



RESNET® Off-Site Construction Advisory Group

Recommendations for a Pilot Program

Approved by the RESNET Board on September 26, 2025

Background and Overview

Off-site residential construction is becoming an increasing trend in the home building industry. It is estimated that 25,000 (non-HUD code) homes were constructed off-site in 2023. This number will only grow as construction costs and labor challenges continue.

Currently due to the process of constructing off-site homes, there are challenges to have the homes rated through the current RESNET process. RESNET sees the expansion of HERS® Ratings of off-site construction as an important element in meeting the goal of a million ratings a year by the end of 2028.

To meet this challenge RESNET has appointed an Off-Site Construction Advisory Group. Steve Byers of EnergyLogic was appointed as the chair of the group.

Members of the advisory group are:

- Steve Byers – EnergyLogic (Chair)
- Bruce Bennett - GDS Associates Inc
- Chris Isom - Vederra
- Luke Lehman - ICC NTA
- Tony Lisanti - Integral Building + Design, Inc.
- Ryan Meres - RESNET
- Shanti Pless - NREL

The advisory group began meeting in July 2024 and presented its initial recommendations to the RESNET Board in August 2024. After receiving feedback from the Board, the advisory group revised its recommendations and developed additional recommendations for factory and on-site inspections.

The next step is to propose a recommendation for a RESNET pilot program to test the protocols for factory inspections by RESNET-accredited Rating Providers.

Recommendations for a RESNET Pilot Program for Off-Site Construction

The Off-Site Construction Advisory Group is recommending a 12-month pilot program to test new protocols for factory inspections of HERS Rated homes. The full list of factory inspection options are included in Attachment A. The advisory group recommends the following as part of this pilot program:



- RESNET should create a simple process for Rating Providers to sign up to participate in the pilot, to include the following:
 - Registration of each builder and plant participating in the pilot
 - Indication of the inspection option(s) being used in each plant
 - Acceptance of the pilot program protocols
- RESNET Quality Assurance staff may visit plants as part of routine QA reviews
- RESNET should facilitate tracking of individual projects participating in the pilot program in the RESNET Registry
- Rating Providers shall be expected to follow the protocols and provide feedback to RESNET Staff and the advisory group throughout the pilot.
- RESNET staff should seek input from the ENERGY STAR and Zero Energy Ready Home programs on the off-site construction inspection and oversight protocols.
- Six months after the commencement of the pilot, RESNET staff and the advisory group should review all feedback and determine whether the inspection and oversight protocols should be revised.
- Upon completion of the pilot, the advisory group shall review all feedback and make a recommendation to the RESNET Board on necessary revisions to the protocols and whether to move forward with a change to RESNET standards.
- If no significant concerns are revealed through the pilot program, RESNET Rating Providers should be allowed to continue operating under the pilot protocols for off-site construction until any revisions to the RESNET standards are finalized.

The following guiding principles were used in the development of inspection protocols.

- Compliance with the intent of Standard 301 and RESNET HERS
- Verification must be by certified RESNET professionals (HERS Rater, RFI) via on-site inspections or remote/virtual protocols
- There should be comprehensive archiving of assessment/inspection data
- Pathways should be streamlined and compatible with off-site construction to not limit the applicability and the market for HERS and energy efficiency programs.
- Pathways should strive to attain a level playing field between off-site and on-site, neither advantaging nor disadvantaging either



ATTACHMENT A

Off-site/Modular Construction Inspection Options

Off-site or modular construction companies come in many shapes and sizes. They can be broadly categorized as any form of construction that takes place primarily in a plant (or factory) setting as opposed to traditional on-site construction. It is important to recognize that different plants have different operating models, they are not monolithic. Most plants build volumetric modules for specific projects and are able to adapt to different codes and program requirements.

We are specifically not addressing manufactured homes with steel floor systems that are transported with wheels (HUD homes for example).

Plant operators have an interest in reducing barriers to successful completion of HERS Ratings on the homes they produce. The nature of the plant setting creates an obstacle to HERS Raters or RFI's physically inspecting each unit. Obstacles include the distance of HERS Raters from factories, which are typically in more rural locations as well as the quick pace at which factories can produce modules.

These obstacles can make it cost-prohibitive for modular home builders to obtain HERS Ratings as well as other energy efficiency program certifications, based on RESNET's current standards. For this reason, it is necessary for RESNET to consider innovative solutions that acknowledge the uniqueness of off-site construction practices.

The inspection options, presented below, were developed by RESNET's Off-Site Construction Advisory Group as a way to streamline factory inspections while maintaining the intent of RESNET's standards and quality assurance oversight.

These pilot protocols are not intended to usurp HERS Raters and Rating Field Inspectors currently working with off-site construction facilities under existing RESNET standards for HERS Ratings, ENERGY STAR New Homes Program certification or the Zero Energy Ready Home Program certification.



A note about sampling: the RESNET HERS Standards currently in place for sampling of multifamily projects may be applied to off-site construction. The RESNET HERS Standards do not allow for sampling of single-family home types.

Inspection Options

Option 1 – Virtual/Remote Inspection of Factory Built Components

Description:

Many plants and factories are already operating with continuous or episodic video monitoring of workstations and have sophisticated digital management systems. Where that is true, it should be relatively easy for a HERS organization to perform inspections that are in essence the equivalent of being on-site full-time. Where that is not true, the plant operators would need to install such monitoring on the necessary workstations. It is important to note that, given the production line nature of these operations, the Rater or RFI will have to perform such inspections in a timely fashion. Just as with conventional construction, missed inspections that are subsequently covered up preventing visual verification will result in loss of certification.

Note: this option is not yet approved by the EPA or DOE for certification of ENERGY STAR or Zero Energy Ready Homes. For a home to qualify for certification under those programs, Option 2 or other in-person inspection options currently accepted under RESNET standards will need to be used.

Protocols for Virtual/Remote Inspections for Off-site Construction

Plant/Factory Requirements

1. Continuous or near continuous recording or photo documentation of work performed at all stations that impact the verification of Minimum Rated Features for HERS Ratings as defined in Appendix B of ANSI/RESNET/ICC 301-2022.
 - a. The intention of this option is for plant/factory staff to notify their certified HERS Rater or Rating Field inspector to view a module or panel remotely via video prior to proceeding with the completion of the module or panel. This is referred to as the “pre-drywall inspection.” Where the video equipment is not able to view all necessary inspection components, the certified HERS Rater or RFI shall request additional photo or video documentation. The HERS Rater or RFI shall guide plant staff in capturing the necessary photos or videos to determine compliance.
 - i. Photo documentation in the absence of any video recording or viewing option is not sufficient as a stand-alone means to determine compliance, but rather to supplement video documentation.



- b. Documentation that is sufficient for a certified RESNET HERS Rater or Rating Field Inspector to determine compliance shall be produced through video or photo documentation for the following components, in the factory, as applicable to each module:

- i. Floor Assembly
- ii. Wall Assembly
- iii. Roof/ceiling Assembly
- iv. Rim/band Joist or Floor Perimeters
- v. Doors
- vi. Windows
- vii. Skylights
- viii. Heating and Cooling Distribution System
- ix. Heating and Cooling Equipment
- x. Service Hot Water Equipment
- xi. Service Hot Water Distribution
- xii. Light Fixtures
- xiii. Refrigerators
- xiv. Dishwashers
- xv. Range/Oven
- xvi. Clothes Washer
- xvii. Clothes Dryer
- xviii. Ceiling Fans
- xix. Dwelling Unit Mechanical Ventilation System

Further details and inspection requirements for these items are in Appendix B of ANSI/RESNET/ICC 301-2022. Any Minimum Rated Features not available for inspection in the factory shall be verified during the final inspection.

3. Education by Certified HERS Rater in coordination with their Rating Provider on HERS requirements.

- a. Initial training. This training shall be conducted prior to commencement of inspection protocols under this option.
- b. Annual update training. This training shall cover any major updates to RESNET standards impacting factory inspections.
- c. Continuous update training on material changes to HERS and/or EEP requirements. This training shall cover any major updates to RESNET standards that take effect prior to the annual update training.



4. In-person Inspection by HERS Rater. At a minimum, one module or panel shall be inspected in-person by a HERS Rater and approved by the HERS Rating Provider, prior to commencing the inspection protocols under this option.

Requirements for Rating Providers

- Rating Providers must register with RESNET to participate in this pilot program. HERS Raters and Rating Field Inspectors should ensure their Rating Provider is registered to participate.
- Initial and annual inspection of plant video monitoring or photo documentation setup and operation by a certified HERS Rater.
- HERS Raters shall coordinate with their Rating Provider to ensure all quality assurance requirements are covered in their education and training curriculum.
- Perform quality assurance on all work done via virtual/remote inspections in alignment with RESNET standards for file and field reviews.
- Maintain records of all inspections performed and photo and/or video documentation in accordance with RESNET standards.
- Verify the plant's capabilities for video monitoring and documentation of required inspection components.
- Work with plant owners or leadership to update their procedures to ensure the required inspection items can be reviewed remotely by a HERS Rater or RFI.
- Ensure plant leadership is aware of the required inspection items.
- Train plant leadership and personnel on the remote/virtual inspection process or verify that the training has been completed by a certified HERS Rater.
- Ensure rating staff are properly equipped to review video monitoring and/or photo documentation.
- Ensure one in-person inspection has been completed prior to the plant commencing with protocols under this pilot program.

Option 2 –Third-Party Inspectors certified as RFI's

Description:

For many plants, there is an existing quality assurance structure in the form of a third-party inspector. These inspectors could be brought into the RESNET ecosystem as a Rating Field Inspector. Although this option could be implemented under current RESNET standards, it is being included here to explicitly call attention to this option for factory leadership.

Plant/Factory Requirements:

1. Ensure your current third-party inspection firm has a certified RESNET Rating Field Inspector (RFI).



2. Ensure an RFI is used to complete HERS Inspections.
3. A certified RESNET HERS Rater or Rating Field Inspector shall provide in-plant inspections to determine compliance with the following components, as applicable to each module:
 - I. Floor Assembly
 - II. Wall Assembly
 - III. Roof/ceiling Assembly
 - IV. Rim/band Joist or Floor Perimeters
 - V. Doors
 - VI. Windows
 - VII. Skylights
 - VIII. Heating and Cooling Distribution System
 - IX. Heating and Cooling Equipment
 - X. Service Hot Water Equipment
 - XI. Service Hot Water Distribution
 - XII. Light Fixtures
 - XIII. Refrigerators
 - XIV. Dishwashers
 - XV. Range/Oven
 - XVI. Clothes Washer
 - XVII. Clothes Dryer
 - XVIII. Ceiling Fans
 - XIX. Dwelling Unit Mechanical Ventilation System

Further details and inspection requirements for these items are in Appendix B of ANSI/RESNET/ICC 301-2022. Any Minimum Rated Features not available for inspection in the factory shall be verified during the final inspection.

Requirements for Rating Providers:

- Follow the RESNET HERS Standards for certifying third-party plant inspectors as Rating Field Inspectors, including three mentored rating field inspections to be completed in the plant.
- Ensure these RFIs understand RESNET's standards and inspection requirements.
- Educate plant leadership and personnel on the requirements of the RFI and required inspections.
- Maintain records and documentation of all inspections performed in accordance with RESNET Standards.
- Conduct quality assurance oversight of the RFI's work in accordance with RESNET HERS Standards.

