



## Mortgage Industry National Home Energy Rating Systems Standards – Continuous Maintenance Version

*This document incorporates all MINHERS Standards amendments adopted as of July 1, 2020. **The first page of each Chapter denotes whether there are addenda to the Standards with delayed implementation dates that revise requirements in the Chapter.** Note also that amendments to Standards ANSI/RESNET/ICC 301 and ANSI/RESNET/ICC 380 are effective when approved by ANSI and may have a Transition Period before compliance becomes mandatory. See Chapter 3 Section 304 Normative References for editions of the Standards and their Addenda.*

*The Standards adopted January 1, 2013 and approved addenda are posted at <https://www.resnet.us/about/standards/minhers/>*

*Published by:*

*Residential Energy Services Network, Inc.*

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[www.resnet.us](http://www.resnet.us)

## Submitting Proposed Amendments to the RESNET Standards

RESNET welcomes proposed amendments to the Mortgage Industry National Home Energy Rating Standards. The proposed amendment must be submitted online. To submit a proposed amendment, fill out the [RESNET Online Standard Amendment Form](#).

After RESNET receives a proposed amendment it is reviewed by the Standards Management Board to determine when it will be addressed. Proposed amendments will be forwarded to the appropriate Standards Development Committee. The committee will review the proposal and either request additional information, reject the proposal and inform the proponent the reason for rejecting or submit it to the RESNET standard amendment development process including public review and comment.

In order to be considered the proposal must be in editorial add/underline/strike delete format with specific sections listed. [Click here for an example of an accepted proposed amendment](#).



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

### **101 General Provisions**

#### **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 through their 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 HERS Raters and Rating Field Inspectors (RFI's) 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's as required in Chapter 2 of these Standards.

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

102.1.4 Submit Confirmed or Sampled Ratings conducted by their 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 HERS Rater compliance complaints.

102.1.7 Undertake disciplinary action on HERS Raters and RFI's when required.

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

## 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 certified HERS Raters and RFI's 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 certified HERS Raters 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 Agreements.

102.2.7.1 As a condition of HERS Rater certification, each Rating Quality Assurance Provider shall ensure that a certified HERS Rater who has met the requirements of Chapter 2, Rater Training Requirements, 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 A copy of the Rating Quality Assurance Provider's standard HERS Rater written agreement 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 agreement shall at a minimum require Raters to:

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

102.2.7.2.2 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 HERS Rater agreement.

102.2.7.2.3 Provide any information requested by the Quality Assurance Provider.

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

The following represent minimum provisions for each HERS Rater/RFI disciplinary category. A Provider's policies and procedures may be more stringent than the following requirements.

102.2.9.3.1 Probation - A HERS Rater/RFI 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 HERS Rater/RFI 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 HERS Rater does not possess the appropriate RESNET certification from the Provider.

102.2.9.3.2 Suspension - Any HERS Rater/RFI 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 HERS Rater does not possess the appropriate RESNET certification from the Provider.

102.2.9.3.2.6 Provisions for HERS Rater/RFI suspension shall include:

102.2.9.3.2.6.1 Written notification to the HERS Rater/RFI which includes the cause, terms, restrictions, and notifications to third-parties of the suspension of the HERS Rater/RFI 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 HERS Rater/RFI 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 HERS Rater clients (i.e. builders or other organizations with repeat business with a HERS Rater or Rating Company), EPA or other known EEP's;

102.2.9.3.2.6.3 Removal of the HERS Rater/RFI's name and, in cases of a single 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 HERS Rater/RFI 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 HERS Rater/RFI 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 HERS Rater/RFI 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 HERS Rater/RFI agrees to be subject to, QA File review for 100% of the identified ratings completed under this Section. HERS Rater/RFI 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 HERS Rater/RFI agrees to be subject to, QA Field review for a minimum 25% of the identified ratings completed under this Section. 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 HERS Rater 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 HERS Rater/RFI shall be eligible to have their certification re-instated under terms for disciplinary probation agreed upon by the Rater/RFI and the Provider.

102.2.9.3.3 Revocation - Any HERS Rater/RFI 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 HERS Rater 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 HERS Rater/RFI certification shall include:

102.2.9.3.4.1 Written notification to the HERS Rater/RFI which includes the cause for revocation and explanation of notifications to third-parties of the HERS Rater's/RFI'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 HERS Rater/RFI 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 HERS Rater clients (i.e. builders or other organizations with repeat business with a HERS Rater or Rating Company), RESNET, EPA or other known EEP;

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

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

102.2.9.3.5 HERS Rater/RFI's who have their certification revoked may at their initiative re-apply for certification to any Rating Quality Assurance Provider as a HERS Rater or RFI candidate after a period of no less than 12 months from the date of revocation provided the following conditions 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 certified 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 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 certified HERS Raters 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 HERS Raters;

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 certified 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 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 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 HERS Rater 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, 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 HERS Rater 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**

### **201 Purpose and Scope**

#### **201.1 Purpose**

The purpose of these standards is to ensure that Home Energy 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 promote voluntary participation in an objective, cost-effective, sustainable home energy rating process.

#### **201.2 Scope**

This document defines the requirements of Accredited Training Providers, Certified Rater Instructors, 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 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 the following duties and responsibilities. Failure to properly discharge 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 910.3](#) - Accreditation Renewal Process.

203.2.2 Maintain Certified Rater Instructors. Only RESNET Certified Rater Instructors can offer rater training through a RESNET Accredited Training Provider.

203.2.3 Hold the exam questions administered by RESNET in strictest confidence.

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 RESNET standards.

203.2.7 Provide for training facilities and equipment appropriate to the training being delivered.

203.2.8 Only RESNET Accredited Training Providers may offer Rater Training using RESNET Certified Rater Instructors.

## 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 Rater trainees, instructors or trainers.

203.3.2 The right to present evidence, arguments and a vigorous defense in 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](#).

# 204 Certification of Rater Instructors

## 204.1 Achieving Certification

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

204.1.1 Demonstrate 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 knowledge and 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 Instructor Competency Test

204.1.2.2 RESNET Combustion Appliance Tests

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 and also every three years:

204.2.1 Document twelve (12) hours of attendance at RESNET conferences or other conference 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 Certified Rater Instructor and Quality Assurance Designee shall complete both the two-hour RESNET roundtable for Certified Rater Instructors and the two-hour roundtable for Quality Assurance Designees.

## 204.3 Revocation

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

204.3.1 Compromising the security or integrity of any RESNET certification test.

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 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 Certified HERS Rater in good standing.



205.1.2 As a 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 the minimum quality assurance processes defined in Section 904.4 – Quality Assurance of Raters and Ratings.

## 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 12-month period (unless otherwise indicated). Only RESNET Accredited Rating Quality Assurance Providers may certify candidates. Rating Providers may require candidates have 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:

##### 206.2.1.1.1 The RESNET Combustion Appliance Test

##### 206.2.1.1.2 RESNET approved graded field evaluation

##### 206.2.1.1.2.1 The graded field evaluation shall performed under the observation of a Candidate Field Assessor.

206.2.1.2 Complete at least three mentored rating field inspections observed by a certified HERS rater or a RESNET Candidate Field Assessor. The certified HERS Rater or RESNET Candidate Field Assessor shall use the RESNET graded field evaluation to document the results of mentored inspections. The mentored Rating Field Inspections shall comprise at a minimum the following tasks.

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

206.2.1.2.2 Identify insulation defects and account for them in energy analysis tool inputs.

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

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

206.2.1.2.5 Perform envelope leakage testing in accordance with the airtightness testing protocols contained in [ANSI/RESNET/ICC 380-2016](#).

206.2.1.2.6 Perform duct leakage testing in accordance with the duct testing protocols contained in [ANSI/RESNET/ICC 380-2016](#) and interpret results.

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

206.2.1.2.8 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.

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 pass the RESNET graded field evaluation.

206.2.1.4 After successfully completing the mentored rating field inspections and passing the RESNET graded field evaluation, RFI's may be permitted to conduct all rating tasks contained under [Appendix A](#) without having a certified Rater on site."

## 206.2.2 Home Energy Rater (HERS Rater)

206.2.2.1 Successfully complete a Rater training course provided through a RESNET Accredited Training Provider that meets the minimum standards as defined in Section 202 - Accredited Training Providers.

206.2.2.2 Complete the following National RESNET 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)

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. 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 380-2016](#) and shall be completed in the presence of a RESNET Certified Field Assessor, at least one of which shall be completed one-on-one. Probationary ratings shall not be considered Confirmed Ratings.

206.2.2.4 A HERS Rater Candidate who does not complete, to the satisfaction of a 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 series of tests as defined in 205.2.3.1, or otherwise does not achieve certification within the allowed fifteen month timeframe, 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 Rater Test 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 Chapter 8, with the exception that the work is not being performed by a currently Certified Rater and shall be completed in the presence of a RESNET certified Candidate Field Assessor. Probationary ratings shall not be considered Confirmed Ratings.

## 207 Recertification

### 207.1 Certification Renewal:

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

#### 207.1.1 Rating Field Inspectors

Pass the RESNET graded field evaluation overseen by a RESNET certified Candidate Field Assessor once in a three year period.

#### 207.1.2 Certified 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

207.1.2.3 Certified 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, 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 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 QA 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 Raters that fail to successfully meet the criteria for recertification by 180 days past the date of expiration of their certification shall be revoked by their affiliated RESNET QA Provider per Section 102.1.4.7.3.

## 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 - , ANSI/RESNET/ICC 380-2016](#), and [Appendix 1 - On-Site Inspection Procedures for Minimum Rated Features](#). Certification candidates shall demonstrate proficiency at these capabilities through successful completion of certification requirements specified in See [Section 206 Certification Candidates](#). Training providers should ensure that their curricula effectively cover these items.

### 208.1 Rating Field Inspector (RFI)

A Rating Field Inspector is permitted to conduct all tasks contained within [Appendix A](#). A Certified Rating Field Inspector shall have proficiency at 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 customer communication skills, ethics, and privacy.

208.1.1.3 Use field inspection forms to identify and document the minimum rated features of the Reference Home and Rated Home in accordance with the requirements of [ANSI/RESNET/ICC 301-2014](#) – Energy Rating Reference Home and Rated Home Configuration and MINHERS [Appendix A](#).

208.1.1.4 Identify potential problems with the building such as health and safety concerns, building durability issues, potential comfort problems, and possible elevated energy use.

208.1.1.5 Identify basic home construction types and the ramifications of these for energy usage.

#### 208.1.2 Basics of specifications

208.1.2.1 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.

### 208.1.3 Determining Conditioned Space Volume

208.1.3.1 Determine the Conditioned Space Volume of a dwelling unit as defined in Appendix B.

### 208.1.4 Health and Safety

208.1.4.1 Identify moisture issues such as condensation, leaks through building components, signs of mold or mildew, insect damage, efflorescence and stains.

208.1.4.2 Identify potential combustion appliance safety hazards.

208.1.4.3 Identify evidence in combustion equipment of flame rollout, blocked chimneys, rust and corrosion, and missing or damaged vent connectors.

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

208.1.4.5 Identify potential presence of mold and potential causes.

### 208.1.5 Building Science Concepts

208.1.5.1 Identify areas of potential envelope leakage, thermal bypasses, and thermal bridging.

### 208.1.6 Moisture Principles and Properties

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

### 208.1.7 Building Components

208.1.7.1 Identify exterior building components.

208.1.7.2 Determine building orientation and shading characteristics.

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

208.1.7.4 Estimate the approximate age of a building.

### 208.1.8 Measuring Building Components

208.1.8.1 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.

### 208.1.9 Collecting Field Data (including photo documentation)

208.1.9.1 Determine building orientation.

208.1.9.2 Measure window overhang lengths, heights, and distances from top and bottom of windows.

208.1.9.3 Determine roof slopes, gable heights, etc.

208.1.9.4 Calculate gross and net areas and volumes.

#### 208.1.10 Insulation

208.1.10.1 Identify the presence or absence of insulation and the quality of its installation when visually accessible.

208.1.10.2 Determine thickness, R-value, and location of insulation.

208.1.10.3 Recommend levels of insulation by climate zone

208.1.10.4 Identify insulation types, thickness measurements, common usage locations, and alignment with air barriers.

208.1.10.5 Identify insulation defects, and grading (I, II, III).

#### 208.1.11 Building Foundations

208.1.11.1 Identify type as crawl space, basement, or slab.

208.1.11.2 Identify ventilation system types.

208.1.11.3 Identify location, type, and R-value of insulation systems.

#### 208.1.12 Framed Floors

208.1.12.1 Identify location and type of floor system, its insulation type, thickness, and approximate R-value

208.1.12.2 Determine if framed floors are exposed to Conditioned Space Volume, Unconditioned Space Volume, or the outdoors.

208.1.12.3 Determine floor system type and frequency of framing members.

208.1.12.4 Determine insulation thickness, type, and grade (I, II, or III).

#### 208.1.13 Slab-on-Grade

208.1.13.1 Identify slab as covered or exposed.

#### 208.1.14 Above Grade Walls

208.1.14.1 Determine wall types, insulation thickness, and approximate R-value.

208.1.14.2 Identify signs of building additions.

208.1.14.3 Determine if walls are exposed to Conditioned Space Volume, Unconditioned Space Volume, or outdoors.

208.1.14.4 Determine construction type, thickness, and exterior color.

#### 208.1.15 Windows, Doors and Skylights

208.1.15.1 Identify window and skylight types, frame materials, and permanently installed shading devices.

208.1.15.2 Determine window, door, and skylight efficiencies and performance factors.

208.1.15.3 Identify window labels, framing types and materials, U-factors, reflective and low-e films and coatings, shading and overhangs, and orientation.

208.1.15.4 Identify exterior door types, insulation, and orientation.

208.1.15.5 Identify glass-area of exterior doors and windows.

#### 208.1.16 Rim or Band Joist

208.1.16.1 Determine insulation type, thickness, and approximate R-value.

#### 208.1.17 Ceilings

208.1.17.1 Determine ceiling type, insulation thickness, and approximate R-value.

#### 208.1.18 Attic

208.1.18.1 Identify type of attic and location of attic venting.

#### 208.1.19 Roof

208.1.19.1 Identify approximate age, type, and color of roofing materials.

208.1.19.2 Determine approximate R-value if insulated.

#### 208.1.20 Heating and Cooling Systems

208.1.20.1 Identify types, model numbers, and location of systems.

208.1.20.2 Identify HVAC pros/cons, drivers and sensitivities for major system types.

208.1.20.3 Identify basic combustion appliance concerns

208.1.20.4 Determine equipment efficiencies using equipment data (make, model, nameplate data), AHRI or other current accepted guides, or age-based defaults.

208.1.20.5 Identify space-conditioning systems as active or passive.

208.1.20.6 Identify heating system properties: fuel type, burner type, venting type, distribution type, and efficiency.

208.1.20.7 Identify Ground-source heat pumps, air-source heat pumps, and air conditioning systems.

208.1.20.8 Identify ductless systems (hydronic, steam, electric).

208.1.20.9 Identify combo systems.

208.1.20.10 Identify solar thermal systems.

208.1.20.11 Identify control types (standard thermostats, programmable thermostats, multi-zone controls).

208.1.20.12 Identify sizing and design issues, control types, and their impacts on energy use and humidity control.

208.1.20.13 Identify summer and winter design temperatures.

208.1.20.14 Identify cooling and heating system design trade-offs.

#### 208.1.21 Domestic Hot Water Systems

208.1.21.1 Identify system types and efficiency factors from equipment labels, model numbers, or default tables.

#### 208.1.22 Gas Leakage Testing

208.1.22.1 Identify gas leaks using combustible gas sensing equipment.

#### 208.1.23 CAZ Testing

208.1.23.1 Perform CAZ depressurization, 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.

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

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

#### 208.1.24 Air Leakage



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

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

208.1.24.3 Perform single-point and multi-point building envelope leakage testing in accordance with the airtightness testing protocols contained in [ANSI/RESNET/ICC 380-2016](#).

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

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

#### 208.1.25 Conditioned Air Distribution Systems

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

208.1.25.2 Identify obvious leakage locations and indications of previous sealing.

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

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

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

208.1.25.6 Perform duct leakage testing in accordance with the duct testing protocols contained in [ANSI/RESNET/ICC 380-2016](#) and recommend sealing as needed based on test results.

208.1.25.7 Determine need for duct insulation in Unconditioned Space Volumes and specify thickness of retrofit insulation if needed.

#### 208.1.26 Ventilation

208.1.26.1 Identify presence and type of exhaust fans and determine whether they vent to outdoors.

208.1.26.2 Identify fresh air ventilation from supply, exhaust and balanced flow systems.

208.1.26.3 Identify heat-recovery ventilation (HRV) and energy-recovery ventilation (ERV) systems.

208.1.26.4 Determine HRV or ERV efficiency, fan power and duty cycle characteristics.

#### 208.1.27 Appliances and Lighting

208.1.27.1 Estimate efficiency from model numbers or vintage.

208.1.27.2 Identify potential lighting upgrades.

## 208.2 Home Energy Rating System Rater (HERS Rater)

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

208.2.1.3 Prepare a detailed work scope.

208.2.1.4 Develop field inspection forms.

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

### 208.2.2 RESNET Rating System

208.2.2.1 Communicate the business aspects of being a RESNET 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 -](#) and [ANSI/RESNET/ICC 380-2016](#).

208.2.2.4 Use RESNET approved energy analysis software capable of producing a HERS Index, data entry procedures, reporting, and analysis of results.

208.2.2.5 Calculate HERS Score computation using the Normalized Modified Loads 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.
- 208.2.2.7.3 Quality assurance.
- 208.2.2.7.4 Marketing of HERS Rated Homes.
- 208.2.2.7.5 Qualifications for programs 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.
- 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 Providers shall accept certified training provided by an accredited Training Provider as meeting the core competencies for a Home Energy Rater. Accredited Home Energy Rating 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 301-2014(Republished January 2016), “Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index.”, including addenda and normative appendices.

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



## Chapter 3- NATIONAL HOME ENERGY RATING TECHNICAL STANDARDS

### 301 General Provisions

#### 301.1 Purpose

The provisions of this Standard establish residential energy rating and labeling standards, consistent with the provisions of the Energy Policy Act 1992 that any provider of home energy ratings may follow to produce uniform energy ratings for Residential Buildings.

#### 301.2 Scope

These Standards apply to existing or proposed, site-constructed or manufactured, one- and two-family Dwellings and to Dwelling Units in Residential Buildings not over three Stories Above Grade Plan in height containing multiple Dwelling Units.

**Exception 1:** These Standards also apply to Dwelling Units in multi-family buildings four and five stories above grade that are certified through the EPA's ENERGY STAR certified homes program.

**Exception 2:** These Standards also apply to Townhouses and single-family Dwellings four Stories Above Grade Plane in height.

#### 301.3 Relationship to Other Standards.

This Standard is a companion to Standard MINHERS [Chapter 1](#), "National Accreditation Procedures for Home Energy Rating Systems"; Standard MINHERS [Chapter 2](#), "Nation Rater Training and Certifying Standard and Standard MINHERS [Chapter 9](#) "RESNET National Standard for Quality Assurance".

### 302 Definitions

The following terms have specific meanings as used in this Standard. In the event that definitions given here differ from definitions given elsewhere, including those given in [ANSI/RESNET/ICC 301- 2014](#), the definitions given here shall govern.

#### 302.1 Approved Rating Provider

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

#### 302.2 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 <https://www.resnet.us/providers/accredited-providers/hers-software-tools/>

### 302.3 Approved Tester

Shall mean a RESNET 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.

### 302.4 Certified Rater

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.

### 302.5 Approved IDR Review Authority

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

## 303 Technical Requirements

### 303.1 Applicable Standards

All RESNET Home Energy Ratings conducted in accordance with this Standard shall comply with the provisions of [ANSI/RESNET/ICC 301](#),

Note: The RESNET Home Energy Ratings adopt Standards ANSI/RESNET/ICC 301 and ANSI/RESNET/ICC 380 including all of their addenda and normative appendices. See 304 Normative References. Standards 301 and 380 Addenda are effective on the date they are approved by ANSI. The Standards Management Board may establish a Transition Period during which addenda may be used. If a Transition Period is authorized these addenda must be used after Mandatory Compliance Date designated by the Standards Management Board. If no Transition Period is authorized they must be used beginning on the Mandatory Compliance Date established by the Standards Management Board.

(other exceptions are repealed when Addendum 42 becomes mandatory July 1, 2020)

**Exception 1:** RESNET Home Energy Ratings conducted in Puerto Rico and the US Virgin Islands shall comply with the provisions of ANSI/RESNET/ICC 301, except that Ratings of homes with a permit date prior to January 1, 2022 are permitted to use a default infiltration rate of 10 ACH50 in lieu of conducting an airtightness test in accordance with Standard ANSI/RESNET/ICC 380. In addition, for a home in the Tropical Climate Zone for which its Living Space is not serviced by a space heating mechanical system and not more than one-half of its Living Space is serviced by a space cooling mechanical system, the Conditioned Space Volume shall be defined as the volume of its Living Space and the Conditioned Floor Area shall be defined as the floor area of its Living Space.

**Exception 2:** RESNET Home Energy Ratings conducted on Dwelling Units in multi-family buildings four and five stories above grade that are certified through EPA's ENERGY STAR certified homes program shall comply with the provisions of ANSI/RESNET/ICC 301-2014, notwithstanding the limit on stories, and Sections 303.2 and 303.3.

**Exception 3:** RESNET Home Energy Ratings conducted on Townhouses and single-family Dwellings four Stories Above Grade Plane in height(e.g., four-Story detached single-family home, four-Story duplex, four-Story Townhouse) shall comply with the provisions of ANSI/RESNET/ICC 301-2014, notwithstanding the limit on stories, and Sections 303.2 and 303.3.

Note: Standard ANSI/RESNET/ICC 301-2014 requires that mechanical ventilation flow rates must be tested. The 2019 edition of Standard 301 provides an alternative where the flow rate cannot be measured. MINHERS

Addendum 39 created Exception 3 to allow use of those alternatives until Standard 301-2019 takes effect. Exception 3 is in effect and may be used at this time. Exception 3 must be used for ratings where mechanical ventilation flow rates cannot be measured on homes issued a building permit after July 1, 2019

**Exception 3:** Where Whole-House Mechanical Ventilation System airflow rate cannot be measured, the Infiltration rate in the Rated Home shall be no less than 0.3 ACH. To determine fan energy in the Rated Home, ventilation fan watts shall be based on the table below for the given system or the value observed in the Rated Home, for the highest airflow setting. Where needed to calculate fan watts, for systems other than Central Fan Integrated Supply (CFIS), the Whole-House Mechanical Ventilation System rate shall be assumed to be equal to  $Q_{fan}$ , as calculated in accordance with Section 4.1.2 of ASHRAE Standard 62.2. For CFIS systems, the cfm used to determine fan watts shall be the larger of 400 cfm per 12 kBtu/h cooling capacity or 240 cfm per 12 kBtu/h heating capacity.

**Exception 4:** RESNET Home Energy Ratings conducted in Puerto Rico and the US Virgin Islands shall comply with the provisions of ANSI/RESNET/ICC 301, except that Ratings of homes with a permit date prior to January 1, 2022 are permitted to use a default infiltration rate of 10 ACH<sub>50</sub> in lieu of conducting an airtightness test in accordance with Standard ANSI/RESNET/ICC 380. In addition, for a home in the Tropical Climate Zone for which its Living Space is not serviced by a space heating mechanical system and not more than one-half of its Living Space is serviced by a space cooling mechanical system, the Conditioned Space Volume shall be defined as the volume of its Living Space and the Conditioned Floor Area shall be defined as the floor area of its Living Space.

**Exception 5:** RESNET Home Energy Ratings shall comply with the requirements of ANSI/RESNET/ICC 301 and its Addenda except that Ratings on homes with a building permit date, or alternate pursuant to Addendum 43, prior to January 1, 2021 are permitted to use the following exception:

When the following condition is met and documented, duct leakage testing is not required.

At a pre-drywall stage of construction, 100% of the distribution system and air handler shall be visible and visually verified to be contained inside the Conditioned Space Volume. At a final stage of construction, ductwork that is visible and the air handler shall again be verified to be contained in the Conditioned Space Volume.

To calculate the energy impacts on the Rated Home, a DSE of 0.88 shall be applied to both the heating and cooling system efficiencies.

**Exception 6:** RESNET Home Energy Ratings shall comply with the provisions of ANSI/RESNET/ICC 301, except for dwelling units with a rating date on or up to 120 days after the effective date of this amendment established by the RESNET Standards Management Board. Due to the COVID pandemic, dwelling units rated during that time are permitted to use default values in lieu of conducting air tightness testing of dwelling unit enclosures and duct systems as well as measuring airflow of mechanical ventilation systems in accordance with Standard ANSI/RESNET/ICC 380. Ratings utilizing default test values must be compliant with RESNET's Temporary Protocols for Alternative Testing During the COVID-19 Pandemic:

1. Default values by Climate Zone below in table 3.1, OR
2. Default values determined by the Rating Provider for a builder by metro-code area based on past 120 days performance (i.e. measured data from the 120 days immediately preceding the effective date of this exception), OR
3. Other default values adopted by program sponsors such as a building department, a utility program, or a

program such as ENERGY STAR as approved by RESNET.

Default Ventilation Fan Watts

Equipment Type	W/cfm
Exhaust ventilation fans	0.35
Supply ventilation fans	0.35
Balanced ventilation fans	0.70
HRV/ERV fans	1.00
CFIS fans	0.50
Range hoods	0.70

### 303.2 Sampled Ratings

All Confirmed and Sampled RESNET Ratings shall be registered with the National RESNET Registry in accordance with Sections [102.1.4.10](#) and [102.1.4.12](#).

### 303.3 HERS Rating Tools

All RESNET-accredited HERS Rating Tools shall prohibit printing of Confirmed and Sampled HERS Ratings until such rating has been registered with the National RESNET Registry and a unique registration identification has been assigned. Said registration identification shall be prominently displayed on all printed HERS Rating reports.

## 304 Normative References

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

RESNET MINHERS Chapter 1-2013, “National Accreditation Procedures for Home Energy Rating Systems” including addenda.

RESNET MINHERS Chapter 2-2013, “National Rater Training and Certifying Standard” including addenda.

RESNET MINHERS Chapter 9-2013, “RESNET National Standard for Quality Assurance” including addenda.

RESNET Publication No. 002-17 Procedures for Verification of RESNET Accredited HERS Software Tools (MINHERS- Mortgage Industry National Home Energy Rating Standards)

ANSI/RESNET/ICC 380-2016, “Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems”, including addenda and normative appendices. (see below for addenda)

ASHRAE Standard 62.2-2013, “Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings”, ASHRAE, Atlanta, GA.

Note:

ANSI/RESNET/ICC 301-2014 Addenda

[ANSI/RESNET/ICC 301-2014 Addendum A-2015, Domestic Hot Water Systems, January 15, 2016](#)

[ANSI/RESNET/ICC 301-2014 Addendum B-2015, Innovative Design Requests, January 15, 2016](#)

[ANSI/RESNET/ICC 301-2014 Addendum D-2017, Standard ANSI/RESNET/ICC 380-2016 and Addenda, January 1, 2018](#)

[ANSI/RESNET/ICC 301-2014 Addendum F-2018, Appendix A Inspection Procedures for Insulation Grading and Assessment, July 1, 2019](#)

[ANSI/RESNET/ICC 301-2014 Addendum E-2018, House Size Index Adjustment Factors, February 1, 2018](#)

[ANSI/RESNET/ICC 301-2014 Addendum G-2018 , Solid State Lighting, February 2, 2018](#)

[ANSI/RESNET/ICC 301-2014 Addendum K-2017, Roof Solar Absorptance Test Standard, November 10, 2017](#)

[ANSI/RESNET/ICC 301-2014 Addendum L-2018, Duct Leakage to Outside Text Exception, July 1, 2019](#)

[ANSI/RESNET/ICC 301-2014 Addendum N-2018, Appendix B Inspection Procedures for Minimum Rated Features, July 1, 2019](#)

[ANSI/RESNET/ICC 301-2014 Addendum R-2018, Threshold Ratings, January 1, 2019](#)

[ANSI/RESNET/ICC 301-2014 Addendum T-2018, Thermal Distribution System Efficiency, December 30, 2018](#)

ANSI/RESNET/ICC 380-2016 Addenda

[ANSI/RESNET/ICC 380-2016 Addendum A-2017, Attics and Crawlspace, January 1, 2018](#)





## **Chapter 5- REVISION OF STANDARDS**

### **501 General Provisions**

#### **501.1 Purpose**

The purpose of these standards is to create a process for revisions and amendment to the RESNET Standards.

#### **501.2 Scope**

This document defines the process for revisions and amendments to the RESNET Standards.

#### **501.3 Definitions and Acronyms**

See [Appendix B- Glossary of Terms](#).

### **502 Revisions and Amendments**

RESNET Standards shall be continuously maintained and updated for circumstances including, but not limited to the following:

- i. Periodic reviews of rating program needs by RESNET
- ii. Changes in law
- iii. Technical innovations
- iv. Proposals for change from interested parties

#### **502.1 Continuous Maintenance Proposals to Revise Standards**

502.1.1 RESNET will accept proposals to change the Standards on an ongoing basis. All proposals that meet the criteria set forth in this section shall be accepted for consideration and evaluation.

502.1.2 Proposals to change these Standards shall be submitted in writing using the online amendment form on the RESNET website.

502.1.3 Proposals to change these standards shall include the following:

502.1.3.1 Title of Proposed Amendment:

502.1.3.2 Proponent(s) full name(s),

502.1.3.3 Organizational affiliation(s) or representation(s),

502.1.3.4 E-mail address(es),

502.1.3.5 Daytime phone number(s),

502.1.3.6 Specific proposed revisions to the standards, presented in a format that clearly identifies the manner in which the standards are to be changed.<sup>1</sup> Failure to include a specific proposed change(s) is grounds for the proposal to be rejected and returned to the proponent.

502.1.3.7 Substantive reason(s) or justification for each proposed change. The lack of substantive justification for a proposed change may result in the return of the proposals to change to the proponent(s).

502.1.3.8 Supporting documentation that may be needed for the reasoned evaluation of the proposal.

502.1.4 Proposals to change these standards shall be considered and evaluated at least annually.

## 502.2 Standards Revision Process.

502.2.1 Revision of these standards shall be conducted in accordance with the RESNET Standards Development Policy and Procedures Manual for Non-“ANSI/RESNET” Standards.

## 502.3 Publication of Standards.

502.3.1 These standards shall be published in the Mortgage Industry National Home Energy Rating System (MINHERS) Standard, which is posted on the RESNET website. The MINHERS Standard is the official standard for the RESNET Home Energy Rating System (HERS) and shall be updated continuously as amendments are approved.

502.3.2 Each amendment shall be posted online following approval for publication by the Standards Management Board with the following dates established:

Publication Date – The date on which an amendment is officially approved for publication with a title and/or reference number. This date indicates that an amendment is final, but it shall not be used until the Voluntary Compliance Date.

Voluntary Compliance Date<sup>2</sup> – The date on which an amendment approved for publication shall be first allowed, but not required, to be used on any Dwelling Unit or Sleeping Unit.

Mandatory Compliance Date<sup>2</sup> – The date on which compliance with an amendment approved for publication shall be required for any Dwelling Unit or Sleeping Unit with a Building Permit Date on or after that date. Alternatively, the date of the HERS Rater 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.

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1.(Informative Note) For example, underline/strikeout format or equivalent.

2. (Informative Note): For an amendment that requires a change to an Approved Software Rating Tool, the Approved Software Rating Tool is not required to be updated by the Voluntary or Mandatory Compliance Date; however, a Dwelling Unit or Sleeping Unit cannot be rated using the Approved Software Rating Tool until it is updated in accordance with the amendment.

Transition Period – The period of time beginning on the Voluntary Compliance Date and ending on the Mandatory Compliance Date, during which an amendment shall be allowed, but not required, to be used for any Dwelling Unit or Sleeping Unit.

**502.4 Defining the Voluntary Compliance Date.** The Voluntary Compliance Date for each amendment shall be established by the Standards Management Board in accordance with Sections 502.4.1 and 502.4.2.

502.4.1 The Voluntary Compliance Date shall be the Publication Date unless the Standards Management Board determines in consultation with RESNET staff that additional preparation time is needed to implement the amendment.

502.4.2 The Voluntary Compliance Date of an amendment that requires changes to Approved Rating Software Tools shall be not less than 60 days after the Publication Date.<sup>3</sup>

**502.5 Defining the Mandatory Compliance Date for an Amendment.** The Mandatory Compliance Date for each amendment shall be established by the Standard Management Board in accordance with Sections 502.5.1 through 502.5.3.

502.5.1 The default Mandatory Compliance Date for an amendment shall be the earlier of the January 1 or the July 1 following its Publication Date. If that date is less than 30 days, or less than 60 days for amendments that require changes to Approved Software Rating Tools, after its Publication Date, then the default Mandatory Compliance Date shall be the earlier January 1 or the July 1 that follows.

502.5.2 A non-default Mandatory Compliance Date is permitted to be defined under the following circumstances:

502.5.2.1 The Mandatory Compliance Date of an Interim RESNET Standard or Addendum is permitted to be before the default Mandatory Compliance Date.

502.5.2.2 The Mandatory Compliance Date of an amendment that is optional in nature and does not disallow existing methods or procedures is permitted to be before the default Mandatory Compliance Date.

502.5.3 For amendments the Standards Management Board determines in consultation with RESNET Staff that the industry cannot adapt to the level of change effected by the amendment the Mandatory Compliance Date is permitted to be a January 1 or July 1 after the default Mandatory Compliance Date at the discretion of the Standards Management Board.<sup>3</sup>

**502.6 Defining the Transition Period for an Amendment.** The Transition Period for each amendment shall be defined by the Standards Management Board in accordance with the anticipated magnitude of preparation required to implement the amendment. The Transition Period is permitted to be as little as zero days for an amendment that does not require preparation and shall typically not exceed six months.

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3. (Informative Note) For example, when an amendment requires Approved Software Rating Tools to be updated and accredited.



## Chapter 6- RESNET NATIONAL STANDARD FOR SAMPLED RATINGS

### 601 General Provisions

#### 601.1 Purpose

Sampling is intended to provide certification that a group of new homes meets a particular threshold such as ENERGY STAR®, energy code compliance, or qualification for an energy efficiency lending program. It is based on pre-analysis of building plans meeting the intended qualification (e.g. a HERS Index threshold), and subsequent random testing and inspections of a sample set of the homes as-built. Certifying a group of homes by sampling entitles the customer to documentation certifying that the homes meet the desired threshold; it does not constitute a confirmed HERS rating on any home.

#### 601.2 Scope

This chapter sets out the procedures for the accreditation of Sampling Providers. Accredited Sampling Providers shall assume all warranties and liabilities associated with the sampling of homes. RESNET does not provide any warranty, either explicit or implied, that sampled homes will meet or exceed the threshold specifications for the sample set. There may be instances in which state laws or regulations differ from these Standards. In such instances, state law or regulation shall take precedence over this standard.

#### 601.3 Definitions and Acronyms

See [Appendix B- Glossary of Terms](#).

### 602 Technical Requirements for Sampling

#### 602.1 Compliance Requirements

The testing and inspection of homes for minimum rated features shall be conducted in compliance with the procedures for conducting home energy ratings contained in this Standard.

#### 602.2 Homes Eligible to be Sampled

The homes being sampled shall be of the same construction type using the same envelope systems.

#### 602.3 Analysis of Homes

A Worst-Case Analysis shall be performed on each home plan in the sample set. If an option or change in the design of the structure is made that differs from those used in the initial analysis in a way that would require more stringent threshold specifications, then that home must be individually rated. At a minimum, a certified Rater shall oversee this process.

## 602.4 Labeling of Homes

602.4.1 Every home within a given sample set shall be assigned the HERS Index Score as determined by the worst-case analysis and threshold specification for the floor plan for that home.

602.4.2 Every home subjected to this sampling Standard shall be provided with a label in accordance with [Section 303](#) of these standards, which contains the following statement: “This home has been certified using a sampling protocol in accordance with [Chapter 6](#) of the RESNET Standards (see <http://www.resnet.us>). This label shall be located on the electrical panel and the font shall be a minimum of 10 points.

## 602.5 Sample Set of Homes

Sampling controls may be applied to any sample set of homes within the same subdivision, community or metropolitan area and climate zone (as specified in the most current edition of the IECC), provided the criteria in Item [602.2](#) are met and:

602.5.1 Each sample set is made up of homes at the same stage of construction (e.g. pre-drywall, final);

602.5.2 For each stage of construction, each sample set will be composed of homes eligible for the applicable sampling controls within a 30 calendar day period. For example: a sample set that is defined for a pre-drywall inspection must include homes that are eligible for that pre-drywall inspection within a given 30-day period. If fewer than seven (7) homes are available for that phase of inspection, the sample set must be cut off at the number of homes that are available within that 30-day period. This sample set need not be carried through to final inspection; in fact, a whole new sample set may be defined for the final inspection phase based on the homes available for that phase within a new, 30-day period applied to that phase of tests and inspections.

602.5.3 Each home subject to sampling is required to be part of an identified set of sampling controls for each test or inspection that is sampled;

602.5.4 Each participating subdivision within a metropolitan area is subject to sampling controls on at least one home in any 90 calendar day period;

602.5.5 Each participating subdivision within a metropolitan area must start a minimum of one home in any 90 calendar day period.

## 602.6 Application of Sampling

The application of the sampling controls in this standard are only required for those tests and inspections that are not conducted on every home. Sampling controls shall be conducted for any tests and inspections not conducted on every home, according to the field testing and inspection requirements of [Chapter 8](#).

## 602.7 Sampling Controls

602.7.1 A complete set of Sampling Controls shall be performed at a minimum ratio of one (1) test or inspection per seven (7) homes within a given sample set. At a minimum, a certified Rater shall oversee this process.

602.7.2 Sampling Providers may complete the sampling controls collectively on a single home or distribute the tests and inspections across several homes within a given sample set, provided the total number of individual tests and inspections meets or exceeds the minimum ratio set forth in [602.7.1](#).

602.7.3 To qualify for sampling in a metropolitan area, a builder shall first complete, without any incidence of failure, a complete set of sampling controls on at least seven (7) consecutive homes in that metropolitan area. For this initial phase of testing and inspections, the complete set of sampling controls shall be performed on each of the seven (7) homes.

602.7.3.1 For each newly started subdivision, sampling may begin for each sampling control only after three (3) of a particular sampling control passes consecutively without any incidence of failure.

602.7.4 Having successfully met the requirements of [602.7.3](#), a Sampling Provider may complete sampling controls for a builder indefinitely until a “failure” occurs or any of the criteria set forth in [602.2](#) are no longer met.

602.7.5 A complete set of sampling controls, whether performed on a single home or spread across several homes, must be completed whether or not one or more failure(s) are found.

602.7.6 When an “initial failure” occurs, the failed item(s) shall be tested or inspected in two (2) additional homes selected from the same sample set. Testing and/or inspections for any item(s) that may become inaccessible during the construction process, (e.g. wall insulation) must be timed so additional testing and/or inspections can occur on other homes in the sample set before they become inaccessible for inspection or testing.

602.7.7 When an “additional failure” occurs, in one or more of the two (2) additional homes, the failed item(s) shall be tested or inspected in the remaining four (4) homes selected for the same sample set.

602.7.8 Until the failure is corrected in all identified (failed) homes in the sample set, none of the homes shall be deemed to meet the threshold or labeling criteria.

## 602.8 Multiple “Additional Failures”

Action is required if three (3) “additional failures” occur within a ninety (90) calendar day period. The required action depends on whether those “additional failures” apply to the same failed item or various failed items.

602.8.1 If the multiple “additional failures” all apply to the same failed item, the builder shall submit to 100% inspection of that failed item, for a minimum of seven (7) homes, before resuming sampling of that item. Remaining unrelated sampling controls may be conducted on a sampled basis throughout this process.

602.8.2 Exception: If a builder conducts a “root cause analysis” on an item or items covered under [602.8.1](#) or [603.8.2](#), and submits it in writing to the sampling Provider, sampling may resume as soon as the Provider deems that the solution has been implemented. The “root cause analysis” report shall contain at a minimum:

602.8.2.1 A written description of the problem(s) covered by the analysis;

602.8.2.2 A written explanation of the underlying reason(s) that the problem(s) occurred (e.g. inadequate training of subcontractor(s) or site supervisors, insufficient information or inadequate detail in the plans or specifications, etc);

602.8.2.3 A written description of a clearly defined process to correct the underlying cause(s);

602.8.2.4 A written description of when and how that process has been carried out;

602.8.2.5 A copy of the root cause analysis report shall be kept by the sampling Provider as part of the QA file, for a period of time of three (3) years, consistent with the requirements of [102.1.4.9](#).

## 602.9 Quality Assurance by Sampling Providers

602.9.1 The Sampling Provider's Rating Quality Assurance Provider QA Designee shall be responsible for monitoring compliance with the sampling process and maintaining records in accordance with the requirements of [Chapter 9](#).

## 603 Rating Sampling Provider Accreditation Criteria

### 603.1 Minimum Standards for Rating Sampling Provider (Sampling Provider)

Accreditation Sampling Providers shall be accredited in accordance with the Accreditation Process specified in [Chapter 9](#) of these Standards. A Sampling Provider must specifically meet the following minimum standards for Accreditation.

603.1.1 All Sampling Providers shall be accredited by RESNET as a QA Provider in good standing and shall maintain their accreditation in good standing.

603.1.2 A Sampling Provider's accreditation must be renewed annually by RESNET.

603.1.3 In order to be eligible to be a Sampling Provider, the RESNET accredited QA Provider shall complete a minimum of twenty-five (25) confirmed ratings as an accredited QA Provider that have been documented to be accurate by the QA Provider's Quality Assurance Designee.

603.1.4 The Sampling Provider shall demonstrate to RESNET a minimum insurance coverage of \$1,000,000 in general liability coverage and \$1,000,000 in professional liability coverage.

603.1.5 Builders cannot use the sampling standard to certify or qualify homes in which they have a financial interest.

### 603.2 Responsibilities of Accredited Sampling Providers

603.2.1 Sampling Providers are responsible for ensuring that all of the Sampling inspections conducted and issued by their sampling program are in compliance with all of the criteria by which the system was accredited.

603.2.2 Sampling Providers are responsible for ensuring that the specifications for the minimum rated features for the sampled homes be communicated to the personnel or trades responsible for completing the work.

603.2.3 Minimum Standards For Sampling Provider's Operation Policies and Procedures must be written and provide for the following:

603.2.3.1 Field inspections and tracking of all homes in the sample set for verifying threshold technical specifications and tracking failures and re-inspections;

603.2.3.2 Blower Door Testing completed for sample sets in which the threshold specifications include credit for reduced air infiltration lower than the default value;

603.2.3.3 Duct testing completed for sample sets in which the threshold specifications include credit for reduced air distribution system leakage lower than the default value;

603.2.3.4 Sampling Inspector discipline procedures that include progressive discipline involving Probation - Suspension – Termination.





## **Chapter 7- RESNET NATIONAL STANDARDS FOR HOME ENERGY AUDITS**

Chapter 7, pertaining to Home Energy Surveys was removed effective July 1, 2019.



## Chapter 8- RESNET STANDARD FOR PERFORMANCE TESTING AND WORK SCOPE

### 801 General Provisions

#### 801.1 Purpose

This Standard will present a procedures for work scope development and combustion safety testing.

#### 801.2 Scope

The purpose of this document sets out the procedures for work scope development and combustion safety testing by which home energy ratings shall be conducted so their results will be acceptable to all public and private sector industries that may require an objective, cost-effective, sustainable home energy rating process.

#### 801.3 Definitions and Acronyms

See [Appendix B- Glossary of Terms](#).

### 802 Combustion Safety Testing

802.1 These protocols contained in [ANSI/ACCA 12 QH, Appendix A](#) Sections A3 (Carbon Monoxide Test) and A4 (Depressurization Test for the Combustion Appliance Zone) shall be followed by RESNET-accredited Raters and Auditors (hereinafter referred to collectively as “Auditors”) performing combustion appliance testing.

802.2 Prior to conducting any test that affects the operating pressures in the home, the Auditor shall inquire whether a person that has environmental sensitivities (asthma, allergies, chemical sensitivity, etc.) is present in the home. If such a person is present, the Auditor shall not perform such tests without written disclosure from the affected party (or responsible adult). The written disclosure shall state (at a minimum) that “during the period of testing, some amount of dust, particles, or soil gases already present in the home may become airborne.” Without a signed disclosure, the Auditor shall either reschedule the test for a time when they will not be present, or ask them to leave the home during the testing process. The Auditor shall also inquire as to the presence of pets that may potentially be affected by testing procedures.

#### 802.3 Gas Leakage Test

802.3.1 If there is a noticeable odor indicating gas buildup within the home, the occupants and Auditor shall leave the house and the appropriate authorities and utility providers shall be notified from outside the home.

802.3.2 The Auditor should use a gas detector upon entry into the home to detect the presence of natural gas. If gas is suspected or confirmed, ensure that switches are not operated while exiting and no ignition concerns

are present. The audit shall not proceed until the proper authorities have deemed it safe to re-enter the home. If there is no noticeable odor indicating gas buildup within the home, the Auditor shall determine if there are gas leaks in the fittings and connections of natural gas appliances within the home and natural gas/liquid propane supply lines following these protocols.

802.3.3 Inspect all fittings and joints in supply lines and appliance connectors and confirm suspected leaks with leak-detection fluid. Identify for repair or replacement any kinked, corroded or visibly worn flexible gas lines and any flexible connectors manufactured prior to 1974.

802.3.4 Equipment needed

802.3.4.1 Combustible gas detector capable of measuring 20 ppm

802.3.4.2 Leak detection fluid (non-corrosive)

## 803 Work Scope for Contractors

### 803.1 Requirements

803.1.1 All work must meet applicable codes and regulations for the jurisdiction.

803.1.2 When air sealing is being performed the work scope shall specify CAZ depressurization testing to be performed at the end of each workday.

803.1.3 The work scope for recommended improvements will be determined by the Auditor and shall be based upon the findings of the assessment, the client's needs and budget, and priorities identified during combustion appliance testing, subject to health and safety requirements.

803.1.4 The work scope shall clearly identify for the client any remedial actions which require prompt attention, affect safety, or require a licensed trade.

803.1.5 The work scope shall provide sufficient specification that the client may obtain reasonably comparable bids from alternative sources for making recommended improvements.

803.1.6 All scopes of work shall include this statement: "The estimated energy use and savings information contained in the audit report does not constitute a guarantee or warranty of actual energy cost or usage."

803.1.7 The work scope shall be developed based on the Auditor's diagnosis and analysis. Emphasis shall be on:

bringing air distribution system components inside the building enclosure when it is feasible, or sealing and insulating ducts when it is not improving airflow and total HVAC system efficiency as applicable upgrades to the building enclosure as applicable improvements to lighting and appliances as applicable.

803.1.8 The scopes shall reflect the "house as a system" approach, recognizing measure interaction. The following statement shall be included whenever a fireplace or combustion appliance is located within the building enclosure:

“This work scope is not a list of recommendations that may be implemented independently; any exclusions or variations to this scope may increase the risk of flue gas spillage, back-drafting, carbon monoxide production and/or moisture problems within the home.”

803.1.9 When specifying equipment replacement, new equipment sizing shall be based on the proposed, upgraded condition of the building enclosure and duct system.

803.1.10 The work scope shall call for post-work combustion appliance testing in accordance with these guidelines when any work affecting enclosure or duct tightness, or building pressures, is specified.

## 803.2 Work Scope: Carbon Monoxide

803.2.1 The source of the CO must be repaired or replaced and the problem corrected prior to commencing work on other tasks on the work scope, unless remediation of the CO production is specifically related to one or more of those tasks (such as duct repairs that will correct a large negative pressure in the CAZ).

803.2.2 If there are combustion appliances within the building envelope, a carbon monoxide detector should be specified in the main area of each floor according to manufacturer's recommendations, typically in the hallway outside each bedroom area.

803.2.3 If measured CO levels are higher than 100 ppm (200 for oven), or an appliance fails to meet manufacturer's specifications for CO production (whichever is higher), the work scope shall specify replacement or repair of the appliance, and the homeowner shall be notified of the need for service by a qualified technician.

## 803.3 Work Scope: Worst Case Depressurization

803.3.1 If the results of the Worst Case Depressurization Test indicate the potential for backdrafting by failing the CAZ pressure limits or spillage test, remediation of the failure must be addressed in the work scope, through one or more of the following (as applicable): targeted air- and duct-sealing, room pressure balancing, exhaust fan makeup air, or appliance replacement (with power- or direct-vented equipment). As an alternative, the combustion appliance zone may be isolated by creating a sealed combustion closet containing the combustion appliances that has the proper amount of combustion air supplied to it according to the applicable version of the IRC. Adequate sealing for isolation purposes shall include air sealing and duct sealing (especially of adjacent platform or cavity return ducts) and confirmed by another CAZ depressurization test.

803.3.2 The work scope should specify replacement of atmospheric-vented combustion appliances with high-efficiency sealed combustion, direct vent, or power vented appliances when feasible. If the home has unvented combustion appliances, the Auditor shall recommend they be disconnected and replaced with vented combustion appliances.

803.3.3 If unvented combustion appliances are not removed or replaced with vented combustion appliances or electric appliances, the work scope shall not specify measures that affect the air tightness of the envelope, including air sealing, duct sealing, sidewall insulation, or window replacements. Duct sealing outside the thermal envelope may be specified in IECC climate zones 1-3.

## 804 Referenced Standards

### 804.1 Auditor Referenced Standards

These referenced standards provide guidance for the Auditor in the performance of their role as an auditor or home energy rater (diagnostic testing, analysis, writing scopes of work).

Mortgage Industry National Home Energy Rating Systems Standards, published by the Residential Energy Services Network, latest version, <http://www.resnet.us>

ASTM E1998-02(2007) “Standard Guide for Assessing Depressurization-Induced Backdrafting and Spillage from Vented Combustion Appliances”, published by ASTM International, <http://www.astm.org>

### 804.2 Contractor Work Scope Referenced Standards

These referenced standards should be referenced in the work scope, as applicable to provide guidance for the contractor to perform the work scope.

International Residential Code for One- and Two-Family Dwellings- 2006, published by the International Code Council, Inc., <http://www.iccsafe.org>

International Energy Conservation Code- 2006, published by the International Code Council, Inc., <http://www.iccsafe.org>

International Mechanical Code- 2006, published by the International Code Council, Inc., <http://www.iccsafe.org>

International Fuel Gas Code- 2006, published by the International Code Council, Inc., <http://www.iccsafe.org>

ANSI/ACCA Standard 5 QI-2007 HVAC Quality Installation Specification, published by the Air Conditioning Contractors of America, <http://www.acca.org>

Manual J, Residential Load Calculation, 8th edition, published by the Air Conditioning Contractors of America, <http://www.acca.org>

Manual D, Residential Duct Systems, 3rd edition, published by the Air Conditioning Contractors of America, <http://www.acca.org>

Manual S, Residential Equipment Selection, published by the Air Conditioning Contractors of America, <http://www.acca.org>

Manual RS, Comfort, Air Quality, & Efficiency by Design, published by the Air Conditioning Contractors of America, <http://www.acca.org>

Manual T, Air Distribution Basics, published by the Air Conditioning Contractors of America, <http://www.acca.org>

Manual H, Heat Pump Systems, published by the Air Conditioning Contractors of America, <http://www.acca.org>

Manual G, Selection of Distribution Systems, published by the Air Conditioning Contractors of America, <http://www.acca.org>

ASHRAE Standard 62.2 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings, published by the American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc., <http://www.ashrae.org>

ASHRAE Standard 52.2 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size, published by the American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc., <http://www.ashrae.org>

ASTM Standard C1015-06 “Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation”, published by ASTM International, <http://www.astm.org>

ASTM Standard C1320-05 “Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction”, published by ASTM International, <http://www.astm.org>

ASTM Standard C727-01 (2007)e1 “Standard Practice for Installation and Use of Reflective Insulation in Building Constructions”, published by ASTM International, <http://www.astm.org>

ASTM Standard C1158-05 “Standard Practice for Installation and Use of Radiant Barrier Systems in Building Constructions”, published by ASTM International, <http://www.astm.org>

ASTM Standard E2112-07 “Standard Practice for Installation of Exterior Windows, Doors and Skylights”, published by ASTM International, <http://www.astm.org>

Flexible Duct Performance and Installation Standards 4th edition, published by the Air Diffusion Council, <http://www.flexibleduct.org>

Fibrous Glass Duct Construction Standards, 5th edition, published by the North American Insulation Manufacturers Association, <http://www.naima.org>

FTC Trade Regulation Rule 16 CRF 460, Labeling and Advertising of Home Insulation, published by the Federal Trade Commission, <http://www.ftc.gov>

### 804.3 Sample Work Scope Form

(This is informative and does not contain requirements necessary for conformance to these guidelines.)

Work Scope for \_\_\_\_\_

All work will be performed according to the following checked standards:

This work scope is not a list of recommendations that may be implemented independently; any exclusion to this scope may increase the risk of flue gas spillage, back-drafting, carbon monoxide production or moisture problems within the home.

What qualifications are required from contractors/technicians conducting the work:

What work needs to be performed:

Where the work needs to be performed:

How the work is to be performed (referenced Standard(s)):



## **Chapter 9- RESNET NATIONAL STANDARD FOR QUALITY ASSURANCE**

### **901 General Provisions**

#### **901.1 Purpose**

This chapter outlines the responsibilities of RESNET and Quality Assurance Providers and minimum tasks associated with quality management systems used to comply with these Standards.

### **902 Definitions and Acronyms**

See [Appendix B- Glossary of Terms](#).

### **903 RESNET Oversight of Quality Assurance Process**

#### **903.1 RESNET Oversight of Quality Assurance Designees**

RESNET will be responsible for oversight of the work performed under these Standards by approved Quality Assurance Designees.

#### **903.2 Review of Rating Quality Assurance Provider Quality Assurance Reviews**

RESNET shall review 100% of the annual Rating Quality Assurance Provider Quality Assurance Reports submitted by Quality Assurance Designees.

#### **903.3 Quality Assurance File Review**

RESNET will centrally administer quality assurance review of ratings using data in the National RESNET Registry.

### **904 Quality Assurance Requirements for Rating Quality Assurance Providers**

904.1 The quality assurance process specified in this Section shall only be carried out by a RESNET certified Quality Assurance Designee.

#### **904.2 Quality Assurance by Rating Quality Assurance Providers**

904.2.1 Rating Quality Assurance Providers are responsible for completing an annual submission of their Quality Assurance results to RESNET. RESNET shall annually notify Rating Quality Assurance Providers of the date submissions are due and the content of each submission. The time frame for which data is provided for the annual submissions shall be the calendar year i.e. the twelve month period from January 1st through



December 31st. Rating Quality Assurance Providers will have at least thirty (30) days from notification from RESNET of the annual submission due date until the submissions are due.

904.2.2 RESNET shall develop a "RESNET Quality Assurance Checklist" that is to be used by Quality Assurance Designees for the purpose of verifying a Provider's compliance with the individual requirements for Providers set forth in the RESNET Standards. The Quality Assurance Designee shall review the Rating Quality Assurance Provider's compliance with the items on the checklist annually.

### 904.3 Quality Assurance of HERS Raters and Ratings

#### 904.3.1 Ratings included in QA File and QA Field reviews.

904.3.1.1 For QA File and QA Field reviews, the HERS Rater's "annual total of ratings" shall mean all ratings entered into the National RESNET Registry (based on "date registered") for a calendar year, i.e. the twelve month period from January 1st through December 31st.

904.3.1.2 Ratings selected for QA File and QA Field review may be registered in the previous quarter but the annual total required is always based on the total number of ratings registered in a calendar year.

#### 904.3.2 HERS Rater Quality Assurance File review (QA File review)

904.3.2.1 QA File review of RESNET Flagged Files. Quality Assurance Designees shall review ratings with apparent errors flagged by the RESNET QA File review for further Quality Assurance review, investigating the specific issues of concern and working with the HERS Rater and Rating Quality Assurance Provider to correct any errors.

904.3.2.2 For each HERS Rater, the Provider's Quality Assurance Designee shall be responsible for an annual QA File review of the greater of one (1) rating or ten percent (10%) of the HERS Rater's annual total of Confirmed or Sampled Ratings. When determining the number of ratings to review for a HERS Rater, round up to the next whole number when the percentage calculation yields a decimal point, e.g. 101 ratings  $\times 10\% = 10.1$  means that 11 ratings shall be reviewed.

904.3.2.3 QA File reviews shall be conducted on an ongoing basis as appropriate for the volume of ratings being completed and submitted to the National RESNET Registry, and at a minimum quarterly.

904.3.2.4 The QA File review completed by a Quality Assurance Designee shall consist of, at a minimum, the following:

904.3.2.4.1 Ratings shall be selected using a nonbiased selection process from the entire pool of ratings available at the time of the review for each HERS Rater. It may be necessary to first select ratings that represent any particular area of concern in either the rating or construction process. Once it is ensured that ratings from these areas of interest will be included in the quality assurance process, a nonbiased selection process can then be applied such as random selection. Special effort should be taken to make certain that the selected ratings are as representative as possible of the ratings being completed, i.e. new and existing

homes, geographic location, builder, trade contractor, variety of floor plans, etc., which, in some instances, may require more than the minimum (1) rating or ten percent (10%).

904.3.2.4.2 While Section 102.1.4.11 and 303.3.7 require that HERS Raters submit energy simulation files for every rated home to their Providers, the QA file review does not require that Raters submit quality assurance data files, as defined in Appendix B, to their Provider and/or Quality Assurance Designee for every home that is rated. Only quality assurance data files for the ratings selected for quality assurance shall be required to be submitted for review by the Provider's Quality Assurance Designee.

904.3.2.4.3 For of each Confirmed Rating, confirm that the values entered into the HERS Rating Software for all Minimum Rated Features are supported by actual on-site field-verified test data;

904.3.2.4.4 Confirm that paper and/or electronic files are being maintained and archived by HERS Raters for each rating and/or unique floor plan, including the HERS Rating Software Energy Simulation File and all supporting documentation required to validate the inputs into the rating software file (e.g., architectural drawings, threshold specifications, field data). These files shall be maintained a minimum of three (3) years;

904.3.2.5 QA File review for Sampled Ratings. For Sampled Ratings, annually review sample sets, the sampling process, and the worst-case projected rating energy simulation files for ratings rated through sampling.

904.3.2.5.1 The QA File review for sampled ratings shall include a review of the greater of one (1) file or ten percent (10%) of the projected worst-case energy simulation files for each new sampled community in order to confirm that minimum rated features and worst-case specifications have been entered into the rating software accurately. Energy simulation files for an existing sampled community shall receive a QA File review, at a rate of one (1) file or ten percent (10%) of the worst-case energy simulation files.

904.3.2.5.2 The QA File review for sampled ratings shall include an analysis and confirmation that the sampling process, as defined in Chapter 6, is being properly followed, including sample set creation and the application of testing and failure protocols.

904.3.2.5.2.1 QA File review of the sampling process shall be completed on the greater of one (1) sample set or one percent (1%) of the HERS Rater's annual total of sample sets. When determining the number of sample sets to review for a HERS Rater, round up to the next whole number when the percentage calculation yields a decimal point, e.g. 101 sample sets x 1% = 1.01 means that 2 sample sets shall be reviewed.

904.3.2.5.2.2 For each sample set QA File review, the quality assurance data file(s) shall be reviewed to confirm that data collected in the field (i.e. sample controls) are equal to or better than the minimum rated feature threshold specification inputs for the worst-case energy simulation file for the home(s) that received sample controls for the sample set.

904.3.2.5.2.3 If a discrepancy in minimum rated features is identified that requires more stringent threshold specifications for a floor plan, then the worst case projected rating energy simulation file for that plan and home, or for the entire set of homes (as appropriate), subject to sampling shall be reviewed.

### 904.3.3 HERS Rater Quality Assurance Field review (QA Field review).

#### 904.3.3.1 Determining the number of ratings to receive QA Field reviews.

904.3.3.1.1 HERS Raters. For each HERS Rater, the Provider's Quality Assurance Designee shall be responsible for an annual onsite QA Field review of the greater of one (1) rating on a completed home or one percent (1%) of the HERS Rater's annual total of ratings for which Confirmed or Sampled ratings were provided. When determining the number of QA Field reviews to complete for a HERS Rater, round up to the next whole number when the percentage calculation yields a decimal point, e.g. 101 ratings x 1% = 1.01 means that 2 QA Field reviews shall be completed.

904.3.3.1.2 Rating Field Inspectors. For HERS Raters utilizing RFI's, the Quality Assurance Designee shall ensure that a QA Field review is completed on the greater of one (1) rating on a completed home or one percent (1%) of each RFI's annual total of confirmed or sampled ratings the RFI assisted with. When determining the number of QA Field reviews to complete for an RFI, round up to the next whole number when the percentage calculation yields a decimal point, e.g. 101 ratings x 1% = 1.01 means that 2 QA Field reviews shall be completed. The RFI QA Field reviews may fulfill all of the HERS Rater's annual QA Field review requirement, but only if the HERS Rater does not do field inspections on completed homes. When a HERS Rater also does field inspections on completed homes, they must have field QA at the same calculated rate of 1% using the above methodologies.

904.3.3.1.3 Pre-drywall QA Field reviews. In addition to QA Field reviews on completed homes, for ratings on new homes, the Quality Assurance Designee may perform a pre-drywall QA Field review on each HERS Rater or RFI. Pre-drywall QA Field reviews can be used to meet the 1% QA Field review requirement for a HERS Rater or RFI in addition to the QA Field reviews on completed homes, and can replace 10%, but no more than 25%, of the total number of QA Field reviews (rounded up).

904.3.3.1.4 For example, if a HERS Rater or RFI is required to have one (1) QA Field review, one (1) review can be on a completed home and one (1) additional QA Field review can be on the same or a different home before drywall is installed. If a HERS Rater or RFI is required to have two (2) to ten (10) QA Field reviews, one (1) pre-drywall QA Field review may be performed and can count towards one, but no more than one, of the QA Field reviews. If a HERS Rater or RFI is required to have eleven (11) or more QA Field reviews, two (2) pre-drywall QA Field reviews may be performed and they can count towards two, but no more than two, of the QA Field reviews.

904.3.3.1.5 HERS Raters and RFIs are exempt from receiving a QA field review for pre-drywall or final inspections and/or testing if they have not performed inspections and/or testing of any minimum rated features for pre-drywall or completed homes within the calendar year. For example, if a HERS Rater or RFI have not completed any pre-drywall inspections within the calendar year, they are exempt from QA Field reviews for pre-drywall inspections.

904.3.3.1.6 "Remote" QA Field reviews. All HERS Raters must annually receive a minimum of one (1) on-site, in-person QA Field reviews on the total annual confirmed or sampled ratings or inspections completed. All RFIs must annually receive a minimum of one (1) on-site, in person QA field review on the total annual pre-drywall or final field inspections completed. All other QA Field reviews, for completed

and pre-drywall homes, may be performed using a "remote" QA Field review methodology specified by RESNET.

904.3.3.1.7 Sampled Ratings. For the purposes of calculating the one (1) rating/home or one percent (1%) QA Field review requirement for HERS Rater and RFI sampled ratings, all the homes rated by a HERS Rater, or for which an RFI assisted, using sampling shall be considered and not just the number of homes tested and inspected. If at least two (2) homes are required for QA Field review, a maximum of one (1) of the homes shall be a non-tested, sampled home. To ensure that Quality Assurance is being completed on HERS Raters and RFI's rather than builders, the balance of homes included in the QA Field reviews shall have received field testing and/or inspections.

904.3.3.1.8 Quality Assurance Designees shall complete a minimum of 1% quarterly QA Field reviews of Rating Quality Assurance Provider's ratings, based on the total number of ratings registered by the Provider in the previous quarter, until all annual QA requirements for the Provider have been met for each Rater. QA field reviews are not required on every Rater every quarter.

#### 904.3.3.2 Requirements for QA Field reviews.

904.3.3.2.1 HERS Raters. The QA Field review shall confirm the accuracy of all stages of the rating process (e.g. data collection, reporting, and energy simulation file creation and/or updating) for the rating receiving a QA Field review.

904.3.3.2.1.1 Collect dimensional measurements in the field for the home to evaluate the accuracy of those determined by the HERS Rater in the field or from plans, including conformance to the requirements set forth in Chapters 3 and 8 and Appendix A of these Standards.

904.3.3.2.1.2 Complete in the field all necessary performance testing and all necessary inspections of minimum rated features for the home to evaluate the accuracy of those determined by the HERS Rater, including conformance to the requirements set forth in Chapters 3 and 8 and Appendix A of these Standards.

904.3.3.2.1.3 Evaluate inputs entered by the HERS Rater into the energy simulation file for the rated home to determine conformance with data from 904.3.3.2.1.1 and 904.3.3.2.1.2 as well as Chapters 3 and 8 and Appendix A of these Standards.

904.3.3.2.2 Rating Field Inspectors. The QA Field review shall confirm the accuracy of data collection and reporting by the RFI for the rating receiving a QA Field review.

904.3.3.2.2.1 As necessary, collect dimensional measurements in the field for the home to evaluate the accuracy of those that may have been determined by the RFI, including conformance to the requirements set forth in Chapter 8 and Appendix A of these Standards.

904.3.3.2.2.2 Complete in the field all necessary performance testing and all necessary inspections of minimum rated features for the home to evaluate the accuracy of those that may have been determined by the RFI, including conformance to the requirements set forth in Chapter 8 and Appendix A of these Standards.

904.3.3.2.3 Pre-drywall. For homes receiving a QA Field review prior to the installation of drywall, the QA shall complete in the field all necessary performance testing and all necessary inspections of minimum rated features for the home to evaluate the accuracy of those determined by the HERS Rater or RFI, including conformance to the requirements set forth in Chapter 8 and Appendix A of these Standards.

904.3.3.2.4 Each rating selected for a QA Field review for each HERS Rater and RFI shall be randomly selected to ensure that a representative sample of all home types, locations and builders is achieved.

904.3.3.2.5 Remote QA Field reviews. QA Field reviews not completed on-site, in-person by a Quality Assurance Designee, may be completed remotely using video technology and processes, protocols, and procedures approved by RESNET.

#### 904.3.4 Quality Assurance for Multifamily Projects

904.3.4.1 In addition to the Quality Assurance requirements specified in this Chapter, quality assurance for multifamily projects shall include, at a minimum, the following:

904.3.4.1.1 All dwelling units that are certified or qualified by the use of sampling shall be considered to be "Ratings". QA File and QA Field reviews shall be conducted on a percentage of all the dwelling units certified or qualified under sampling, rather than the percentage of tested and inspected dwelling units.

904.3.4.1.2 If units within a multifamily building have multiple space conditioning configurations such that some units have ducts and other units do not, the Quality Assurance Designee shall choose a unit with ducts for QA Field review. Additionally, if the building has some units with ducts that are within conditioned space while others have ducts that are outside of the building envelope, the Quality Assurance Designee shall choose a unit with ducts outside of the envelope for QA Field review.

904.3.4.1.3 For multifamily projects, when selected, QA Field reviews shall include a comprehensive inspection of all minimum rated features that are possible to be inspected within the selected units and within the building during the time of the QA Field review. This means that the Quality Assurance Designee shall inspect attic insulation via a common attic access where present, mechanical rooms that house common mechanical systems that serve multiple units, common ventilation systems, common laundry etc.

904.3.4.2 If the annual rating volume of a HERS Rater is such that more than one QA Field review is required for that annual period's QA Field review quota (i.e. the HERS Rater completed more than 100 ratings during the annual period), no more than one QA Field review within a particular multifamily development shall count toward meeting the total QA Field review quota.

904.3.4.2.1 Exception. If a Rater/RFI did not perform ratings on any other single or multifamily buildings for the calendar year and the multifamily building is 100 units or less, then pre-drywall and final QA Field reviews may be performed on the multifamily building that was rated.

904.3.4.2.2 Exception. If a particular multifamily development contained more than 100 units. In such an instance, one QA Field review per every 100 units of that development shall count towards the annual QA Field review quota.

904.3.4.2.3 Exception. If the HERS Rater had one or more RFI's who worked with them throughout the annual period, the Quality Assurance Designee may select multiple units within a particular multifamily development to count towards the annual QA Field review quota for each RFI as long as those additional QA Field reviews represent work performed by each individual RFI during the annual period.

904.3.5 Non-compliance of a reviewed rating shall trigger corrective action.

904.3.5.1 A Quality Assurance Designees will conduct an evaluation using the RESNET QA Review Checklist to determine if the file or field QA review complies with the RESNET Standards or needs corrective action.

904.3.5.2 Under the supervision of the Quality Assurance Designee, non-compliant rating(s) shall be corrected in order to come into compliance with RESNET technical Standards.

904.3.5.3 The Quality Assurance Designee shall develop and implement a coaching action plan for the HERS Rater that addresses the underlying problems that led to the non-compliant rating. The coaching plan shall include mentoring the HERS Rater.

904.3.5.4 The Provider shall initiate appropriate disciplinary action on the HERS Rater/RFI in accordance with the Provider's written HERS Rater/RFI disciplinary procedures.

904.3.5.5 Multiple instances of non-compliance with QA File and/or QA Field review for a Rater or RFI shall trigger an increased rate of QA File reviews or QA Field reviews.

904.3.5.5.1 When in the course of quality assurance review, as ratings outlined in 904.3.5.5.2 and 904.3.5.5.3, in a twelve (12) month period from January 1st through December 31st are found to be out of compliance by more than 5%, or the Quality Assurance Designee determines that field work (e.g. testing or inspections of minimum rated features) is being completed inaccurately or incompletely, the following, at a minimum, shall occur:

904.3.5.5.1.1 The Rater shall be placed on probation;

904.3.5.5.1.2 If the noncompliant ratings are due to errors found in QA File review, the Rater's File QA shall be increased to 15% ratings for the next twelve (12) month period. Round up to the next whole number when the percentage calculation yields a decimal point, e.g. 50 ratings x 15% = 7.5 means that 8 QA File reviews shall be completed;

904.3.5.5.1.3 When appropriate (e.g. the HERS Rater/RFI previously struggled with field compliance, a piece of equipment is used in the rating that is not commonly found in the market or used by a builder,

field test results are out of typical range for the market, etc.), a QA Field review shall be completed by the Quality Assurance Designee on the ratings that were out of compliance by more than 5%;

904.3.5.5.1.4 If the noncompliant ratings are due to inaccurate or incomplete field work, the Rater and/or RFI Field QA shall be increased to 2% or 2 ratings whichever is larger for the next twelve (12) consecutive months . Round up to the next whole number when the percentage calculation yields a decimal point, e.g. 50 ratings x 2% = 1 means that 2 QA Field reviews shall be completed.

904.3.5.5.2 The threshold for Raters and RFI's who performed work on fewer than 100 homes in the prior or current twelve (12) month period from January 1st through December 31st shall be "two (2) or more ratings";

904.3.5.5.3 The threshold for Raters and RFI's who performed work on 100 homes or greater in the prior or current twelve (12) month period from January 1st through December 31st shall be "three (3) or more ratings or 1% of ratings, whichever is greater";

904.3.5.5.4 If additional noncompliance or major errors are discovered during the period of increased File or Field QA, the Quality Assurance Designee shall review 100% of the next five (5) rating files submitted or field inspections conducted. If noncompliance or major errors continue to be discovered, the Rater may be suspended in accordance with the Provider's written HERS Rater/RFI disciplinary procedure.

#### 904.4 Significant Non-compliance by Rating Quality Assurance Providers.

It is the expectation of RESNET that Providers fully comply with all the requirements set forth in these Standards. Discovery of one or more areas of non-compliance via the RESNET Quality Assurance process, reporting by a Quality Assurance Designee as part of the Provider's Quality Assurance process, or in the course of RESNET's research of an ethics or consumer complaint will result in the Quality Assurance Designee working with a Provider to come back into compliance. However, on occasion, there may be instances where actions by a Provider are truly egregious and, as such, would be deemed to be "significant non-compliance". This Section seeks to define the thresholds when actions by a Provider are deemed to be significant non-compliance, thereby requiring that the Quality Assurance Designee report the significant non-compliance to RESNET and additional action by RESNET may be taken.

904.4.1 Significant non-compliance by Providers shall include, but not be limited to, the following:

904.4.1.1 Failure to comply with multiple individual requirements, or requirements impacting multiple HERS Raters and/or ratings, for Providers set forth in the RESNET Standards and enumerated in a RESNET Quality Assurance Checklist;

904.4.1.2 Failure of a Provider to comply with the RESNET Standards of Practice, Code of Ethics, or Conflict of Interest Disclosure;

904.4.1.3 Failure to follow a Provider's written HERS Rater/RFI disciplinary procedures for known or obvious non-compliance with the RESNET Standards, Standards of Practice, Code of Ethics, or Conflict of Interest Disclosure.

#### 904.4.2 Reporting of significant non-compliance to RESNET.

904.4.2.1 Quality Assurance Designees must report all significant non-compliance by a Provider to RESNET when it becomes known to the Quality Assurance Designee so that RESNET may assist the Quality Assurance Designee in working with a Provider to come back into compliance.

904.4.2.2 Failure of a Quality Assurance Designee to report significant non-compliance issues may result in actions taken by RESNET as stipulated in Section 905.2.7.

### 905 Quality Assurance Designee (QA Designee)

905.1 A Rating Quality Assurance Provider shall designate one and only one officer, employee, or contractor to be the Primary Quality Assurance Designee for the organization, responsible for quality assurance within the organization. This does not preclude a Provider from having more than one QA Designee on staff or as a contractor, as may be necessary for business models where QA Designees do Ratings. The Primary QA Designee shall have ultimate responsibility, on behalf of the QA Provider, for fulfilling the requirements listed in [Section 904.10](#) and who shall be the single point of contact to RESNET regarding all Quality Assurance matters. All QA Designees shall meet each of the minimum requirements to be a QA Designee as stipulated in this Section.

905.2 RESNET shall certify all Quality Assurance Designees and maintain a national registry of certified Quality Assurance Designees.

#### 905.3 Certification requirements to be a RESNET certified Quality Assurance Designee

905.3.1 Meet the following requirements:

905.3.1.1 Previous certification as a Home Energy Rater; and

905.3.1.2 As a certified Home Energy Rater, complete confirmed ratings on a minimum of twenty-five (25) homes, five (5) of which must have received quality assurance field reviews in accordance with the RESNET Standards without significant non-compliance issues, or

905.3.1.3 Complete QA Field reviews on a minimum of ten (10) homes and QA file reviews on a minimum of twenty (20) homes as either a Quality Assurance Designee or delegate (as previously allowed by RESNET) or under the supervision and mentorship of another Quality Assurance Designee.

905.3.2 Passing the RESNET Quality Assurance Designee Competency Test with a minimum score determined by RESNET

905.3.3 Attend and successfully complete a RESNET Quality Assurance Designee Training.

905.3.4 The requirements of [905.3.1.2](#) and [905.3.1.3](#) must be met within twelve (12) months of passing the RESNET Quality Assurance Designee Test, or the individual must pass the test again prior to being recognized as a QA Designee.

905.3.5 Submit an application to RESNET and be recognized as a qualified QA Designee.



## 905.4 Professional Development for QA Designees

905.4.1 All Quality Assurance Designees annually shall:

905.4.1.1 Document attendance at the RESNET Conference or of RESNET approved CEUs; and

905.4.1.2 Participate in a one-day in-person (or virtual) RESNET update and training.

905.4.2 A Quality Assurance Designee must renew annually with RESNET to maintain certification.

## 905.5 Responsibilities of Quality Assurance Designees.

905.5.1 Complete all QA File and QA Field reviews for a Rating Quality Assurance Provider as required by these Standards.

905.5.2 Serve as a liaison between RESNET and Rating Quality Assurance Providers, assisting with the following:

905.5.2.1 Confirm that Rating Quality Assurance Providers are informed of all changes to the RESNET ANSI and non-ANSI standards.

905.5.2.2 Querying RESNET on behalf of Providers if interpretive questions arise about technical or administrative issues regarding ratings.

905.5.2.3 Ensure that Rating Quality Assurance Providers are properly following all RESNET technical and administrative requirements set forth in these Standards or stipulated in formal interpretations issued by RESNET.

905.5.2.4 On behalf of RESNET, ensure that Rating Quality Assurance Providers are properly enforcing disciplinary actions for Raters/RFI's and/or adhering to any disciplinary actions imposed on a Provider by RESNET.

905.5.3 Maintenance of quality assurance files;

905.5.4 Complete annual submission of Quality Assurance results to RESNET in accordance with Section 904.2;

905.5.5 Annually complete the RESNET Quality Assurance Checklist for Rating Quality Assurance Providers in accordance with Section 904.2;

905.5.6 Maintain the Quality Assurance Data File for each rating that receives quality assurance review at a minimum containing the information required by Section 904.3. The Data Files shall be archived for a minimum of three (3) years

## 905.6 RESNET Whistle Blower Protection Policy.

905.6.1 A Rating Quality Assurance Provider shall not retaliate against a Quality Assurance Designee or HERS Rater in the terms and conditions of their status with the Provider for any of the following reasons:

905.6.1.1 Reporting to a supervisor, to RESNET or to a federal, state or local agency what the Quality Assurance Designee or HERS Rater believes in good faith to be a violation of the RESNET Standards and/or a local, state or federal law; or

905.6.1.2 Participation in good faith in any resulting investigation or proceeding;

905.6.1.3 Exercising his or her rights under any state or federal law(s) or regulation(s) to pursue a claim or take legal action to protect the Quality Assurance Designee's or HERS Rater's rights.

905.6.2 RESNET may take disciplinary action (up to and including revocation) against a Rating Quality Assurance Provider who in its assessment has engaged in retaliatory conduct in violation of this policy.

905.7 Failure of a Quality Assurance Designee to fulfill their responsibilities. Failure of a Quality Assurance Designee to properly fulfill their responsibilities as specified in these Standards may include one or more of the following actions by RESNET:

905.7.1 The Quality Assurance Designee being placed on probation;

905.7.2 Removal of the Quality Assurance Designees' certification as a Quality Assurance Designee of RESNET;

905.7.3 Removal of the Quality Assurance Designee from the National Registry of Approved Quality Assurance Designees;

905.7.4 The Quality Assurance Designee may appeal an action taken by RESNET under this Section using the Appeals procedures stipulated in Section 911 of these Standards.

## 906 Quality Assurance Requirements for Third-Party Energy Efficiency Programs

906.1 See [Appendix B- Glossary of Terms](#) for definition of Third Party Energy Efficiency Program (EEP).

906.2 Quality Assurance, as specified in Section 904, may be provided for EEP's by Quality Assurance Designees as part of the RESNET Quality Assurance process when RESNET and the EEP enter into a formal agreement. Where EEP Quality Assurance requirements are greater than specified in Section 904, those Quality Assurance requirements shall be specified in writing by an EEP and provided to RESNET for approval in order to be included in the RESNET Quality Assurance process.

906.2.1 Unless formally authorized by RESNET, RESNET's oversight of a QA Designee shall only cover areas covered in these Standards and in the RESNET Home Energy Rating Standards of Practice.

906.3 Quality Assurance data files and the results of onsite verification of ratings files will be made available by Providers to EEPs only for the EEP's quality assurance initiatives and, additionally, only

if the EEP has agreements with rating clients in the program that allow for HERS Raters to release rating information.

906.4 EEP files will be inspected for quality assurance pursuant to [Section 903.4](#) and shall include those items related to energy efficiency specific to the EEP that may be in addition to the Home Energy Rating. Significant non-compliance by Providers shall be reported to EEP's when they become known to RESNET.

## 907 Quality Assurance Requirements for Contractor Education and Qualification (CEQ) Providers, Energy Smart Providers, Energy Smart Contractors, and Energy Smart Teams

### 907.1 RESNET Quality Assurance of CEQ Providers

907.1.1 RESNET shall select a limited number of CEQ Providers and conduct an annual review of their Quality Assurance records.

907.1.2 A CEQ Provider shall have the right to challenge the findings of RESNET's quality assurance review.

907.1.3 CEQ records that must be reviewed include the following:

907.1.3.1 The CEQ's Energy Smart Contractor Registry;

907.1.3.2 The CEQ's Energy Smart Contractor Agreements;

907.1.3.3 Documentation of CEQ Provider's initial training course and continuing education offerings for Energy Smart Contractors;

907.1.3.4 Documentation of Energy Smart Contractor's Designated Qualification Representative completing required training and testing;

907.1.3.5 Documentation of the Representative's continuing education;

907.1.3.6 The CEQ's Energy Smart Contractor complaint files;

907.1.3.7 Documentation of disciplinary actions.

907.1.4 In the case of an unresolved complaint brought to the RESNET Executive Director, it will be the responsibility of the CEQ to secure the Energy Smart Project files from the Energy Smart Project Manager and present them to RESNET. Failure of the Energy Smart Project Manager to provide adequate records shall result in sanctions up to and including a 60 day suspension of the Energy Smart Contractor designation.

907.1.5 An on-site review by RESNET may be conducted if there are significant inconsistencies or errors in the reviewed CEQ files.

907.1.6 Complaints against a CEQ Provider submitted by the Complaint Resolution Officer (CRO) to RESNET shall be addressed by the Executive Director. The RESNET Executive Director shall:

907.1.6.1 Resolve the complaint in forty-five (45) calendar days.

907.1.6.2 A complaint will be considered resolved once a Complaint Resolution Form has been submitted, signed by the party who filed the complaint and the CEQ Provider.

907.1.6.3 A log of unresolved complaints shall be maintained by the RESNET Executive Director.

907.1.7 CEQ Providers are subject to Probation, Suspension, and Revocation of Accreditation by RESNET in accordance with [Section 910](#) of these Standards.

907.1.7.1 Suspension and Revocation of Accreditation of a CEQ Provider may result from the following:

907.1.7.1.1 The provisions described in 912.3;

907.1.7.1.2 Failure to ensure that the Energy Smart Contractor followed the complaint resolution process in the case of a complaint against the Energy Smart Contractor or failure to follow required disciplinary and corrective action with respect to a contractor;

907.1.7.2 RESNET shall comply with the due process and appeals procedures contained in [Section 911](#) of these Standards with respect to disciplinary actions against an accredited CEQ Provider.

## 907.2 CEQ Provider Quality Assurance of Energy Smart Contractors

907.2.1 The CEQ Provider shall annually verify that the Energy Smart Contractor's representative is still with the company.

907.2.2 Respond to complaints against Energy Smart Contractors.

907.2.3 Follow written Energy Smart Contractor Disciplinary Procedures described in the CEQ Provider's written policies and procedure for Energy Smart Contractors.

## 907.3 CEQ Provider Complaint Resolution Procedures

907.3.1 The CEQ Provider must conduct non-compliance resolution when a complaint is received about the work performance of an Energy Smart Contractor from any of the following: the client, Rater/Auditor, other Energy Smart Contractors, Final Verifier.

907.3.2 Complaints shall be managed and resolved by the CEQ Provider's CRO following the CEQ Provider's Complaint Response Process.

907.3.3 Each CEQ Provider shall retain records of complaints received and responses to complaints for a minimum of three (3) years after the date of the complaint.

907.3.4 The Complaint Response Process shall include, at a minimum, the following:

907.3.4.1 Consumer Complaint Form, available for submittal via the RESNET website. The form will be forwarded to the CEQ Provider to the attention of the CRO.

907.3.4.2 It is the responsibility of the CEQ Provider to secure the documentation from the Energy Smart Project Manager or Final Verifier for review by the CRO.

907.3.4.3 The CRO shall evaluate the complaint to determine if the contractor shall be deemed to be in non-compliance. Complaints must:

907.3.4.3.1 Be related to either structural or major deficiencies (over \$500) and must impact the energy efficiency of the home.

907.3.4.3.2 Include the work contract(s) and copies of checklists denoting unresolved deficiencies.

907.3.4.3.3 In the event the CRO cannot make a fair evaluation of the complaint based on the information submitted, the consumer shall have the option of hiring an independent Rater/Auditor to visit the site and submit his or her report and findings.

907.3.4.3.4 The Energy Smart Contractor Complaint Resolution Process shall consist of the following:

907.3.4.3.4.1 The CRO will notify the contractor of the complaint and the contractor shall have forty five (45) calendar days to resolve the complaint.

907.3.4.3.4.2 A complaint will be considered resolved once a Complaint Resolution Form has been submitted, signed by both the client and the party against whom the complaint was filed, and the resolution verified by the CRO.

907.3.4.3.4.3 If the complaint is not resolved in the allotted time, it will be considered unresolved.

907.3.4.4 Energy Smart Contractors with three (3) unresolved complaints within a 90 day period or with five (5) or more unresolved complaints at any given time shall have their certification suspended in accordance with the provisions of [907.3.5](#).

907.3.4.5 A log of unresolved complaints shall be maintained by the CEQ Provider and must be made available to RESNET upon request.

907.3.5 The minimum requirements for suspension of certification procedures are the following:

907.3.5.1 First Offense: First time an Energy Smart Contractor has three (3) unresolved complaints within a 90 day period or has five (5) outstanding unresolved complaints, the CEQ Provider shall suspend the contractor's certification for a period of not less than 30 days, and:

907.3.5.1.1 Shall inform RESNET that the contractor's certification has been suspended, and shall request that RESNET remove the contractor from the Directory.

907.3.5.1.2 Shall require the contractor, prior to reinstatement, to complete two (2) hours of Continuing Education specific to conflict resolution or customer relations, or successfully resolve at least one of the 90

day old complaints and all of the complaints older than 90 days. CEQ Providers may provide exceptions for complaints that cannot be resolved.

907.3.5.1.3 Shall inform RESNET when the contractor's certification has been reinstated, clarify the resolution, or reasons for not being able to resolve the complaint, and shall request that RESNET reinstate the listing on the Directory.

907.3.5.2 Second Offense: Second time an Energy Smart Contractor has three (3) unresolved complaints within a 90 day period or has five (5) outstanding unresolved complaints, the CEQ Provider shall suspend the contractor's certification for a period of not less than 90 days, and:

907.3.5.2.1 Shall inform RESNET that the contractor's certification has been suspended, and shall request that RESNET remove the contractor from the directory.

907.3.5.2.2 Shall require the contractor prior to reinstatement to complete three (3) additional hours of Continuing Education and successfully resolve at least one of the 90 day old complaints and all of the complaints older than 90 days. CEQ Providers may provide exceptions for complaints that cannot be resolved.

907.3.5.2.3 Shall inform RESNET when the contractor's certification has been reinstated, clarify the resolution, or reasons for not being able to resolve the complaint, and shall request that RESNET reinstate the listing on the Directory.

907.3.5.3 Third Offense: Third time an Energy Smart Contractor has three (3) unresolved complaints within a 90 day period, or has five (5) outstanding unresolved complaints, the CEQ Provider shall suspend the contractor's certification for a period of not less than twelve (12) months, and:

907.3.5.3.1 Shall inform RESNET that the contractor's certification has been suspended, and shall request that RESNET remove the contractor from the Directory.

907.3.5.3.2 Shall require the contractor, prior to reinstatement, to complete three (3) additional hours of Continuing Education and successfully resolve all of the outstanding complaints. CEQ Providers may provide exceptions for complaints that cannot be resolved.

907.3.5.3.3 Shall inform RESNET when the contractor has met the requirements of [907.3.5.3.2](#), clarify the resolution, or reasons for not being able to resolve the complaint. RESNET approval shall be required for reinstatement of certification and RESNET shall reinstate the contractor's listing on the Directory if appropriate.

## 907.4 Quality Assurance Provider Quality Assurance Review of Rater Final Verification of Energy Smart Projects

907.4.1 Quality assurance of HERS Raters' Final Verifications of an EnergySmart Projects shall be performed by the Provider's Quality Assurance Designee.

907.4.2 Quality Assurance File Review

907.4.2.1 For each Rater/Auditor that performs Final Verification for an Energy Smart Project, the QA Provider's QA Designee shall annually conduct QA File Review of the Final Verification documentation file(s) the greater of one (1) projects or ten percent (10%) of the Contractor's annual total of projects completed. When determining the number of projects to review for a Contractor, round up to the next whole number when the percentage calculation yields a decimal point, e.g. 101 projects x 10% = 10.1 means that 11 projects shall be reviewed.

907.4.2.1.1 Project documentation file(s) shall include

907.4.2.1.1.1 A copy of the original work scope and signed proposal;

907.4.2.1.1.2 Rater/Auditor and Contractor names and contact information;

907.4.2.1.1.3 Program sponsor name, completed final verification checklist;

907.4.2.1.1.4 Energy simulation software file;

907.4.2.1.1.5 All test out results.

907.4.2.1.2 When the QA Provider's QA Designee conducts the QA File Review, they shall review at least one (1) project documentation file for each Energy Smart Contractor and Energy Smart Team. The QA Designee shall equitably distribute the QA File Reviews of each individual Energy Smart Contractor's or Team's Projects.

907.4.2.2 The QA Designee will confirm that each Energy Smart Contractor for the project has been approved by a RESNET-approved CEQ Provider as demonstrated by listing on the RESNET Energy Smart Contractor Directory.

907.4.2.3 The QA Designee will verify the completion of the Rater Final Verification checklist.

907.4.2.3.1 There must be consistency between the Final Verification Checklist and final test out results, copy of work scope, and signed proposal.

907.4.2.3.2 Must include reported results of non-conformance by Final Verification.

907.4.2.4 The QA Designee will review 10% of the Rater/Auditor Final Verifier energy simulation software file and projected estimated energy savings.

### 907.4.3 Quality Assurance Field Review (QA Field Review)

907.4.3.1 For each Rater/Auditor that performs Final Verification for an Energy Smart Project the QA Designee shall annually conduct QA Field Reviews of Energy Smart Projects at a rate of 1% of verified projects or one project, whichever is greater. QA Field Review shall include the greater of one (1) project or ten percent (10%) of each Contractor's annual total of projects completed. When determining the number of projects to review for a Rater and Contractor, round up to the next whole number when the percentage calculation yields a decimal point, e.g. 101 projects x 1% = 1.01 means that 2 projects shall be reviewed.

907.4.3.2 The QA Designee shall confirm the results of the Final Verifier's combustion appliance testing where applicable.

907.4.3.2.1 Where there are vented combustion appliances that use indoor air to vent combustion gases, re-test Worst Case Depressurization in accordance with the QH Standard.

907.4.3.2.2 Where any spaces contain combustion appliances, re-test for Carbon Monoxide in accordance with the QH Standard.

907.4.3.3 The QA Designee shall review the work scope and signed proposal, and shall confirm installed measures are consistent with selected measures and work scope in accordance with the QH Standard.

907.4.3.4 The QA Designee shall confirm the Final Verifier's Estimate of Project Energy Savings as follows:

907.4.3.4.1 Calculate an independent estimate of projected energy savings for the Energy Smart Project using the same RESNET-approved software used by the Final Verifier.

907.4.3.4.2 Compare the Final Verifier's final estimated energy savings against the QA Designee's independent calculation of estimated energy savings.

907.4.3.4.3 The QA Designee's results must be no more than three percent (3%)(+/-) variation in the HERS Index from the HERS Index result as determined by the QA Designee.

#### 907.4.4 Non-Compliance and Resolution

907.4.4.1 Reporting: Non-compliance of an Energy Smart Project with respect to installed measures or estimate of projected energy savings shall be reported to the CEQ Provider's Compliant Resolution Officer (CRO).

907.4.4.2 Discipline: Non-compliance of the Final Verifier's Final Verification of an Energy Smart Project with respect to installed measures or estimate of projected energy savings shall result in additional action in accordance with the QA Provider's written Disciplinary Procedures.

907.4.4.3 Record-Keeping: Rating Providers shall maintain Quality Assurance records for every Energy Smart Project that has received Documentation or On-Site QA Review for a period of no less than three (3) years and that will include the following:



907.4.4.3.1 Copy of work scope and signed proposal;

907.4.4.3.2 Names and contact information of the Rater/Auditor, ES Contractors, and Final Verifier;

907.4.4.3.3 Program sponsor name;

907.4.4.3.4 Completed final verification checklist;

907.4.4.3.5 All test out results;

907.4.4.3.6 QA Review Results.

## 908 Ethics and Appeals Committee

The Ethics and Appeals Committee shall have the responsibility of investigating ethics and consumer complaints and hearing appeals of an Application or Renewal Application that has been denied, or if a Provider has been placed on probation, or if a Provider's accreditation has been suspended or revoked. The Committee shall report to the RESNET Executive Director.

**908.1 Committee membership.** The Ethics and Appeals Committee shall be chaired by a member of the RESNET Board of Directors. The Chair shall be approved by the RESNET Board. Nomination of Committee members shall be made by the Chairman. The Committee shall be composed of a minimum of five (5) members, but no more than seven (7) members including the chairman. The Committee shall consist of a minimum of two (2) Home Energy Raters and a minimum of two (2) representatives of Provider organizations.

**908.2 Committee Responsibilities.** The Ethics and Appeals Committee shall have the responsibility of investigating ethics and consumer complaints and hearing appeals of an Application or Renewal Application that has been denied, or if a Provider has been placed on probation, or if a Provider's accreditation has been suspended or revoked within 30 business days.

## 909 Ethics and Compliance Complaints

### 909.1 Filing of Ethics and Compliance Complaints

909.1.1 Ethics complaints may be filed for violation of the RESNET Code of Ethics.

909.1.2 Compliance Complaints may be filed for failures to comply with the RESNET Standards

909.1.3 Complaints shall document the alleged violation(s) or compliance issue(s). The complaint shall also be specific about which section(s) of the Code of Ethics or the RESNET Standards have been violated. To be considered, the full and complete complaint shall be submitted on the RESNET's online ethics or compliance complaint form posted on the RESNET web-site and contain the following information:

909.1.3.1 The name of the complainant and contact information;

909.1.3.2 The name of the party that is the subject of the complaint;

909.1.3.3 A complete description of the alleged violation(s);

909.1.3.4 A recitation of all the facts documenting the complaint;

909.1.3.5 Copies of all relevant documents.

## 909.2 Investigation of Complaints

909.2.1 RESNET has a tiered approach to investigation of complaints; RESNET makes an initial determination and all parties have the right to appeal the decision to the RESNET Ethics and Appeals Committee. Furthermore, a provider has the right to appeal any decision made by the Ethics and Appeals Committee to the RESNET Ethics Panel per section 910.2.3. Upon receipt of a complaint, RESNET shall assign a case number and RESNET staff shall review the evidence submitted. The Chair of the Ethics and Appeals Committee shall be informed. RESNET staff shall consider the documentation contained in 909.1.3 in making a determination to proceed or dismiss the complaint.

909.2.2 In cases where RESNET staff finds the documentation submitted does not meet the minimum standards for an ethics or compliance complaint, the complaint may be dismissed. Both parties shall be notified of RESNET staff's finding by electronic mail.

909.2.3 Upon a decision by RESNET staff that the complaint should proceed to the next step, RESNET shall send a copy of the complaint by electronic mail to the subject of the complaint immediately. The respondent has 20 business days to submit a full and complete response to the complaint. All relevant information and documentation shall be included in the response. The response shall be in writing and sent to RESNET by electronic mail.

909.2.4 Upon receipt of the response, RESNET shall within thirty (30) business days of receiving the complaint, take action on the complaint. The action may include, but is not limited to:

909.2.4.1 Dismissal of complaint;

909.2.4.2 Require that steps be taken by the subject of the complaint to correct the problem; and/or

909.2.4.3 Specify sanctions under Section 912 (Probation, Suspension and Revocation of Accreditation) of this chapter.

909.2.5 All parties to the complaint shall be informed by electronic mail of the RESNET's action.

909.2.6 Actions shall be subject to appeal in accordance with Section 913 of these Standards.

909.2.7 All complaints, responses, and supporting documentation received by RESNET shall be handled in strict confidence by RESNET staff, the Ethics and Appeals Committee and the RESNET Appeals Panel.

## 910 Probation, Suspension, and Revocation of Accreditation

### 910.1 Notification.

RESNET shall provide written notification to Providers of any decisions under this section. All notices shall be sent by certified mail, or other method which provides evidence of delivery. All notices shall clarify the procedures being followed, as stipulated in this Standard, and include, where applicable, a statement of the Provider's rights to appeal under [Section 911](#) of this chapter.

### 910.2 Probation

If RESNET determines at any time that a Provider has failed to adhere to the accreditation requirements set forth in these Standards, RESNET shall notify the Provider of the specified deficiencies and shall require that specific corrective action, set forth in the notification, be taken within a specified time after the date set forth in such notification. A notice of probation may be appealed under [Section 911](#) of this chapter.

#### 910.2.1 Types of probation:

910.2.1.1 Administrative Probation. Results from violations found through a Provider's QA process, RESNET quality assurance monitoring or through the RESNET complaint resolution process. RESNET shall notify the Provider of the specified deficiencies and shall require that specific corrective action, set forth in the notification, be taken not later than twenty (20) business days after the date set forth in such notification. Probations resulting from these violations shall remain confidential. These violations may include but not limited to:

910.2.1.1.1 Failure to submit to RESNET any material information required to be submitted by the Provider, in accordance with obtaining or maintaining accreditation;

910.2.1.1.2 Failure by a Rating Quality Assurance Provider to make changes/updates to a Provider's Policies and Procedures;

910.2.1.1.3 Failure by a Rating Quality Assurance Provider to adhere to requirements for quality assurance of Raters that causes a minor deficiency in the QA of one or more Raters;

910.2.1.1.4 Failure by a Rating Quality Assurance Provider to adhere to requirements for Rater certification and re-certification;

910.2.1.1.5 Failure by a Rating Quality Assurance Provider to enforce corrective action requirements for Raters having non-conforming QA results;

910.2.1.1.6 Failure to adhere to one or more provisions of the RESNET Standards.

#### 910.2.1.2 Disciplinary Compliance Probation.

More serious compliance violations found through a Provider's QA process, RESNET quality assurance monitoring or through the RESNET complaint resolution process. RESNET shall, at its discretion, make a final determination regarding the necessity of posting a probation resulting from these violations on the RESNET web site. These violations may include but are not limited to:

910.2.1.2.1 Failure to correct the terms of an administrative probation during the time period defined in the issuance of probation;

910.2.1.2.2 Investigated and validated ethics or compliance complaints against a Provider;

910.2.1.2.3 Failure by a Rating Quality Assurance Provider to follow complaint resolution process regarding actions of the Provider or their Raters;

910.2.1.2.4 Failure by a Rating Quality Assurance Provider to follow a Provider's Rater/RFI Disciplinary procedures.

910.2.1.2.5 Misrepresentation of any accreditation or certification status in marketing materials, or services offered or actually provided, for which the Provider organization does not possess the appropriate RESNET accreditation or affiliated individuals do not possess the appropriate RESNET certification;

910.2.1.2.6 A Rating Quality Assurance Provider knowingly registering fraudulent ratings to the National RESNET Registry;

910.2.1.2.7 Willful misconduct;

910.2.1.2.8 A Provider shall at a minimum be placed on Disciplinary Probation if they have been placed on Administrative Probation twice within twelve months.

910.2.1.2.9 Rating Quality Assurance Providers placed on Disciplinary Compliance Probation by RESNET will be subject to a fine set by the RESNET Board of Directors.

### 910.3 Suspension

910.3.1 At the discretion of RESNET, any Provider accredited by RESNET may have their accreditation suspended in any of the following circumstances but are not limited to:

910.3.1.1 A Provider has had more than one (1) Disciplinary Probation violation within a twelve-month period;

910.3.1.2 Failure to correct the terms of a Disciplinary Probation during the time period defined in the notice of probation;

910.3.1.3 Submission of false information to RESNET in accordance with obtaining or maintaining accreditation;

910.3.1.4 Misrepresentation of any accreditation or certification status in marketing materials, or services offered or actually provided, for which the Provider organization does not possess the appropriate RESNET accreditation or affiliated individuals do not possess the appropriate RESNET certification;

910.3.1.5 A Rating Quality Assurance Provider knowingly registering fraudulent ratings to the National RESNET Registry;

910.3.1.6 Willful misconduct;

910.3.1.7 A Provider shall at a minimum be placed on suspension if they have any Disciplinary Probation violations within twelve months of reinstatement from a suspension.

910.3.2 RESNET shall notify the Provider that their accreditation has been suspended and, unless the Provider chooses to appeal, the Provider shall be removed from the RESNET Provider Directory.

910.3.3 RESNET shall post Providers whose accreditation has been suspended. The Provider's suspension listing shall be removed when the Provider successfully complies with the terms of the suspension.

910.3.4 RESNET shall electronically inform accredited QA Providers, Rating Software Providers, Rater Instructors/Assessors and Home Energy Raters of a QA Provider's accreditation suspension.

910.3.4.1 Prior to reinstatement, the Provider shall:

910.3.4.1.1 Successfully resolve the issue(s) that resulted in the Provider being suspended;

910.3.4.1.2 Inform RESNET in writing as follows:

910.3.4.1.2.1 That issue(s) that resulted in the Provider being suspended have been successfully resolved;

910.3.4.1.2.2 Stating the steps taken to resolve the issue(s);

910.3.4.1.2.3 Stating the steps that will be taken to prevent the issue(s) from occurring again in the future; and

910.3.4.1.2.4 Requesting that RESNET reinstate the Provider's listing on the Directory.

## 910.4 Revocation

910.4.1 At the discretion of RESNET, any Provider accredited by RESNET may have their accreditation revoked in any of but not limited to the following circumstances:

910.4.1.1 A Provider has had more than two (2) Disciplinary Probation violations within a twelve month period;

910.4.1.2 In the event that deficiencies stipulated in a notice of suspension have not been remedied within the period set forth in such notice;

910.4.1.3 Pursuant to any of the express provisions of Section 103.3.5 non renewal;

910.4.1.4 Provider goes out of business;

910.4.1.5 Upon expiration of a Provider's right to appeal a suspension of accreditation pursuant to Section 912 of this chapter;

910.4.1.6 Fraud.

910.4.1.7 A Principle of the organization has been convicted of or has admitted to a felony or is listed on any state or federal sex offenders list, when deemed by RESNET to impact performance or industry reputation.

910.4.2 RESNET shall notify the Provider that their accreditation has been revoked and, unless the Provider chooses to appeal, the Provider shall be removed from the RESNET Provider Directory.

910.4.3 RESNET shall post Providers whose accreditation has been revoked. The Providers revocation listing shall be removed when the Provider successfully complies with the terms of the revocation.

910.4.4 RESNET shall electronically inform accredited QA Providers, Rating Software Providers, Rater Instructors/Assessors and HERS Raters of a QA Provider's accreditation revocation within 30 business days after a decision by the committee.

## 910.5 Probation/Suspension/Revocation Due Process

RESNET shall comply with the following due process procedures in considering any probation, suspension or revocation actions against an accredited Provider.

910.5.1 RESNET may, at its discretion, initiate a probation, suspension or revocation action against an accredited Provider by providing the Provider written notice of the action. Such notice shall inform the subject Provider of the entire basis and justification for the action.

910.5.2 Providers have the right to appeal a probation, suspension or revocation action in accordance with [Section 911](#) of this chapter.

910.5.3 Upon the expiration of the notice to appeal period, failure to submit appeal documentation, as stipulated in [Section 911](#), or the conclusion of the appeals process in which a Provider's appeals are unsuccessful. RESNET will remove the Provider's name and any directory listing from the RESNET website and post their probation, suspension or revocation status on the RESNET website with other Providers and Raters who are under probation, suspension or revocation, and will, at a minimum, inform the EEP of their suspended/revoked status.

## 911 Appeals

### 911.1 Procedures

911.1.1 Appeals shall be made first to the RESNET Ethics and Appeals Committee, then to the RESNET Ethics and Appeals Panel.

911.1.2 Within five (5) business days after receipt of an appealable action by RESNET, the Appellant shall notify the RESNET Executive Director of their intent to appeal. The Appellant shall then have ten (10) business days after the date of notice to submit appeal documentation to the RESNET Executive Director.

911.1.3 Appeals shall include all relevant information and documentation and be sent in writing by electronic mail to the RESNET Executive Director.

911.1.4 During the appeals process, all parties to the appeal may petition the RESNET Ethics and Appeals Committee for a stay of action upon expiration of the appeals process. A decision on the petition shall be rendered by the hearing body not later than ten (10) business days after receipt of the petition. In the event that additional information is requested, an extension of ten (10) business days may be applied in order to allow the appellant sufficient time to respond.

911.1.5 Within twenty (20) business days of receiving the appeal, the Ethics and Appeals Committee shall render a decision on the appeal. In the event that additional information is requested, a one-time extension of ten (10) business days may be applied in order to allow the appellant sufficient time to respond.

911.1.6 Within five (5) business days after receipt of the decision of the RESNET Ethics and Appeals Committee, the Appellant shall notify the RESNET Executive Director of their intent to appeal the decision of the RESNET Ethics and Appeals Committee to an independent hearing by a RESNET Ethics Appeal Panel. The Appellant shall then have ten (10) business days after the date of notice to submit appeal documentation to the RESNET Executive Director.

911.1.6.1 A hearing shall be scheduled at a time convenient to all participants within a thirty (30) day period. At least a ten (10) business days' notice shall be provided.

911.1.6.2 The Ethics Appeal Panel shall comprise three (3) voting members and one alternate who have not been directly involved in the dispute and who will not be materially or directly affected by the result of the decision made in the appeal.

911.1.6.3 At least two (2) persons shall be selected by the Appellant and at least two (2) persons shall be selected by RESNET as represented by the RESNET Executive Director, the RESNET Standards Manager and a member of the RESNET Board of Directors who will not be materially or directly affected by the result of the decision made in the appeal.

911.1.6.4 In cases where the Appellant does not wish to appoint any persons to the Ethics Appeal Panel, RESNET as represented by the RESNET Executive Director, the RESNET Standards Manager and a member of the RESNET Board of Directors shall appoint the members of the Ethics Appeal Panel.

911.1.6.5 All decisions of the Ethics Appeal Panel shall be determined by a two thirds (2/3) majority. The Appellant shall have the burden of proof to demonstrate the fault of the RESNET Ethics and Appeals Committee decision. RESNET shall have the burden of proof to demonstrate that all actions taken were in compliance with the due process procedures of this standard.

911.1.7 Within thirty (30) business days of the date of a hearing, the RESNET Ethics Appeal Panel shall render a written decision on the appeal. In the event that additional information is requested, a one-time extension of ten (10) business days may be applied in order to allow the Appellant sufficient time to respond.

911.1.8 All parties to the appeal shall be informed by electronic mail of the decision.

911.1.9 All appeals documentation received by RESNET shall be handled in strict confidence by RESNET staff, the Ethics and Appeals Committee and the Board of Directors.



## **Chapter 10- RESNET STANDARD FOR ENERGY SMART PROJECTS AND ENERGY SMART CONTRACTORS**

### **1001 General Provisions**

#### **1001.1 Purpose**

This standard defines a framework for designating contractors as RESNET Energy Smart Contractors, defines an Energy Smart Project, and establishes requirements for the final verification and quality assurance review of an Energy Smart Project.

#### **1001.2 Scope**

This document details:

Requirements for Contractor Education and Qualification Providers;

The process by which a contractor shall receive and maintain designation as a RESNET Energy Smart Contractor;

The process by which RESNET Energy Smart Contractors working in partnership with a certified RESNET Home Energy Rating System (HERS) Rater must complete an Energy Smart Project;

The requirements of an Energy Smart Project.

##### **1001.2.1 Relationship to State Law**

There may be instances in which state laws or regulations differ from these provisions. In such instances, state law or regulation shall take precedence over these provisions.

#### **1001.3 Definitions and Acronyms**

See [Appendix B- Glossary of Terms](#).

### **1002 Participants Roles and Responsibilities**

#### **1002.1 RESNET**

Residential Energy Services Network (RESNET) is responsible for the following:

##### **1002.1.1 Accreditation of Contractor Education and Qualification (CEQ) Providers**

##### **1002.1.2 Quality Assurance Review of Accredited CEQ Providers**



### 1002.1.3 Quality Assurance Review of Accredited Quality Assurance Providers

1002.1.4 Develop a National Energy Smart Contractors test. The competency categories covered on the 50 question multiple-choice test and the percentage of questions devoted to each category are as follows:

- Air sealing (10%)
- Client communication (6%)
- Combustion safety (6%)
- Ducts/distribution (10%)
- Energy fundamentals (10%)
- Ethics (6%)
- Health/safety (6%)
- Insulation (10%)
- Lighting/appliances (4%)
- Moisture management (10%)
- Structure (6%)
- Ventilation (6%)
- Heating/AC (10%)

### 1002.2 Contractor Education and Qualification (CEQ) Provider

1002.2.1 The CEQ Provider must be an accredited RESNET Rating Provider or Home Energy Audit Provider in good standing.

1002.2.2 The CEQ Provider must have a staff member or representative with at least 10 years of residential construction or home improvement contractor experience.

1002.2.3 The CEQ Provider must provide its Energy Smart Contractor Registry to RESNET.

1002.2.4 The CEQ Provider is responsible for the Quality Assurance review of the Energy Smart Contractors.

1002.2.5 The CEQ Provider must have written policies and procedure for designating Energy Smart contractors in accordance with the following provisions:

1002.2.5.1 Energy Smart Contractor course: Develop and provide an initial eight (8) hour RESNET Accredited Qualified Energy Smart Contractor course that covers the following topics:

1002.2.5.2 The importance of Energy Smart Contractors

1002.2.5.3 The house as a system

1002.2.5.4 Building science basics/ building shell fundamentals

1002.2.5.5 Energy efficiency concepts

1002.2.5.6 Energy related consequences of inefficient construction design and application

1002.2.5.7 Introduction on how a Rater/Auditor utilizes air leakage testing, duct leakage testing, and IR technology during energy audits

1002.2.5.8 Understanding and completing scopes of work as defined in the RESNET combustion appliance testing and writing work scope contained in [Chapter 8](#) of RESNET Standards

1002.2.5.9 Work order, sequences and priority of work, and respect for other contractors

1002.2.5.10 Introduction to RESNET Standards and RESNET Code of Ethics

1002.2.5.11 Quality Homes (QH) Standard

#### 1002.2.6 Continuing Education

Provide at least four (4) hours of Continuing Education (CE) courses per year that are relevant to energy efficiency, home improvement contracting, standards updates, technology updates, new incentive programs, retrofit lessons learned and/or other topics deemed applicable and appropriate by the CEQ Provider.

1002.2.7 De-listing: De-list an Energy Smart Contractor that does not renew every three (3) years.

1002.2.8 Energy Smart Contractor Agreement: Enter into a written agreement with each Energy Smart Contractor, and send an un-executed copy of the agreement to RESNET. The agreement shall contain, at a minimum, the following:

1002.2.8.1 A written commitment by the Energy Smart Contractor to comply with the guidelines in the RESNET Energy Smart Contractor Pledge and Code of Ethics;

1002.2.8.2 A requirement for the Energy Smart Contractor to inform clients about the CEQ Provider's complaint process;

1002.2.8.3 A requirement for the Energy Smart Contractor to provide the client with a disclosure statement for jobs not performed to industry standards;

1002.2.8.4 A requirement for the Energy Smart Contractor to inform the CEQ Provider within 60 days if Energy Smart Contractor's representative leaves the company or is replaced.

1002.2.8.4.1 Complaint Resolution Officer: Have signed agreement with a dedicated Complaint Resolution Officer (CRO) to conduct Non-Compliance Resolution in accordance with Section 1006.5.4. The CEQ Provider shall have sixty (60) days to notify RESNET if the CRO leaves the CEQ

Provider, or be subject to suspension of accreditation under provisions of Section 908 of the Mortgage Industry National Home Energy Ratings Standard.

1002.2.8.4.2 Written Energy Smart Contractor discipline procedures, including:

1002.2.8.4.2.1 Probation and minimum requirements for duration and corrective action;

1002.2.8.4.2.2 Suspension of certification and minimum requirements for duration and corrective action that at least meet 1006.4.5 Termination of certification

1002.2.9 Energy Smart Contractor Registry: Maintain an Energy Smart Contractor Registry that contains Energy Smart Contractors' representative's name, company name, mailing address, voice phone number, fax number, and email address.

1002.2.10 Reciprocity with the Air Conditioning Contractors of America (ACCA): RESNET shall recognize contractors trained and designated by ACCA to be Energy Smart Contractors.

### 1002.3 Complaint Resolution Officer (CRO)

1002.3.1 Shall manage and resolve consumer and Rater/Auditor complaints about Energy Smart Contractors and Energy Smart Contractor or Rater/Auditor complaints about the CEQ Provider.

1002.3.2 Shall submit complaints against the CEQ Provider to RESNET to the attention of the Executive Director.

### 1002.4 Energy Smart Contractor

1002.4.1 Energy Smart Contractors must be designated as such by a CEQ Provider in accordance with Section 1004.2.5 of this standard<sup>1</sup>.

1002.4.2 Energy Smart Contractors must be licensed in the state(s) in which they conduct business if that state requires a license.

1002.4.3 An Energy Smart Contractor company shall assign an employee as its representative. The Energy Smart Contractor's representative shall:

1002.4.3.1 Take an initial accredited eight (8) hour Qualified Contractor Course from a RESNET accredited CEQ Provider;

1002.4.3.2 Pass the RESNET National Energy Smart Contractors test administered by a CEQ Provider;

1002.4.3.3 Enter into a written agreement with the CEQ Provider in which the Energy Smart Contractor agrees to comply with the program requirements contained in the RESNET Standards and RESNET Code of Ethics;

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1. Energy Smart Contractors providing HVAC services must be recognized ACCA QA Program Participants within 90 days of the adoption of this standard.

1002.4.3.4 Complete a minimum of four hours of Continuing Education annually delivered by the CEQ Provider;

1002.4.3.5 Renew with the CEQ Provider not less than every three years. Failure to do so will result in the Energy Smart Contractor being deleted from the CEQ's Registry and from the RESNET Directory;

1002.4.3.6 Within 60 days of losing their previous representative, the Energy Smart Contractor must notify the CEQ Provider of their new representative.

1002.4.4 Only companies with the Energy Smart Contractor designation from an accredited CEQ Provider are eligible for posting and promotion on the RESNET Directory.

1002.4.5 A company with the Energy Smart Contractor designation must carry a minimum of \$1,000,000 in general liability insurance.

1002.4.6 Energy Smart Contractors will install the energy-saving measures from the final, homeowner approved work scope prepared by the Rater/Auditor.

1002.4.7 All Energy Smart Contractors shall have their clients signify that they understand a disclosure statement indicating that all work will or will not meet recognized industry standards.

1002.4.8 All Energy Smart Contractors shall have their clients signify on a disclosure statement that a whole-house audit is recommended.

## 1002.5 Energy Smart Home Performance Team (Energy Smart Team)

An Energy Smart Team is comprised of the following, as necessary:

1002.5.1 One Project Manager;

1002.5.2 A certified CHERS Rater/BPA;

1002.5.3 An HVAC contractor who is a recognized ACCA QA Program Participant<sup>1</sup>;

1002.5.4 A RESNET Energy Smart Contractor that specializes in Air Sealing and Insulation who employs at least one senior technician who is an ICAA Certified Insulation Installer or another RESNET recognized quality installation training program;

1002.5.5 Any number of other Energy Smart contractor companies working under the oversight of the Project Manager according to work scope requirements of a certified Rater and applicable RESNET Standards of Practice.

1002.5.6 A Final Verifier who is a 3rd party certified HERS Rater who has passed both the CAZ written and simulation exams.

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1. Energy Smart Contractors providing HVAC services must be recognized ACCA QA Program Participants within 90 days of the adoption of this standard.

## 1002.6 Energy Smart Project Manager

The ES Team will be led by an Energy Smart Project Manager. The following are the requirements for being the Project Manager:

1002.6.1 Shall be certified as either an Energy Smart Contractor or a Rater who has passed both the CAZ written and simulation exams.

1002.6.2 The Energy Smart Project Manager, if not the Rater, shall use a certified RESNET Rater for the diagnosis and preparation of energy retrofit recommendation.

1002.6.3 Is an employee of or contractor to the company with whom the homeowner is under contract for the completion of the Energy Smart Project.

1002.6.4 Must ensure that the initial rating or audit is performed on each Project in accordance with the QH Standard.

1002.6.5 Must ensure that preliminary and post-installation combustion safety testing and inspection of all combustion appliances are completed in accordance with the QH Standard.

1002.6.6 Must provide general oversight of all contractors performing work on the Energy Smart Project to ensure proper sequence and compliance with the work scope prepared by the Rater/Auditor, along with ensuring that industry best practices are followed for all work performed.

1002.6.7 Must deliver the initial rating or audit report along with documentation of all work performed to the Final Verifier.

1002.6.8 Must verify that each project has final verification and calculation of estimated projected energy savings conducted by a Final Verifier.

1002.6.9 Must provide all results and Energy Smart Project documentation to the client.

1002.6.10 Must maintain the initial rating or audit report, documentation of all energy-saving retrofits and installations, and the final verification report with all test-out and estimated energy savings results for each individual Energy Smart Project for a period of no less than three years. This documentation must be made available to the HEA, Rating, or CEQ Provider upon request.

1002.6.11 Ensure that all Energy Smart Team participants are eligible to serve on the team.

1002.6.11.1 Eligible HVAC contractors must be listed on the ACCA QA Contractor Registry.

1002.6.11.2 Energy Smart Contractors must be listed on the RESNET Registry.

## 1002.7 Rating QA Provider

1002.7.1 The Rating QA Provider will be responsible for performing Quality Assurance (QA) Review of the Rater Final Verification of an Energy Smart Project in accordance with [Chapter 9](#) of these Standards.

1002.7.2 The Rating QA Provider must be RESNET-accredited and in good standing in accordance with RESNET Standards.

1002.7.3 The Rating QA Provider must be independent of the following:

1002.7.3.1 HERS Rater that evaluated the home and prepared the recommendations and work scope;

1002.7.3.2 The Energy Smart Contractors that installed the approved recommended measures.

1002.7.3.3 The independent Rater/Auditor that performed the Final Verification of the Energy Smart Project (the Final Verifier).

1002.7.3.4 Any financial compensation for any of the retrofits performed on the project.

## 1002.8 HERS Rater

The HERS Rater is responsible for following the QH Standard procedures to complete the following:

1002.8.1 Conducting the initial, comprehensive evaluation of a home.

1002.8.2 Presenting prioritized energy saving measures recommendations to the homeowner.

1002.8.3 Developing a work scope to be approved by the homeowner.

## 1002.9 Final Verifier

1002.9.1 The Final Verifier must be an independent certified RESNET HERS Rater 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.

1002.9.2 The Final Verifier is responsible for the following:

1002.9.2.1 Must perform applicable combustion appliance testing.

1002.9.2.2 Where there are vented combustion appliances that use indoor air to vent combustion gases, test Worst Case Depressurization in accordance with the QH Standard.

1002.9.2.3 Where any space contains combustion appliances, test for Carbon Monoxide in accordance with the QH Standard.

1002.9.3 Verification of installed measures. The Final Verifier will review the work scope and signed proposal, and confirm that the installed measures are consistent with selected measures and work scope in accordance with the QH Standard.

1002.9.4 Calculation of estimated project energy savings using a RESNET-approved software.

1002.9.5 Must report any non-conformance of an Energy Smart Project with respect to combustion safety testing, installed measures, or estimate of projected energy savings to the Energy Smart Contractors' CEQ Provider's Complaint Resolution Officer (CRO) and the Rating Provider's Quality Assurance (QA) Designee.

1002.9.6 Must report non-conformance of HVAC QA Contractors to the QI Standard to ACCA.

1002.9.7 Must maintain Final Verification records, for a period of no less than three years, for every Energy Smart Project for which final verification was performed. These records include:

1002.9.7.1 Copy of the work scope and signed proposal,

1002.9.7.2 Name and contact information for the Rater/Auditor and Energy Smart Contractors,

1002.9.7.3 Completed final verification checklist,

1002.9.7.4 Energy simulation software file, and

1002.9.7.5 All test-out results.

## 1003 Energy Smart Projects

### 1003.1 Energy Smart Project

An Energy Smart Project shall employ an Energy Smart Team and comply with the following:

1003.1.1 Follows accepted industry standards and OEM instructions.

1003.1.2 Includes disclosure statements for work performed that does not meet recognized industry standards.

1003.1.3 Verified and validated by a Final Verifier.

1003.1.4 Consists of work performed by either an Energy Smart Contractor or, for work done on HVAC systems or components, the contractor must be a participant in the ACCA QA Recognition Program.

1003.1.5 Is comprised of two or more trades.

1003.1.6 Has an Energy Smart Project Manager that complies with Section 1004.6.

### 1003.2 Energy Smart Home

A home designated as an Energy Smart Home shall be recognized by RESNET if:

1003.2.1 The project is in compliance with [Section 1003.1](#) except for the following:

1003.2.1.1 Must undergo an initial rating or audit that is performed in accordance with QH Standard.

1003.2.1.2 The homeowner is provided an estimate of percentage energy savings and a reduction in estimated energy usage of not less than 30% based upon actual installed measures.

1003.2.2 A Final Verifier conducts an independent verification of the project and a calculation of estimated energy savings.

## 1004 Quality Assurance Oversight

1004.1 The CEQ Provider shall be responsible for providing quality assurance of Energy Smart Contractors and Teams in accordance with the requirements set forth in [Chapter 9](#).



## **Appendix A**

MINHERS Appendix A- On-Site Inspection Procedures for Minimum Rated Features was superseded by Standard ANSI/RESNET/ICC 301-2014 [Addendum N, Appendix B Inspection Procedures for Minimum Rated Features](#) and [Addendum F, Appendix A Inspection Procedures for Insulation Grading and Assessment](#) on July 1, 2019



## 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 Raters.

#### *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 Raters certified by Accredited Rating Quality Assurance Providers. Only RESNET Accredited Rater Training Providers may offer rater 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 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 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 Rater*

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.

### *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<sup>®</sup> 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 to 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 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 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 Rater/Auditor. An Energy Smart project shall include Final Verification of the project post-improvement by an Independent 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 Rater/Auditor, and who is responsible for the duties of Project Manager. The Energy Smart Project Manager could be the 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 Rater/Auditor who can collectively prescribe, complete and verify an Energy Smart Home Project.

*EPAct*

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 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, or 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 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<sup>®</sup>*

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 Rater/Auditor who performs Final Verification of an Energy Smart Project in accordance with these sections and is certified by a RESNET-accredited Rating Provider in accordance with RESNET Standards. Independent Rater/Auditors shall be independent of the Auditor/Rater or Contractors(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*

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 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 Raters and Accredited Home Energy Rating 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 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. Raters and/or Rating Field Inspectors) 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 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 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 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 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.

*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 Field Inspector under the direct supervision of a certified home energy 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 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 Raters 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 certified 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  $\text{h}\cdot\text{ft}^2\cdot\text{F}/\text{Btu}$ .

*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® 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® 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 Raters.

### *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.





## Appendix C (Informative) (Informative)

General Guidelines for Determining Energy Conservation Measure (ECM) Service Lifetimes and Maintenance Fractions

Improvement Category	ECM Life	Maint. Frac.
Air Sealing, Ducts	20	0
Air Sealing, Envelope	30	0
Attic, Ventilation	30	0
Attic, Radiant Barrier	30	0
Color, Roof Shingles	15	0
Color, Wall Paint	10	0
HVAC, Replacement	15	0
Furnace, Replacement	20	0
Hot Water, Heat Pump	15	0.009
Hot Water, Heat Recovery	15	0
Hot Water, Pipe Insulation	15	0
Hot Water, Tank Wrap	12	0
Hot Water, Solar, Direct	40	0.011
Hot Water, Solar, ICS	40	0.004
Hot Water, Solar, Indirect	40	0.011
Hot Water, Standard System	12	0
Hot Water, Tankless, Gas	12	0.024
Insulation, Block Wall	40	0
Insulation, Ceiling	40	0
Insulation, Frame Wall	40	0
Lighting, High Efficiency	5	0
Pool Pump, High Efficiency	15	0

Refrigerator, Replacement	15	0
Showers, Low Flow	15	0
Window, Replacement	40	0
Window, Film Tinting	15	0
Window, Solar Screen	15	0