascal (Pa)

The metric unit of pressure equaling 1 Newton per square meter, or 0.004 inch W.G.

## Performance Testing

Testing conducted to evaluate the performance of a system or component using specified performance metrics.

## Polyethylene Sheeting

Any sheet material made of polyethylene, often called Visqueen™, used as a moisture barrier either on the walls of a structure built in an extreme northern climate or as a barrier covering the dirt on the floor of a basement or crawl space.

## Power Burner

A burner for which air is supplied at a pressure greater than atmospheric pressure; includes most oil-fired burners and gas burners used as replacements for oil burners.

## Power-Vented

An appliance that operates with positive static pressure in the vent, and is constructed and installed with a fan or blower to push all the products of combustion directly to the outdoors through independent sealed vents connected directly to the appliance.

## Predicted Depressurization

Calculated house depressurization after improvements, accounting for estimated change in house tightness and exhaust fan flow.

## Probationary Rating

Ratings conducted by a Rater Candidate while supervised by a Candidate Field Assessor under the auspices of an Accredited RESNET Rating Quality Assurance Provider.

## Projected Rating

A Rating accomplished using minimum rated feature data derived from home plans and specifications or based on a site audit for a to-be-improved home which have not yet been implemented in the field. Projected Ratings are commonly generated prior to the construction of a new building or prior to the implementation of energy-efficiency improvements to an existing building.

## Purchased Energy

The portion of the total energy requirement of a home purchased from a utility or other energy supplier.

## Purchased Energy Fraction (PEfrac)

The fraction of the total energy consumption of the Rated Home that is purchased energy, wherein all site fossil energy uses are converted to their Equivalent Electric Power using the Reference Electricity Production Efficiency of 40%.

## QH Standard BSR/ACCA 12 QH 201x (Existing Home Evaluation and Performance Improvement).

A standard that establishes the minimum criteria by which deficiencies in existing residential buildings are identified by audit, improvement opportunities are assessed, scopes of work are finalized, work is performed in accordance with industry recognized procedures, and improvement objectives were met.

## Qualitative (insulation)

In relation to insulation inspections, determining general areas of anomalies without assigning temperature values to the patterns.

## Qualifying Light Fixture

A light fixture located in a Qualified Light Fixture location and comprised of any of the following components: a) fluorescent hard-wired (i.e. pin-based) lamps with ballast; b) screw-in compact fluorescent bulb(s); or c) light fixture controlled by a photocell and motion sensor.

## Qualifying Light Fixture Locations

For the purposes of rating, those light fixtures located in kitchens, dining rooms, living rooms, family rooms/dens, bathrooms, hallways, stairways, entrances, bedrooms, garage, utility rooms, home offices, and all outdoor fixtures mounted on a building or pole. This excludes plug-in lamps, closets, unfinished basements, and landscape lighting.

## Quality Assurance (QA)

The planned and systematic processes intended to ensure compliance with current applicable standards in a systematic, reliable fashion.

## Quality Assurance Data File (QA Data File)

The collection of data that comprises the complete quality assurance information for a specific Home Energy Rating, including take-off forms, field data collection forms, energy simulation files, building plans, RESNET Standard Disclosure Forms, rating certificates, rating reports, QA records (including findings and the resolution of any issues), photo documentation, as well as any documentation required by Third-Party

Energy Efficiency Programs (EEP's) such as checklists, copies of labels or third-party certificates), and the names of each certified individual (i.e. HERS Raters and/or Rating Field Inspectors and/or HERS Modelers) who worked on the rating (field inspections, modeling, etc.).

#### Quality Assurance Designee (QA Designee)

An officer, employee, or contractor responsible for quality assurance within a Provider organization, who has met the requirements of section 905.3 of this Chapter and has signed an agreement with the Provider to be the Provider's QA Designee.

#### Quality Assurance Designee Delegate (QA Delegate)

An individual certified as a ~~Home Energy~~ HERS Rater, appointed by a Quality Assurance Designee to complete a portion of the Quality Assurance process, who has met the requirements of section 904.7 of this Chapter.

#### Quality Assurance Designee, Primary (Primary QA Designee)

The one QA Designee for a Provider who shall have ultimate responsibility, on behalf of the Provider, for fulfilling the Provider's QA requirements/responsibilities and who shall be the single point of contact to RESNET regarding all Quality Assurance matters.

#### Quality Assurance Committee (QA Committee)

A Standing Committee of the RESNET organization that is responsible for the oversight of RESNET's rating quality assurance program, review and ruling on the merits of formal Ethics and Consumer Complaints received by RESNET, and review and rule on the merits of all appeals of non-approval or renewal of an application, probation, suspension, or revocation.

#### Quality Assurance Plan

A QA Provider's written quality assurance processes and procedures as specifically required in Chapter 9 of these Standards.

#### Quantitative

In relation to insulation inspections, determining the total square footage of anomalies of a structure as a percentage of the total surface area of the structure in square feet.

#### Radon Mitigation

The method(s) for reducing radon entry into attached and detached residential buildings. This practice is intended for use by trained, certified or licensed, or both, or

otherwise qualified individuals, following ASTM E 2121-09, Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings.

## Radon Testing

Typically one of two approaches is used: 1) Approved radon test kit is purchased and used by the person responsible for the building, 2) Certified and/or licensed independent radon tester to perform the required radon test. A short-term test remains in the home for 2 to 90 days, whereas a long-term test remains in your home for more than 90 days.

There are two types of radon testing devices. **Passive** radon testing devices do not need power to function and include; charcoal canisters, alpha-track detectors, charcoal liquid scintillation devices, and electric ion chamber detectors. Both short- and long-term passive devices are generally inexpensive. **Active** radon testing devices require power to function and usually provide hourly readings and an average result for the test period. These include continuous radon monitors and continuous working level monitors, and these tests may cost more. All radon tests should be taken for a minimum of 48 hours. A short term test will yield faster results, but a long-term test will give a better understanding of the home's year round average radon level. Regardless of the approach used if the radon level is confirmed to be 4 picoCuries per liter (pCi/L) or higher, the mitigation should occur.

## Rated Home

The specific home being evaluated using the rating procedures contained in the National Home Energy Rating Technical Guidelines.

## Rater

See ~~Home Energy~~ Certified HERS Rater.

## Rater Candidate

See Home Energy Rater Candidate.

## Rater Test Identification Number (RTIN)

The unique numerical identifier for each individual who has passed the RESNET National Home Energy Rater Exam as assigned by RESNET through the RESNET Buildings Registry. This number also serves as the Certified HERS Rater's ID number once they have been certified by a Rating QA Provider.

## Rater Specialty Certification

Professional building performance certification recognized by RESNET as part of a ~~Home Energy~~ Certified HERS Rater's advanced certification.

Rater Instructor, Certified

~~An individual certified by RESNET and designated by an Accredited Training Provider to provide instruction and assistance to candidates. Only RESNET Certified Rater Instructors may provide rater instruction under the auspices of a RESNET Accredited Training Provider.~~ See RESNET Certified Instructor

Rater Training Provider or Training Provider

See Accredited ~~Rater~~ Training Provider

Rating

See Home Energy Rating.

Rating Field Inspector (RFI)

~~A Field Inspector is the entry level of Rater certification.~~ A Rating Field Inspector under the direct supervision of a Ceertified home energyHERS Rater may conduct the inspections and necessary basic performance tests (blower door& duct blaster) to produce a home energy rating. This category requires the ability to identify and quantify building components and systems.

Rating Index

See HERS Index.

Rating Quality Assurance Provider or QA Provider

See Accredited Rating Quality Assurance Provider.

Rating, Projected

A rating performed prior to the construction of a new building or prior to implementation of energy-efficiency improvements to an existing building.

Rating Sampling Provider

See Sampling Provider.

Rating Software

A computerized procedure that is accredited by RESNET for the purpose of conducting home energy ratings and calculating the annual energy consumption, annual energy costs and a HERS Index for a home.

## Rating Tool

A computerized procedure for calculating a home's energy efficiency rating, annual energy consumption, and annual energy costs.

## Reference Electricity Production Efficiency

Electric power production efficiency, including all production and distribution losses, of 40%, approximating the efficiency of a modern, high-efficiency, central power plant. The Reference Electricity Production Efficiency is to be used only to convert site fossil fuel energy uses to an Equivalent Electric Power for the sole purposes of providing home energy rating system credit for On-site Power Production.

## Reference Home

A hypothetical home configured in accordance with the specifications set forth in the National Home Energy Rating Technical Guidelines for the purpose of calculating rating scores.

## Refrigerant

A compound that absorbs heat when it under-goes a phase change, e.g. gas to a liquid. Traditionally, the chlorofluorocarbon (CFC) R-22 was used as a refrigerant for residential air conditioners and heat pumps. Since 1992 time frames have been established for replacing chlorofluorocarbon refrigerants, with non-chlorofluorocarbon refrigerants often referred to as R-410A. The ideal refrigerant has a boiling point somewhat below the target temperature, a high heat of vaporization, a moderate density in liquid form, a relatively high density in gaseous form, and a high critical temperature. Since boiling point and gas density are affected by pressure, refrigerants may be made more suitable for a particular application by choice of operating pressure.

## Refrigerant Charge

Quantity of refrigerant in a vapor compression refrigeration/heating system, determined by measuring the discharge and suction pressures/temperatures in the system.

## Registry

The database maintained by a CEQ Provider of all Energy Smart Contractors they have approved.

## Relative Humidity (RH)



The water vapor pressure in the air expressed as a proportion of the saturated water vapor pressure (i.e. the highest possible value) at the current air temperature.

## Residential Building

Includes detached one- and two-family Dwellings and multiple single-family Dwellings (Townhouses) as well as International Building Code Group R-2, R-3 and R-4 buildings three stories or less in height above grade plane. (i.e. residential other than where occupants are transient, such as hotels and motels)

## RESNET

Residential Energy Services Network

RESNET Accredited Software

See Approved Software Rating Tool

RESNET Candidate Field Assessor

An individual certified by RESNET and designated by an Accredited RESNET Rating Quality Assurance Provider to conduct probationary and field assessments for candidates.

## RESNET Certified Instructor

An individual certified by RESNET and designated by an Accredited Training Provider to provide instruction and assistance to candidates. Only RESNET Certified Instructors may provide HERS Rater and HERS Modeler instruction under the auspices of a RESNET Accredited Training Provider.

RESNET Combustion Appliance Simulation Test or Combustion Appliance Test

Simulation based practical test adopted by RESNET used for the assessment of RFI and HERS Rater candidates.

RESNET National Buildings Registry

The national online registry of all rated homes, ~~and Certified Home Energy~~ HERS Raters, Rating Field Inspectors, HERS Modelers, and Accredited Rating Quality Assurance Providers which is maintained by RESNET.

RESNET Executive Director (Executive Director)

A person elected by the Board of Directors of the Residential Energy Services Network (RESNET) to be the Chief Executive Officer of RESNET.

## RESNET National Rater Trainer Competency Test

Certification test developed and administered by RESNET to ensure that accredited ~~Rater~~ Training Providers' trainers have the requisite knowledge and competence to serve as trainers for prospective Ceertified HERS Raters. The test is based on the national core competency exam developed and maintained by RESNET.

## RESNET Rater Simulation Practical Test

Simulation based practical test adopted by RESNET used for the assessment of HERS Rater candidates.

## RESNET Recognized Home Performance Standard

Technical standard developed to offer a comprehensive, whole-house approach to improving energy efficiency and comfort of existing homes, while maintaining or improving and durability safety.

## RESNET Quality Assurance Checklist

Checklist developed by RESNET for use by a Quality Assurance Designee in evaluating a Rating Quality Assurance Provider's compliance with the requirements of accreditation and quality assurance as stipulated by Section 904.3 of these Standards, and which enumerates the individual requirements that must be verified annually.

## Return Duct

Duct carrying air back (return) to the heating and cooling equipment.

## Room Pressure Differential

In many parts of the country, supply air is delivered to individual rooms, but return air is located only or primarily in the central body of the home. The absence of return air in closeable spaces causes positive pressure in the closed rooms and negative pressure in the central zone. These positive and negative pressure differentials create a number of unwanted impacts, which may include; contaminants in the soil (e.g., radon), sewer gases in poorly trapped drain lines, and air contaminants (e.g., pesticides, mold odors, chemicals, auto exhaust, dust) in unconditioned zones such as crawl spaces and garages being drawn into the conditioned living space. Negative pressure can also produce combustion venting problems such as; very high levels of Carbon Monoxide or push the flame out of the combustion chamber in a process referred to as flame roll-out. These combustion system impacts can create serious dangers for both home and occupants. In order to alleviate the differentials, "jumper ducts", "transfer grilles" or

individual returns are installed to alleviate or balance the pressures differential between zones.

## R-Value

Thermal resistance value measured in h-ft<sup>2</sup>-F/Btu.

## Sample Set

A specific group of homes from which one or more individual homes are randomly selected for sampling controls.

## Sampling

An application of the Home Energy Rating process whereby fewer than 100% of a builder's new homes are randomly inspected and tested in order to evaluate compliance with a set of threshold specifications.

## Sampling Controls

A collection or set of required tests and inspections performed for a sample set of homes in order to confirm that the threshold specifications have been met. "Sampling controls" may refer to the entire set of tests and inspections, or to a particular phase that constitutes a defined subset of those tests and inspections (e.g. pre-drywall, final, HVAC, windows and orientation, etc).

## Sampling Provider

An entity, accredited through these standards, that oversees the sampling process and issues the sampling certifications that homes meet a particular set of threshold specifications such as the ENERGY STAR<sup>®</sup> specifications adopted by the U.S. Environmental Protection Agency.

## Seasonal Energy Efficiency Ratio, or SEER

A standardized measure of air conditioner efficiency based on the total cooling output of an air conditioner in Btu/h, divided by the total electric energy input, in watt-hours, under test conditions specified by the Air Conditioning and Refrigeration Institute Standard 210/240.

## Senior Certified Rater

~~A senior Rater is the first category of advanced Rater certification. Senior Certified Raters have demonstrated that they have the increased experience and knowledge base to interpret the findings of a rating and make recommendations on how the home can be improved.~~

## Sensible Heat Ratio (SHR)

The sensible heat or cooling load divided by the total heat or cooling load.

## Shall

As used in this Standard, the word ‘shall’ means that the action specified is mandatory and must be accomplished by the responsible party.

## Sleeping Unit

A room or space in which people sleep, which can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a Dwelling Unit are not sleeping units.

## Spectral Wavelength

The electromagnetic wavelength interval or equivalent over which observations are made when using an infrared imaging system.

## Spillage, Spill

Combustion gases emerging from an appliance or venting system into the combustion appliance zone during burner operation.

## Standard Ceiling Fan

The ceiling fan against which Labeled Ceiling Fans are measured for efficiency. At medium fan speed, the Standard Ceiling Fan produces 3000 cfm of air flow and uses 42.6 watts of power.

## Standards (HERS Standards)

The “Mortgage Industry National Home Energy Rating System Standards”, as maintained by the Residential Energy Services Network (RESNET).

## Standards Committee

A Standing Committee of the RESNET organization that is responsible overseeing the Standards Amendment process.

## Story Above Grade Plane

Any Story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:

1. More than 6 feet (1 829 mm) above grade plane; or
2. More than 12 feet (3658 mm) above the finished ground level at any point.

### Super Heat

Heat added to a vapor under pressure, raising the temperature of the vapor above the temperature pressure reference point

### Technical Committee

A Standing Committee of the RESNET organization that is responsible for review and oversight of the RESNET Technical Standards ([Chapter 3](#)).

### Thermal Boundary

The line or boundary where the air barrier and insulation are installed in a building assembly. The air barrier and insulation should be adjacent to one another in a building assembly to prevent airflow from circumventing insulation.

### Thermal Expansion Valve (TXV)

A component of a vapor compression refrigeration system that varies the amount of refrigerant flow into the evaporator coil based on temperature and pressure, thereby controlling the superheat at the outlet of the evaporator coil.

### Thermal Storage Mass

Materials or equipment incorporated into a home that will store heat, produced by renewable or non-renewable energy, for release at a later time.

### Thermal bridging

Heat conduction through building components, typically framing, that are more conductive than the insulated envelope.

### Thermal Bypass

Air movement, air leakage or convection “cell”, that circumvents the thermal barrier, is usually hidden and is the result of an incomplete or compromised air barrier.

### Thermal Image

A recorded electronic or printed image provided by an infrared imaging system of the thermal surface variations of an object or a surface.

## Thermal Resolution, or Noise Equivalent Temperature Difference (NETD)

The minimum temperature difference, typically specified in degrees Centigrade at 30 degrees Centigrade, an infrared imaging system is able to distinguish between two blackbody points on a thermal image.

## Thermogram

An infrared picture obtained through the use of an infrared imaging system or other means of recording such images.

## Thermographer, Level I

A person who is qualified by training, experience and testing to gather high-quality data and, where pass/fail guidance is provided, to interpret that data. The American Society for Nondestructive Testing (ASNT) defines a Level I as one who can, 1) Perform calibrations, tests, and evaluations for determining the acceptance or rejection of tested items in accordance with specific written instructions, 2) Record test results but have no authority to sign reports for the purpose of signifying satisfactory completion of NDT operations, and 3) Receive instructions or supervision from a Level III or designee.

## Thermography

The process of generating and interpreting thermal images.

## Third-Party Energy Efficiency Program, or EEP

A national or local program that has set a standard for energy efficiency in building performance and requires a HERS analysis for verification (e.g. ENERGY STAR<sup>®</sup> Qualified Homes, Building America's Builders Challenge, building code, International Code Council, utility companies, etc.)

## Threshold Specifications

A set of qualification criteria which are established for a sample set based on Worst-Case Analysis or a set of prescriptive specifications such as the ENERGY STAR<sup>®</sup> prescriptive path adopted by the U.S. Environmental Protection Agency.

## Townhouse

A single-family Dwelling Unit constructed in a group of three or more attached units in which each unit extends from foundation to roof.

## Training and Education Committee

A Standing Committee of the RESNET organization that is responsible for overseeing RESNET training, RESNET tests, and education and professional development for RESNET Providers, ~~and~~ HERS Raters, Rating Field Inspectors, and HERS Modelers.

#### Transfer Duct

Properly sized ducting and register grilles installed in the wall or door between the central body of a home and an isolated area, in order to reduce room pressure differentials.

#### Transfer Grille

Properly sized grilles installed in the wall or door between the central body of a home and an isolated area, in order to reduce room pressure differentials.

#### Tropical Climate Zone -

Hawaii, Puerto Rico, Guam, American Samoa, US Virgin Islands, Commonwealth of Northern Mariana Islands, and islands in the area between the Tropic of Cancer and the Tropic of Capricorn.

#### Typical Meteorological Year, or TMY Data

Hourly climate data published by the National Climatic Center, Asheville, NC, based on historical climate data in 216 locations.

#### U-factor

Coefficient of thermal transmittance (expressed as Btu/h-ft<sup>2</sup>-oF (W/m<sup>2</sup>-oC)) of a building envelope component or system, including indoor and outdoor air film transmission coefficients.

#### Unconditioned Space Volume

The volume within a building that is not Conditioned Space Volume but which contains heat sources or sinks that influence the temperature of the area or room. The following specific spaces are addressed to ensure consistent application of this definition:

- The volume of a floor cavity shall be included, unless the volume both above and below the floor cavity meets the definition of Conditioned Space Volume.
- The volume of a wall cavity shall be included, unless the wall cavity meets the definition of Conditioned Space Volume.
- The volume of a vented attic shall be included.

- The volume of a vented crawlspace shall be included.
- The volume of a garage shall be included, even when it is conditioned.
- The volume of a thermally isolated sunroom shall be included.
- The volume of an attic sealed and insulated at the roof deck, an unvented crawlspace, or a basement shall be included unless it meets the definition of Conditioned Space Volume.

### Unresolved Complaint

A complaint deemed by the CEQ Provider to require corrective action by the Energy Smart Contractor.

### Unvented Combustion Appliance

Any appliances not used with a duct, chimney, pipe, or other device that carry the combustion pollutants outside the home. These appliances can release large amounts of pollutants directly into a home.

### U-Value

Thermal transmittance value measured in Btu/h-ft<sup>2</sup>-F.

### Vapor barrier/retarder

A material used in the construction process to either slow or stop the movement of moisture, whether in liquid or vapor form, into or out of the building envelope or the wall structure.

### Vapor-Cycle Refrigerant-Based Equipment

The most widely used method for air-conditioning of private residences in the United States. System uses a circulating liquid refrigerant as the medium which absorbs and removes heat from the space to be cooled and subsequently rejects that heat elsewhere, typically includes four components: a compressor, a condensing coil, an expansion valve (also called a thermal expansion valve), and an evaporator coil.

### Vent Connector

The pipe that connects a combustion appliance to a vent or chimney.

### Venting System



A passageway or passageways from a combustion appliance to the outdoors through which combustion gases pass.

### Voids (insulation)

Areas where no insulation has been installed.

### Wind Wash(ing)

Air intrusion between the insulation and the air barrier seriously compromises the effectiveness of the insulation in framed buildings. The long path exfiltration on the cold side of insulation allows moisture from the air to be deposited in the building assembly.

### Weather Resistant Barrier (WRB)

Is designed to keep water from entering the building through the walls and is made up of several individual materials: house wrap or building paper (with weather resistive coating), flashings, sealants and tapes. When installed properly, these materials combine to protect the building from rain-induced moisture damage. If the WRB is sealed to block air flow it also contributes to the air barrier system of a home.

### Work Scope

A set of written recommendations, including specifications detailing repairs and improvements to be made to a home; a work scope may include pre- and post-work performance testing and acceptance criteria.

### Worst-Case Analysis

A home energy rating from a specified home plan for which the minimum rated features of the home are configured to provide the poorest energy performance of the home (i.e. the largest HERS Index) when four ordinal home orientations and the least energy efficient minimum rated features for the specified home plan are considered by the Rating. A Worst-Case analysis may use threshold diagnostic values to determine the least efficient minimum rated features for the specified home plan.