



PON 2309 – Attachment J

Low-rise Residential New Construction Programs

**Quality Assurance Plan
& Processes**

Introduction and Overview

NYSERDA, as program administrator, has contracted with Honeywell Utility Solutions as the Quality Assurance Contractor (QA Contractor) for the Low-rise Residential New Construction Programs (Programs). The QA Contractor's primary goal is to verify that projects completed with program support meet all program requirements, while identifying Partners who do not typically meet all program requirements. The QA Contractor also provides feedback to NYSERDA and their Program Implementation and Support Contractor (Program Implementer) regarding Program requirements that may require modification, or topics that should be emphasized during future training events.

The comprehensive approach taken by the QA Contractor includes mid-construction site visits, site visits following the Home Energy Rating System (HERS) Rater's completion of their confirmed Home Energy Rating, and an administrative file review of modeling software or other relevant documentation. These QA activities are intended to verify the following:

- The conditions reported by Program Partners accurately reflect the conditions observed by the QA team, both within the documentation submitted and as observed on-site;
- All Partners, including the Builders, Home Energy Raters (Rater), Home Energy Rating Providers (Provider), and the Heating, Ventilation and Air Conditioning (HVAC) contractors have met all Program requirements as detailed in PON 2309.

The QA Contractor is expected to conduct their QA activities within 30 days of completion of the relevant EPA-required checklists, or of the confirmed Home Energy Rating. The QA process will typically be completed on a minimum of 15% of single family homes. The QA process will be completed on each multi-unit project which had submitted a Project Application, while inspection of specific dwelling units associated with those projects will be subject to the 15% sampling rate. The final percentage of dwelling units which will be subject to QA inspections will vary based upon the project and shall be determined in coordination with NYSERDA and the Program Implementer prior to scheduling. The QA sampling rate may be altered at NYSERDA's discretion.

Project Selection

Each Partner will be subject to these QA processes for at least one (1) project per year. Additionally, an emphasis will be placed on the following selection criteria when identifying projects for QA, if any of these conditions are met:

- The first three (3) projects of new Partners;
- Partners with status of Probation or Suspended;
- Partners with lower historical QA inspection rates;
- Partners that have had an abnormally high production month;
- As requested by either NYSERDA or the Program Implementer.

Scheduling Information

The QA Contractor shall be provided with access to the database owned and maintained by the Program Implementer, as well as to NYSERDA's project management database used to maintain multi-unit project data called the Comprehensive Residential Information System (CRIS). Automatic e-mailed notifications are provided to the QA Contractor regarding changes in project status, including NYSERDA's initial commitment of funding, or payment of incentives, for multi-unit projects. To help identify projects that meet the selection criteria, the QA Contractor may use monthly HERS Provider reports; information available from either the Program Implementer's or the CRIS database; or feedback from the Program Implementer or NYSERDA.

Mid-construction Checklist Verification

The EPA ENERGY STAR Certified Homes Program requires the Builder, HERS Rater, and HVAC Contractor to complete various checklists, which are intended to verify Program requirements are met. These checklists include the Thermal Enclosure System Rater Checklist, the HVAC System Quality Installation Rater Checklist, the HVAC System Quality Installation Contractor Checklist, and Water Management System Builder Checklist. PON 2309 additionally requires submission of the Home Qualification Form to document compliance with various EPA and New York ENERGY STAR Certified Homes requirements, including achievement of the minimum kWh savings.

Checklist verification will occur during construction for some projects, and following completion of construction for other projects. Copies of completed Checklists may be obtained from the Program Implementer, directly from the HERS Rater or their Rating Provider, or from the Builder, as appropriate. The QA Contractor will perform the testing and verification as required to complete the Checklists, and as allowed by the current status of construction. The QA Contractor shall document the results of all completed testing and verification, noting those instances where verification was not possible due to existing conditions. When a copy of any Checklists is not available at the time of the QA Contractor's site visit, the QA Contractor will review and verify Checklist accuracy at a later date.

Field Inspection and Testing after completion of confirmed HERS Rating

Following the HERS Rater's completion of the confirmed Rating, the QA Contractor will complete a field inspection, as well as diagnostic and performance testing. The intention will be to verify that the project meets all relevant Program requirements, and to verify that the observed conditions of the project are consistent with the conditions reported to NYSERDA by the Builder, HERS Rater, and HVAC Contractor. The QA Contractor's field inspection and testing which occur following the HERS Rater's completion of a confirmed Rating will include:

- Exterior visual inspection to verify building characteristics such as chimneys, ventilation & exhaust, building dimensions, roofing, siding, windows, foundation, drainage, obstructions and landscaping);
- Interior visual inspection which include basements, crawlspaces, and attics, intended to verify building characteristics such as types and sizes for fenestrations, interior dimensions, square footage, ceiling heights, number of bedrooms, insulation levels, distribution system, etc.);
- Basement Inspection (i.e., visual inspections of condition, measure CO in Combustion Appliance Zone [CAZ], gas leak detection, combustion efficiency and safety testing, Worst Case Depressurization);
- Diagnostic & performance testing such as Blower Door, Duct Blaster, Combustion Appliance Zone, gas leak detection, etc.;
- Lighting and appliances evaluation to affirm efficiency values and quantities of high efficacy lamps and fixtures, refrigerators, dishwashers, clothes washers; and
- Data collection & reporting – record building information on QA Inspection Form, including observed conditions and conditions as reported by the Partners.

Administrative Review

The QA Contractor will, in many instances, complete an administrative review of project files for completed projects. Accuracy of the energy modeling software file created by a HERS Rater will be evaluated to confirm the inputs are consistent with the QA Contractor's visual observations and performance testing. Additionally, the QA Contractor will verify the accuracy of the Home Qualification Form and various Program-required checklists. When possible, review of the Rater's energy modeling software file will occur prior to the QA Contractor's field inspection and testing of projects which occur after completion of the confirmed Ratings. The QA Contractor will typically be provided access to these files through the Program Implementer but on occasion, may obtain copies

directly from the HERS Rater or their Rating Provider, as appropriate. If not available prior to the final Field Inspection, the QA Contractor will document all necessary information while at the site and will use the information to check against the modeling software file, Home Qualification Form, the Home Energy Rating Certificate (HERC), and various Checklists as soon as they become available. The QA Contractor may independently complete the energy model to confirm inputs meet all Program requirements and outputs align with those achieved by the HERS Rater. Administrative review is intended to verify reported characteristics and performance testing data, such as:

- Conditioned floor area and volume of the home;
- Number of stories and general type of the home (multi-family or single-family);
- Insulation type, installation grade, location, square footage and R-Values;
- Glazing area, orientation and U-Value;
- Blower door and duct leakage performance testing results;
- Heating, cooling and domestic hot water system sizing and efficiencies.
- Air-tightness attributes of the home;
- Ventilation system type and controls system;
- Heating, cooling and domestic hot water system sizing and efficiencies;
- Electrical kWh savings totals and appliance types
- HERS score of project using QA inputs.

QA Documentation and Reporting

The QA Contractor will document their observations and submit reports to NYSERDA and the Program Implementer. The QA documentation and reporting process will be as follows:

- QA Contractor completes the mid-construction checklist verification, the field inspection and testing after the confirmed HERS Rating, or administrative file review;
- Deficiencies observed which require immediate correction due to health or safety concerns, such as major gas leaks or excessive ambient CO, mandate the QA Contractor immediately contact the Builder's representative and, prior to departing the site, and verify the appropriate corrective action has been taken. Additionally, the QA Contractor must document the event and immediately notify NYSERDA and the Program Implementer;
- The QA Contractor assembles all relevant data and submits to the QA Contractor's office for review;
- The QA Contractor Manager will then review the data, compile the information on the appropriate forms, and create a Summary Report. Both the forms and the Summary Report will be uploaded to the database. Summary reports will identify any observation of non-compliance and provide details regarding any measure that needs to be corrected to meet Program requirements per PON 2309. The QA Contractor will also produce and deliver a Summary Report for projects which are determined to meet all Program requirements.

Notification of QA Findings to Partners

NYSERDA or the Program Implementer will inform the appropriate Partner(s) when the QA Contractor's findings indicate a need for a project-specific corrective action. If the QA Contractor's observations indicate a more comprehensive resolution is required, NYSERDA or the Program Implementer will work with the Partners to develop a formal plan of action to address and resolve any concerns.