

Program Implementation Guidelines for HERS® Ratings for Manufactured Homes

1.0 Purpose

The purpose of these guidelines is to establish the requirements for conducting HERS Ratings on manufactured homes.

2.0 Scope

This document establishes the procedures by which RESNET® will implement HERS Ratings on manufactured homes for Providers, certified professionals, and software vendors. These guidelines are limited to manufactured homes as regulated by the U.S. Department of Housing and Urban Development (HUD).

3.0 Definitions

Manufactured Home— Any dwelling unit built in accordance with the federal Manufactured Home Construction and Safety Standard (24 CFR 3280)

Manufactured Home QA Provider—A RESNET Accredited Rating Quality Assurance Provider, approved by RESNET to provide quality assurance oversight of HERS Ratings on manufactured homes.

4.0 Rating Quality Assurance Provider Responsibilities

All RESNET accredited Rating Quality Assurance Providers are eligible to become a Manufactured Home QA Provider after completing the appropriate form and submitting it to RESNET for approval. The following are the requirements of Manufactured Home QA Providers:

1. Ensure all Quality Assurance Designees, HERS Raters, HERS Modelers and Rating Field Inspectors (RFI) performing services for manufactured homes have competency in manufactured housing design, construction, and installation methods, including quality control procedures.
2. Ensure the manufacturer's third-party inspector has the RESNET RFI or HERS Rater Certification.
3. Conduct a QA file review on 10% of ratings submitted by each rater annually.
4. Ensure all program homes are submitted to the RESNET National Registry
5. Verify that all HERS Raters, HERS Modelers and RFIs are performing the responsibilities as outlined in Section 5.0.

5.0 HERS Rater, HERS Modeler and Rating Field Inspector Program Requirements

All certified RESNET HERS Raters, HERS Modelers and Rating Field Inspectors are eligible to participate in HERS Ratings for manufactured homes. Each of these certified professionals shall meet the following requirements:

1. Be employed by or contract with a Manufactured Home QA Provider.
2. Complete a manufactured home training approved by RESNET or submit documentation to your Rating Provider, of knowledge, skills and abilities related to the construction of manufactured homes.

5.1 HERS Rater Responsibilities

A certified RESNET HERS Rater shall be responsible for the following program requirements:

1. Certify that manufactured housing facilities have adopted practices and policies that conform to the program requirements.
2. Review the plant's program-related documentation including home designs, DAPIA documentation, Quality Control Manual, and the Manufacturer's Installation Manual to ensure they incorporate program requirements.
3. For any home that will be receiving a HERS Rating, use a RESNET-accredited HERS software to model the plan and specifications for each climate zone where the home is expected to be shipped. Report the projected HERS scores and any modeling assumptions or defaults used to the manufacturer. (A HERS Modeler may also fulfill these responsibilities)
4. Adhere to the Energy Modeling guidance provided in Section 7.1 of these Guidelines.
5. Oversee HERS Modelers and Rating Field Inspectors.
6. HERS Raters may provide modeling in accordance with Section 5.2 and testing and inspections in accordance with Section 5.3.
7. Report to the QA Provider any program deviations and failures that are systemic and/or represent significant quality and compliance issues.
8. Visit the manufacturing plant at least twice per calendar year to verify on-going compliance with program requirements and procedures. One plant visit may be conducted virtually. These periodic in-plant visits entail reviewing with plant staff any changes to program technical requirements or compliance verification procedures; reviewing any changes needed to plant documentation, including DAPIA-approved plans, QC manuals/travelers, and Manufacturer's Installation Manual.
9. Serve as the primary contact and resource of first resort for plants regarding issues and questions about the program.

5.2 HERS Modeler Responsibilities

Certified RESNET HERS Modelers may be used to complete energy models for manufactured homes. HERS Modelers should have competency in manufactured housing energy efficiency standards, design and construction.

Certified RESNET HERS Modeler requirements:

1. For any home that will be receiving a HERS Rating, use a RESNET-accredited HERS software to model the plan and specifications for each climate zone where the home is expected to be shipped. Report the projected HERS scores and any modeling assumptions or defaults used to the manufacturer.
2. Adhere to the Energy Modeling guidance provided in Section 7.1 of these Guidelines.

5.3 Rating Field Inspector Responsibilities

Certified RESNET Rating Field Inspectors (RFI) may be used for in-plant and on-site (post-installation) inspections. The In-Plant Inspection Agency (IPIA) inspector may be certified as an RFI to fulfill in-plant inspections. RFIs shall be responsible for the following program requirements:

In-Plant Inspections:

1. Verification that as-modeled components match the installed component specifications.
2. Communicating non-compliance with appropriate plant staff and the HERS Rater.

On-Site (post-installation) Inspections:

- RFIs shall conduct field inspections in accordance with Section 8.0.

6.0 Manufacturer Responsibilities

Manufactured home producers shall meet the following requirements to participate in this program:

1. Be certified by U.S. Department of Housing and Urban Development (HUD) to produce homes conforming to the HUD standards.
2. Contract with a Rating Company to perform HERS Ratings in accordance with these guidelines. A Rating Company shall have at least one certified RESNET HERS Rater on staff.

3. Ensure a certified RESNET HERS Rater reviews each manufacturing facility's home designs, DAPIA documentation, Quality Control Manual, and the Manufacturer's Installation Manual.
4. Incorporate these program requirements into the Design Approval Primary Inspection Agency's (DAPIA)-approved packages, the plant Quality Control Manual, and the Manufacturer's Installation Manual.
5. Ensure the IPIA's in-plant inspector is certified as a RESNET RFI or HERS Rater.
6. Provide the HERS Rater or designated Rating Company representative with the home address (when known) and the manufactured home serial number.
7. Notify your HERS Rater of any changes to design specifications that could affect the energy model (i.e. major equipment and envelope configurations).
8. Assign staff to oversee the design, reporting, quality checking, and delivery of HERS Rated homes.
9. Incorporate RESNET HERS Rating technical requirements and associated building process changes into standard practice and modify construction documents as needed.
10. Collaborate with your HERS Rater and their Manufactured Home QA Provider for annual quality assurance reviews.
11. Ensure QC staff are familiar with these program requirements.
12. Where facility staff are conducting the duct leakage testing, staff shall document the test results and relay this information to the HERS Rater or HERS Modeler.
13. Work with your Rating Company to facilitate inspections and testing in accordance with Sections 7.2 and 8.0.

7.0 Program Requirements

Manufactured homes receiving a HERS Rating shall comply with the energy modeling requirements in Section 7.1 and the field inspection requirements in Section 7.2.

7.1 Energy Modeling. HERS Raters and HERS Modelers shall comply with the following requirements when completing an energy model for a manufactured home:

1. "Manufactured Home" shall be selected as the home type in software and the number of sections shall be indicated as "single" or "multi-section"
2. Where the final home orientation is not known, a worst-case orientation shall be used. The energy model may be updated when the final orientation is known but this is not required.
3. Where the final home heating system on all-electric homes is not known, the modeler shall model the home with both types of heating equipment (heat pump and standard electric furnace). Where the final heating system efficiency is not

known for a gas heating system, the home shall be modeled with the NAECA minimum efficiency (“worst-case”) and a high-efficient option.

- The Home Energy Rating Certificate produced by RESNET-accredited software shall display the HERS Index score and associated energy consumption for both configurations.
 - The HERS Rating submitted to the RESNET Registry shall use the worst-case heating system.
4. If the state where the home will be placed is unknown, the location of the manufacturing facility or the retail lot where the home will be shipped, shall be used. The energy model may be updated when the final location is known, but this is not required.
 5. Assumptions for envelope leakage shall be based on manufacturer documentation, testing or the Energy Rating Reference Home specifications for air exchange rate in ANSI/RESNET/ICC 301.
 6. Where the home address is known, it shall be included in the modeling file along with the home’s serial number.
 7. Where the home address is not known, the modeling file shall include the home’s serial number, prior to submission to the RESNET Registry.
 8. Software should indicate what HUD Thermal Zone the home is being built for. Optionally, software could provide a cross-check against the HUD code *U*-values for a given thermal zone.

7.2 Inspections, Testing and Labeling Requirements Applicable to All HERS Rated Manufactured Homes

HERS Raters, RFIs and manufacturer employees or agents shall comply with the field inspection and testing requirements in Sections 7.2.1 through 7.2.3, as applicable.

7.2.1 Duct Testing. Each duct run shall be tested in the factory by trained plant personnel, a HERS Rater or RFI.

7.2.1.1 Crossover ducts for multi-section homes. For multi-section homes only, crossover ducts must be installed such that all seams and joints are tightly sealed against leakage, and the ducts do not rest on the ground. The Manufacturer’s Installation Manual shall reflect this requirement. Crossover ducts shall be inspected after installation by the retailer or installer, their representative or a HERS Rater or RFI. The full duct system is not required to be tested after installation of the home on-site unless the home is part of the sampled field inspection in Section 8.0.

7.2.2 Marriage walls. For multi-section homes only, the marriage line areas must be filled with a continuous, non-porous insulating gasket creating a permanent air barrier in the ceiling, walls, and floor. Acceptable gaskets can be one- or two-part systems, including proprietary gaskets, foams, insulation wrapped in poly and insulation covered by butyl or other long-life tape on one side. There should be no visible gaps or tears. The marriage line seal shall be installed at the plant and be protected against damage during shipping.

7.2.3 Labeling HERS Rated Manufactured Homes. A HERS label shall be affixed on or near the electrical panel or inside a kitchen cabinet. At a minimum, the certificate or label shall include:

1. Home serial number
2. RESNET Registry ID
3. HERS Index Score
4. HUD Thermal Zone
5. Rating Provider
6. Rating Company

8.0 Sampled Field Inspections

8.1 Inspection sample: Annually, a minimum of two percent (2%) of HERS Rated manufactured homes, produced by each plant, shall be visually inspected in the field by a certified HERS Rater or Rating Field Inspector. The Manufactured Home QA Provider shall determine the number of required field inspections based on the number and type of HERS Rated manufactured homes submitted to the RESNET Registry. Field inspections should be conducted and tracked on a quarterly basis.

Exception: Single-section HERS Rated manufactured homes may be inspected and tested in the plant or on the retail lot, after completion, to meet the two-percent field inspection requirements.

8.1.1 Gaining access to homes: The plant or retailer shall work with a HERS Rater or Rating Field Inspector to arrange access to the home to complete the inspection. It is preferable but it is not required that access to the home be provided prior to occupancy and completion of the final inspection.

8.2 Identifying and selecting homes for the sample: The Manufactured Home QA Provider shall make every effort to select homes representative of the type of HERS Rated homes the plant has built. Homes selected for inspection should represent as wide a cross-section as possible of the following:

1. Production dates

2. Retailers, installers, mechanical equipment (HVAC) contractors and trim-out crews
3. Geographical regions and HUD thermal zones

8.2.1 Plants producing single- and multi-section homes: Where a plant produces both single and multi-section homes, the homes in the sample should be proportionate to the percentage of each home type produced. For example, if a plant produced 100 double-section homes and 50 single-section homes, the sample should include two double-section homes and one single-section home. The inspection sample only applies to homes receiving a HERS Rating.

8.3 Field inspection process: Once on site, the HERS Rater or Rating Field Inspector shall conduct a visual inspection and testing of the items listed below. Photo documentation shall be captured in accordance with ANSI/RESNET/ICC 301.

1. Verify the required label from Section 7.3 is affixed to the home.
2. Conduct a duct leakage test in accordance with ANSI/RESNET/ICC 380 and document the results. Verify the location of the air ducts.
3. Conduct an envelope leakage test in accordance with ANSI/RESNET/ICC 380 and document the results.
4. Where a ventilation system is installed, conduct ventilation system testing in accordance with ANSI/RESNET/ICC 380 and document the results. Verify the ventilation system meets the modeled specifications.
5. Verify that installed heating, cooling and water heating equipment matches the modeled specifications.
6. Verify that installed lighting and appliances match the modeled specifications.