2025 Third-Party QA/QC Study Report

Rhode Island Energy

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Date: 10.15.2025

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Introduction

Rhode Island Energy (RI Energy) offers several programs that install energy efficient equipment and/or weatherization upgrades in customer homes. These upgrades can be complex, often requiring licensed and/or program-trained contractors or personnel. Programs conduct Quality Assurance / Quality Control (QA/QC) Assessments to ensure these contractors and personnel adhere to program requirements, installation best practices, and proper equipment set-up. QA/QC activities drive program success and can positively affect customer acceptance of energy efficient equipment, program satisfaction, energy savings, and savings persistence.

Types of QA/QC

Robust QA/QC processes ensure that programs are delivered effectively and provide stakeholders with confidence in the savings resulting from RI Energy's programs.

Third-party QA/QC

For the purposes of this study, the team, in collaboration with RI Energy, defined **third-party QA/QC** as the mandated or otherwise required quality assessments built into the design and implementation of utility- or publicly funded programs that are conducted by dedicated QA/QC vendors (i.e., not the program implementer or RI Energy). Depending on the program and/or the measure, QA/QC may occur on all or only a sample of completed projects within a program. It can be used to assess field installation, operations, and/or procedural checks (data collection and tracking).

In-program QA/QC

In-program QA/QC, for the purposes of this study, is defined as any quality assurance reviews of project work done by RI Energy or implementation staff. **In-program QA/QC** processes include the feedback loop for the information provided by **third-party QA/QC** vendors and incremental quality checks performed to hold implementation staff accountable for completing work that meets the programs' standards and expectations.

Research Approach

This study was designed to increase the transparency of QA/QC processes, both **third-party** and **in-program QA/QC** processes, and to build stakeholder confidence in current practices for six RI Energy Residential programs:

- Residential HVAC (R-HVAC)
- EnergyWise Single Family (EWSF)

- EnergyWise Multifamily (EWMF)
- Income Eligible Single Family (IESF)
- Income Eligible Multifamily (IEMF)
- Residential New Construction (RNC)

This study was designed to be descriptive and did not include a process evaluation of how well QA/QC is done.

The study reviewed existing QA/QC materials for all six programs, as provided by RI Energy, and identified where there are gaps between documentation of QA/QC steps and current practices. The study gathered information about current practices from interviews conducted by email and by phone with RI Energy program staff and implementers.

Programs of Primary Focus

The study's primary focus was on R-HVAC, EWSF, and EWMF. For these programs, the study design included additional interviews by email and by phone with RI Energy program staff and implementers to inform more in-depth descriptions of processes, summary tables, and process flow charts for each.

Programs of Secondary Focus

The study's secondary focus was on IESF, IEMF, and RNC and did not include research beyond the materials review. Some interviewees we spoke with for the primary focus programs were able to offer information about secondary focus programs' QA/QC processes. This report documents that insight. The reporting for programs under the secondary focus includes higher level write-ups of QA/QC processes and summary tables, but no process flow charts.

Key Findings

The following are key findings from the study.

QA/QC Processes

This section reports a high-level overview of RI Energy's QA/QC processes by summarizing similar QA/QC steps across programs.

Finding 1. There are some similarities across the QA/QC processes for programs, despite the programs' differing in specific processes.

Similar QA/QC steps across programs:

> **Step 1: Documentation of clear standards.** Programs document program standards for achieving high quality program implementation. Then, programs communicate this information to program staff, implementers, inspection vendors, and other stakeholders that support program implementation.
>
> Similar program standards:
>
> - Auditors find all energy savings opportunities, identify all health and safety concerns and worker safety hazards, and recommend the best combination of measures for the home.
> - Workers provide good customer service and customer education like best practices for efficient equipment operation, review completed work with the customer, obtain customer signatures, and ensure the customer is satisfied.
> - Workers perform energy audits and ensure measure installation procedures meet program efficiency requirements which typically include testing if combustion appliances operate safely, doing a blower door test, and assessing insulation and air-sealing effectiveness.
> - Installers follow the work order or make necessary changes as appropriate and install approved materials in a safe, effective, and neat way including equipment mounting, insulation at unit connections, etc.
> - Customers installed equipment that matches their rebate application.
> - *Note: Most programs do not clearly document definitions of programs standards and their correlation to QA/QC inspection procedures. See the related finding below under Gaps in Documentation.*

Step 2: Documentation of clear QA/QC inspection procedures. Programs clearly define the approaches for assessing whether a project meets program standards and expectations, including definitions of inspection ratings and failed inspection mitigation procedures for workers or the organizations overseeing the workers. Similar inspection procedures:

- o Inspectors complete inspection checklists through visual inspection and required equipment testing.
- o Inspectors provide feedback to workers when issues are identified.
- o Inspectors assess customer experience and satisfaction.

Similar inspection ratings:

- o Pass – inspection procedures provide evidence that project activities were performed in a way that meets program-specific protocols for good work.
- o Fail, remediation needed – inspection procedures identify issue(s) that workers must remediate and after remediation, the program conducts a follow-up inspection.
- o Fail, no remediation possible – inspection procedures indicate that the project does not have sufficient evidence to pass inspection or qualify for rebates, then the program notifies the workers and customer.

Similar inspection failure mitigation procedures:

- o If workers or organizations fail inspections, then the program ensures that the workers or the organizations receive additional training to prevent failure in the future.
- o *Note: Most program documentation does not clearly document plans of action or consequences for workers or organizations overseeing the workers that repeatedly fail inspections. See the related finding below under Gaps in Documentation.*

Step 3. Documentation of clear processes for inspection selection. Programs document the approaches for identifying (randomly or otherwise) projects for inspection including rules like whether selection will be random or based on other factors, and what proportion of projects will receive inspection.

- o *Note: Most programs' inspection selection rules do not clearly define whether a single project will receive one, some, or all the inspection types for programs that offer more than one type of inspection. See the related finding below under Gaps in Documentation.*

Step 4: Inspection of home energy assessment auditor practices. As applicable, programs assess how well the auditor meets program standards for customer service, direct install measure installation protocols, proper home energy use testing, proper documentation of testing results, home energy savings opportunities, and recommendations to customers. This inspection may occur concurrently with the auditor's visit to the project site, after the assessment is complete, or both.

Step 5: Inspection of installation practices. As applicable, programs verify whether the installer installs the right equipment based on the work order and follows protocol for proper equipment installation. This inspection may occur concurrently with the installer's visit to the project site, after installation is complete, or both.

Step 6: Remediation of issues. Programs remediate any project-related issues identified through QA/QC where possible. Programs re-inspect remediated issues. Upon passing, rebates and incentives are processed. If remediation is not possible, the program notifies the participant and closes the project without processing incentives.

Step 7: Finalization of post-inspection activities. Programs complete post-inspection activities including rebate processing for projects that pass inspections, sending denial letters to participants in the event of a failed inspection, and mitigating any issues with workers or organizations that failed inspections.

The chapters below describe the nuances of each program's inspection procedures.

Gaps in Documentation

This section describes documentation gaps that remain after this study gathered information about the programs' QA/QC processes.

Finding 2. Updates are needed in documentation across programs to clarify program standards, inspection procedures, and failed inspection mitigation.

Inspection Selection. For R-HVAC, EWSF, EWMF, and IEMF, it is unclear when a job is selected if that job will receive all inspection types within the program, just one, or some other rule. Specific inspection types for each program are described in each program chapter. IESF provides an example: There are two types of IESF inspections, the In-Process HEA Inspection, and the Post-Installation Inspection. All IESF projects must complete a Post-Installation Inspection to qualify for DOE funding. However, only 5% percent of projects receive the in-process HEA inspection.

Mitigation of repeat inspection failures. As noted in the QA/QC processes above, programs should document clear rules for plans of action and/or consequences to

workers or the organizations overseeing the workers who repeatedly fail inspections. For example, what should happen consequently after a certain number of failed inspections within a certain timeframe. Although other programs may have practices or commonly understood rules, all programs but the IESF program lacked formal documentation of these rules. The IESF program has a clear policy, based on state WAP program materials, that other programs can refer to when developing and documenting their procedures.

Outdated information. CMC's inspection manual, which describes **third-party QA/QC** processes for EWSF, EWMF, and IEMF, is outdated. For example, it includes tiered inspections for EWSF that the program no longer uses.

Clear information. A few programs were missing or had unclear information documented. The IESF RI WAP IES and RI Energy program operations manual describes the state **third-party QA/QC** process clearly and cites how the state collaborates with RI Energy. **In-program QA/QC** processes conducted by the implementation lead vendor and the CAPs are not as clearly documented. The EWMF and IEMF program did not describe whether all units would receive all inspections versus a sample of units or some, but not all inspections.

Recommendations

The following recommendations are for RI Energy program managers or other RI Energy staff responsible for ensuring that, 1) programs deliver quality services and products, and 2) that program documentation clearly sets quality standards and expectations for all staff, implementers, vendors, and any others involved in program implementation. If RI Energy staff did not or do not currently plan to develop program documentation (for example, if an implementer developed documentation on behalf of RI Energy or RI Energy adopted documentation used by an implementation partner), this study recommends that staff review current documentation and drive efforts to make the necessary modifications described in the recommendations below.

Recommendation 1. Document clear program standards. Ensure that all programs clearly document program standards and QA/QC procedures including program expectations for high quality implementation, inspection procedures, inspection rating definitions, and remediation steps.

Recommendation 2. Document clear inspection selection procedures. Ensure that all programs clearly document whether a project selected for inspection will receive one, some, or all the types of inspections available within a given program. For multifamily programs, specify how many units in a building receive inspections and whether units that receive inspections receive all types.

Recommendation 3. Document clear remediation procedures. Ensure that all programs clearly document rules and specify plans of action or consequences to workers or organizations who repeatedly fail inspections.

Duplication of Efforts

This section describes the findings from the study's exploration of duplicated QA/QC efforts between **in-program QA/QC** and **third-party QA/QC** procedures.

Finding 3. This study found no evidence of duplicated efforts between programs' in-program QA/QC and third-party QA/QC procedures.

This study explored potential overlaps between programs' **in-program QA/QC** and **third-party QA/QC** processes. We found no clear evidence of overlap or duplication of effort between the **in-program QA/QC** that program implementers do and the **third-party QA/QC** that the vendors do for R-HVAC, EWSF, EWMF, IESF, IEWF, and RNC.[1]

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[1] The IESF program coordinates its **in-program QA/QC** with the RI Department of Human Services (DHS) or Department of Energy (DOE)'s **third-party QA/QCs** to avoid duplication of effort on any one project. The program implementer explained that this has not happened once in their experience. Refer to the IESF chapter for more detail.

Acronyms

The following table, Table 1, lists the acronyms used throughout this report for easy reference.

Table 1. List of Acronyms

Acronym	Definition
AMC	AM Conservation
AMP	Appliance Management Program
BPI	Building Performance Institute
CAP	Community Action Program
CCC	CLEAResult Customer Contact Center
CEM	Customer Energy Management
CMC	CMC Energy Services
DFQC	Data and Field Quality Control
DHS	Department of Human Services
DOE	Department of Energy
EAP	Energy Action Plan
EHPR	Enhanced Heat Pump Rebates
ES	Energy Specialist
EWMF	EnergyWise Multifamily Program
EWSF	EnergyWise Single Family Program
HEA	Home Energy Assessment
HERS	Home Energy Rating System
IEMF	Income Eligible Multifamily Program
IESF	Income Eligible Single Family Program
IIC	Independent Installation Contractor
ISM	Instant Savings Measures
LV	Program Implementation Vendor/ Lead Vendor
MRV	Mechanical Rebate Verification
QAD	Quality Assurance Designee
QA/QC	Quality assurance/quality control
RESNET	Residential Energy Services Network
R-HVAC	Residential High Efficiency Heating and Hot Water Program
RI Energy	Rhode Island Energy
RNC	Residential New Construction Program
SMI	State Median Income
TA	Trade Ally
UDRH	User Defined Reference Home
WAP	Weatherization Assistance Program

Primary Programs

Residential High Efficiency Heating, Cooling, and Hot Water: Heating, Ventilation, & Air Conditioning (R-HVAC)

R-HVAC Introduction

RI Energy offers Standard Rebates and Enhanced Heat Pump Rebates (EHPR) to customers for energy-efficient central heat pump and mini-split heat pump systems through R-HVAC. To qualify for Standard Rebates, the customer must work with a licensed, Independent Installation Contractor (IIC) to install equipment other than smart thermostats, which customers can self-install. The Enhanced Heat Pump Rebate (EHPR) is available to customers with homes that heat primarily with electric baseboard resistance heating, as verified through the EnergyWise program. Within 90 days of installation, participating customers apply for rebates online through the RI Energy website or by downloading the application and mailing it in.

The rebate processing vendor reviews applications and flags jobs for inspection. The rebate processing vendor sends rebate checks to customers with approved inspections. If a job does not pass inspection, the rebate processing vendor issues the participant a denial letter. We provide an overview of the QA/QC procedures below.

R-HVAC QA/QC Overview

The program conducts two QA/QC procedures for the R-HVAC program:

- EHPR Post Inspection including follow-up remediation inspection by CLEAResult Implementation (**in-program QA/QC**)
- Standard Rebates Mechanical Rebate Verification (MRV) Inspection by CLEAResult CCC (**third-party QA/QC**)

Key Players

Role	Company
Program implementer & lead vendor (LV)	CLEAResult Implementation and HVAC Program Operations (CLEAResult Implementation)
Third-party QA/QC vendor	EPHR: No third-party QA/QC Standard Rebates: CLEAResult Customer Contact Center (CLEAResult CCC)
Installation contractors	EHPR: RI Heating and Cooling Program Participating Contractors Standard Rebates: RI Licensed HVAC Contractor
Other: Rebate processor	EHPR and Standard Rebates: AM Conservation (AMC)

R-HVAC QA/QC Process Flow

The following figure details the two R-HVAC QA/QC inspection processes.

Figure 1. R-HVAC Program Process Flow
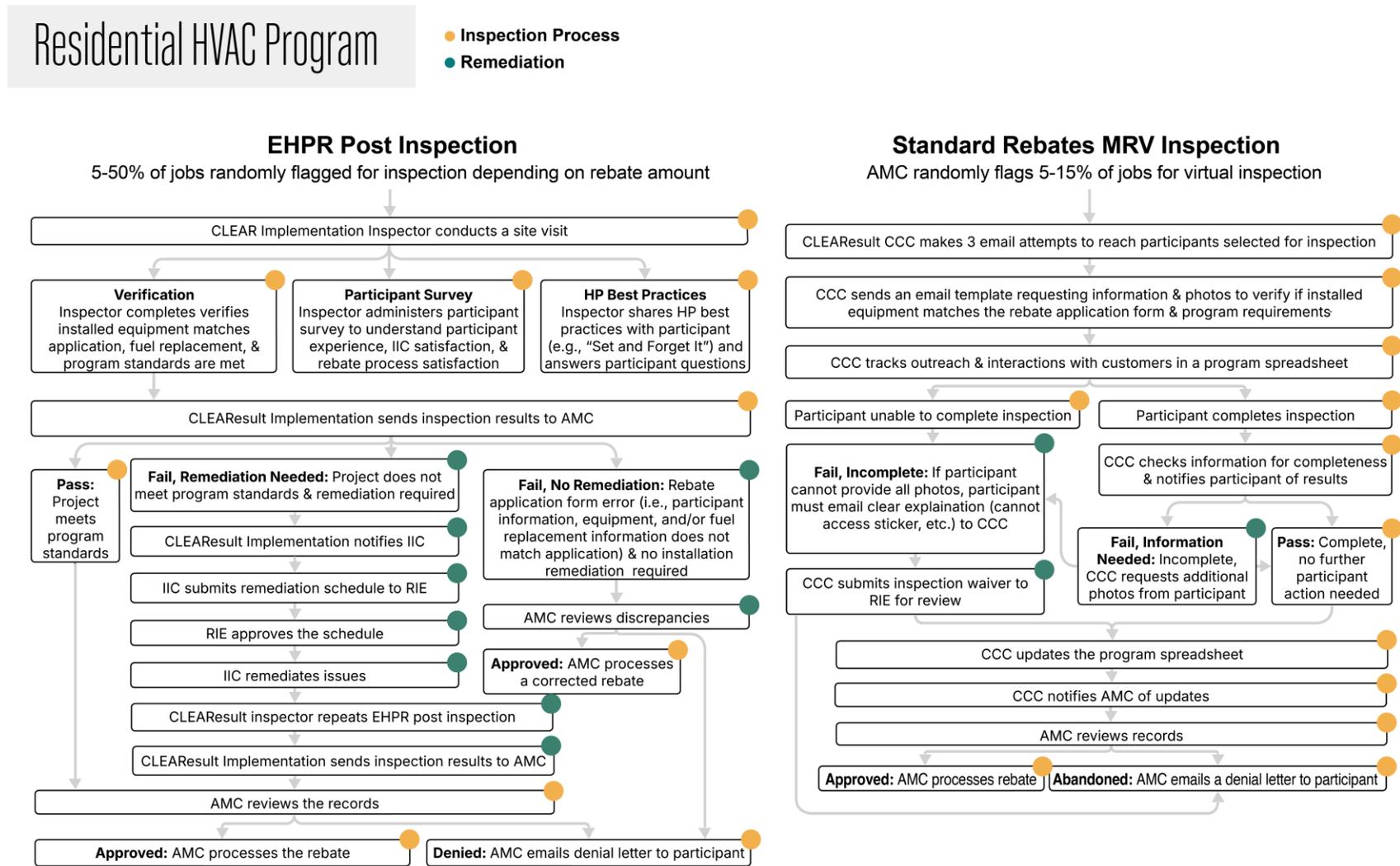
Inspection Selection

AMC reviews rebate applications, flags a portion (described below) of applications at random for post-installation inspection, CLEAResult Implementation & Operation teams review inspection documentation and pass the results to AMC who processes rebates once approved.

CLEAResult Implementation conducts in-person, **in-program QA/QCs** on 5%, 10%, or 50% of EHPR jobs based on rebate amounts (see Table 2). Most of the enhanced rebates fall in the $1,000 and above range, so the program flags about 50% of all jobs for QA/QC.

A CLEAResult CCC **third-party QA/QC** vendor conducts virtual QA/QCs by email on a percentage of Standard Rebate MRV jobs (see Table 2 for details).

Table 2. R-HVAC QA/QC Inspections by Rebate Amount

Rebate Amount	Proportion Selected	EHPR	Standard Rebates
Natural Gas Measures			
$75.01 -$75.99	5%		x
$76 - $100,000	15%		x
Electric Measures			
Up to $499.99	5%	x	x
$500 - 999.99	10%	x	x
$1,000 - $100,000	50%	x	x
$100,000.01 - $999,999.99	50%	x	

The program conducts follow-up inspections on 100% of EHPR and Standard Rebates jobs that require remediation.

EHPR Post Inspection

AMC notifies CLEAResult Implementation about EHPR jobs flagged at random for inspection. CLEAResult Implementation contacts the customer to schedule and conduct EHPR Post Inspections, including a customer satisfaction survey. The QA/QC procedures include:

- Verify installed equipment matches the rebate application form and meets program efficiency requirements
- Solicit customer feedback about their experiences with the IIC and the rebate process
- Share information with the customer about best practices for efficient heat pump operation
- Review the installation quality – how the condenser was mounted, insulation at unit connections, etc.

- Complete the inspection checklist
- Provide feedback to contractors when issues are identified

EHPR Post Inspection ratings are:

- **Pass:** Inspection procedures indicate that project work was performed to program expectations and meets program standards.
- **Fail, Remediation Needed:** Project work does not meet program standards and therefore requires remediation. CLEAResult Implementation notifies the IIC to discuss how the IIC should rectify the issue. Within two days of the notification, the IIC develops and shares a remediation plan schedule for RI Energy's review and approval. Once RI Energy approves the plan, the IIC begins remediation. Once the IIC completes remediation, CLEAResult Implementation conducts the follow-up inspection to ensure the work meets program standards. CLEAResult Implementation notifies the IIC of the re-inspection results. Once the work meets program standards, CLEAResult Implementation records the results and shares them with AMC. AMC then processes the rebate. If the work still does not meet program standards after remediation, then AMC mails a rebate denial letter to the participant.
- **Fail, No Remediation Required:** Rebate application form has an error. For example, participant information or installed equipment information and/or fuel replacement information do not match the application. There is no remediation needed related to the installation. AMC reviews the discrepancies and will either address the discrepancies and approve the rebate or send a denial letter to the participant.

Standard Rebates MRV Inspection

In a separate parallel process, AMC notifies CLEAResult Operations about Standard Rebates jobs flagged for virtual inspection. CLEAResult Operations is a separate entity from CLEAResult Implementation and is the **third-party QA/QC** vendor for the Standard Rebates program. CLEAResult CCC serves under CLEAResult Operations and administers Standard Rebates MRV Inspections virtually with program participants. The Standard Rebates MRV Inspection reviews downstream equipment, including central heat pumps, mini-split heat pumps, heat pump water heaters, gas heating, water heating, and thermostats except for single thermostats. [2]

To administer the virtual inspection, CLEAResult CCC sends an email template including the rebate number, equipment quantity, manufacturer, and description to participants from a shared mailbox (#MB Verifications (verifications@clearesult.com) and asks them to reply with information and pictures of their installed equipment to verify installation. CLEAResult CCC

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[2] Program staff noted that a project with a single thermostat installation would not be flagged for inspection, but a project with more than one thermostat installation could be flagged for inspection based on the overall rebate amount.

makes up to three attempts to reach participants flagged for inspection. This QA/QC procedure checks that the completed email template and pictures verify that the:

- Installed equipment matches the rebate application form including equipment quantity, model number, manufacturer, and description
- Participant name, home address, and rebate number are accurate

The primary purpose of the virtual inspection is to verify that installed equipment matches the rebate application. This inspection is not intended to assess the quality of the installation itself. CLEAResult CCC files information from the participant's email in the shared mailbox and notifies AMC. CLEAResult Operations issues a weekly QA/QC report to AMC, which includes customer demographics, equipment manufacturer, model number, inspection result of Pass, Fail, or Abandon, and the reason for Fail inspection. AMC is responsible for approving the rebate application.

Standard Rebates virtual inspection ratings are:

- **Pass:** Inspection procedures indicate that the rebate application is accurate and ready for processing.
- **Fail:**
  - **Fail, Information Needed:** If the participant cannot complete the request to share the pictures and other information, then CLEAResult CCC will notify AMC and request a Standard Rebate MRV Inspection waiver.[3] AMC notifies RI Energy. RI Energy reviews the rebate application and manages an exception process to find alternate ways to confirm the equipment on the rebate application was installed. If equipment installation can be verified, the project passes inspection, RI Energy approves the application and notifies AMC to issue a rebate. Otherwise, the project will be abandoned, as described below.
  - **Fail, Incomplete:** If CLEAResult CCC is unable to reach the participant within three email attempts, then CLEAResult CCC notifies AMC. If RI Energy cannot confirm installation of a project that had received a Fail, Information Needed rating, then RI Energy denies the application and notifies AMC.
- **Abandon:** Once CLEAResult CCC or RI Energy notify AMC because of a Fail, Incomplete rating, AMC denies the rebate application and mails a denial letter to the participant.

Table 3 provides an overview of these inspections.

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[3] Program staff stated that waivers are rare and may occur once or twice a year.

Table 3. R-HVAC QA/QC Overview

QA/QC FACTORS	EHPR Post Inspection	Standard Rebates MRV Inspection
Purpose	• Verify equipment & customer fuel type match the application form • Assess participant satisfaction • Educate customer on HP use best practices	Verify the equipment installed/operational matches the application form & requirements
Whose work is checked	IICs - RI Heating and Cooling Program Participating Contractors	IIC - RI Licensed HVAC Contractor via customers' completed email template & photos
Who conducts the check	CLEAResult Implementation	CLEAResult CCC
Remediation Steps for Failed Inspections	• Notify IIC (& RIE as needed) to initiate remediation process • IIC develops remediation schedule for RIE's approval • Once approved, IIC remediates the issue • CLEAResult Implementation conducts follow-up inspection, shares results with AMC • AMC processes the rebate if approved or sends denial letter to the customer	• CLEAResult Operations ~~CCC~~ notifies AMC if customer fails the virtual inspection • AMC sends denial letter to the customer If customer cannot complete the virtual inspection: • CLEAResult CCC sends a waiver request to RIE • RIE determines whether to approve the application without inspection • AMC processes the rebate if approved or sends denial letter to the customer if abandoned
Outputs	• Completed inspection checklist to AMC • Pass/fail submission to IIC & AMC • Completed participant survey to RIE • Shared HP best practices to participant	• Completed email template & photos of installed equipment to AMC • Updated inspection spreadsheet
Outcomes/ Benefits	• Confirm quality service & installation meets standards • Verify fuel replacement as applicable • Assurance to RIE & AMC that IICs follow protocols • Potential improvement for future IIC performance • Understand participant satisfaction & HP use	• Verify participant & equipment information • Verify installation meets program requirements

EnergyWise Single Family (EWSF)

EWSF Introduction

The EWSF program provides energy efficiency services to market rate customers in single family and two-to-four-unit buildings on a single property. The program implementer & LV provides Energy Specialists (ES) to conduct on-site Home Energy Assessments (HEA) for customers with any fuel type. The HEA is a comprehensive, whole house, energy evaluation addressing plug load, mechanical needs, and the thermal envelope.

During the HEA, the ES installs direct install measures for instant energy savings such as efficient thermostats, faucet aerators, pipe wrap, advanced power strips, etc. Additionally, the ES provides efficiency recommendations related to heating, cooling, and water heating equipment, appliances and weatherization (insulation and air sealing). The ES makes the customer aware of heating and cooling equipment rebates, appliance rebates, financing opportunities, and ways to overcome pre-weatherization barriers, if identified. Additionally, the ES provides the customer with an executable contract on site for weatherization recommendations.

Weatherization measure installation is a turnkey process. Once a customer approves HEA recommendations and signs and submits their contract to the LV, the LV either assigns an IIC to the project or the customer selects one. Then, the IIC schedules and performs the recommended equipment installations.

The **third-party QA/QC** vendor inspects program implementation activities during the HEA, after the HEA, and after measure installation. We provide an overview of the QA/QC procedures below.

EWSF QA/QC Overview

There are three QA/QC procedures for the EWSF program:

- In-Process HEA Inspection
- Post HEA Inspection
- Post Weatherization (wx in Figure 2) Installation Inspection

Key Players

Role	Company
Program implementer and lead vendor	RISE Engineering
Installation contractors	RI licensed contractor - program-recommended or customers' choice
Third-party QA/QC vendor	CMC Energy

EWSF QA/QC Process Flow

The following figure details the three third-party QA/QC inspection processes employed by the EWSF program.

Figure 2. EnergyWise Single Family Program Process Flow
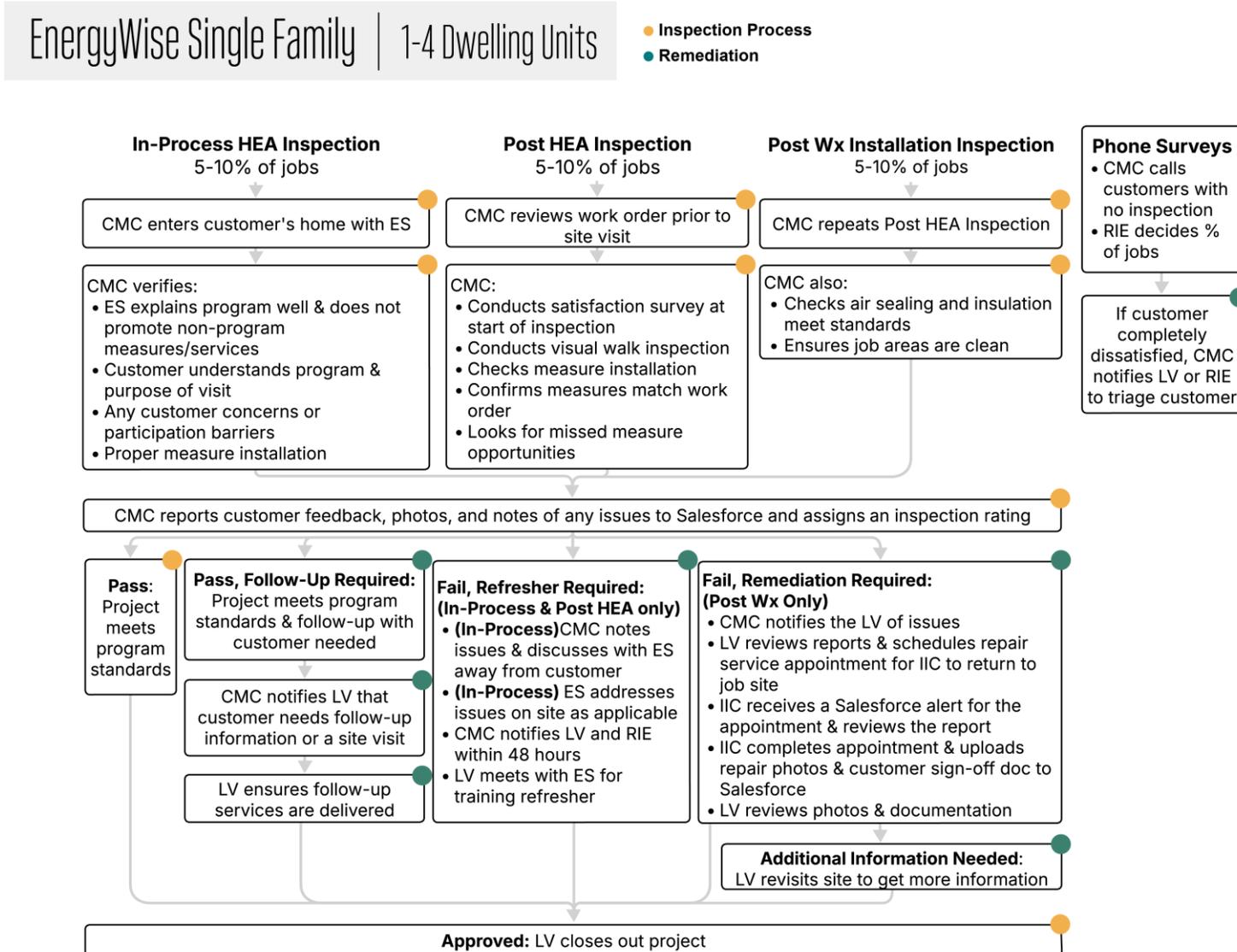
Inspection Selection

CMC conducts each type of inspection on 5-10% of jobs. CMC selects jobs for inspection at random based on weekly data provided by the LV. According to RI Energy program staff, after random selection, CMC may need to target jobs that have specific fuel types or measures to hit their contract goals. It is unclear if a single site could receive all three inspections or if a single site might only receive one.

In-Process HEA Inspection

The In-Process Inspection takes place onsite during the HEA. CMC arrives at the job site and enters the customer's home at the same time as the ES. CMC shadows the ES listening for how they explain the program to the customer, the customer's understanding of the purpose of the visit, the program, and any other topics that the ES covers at the beginning of the assessment. As the ES conducts the HEA, CMC listens for customer concerns or potential roadblocks to their participation. CMC visually inspects how the ES performs their duties including installation of direct install measures and diagnostic testing to ensure this is done to program standards. CMC also verifies that the ES does not promote measures or services from outside of the program. CMC reports customer feedback, photos, and notes of any issues to Salesforce and assigns an inspection rating. The ratings are:

- **Pass:** Inspection procedures indicate that project work was performed to program expectations and meets program standards.
- **Pass, Follow-Up Required:** CMC may find that the ES's work meets program standards and passes inspection, but that the customer would like additional information or a follow-up visit. In this case, CMC notifies the LV and the LV ensures follow-up services are delivered.
- **Fail, Refresher Required:** If CMC identified issues during the inspection, CMC notes the issues and discusses them with the ES away from the customer. The ES addresses the issues in real-time, as applicable. CMC notifies the LV and RIE of the issues within 48 hours, including any recommendations for the ES to receive additional training. If additional training is needed, the LV meets with the ES to provide this training. If an ES continues to fail in-process HEA inspections after having received additional training, a performance improvement plan will be put in place. If the ES continues to fail in process HEA inspections after the implementation of a performance improvement plan, then employment separation would be the next step.

Post HEA Inspection

The Post HEA Inspection takes place after the HEA. Prior to arrival, CMC reviews the project work order and information in ePlus and Salesforce to get familiar with what has been installed. At the start of the inspection, CMC begins with a participant satisfaction survey to better understand the participant experience. During this inspection, CMC conducts a visual inspection with a methodical walkthrough of each room. CMC checks that the ES installed

all measures according to program standards and identifies any missed opportunities for additional measures. CMC reports customer feedback, photos, and notes of any issues to Salesforce and assigns an inspection rating. The ratings are:

- **Pass:** Inspection procedures indicate that project work was performed to program expectations and meets program standards.
- **Pass, Follow-Up Required:** CMC may find that the ES's work meets program standards and passes inspection, but that the customer would like additional information or a follow-up visit. In this case, CMC notifies the LV and the LV ensures follow-up services are delivered.
- **Fail, Refresher Required:** Similar to the In-Process HEA Inspection, CMC notifies the LV and RIE of any issues within 48 hours, including any recommendations for the ES to receive additional training. If additional training is needed, the LV meets with the ES to provide this training.

Post Weatherization Installation Inspection

The Post Weatherization Installation Inspection takes place after the IIC completes installation of weatherization measures. During this inspection, CMC repeats the Post HEA Inspection activities plus an inspection of air sealing & insulation measure installation. CMC may use infrared cameras. They check attic insulation by wading in and looking under it. They re-install any disturbed insulation and rake in any loose fill insulation. CMC ensures that installation areas throughout the home are clean. CMC reports customer feedback, photos, and notes of any issues to Salesforce and assigns an inspection rating. The ratings are:

- **Pass:** Inspection procedures indicate that project work was performed to program expectations and meets program standards.
- **Pass, Follow-Up Required:** CMC may find that the ES's work meets program standards and passes inspection, but that the customer would like additional information or a follow-up visit. In this case, CMC notifies the LV and the LV ensures follow-up services are delivered.
- **Fail, Remediation Required:** CMC reports any issues with installation back to the LV within 48 hours explaining what remediation or corrective steps the IIC needs to complete. If CMC identifies issues that could cause an unsafe or hazardous environment, CMC advises the ES or IIC and requests that they follow proper procedure. CMC will notify RIE and the LV of any health and safety issues within the same business day.

The LV creates a repair service appointment through Salesforce and attaches the report. This alerts the IIC of the new service appointment. The IIC reviews the report to prepare for the appointment. The IIC completes the appointment, addresses the issues, and uploads photos of the repair and a document with the customer's sign-off to Salesforce. The LV

conducts in-person, **in-program QA/QC** to review these documents for completeness and to ensure that the repair is fully addressed. If there is an issue with the photos or documentation, the LV will schedule a follow-up visit with the customer for the LV to check the repair in person and/or gather any missing information (for example, the customer's signature). Examples of issues with photos or documentation include photos that do not clearly show the repair or repair quality or a missing customer signature. Once the LV approves the job, the project is complete.

Table 4 provides an overview of these inspections.

Table 4. EnergyWise Single Family QA/QC Overview

QA/QC Factors	In-Process HEA Inspection	Post HEA Inspection	Post Weatherization Installation Inspection
Purpose	• Audit ES HEA and direct install measure installation practices in real time • Ensure compliance with program requirements • Ensure ES reviews all potential energy measures with customer • Ensure customer understands the program and purpose of the visit	• Conduct follow-up visit after HEA • Administer customer satisfaction survey • Verify direct install measures comply with program requirements • Confirm customer approval of work order for weatherization measures • Confirm no opportunities are missed	• Re-conduct Post HEA Inspection activities • Inspect air sealing & insulation installation meets program standards • Verify working areas are clean
Whose work is checked	ES	ES	ES, IIC
Who conducts the check	CMC	CMC	CMC
Remediation Steps for Failed Inspection	ES addresses issues while still on site and/or LV provides ES training	LV provides ES training	• LV reviews CMC report & schedules repair service appointment for IIC • IIC completes the appointment and reports updates to LV • LV ensures repairs meet program standards

QA/QC Factors	In-Process HEA Inspection	Post HEA Inspection	Post Weatherization Installation Inspection
Outputs	• Confirmation that the program offered and, per customer approval, installed all direct install and weatherization measures • Identification of any quality issues with measure installation • Data tracking inclusive of customer feedback and inspection photos and notes		
	• Confirmed customer program awareness	• Customer satisfaction feedback • Customer-approved work order	• Confirm program left customer home in good condition
	• Information to improve or maintain good ES practices		Information to improve or maintain good IIC practices
Outcomes/ Benefits	• Assurance to RIE and LV that ESs & IICs follow protocols and meet standards • Increased likelihood that all jobs provided comprehensive measures that will result in the most energy savings • Increased customer awareness and satisfaction • Identification of best practices and opportunities to improve the program based on customer feedback		

EnergyWise Multifamily (EWMF)

EWMF Introduction

The EWMF program provides comprehensive energy efficiency services to market rate properties with five or more dwelling units in which 50% or more of the units are not on the utility discount rate. The program implementer and LV provide program services including building energy assessment, coordination with technical experts for custom technical assessments, benchmarking, and engineering studies. The program provides participants with an Energy Action Plan (EAP), including all applicable energy efficiency opportunities, both residential and commercial (in-unit and common area measures).

Once a customer approves EAP measures and services, the LV brings in and oversees an IIC. The IIC installs the measures, where possible, in a single visit to minimize disruption for the tenants. Some projects do require multiple visits. A **third-party QA/QC** vendor conducts QA/QCs of each ES during an HEA every six months, on 15-25% of jobs during installation, and 5-10% of jobs post-installation.

EWMF QA/QC Overview

CMC conducts three QA/QC procedures for the EWMF program:

- Assessment Inspection
- In-Process Installation Inspection
- Post Installation Inspection

Key Players

Role	Company
Program implementer and lead vendor	RISE Engineering
Installation contractors	RI licensed contractor
Third-party QA/QC vendor	CMC Energy

EWMF QA/QC Process Flow

The following figure details the three QA/QC inspection processes of the EWMF program.

Figure 3. EnergyWise Multifamily Program Process Flow
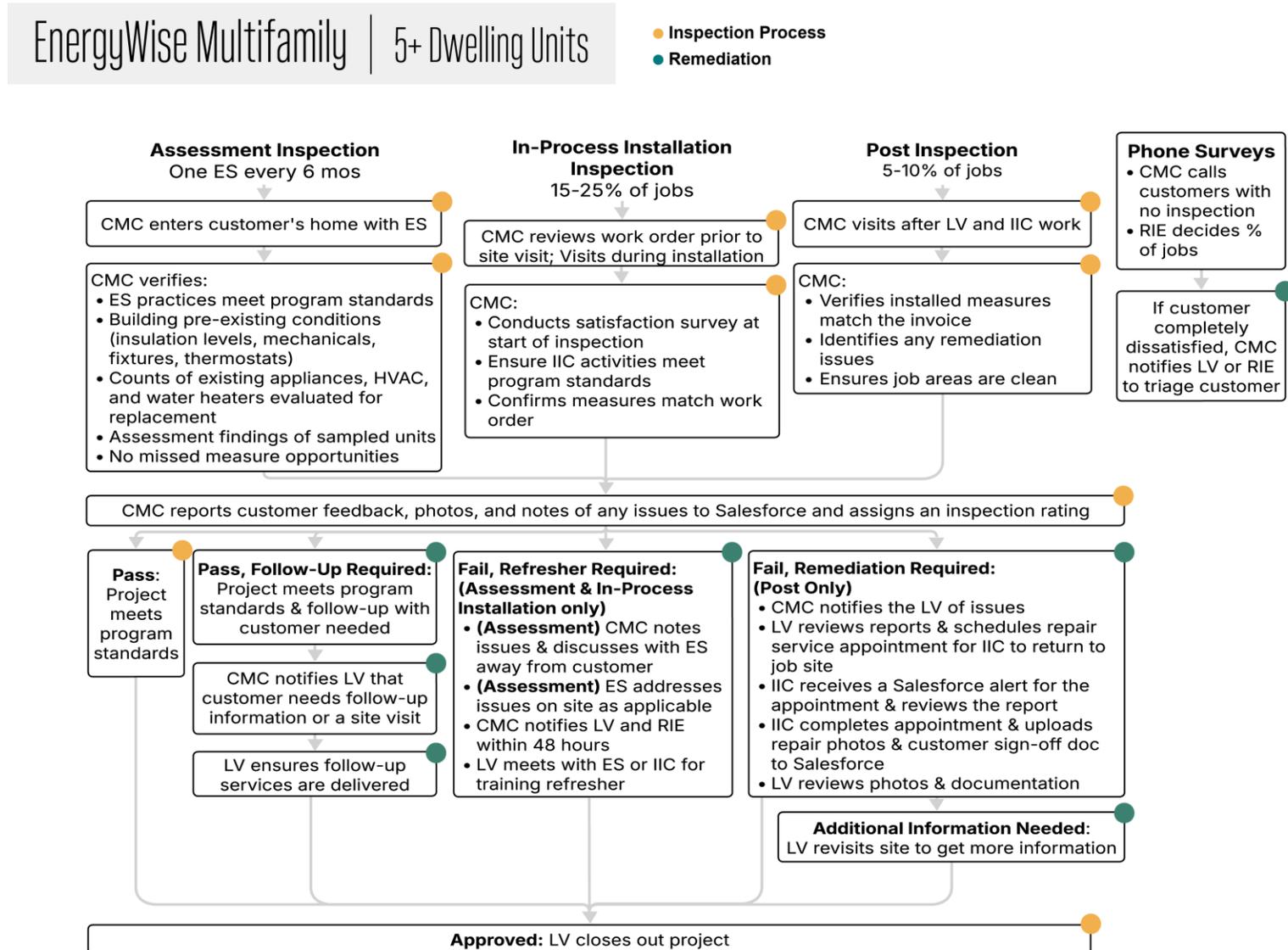
Inspection Selection

Similar to EWSF inspection selection processes, CMC selects EWMF jobs for inspection at random based on weekly data provided by the LV. According to RI Energy program staff, after random selection, CMC may need to target jobs that have specific fuel types or measures to hit their contract goals. It is unclear if a single site could receive all three inspections or if a single site might only receive one.

Assessment Inspection

The EWMF Assessment Inspection is similar to the EWSF In-Process HEA Inspection. CMC arrives at the job site and enters the building at the same time as the ES to check ES processes and procedures during the HEA. CMC ensures that the ES does not miss any measure opportunities. For EWMF, CMC also verifies the building's pre-existing conditions by taking digital photos to document insulation levels, mechanical equipment, fixtures, and thermostats. CMC checks findings from the sample of building units that the ES evaluates. For example, CMC verifies counts of existing appliances, HVAC units, and water heaters that the ES flagged for replacement. CMC submits a copy of the work order to the LV. The LV reviews work orders for completion.

CMC reports any customer feedback, photos, and notes of any issues to Salesforce and assigns an inspection rating. The ratings are the same as the EWSF ratings:

- **Pass:** Inspection procedures indicate that project work was performed to program expectations and meets program standards.
- **Pass, Follow-Up Required:** CMC may find that the ES's work meets program standards and passes inspection, but that the customer would like additional information or a follow-up visit. In this case, CMC notifies the LV and the LV ensures follow-up services are delivered.
- **Fail, Refresher Required:** If CMC identified issues during the inspection, CMC notes the issues and discusses them with the ES away from the customer. The ES addresses the issues in real-time, as applicable. CMC notifies the LV and RIE of the issues within 48 hours, including any recommendations for the ES to receive additional training. If additional training is needed, the LV meets with the ES to provide this training.

In-process Installation Inspection

The EWMF In-Process Installation Inspection checks IIC processes and procedures during the installation. Prior to arrival, CMC reviews the project work order to get familiar with what equipment, lighting, and/or weatherization measures should be installed. At the start of the inspection, CMC begins with a participant satisfaction survey to better understand the participant experience. During the inspection, CMC confirms that all measures match the work order, are the appropriate size, and the correct quantity of each measure is being installed. CMC observes the installation work to ensure that the work is done according to

program standards. CMC reports customer feedback, photos, and notes of any issues to Salesforce and assigns an inspection rating. The ratings are similar to EWSF:

- **Pass:** Inspection procedures indicate that project work was performed to program expectations and meets program standards.
- **Pass, Follow-Up Required:** CMC may find that the IIC's work meets program standards and passes inspection, but that the customer would like additional information or a follow-up visit. In this case, CMC notifies the LV and the LV ensures follow-up services are delivered.
- **Fail, Refresher Required:** If CMC identified issues during the inspection, CMC notes the issues and discusses them with the IIC away from the customer. The IIC addresses the issues in real-time, as applicable. CMC notifies the LV and RIE of the issues within 48 hours, including any recommendations for the IIC to receive additional training. If additional training is needed, the LV meets with the IIC to provide this training.

Post Installation Inspection

The EWMF Post Installation Inspection is similar to the EWSF Post Weatherization Inspection. CMC conducts a site visit after the IIC completes installation activities to ensure that all invoiced measures are installed. CMC takes photos to document assessed buildings, units and common areas, and measures. CMC also ensures that the installation areas are clean. CMC notifies the LV and RIE of any issues within 48 hours. If CMC identifies issues that could cause an unsafe or hazardous environment, CMC advises the ES or IIC on the spot and requests that they follow proper procedure. CMC will notify RIE and the LV of any health and safety issues within the same business day. CMC assigns an inspection rating and uploads a report including photos and notes of any issues to Salesforce. The ratings are the same as the EWSF ratings:

- **Pass:** Inspection procedures indicate that project work was performed to program expectations and meets program standards.
- **Pass, Follow-Up Required:** CMC may find that the IIC's work meets program standards and passes inspection, but that the customer would like additional information or a follow-up visit. In this case, CMC notifies the LV and the LV ensures follow-up services are delivered.
- **Fail, Remediation Required:** CMC reports any issues with installation back to the LV explaining what remediation or corrective steps the IIC needs to complete. The LV creates a repair service appointment through Salesforce and attaches the report. This alerts the IIC of the new service appointment. The IIC reviews the report to prepare for the appointment. The IIC completes the appointment, addresses the issues, and uploads photos of the repair and a document with the customer's sign-off to Salesforce. The LV conducts in-person, **in-program QA/QC** to review these documents for completeness and to ensure that the repair is fully addressed. If there is an issue with the photos or documentation, the LV will schedule a follow-up visit with the customer for the LV to check the repair in person and/or gather any missing

information (for example, the customer's signature). Examples of issues with photos or documentation include photos that do not clearly show the repair or repair quality or a missing customer signature. Once the LV approves the job, the project is complete.

Table 5 outlines an overview of these inspections.

Table 5. EnergyWise Multifamily QA/QC Overview

QA/QC Factors	Assessment Inspections	In-Process Installation Inspection	Post Installation Inspection
Purpose	• Audit ES HEA & direct install measure installation practices in real time • Confirm pre-existing conditions • Confirm no opportunities are missed • Verify assessment findings of all sampled building units • Verify counts of existing appliances, HVAC, & water heaters evaluated for replacement	• Administer customer satisfaction survey • Verify measures match work order • Ensure IIC installation activities meet program standards	• Conduct follow-up visit after installation • Verify installed measures match the project invoice • Identify any remediation issues • Verify working areas are clean
Whose work is checked	ES	IIC	IIC
Who conducts the check	CMC	CMC	CMC
Remediation Steps for Failed Inspections	• ES addresses issues while still on site • LV provides ES training	LV provides IIC training	• LV reviews CMC report & schedules IIC repair service appointment • IIC completes appointment & reports updates to LV • LV ensures repairs meet program standards
Outputs	• Confirmation that the program offered &, per customer approval, installed all eligible measures • Identification of any quality issues with measure installation • Data tracking inclusive of customer feedback and inspection photos & notes		
	Information to improve or maintain good ES practices	Information to improve or maintain good IIC practices	
Outcomes/ Benefits	• Assurance to RIE & LV that ESs & IICs follow protocols & meets standards • Increased likelihood that all jobs provided comprehensive measures that will result in the most energy savings • Increased customer awareness & satisfaction • Identification of best practices & opportunities to improve the program based on customer feedback		

Secondary Programs

Income Eligible Single Family (IESF)

IESF Introduction

RI Energy's IESF program offers cost-effective, energy efficiency products and services directly for customers living in one- to four-unit dwellings in which at least 50% of the occupants are at or below 60% of the State Median Income (SMI). The program does not require a co-payment from participating customers.

CLEAResult, the program implementer and LV, works with local Community Action Program (CAP) Agencies to implement the program. Implementers screen customers for eligibility, then schedule eligible customers for an HEA. An ES conducts the HEA. The HEA evaluates the building shell, efficiency, appliance conditions, and home health and safety. Where applicable, the CAP may conduct an Appliance Management Program (AMP) audit at the same time as the HEA. An AMP audit is an assessment of existing appliance energy use to identify opportunities to replace inefficient equipment.

CAPs coordinate with the State of RI Department of Human Services (DHS) and/or the Department of Energy (DOE) Weatherization Assistance Program (WAP) to ensure the project work is performed with high quality. CAPs leverage all applicable revenue streams from RI Energy, RI DHS, and RI DOE for a joint offering to income eligible residents. This approach provides a seamless, integrated experience for participants with deeper efficiency penetration consistent with a whole-house approach. Due to this braiding of funding, RI Energy projects that leverage state funding must adhere to state program standards which are defined in the RI Weatherization Field Guide.[4] According to program staff, IESF applies state program standards to all projects regardless of whether state funding is involved. This consistency further streamlines efforts for implementers.

QA/QC procedures are designed to check the following program standards:

- Workers will provide good customer service and customer education, review completed work with the customer, obtain customer signatures, and ensure the customer is satisfied
- Workers will perform HEA and installation procedures in accordance with the field guide including testing if combustion appliances operate safely, doing a blower door test, and assessing insulation and air-sealing effectiveness
- Auditors find all energy savings opportunities, identify all health and safety concerns and worker safety hazards, and recommend the best combination of measures for the home

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[4] Rhode Island Weatherization Field Guide: https://dhs.ri.gov/media/6581/download?language=en

- Installers follow the work order or make necessary changes as appropriate and install approved materials in a safe, effective, and neat way

IESF QA/QC Overview

There are two QA/QC procedures for the IESF program:

- In-Process HEA Inspection
- Post Installation Inspection

Key Players

Role	Company
Program implementer and LV	CLEAResult
Other implementation vendors	CAPs
Installation contractors	RI licensed contractor
Third-party QA/QC inspectors (*not* RI Energy vendors)	DHS & DOE

Inspection Selection

Jobs are selected at random for inspection. Inspectors from CAPs and the LV perform **in-program QA/QCs** and state inspectors perform **third-party QA/QCs** to ensure ES and IIC performance meets program standards. CAPs and the state collaborate regularly to ensure that selected projects receive inspections from either the CAP or the state, but not both. Inspectors conduct In-Process HEA Inspections on 5% of jobs and Post-Installation Inspections on at least 10% of jobs. CAPs with a history of non-passing inspections may receive a higher rate of inspection from the state. The state also performs an independent final inspection on 100% of weatherization jobs, although this report does not detail the final state inspection since it is not part of the RI Energy IESF inspection procedures.

In-Process HEA Inspection

The IESF In-Process HEA Inspection is similar to the EWSF In-Process HEA Inspection and the EWMF Assessment Inspection, according to program materials and RI Energy program staff. The inspector arrives at the job site and enters the building at the same time as the ES to check ES processes and procedures during the HEA. The inspector ensures that the ES does not miss any measure opportunities. As in EWMF, the inspector also verifies the building's pre-existing conditions including any pre- weatherization barriers by taking digital photos to document insulation levels, mechanical equipment, fixtures, and thermostats. The inspector checks findings from the sample building units that the ES evaluates. For example, the inspector verifies counts of existing appliances, HVAC units, and water heaters that the ES flagged for replacement. The inspector submits a copy of the work order to the LV. The LV reviews work orders for completion. The inspector audits the ES to ensure their performance and customer interactions meet program standards including whether:

- Customer education is addressed
- Testing meets standards including blower door, combustion efficiency, and a walk-through
- Appropriate measures are recommended
- The work order and the invoice align, and the customer's signature is obtained

If the ES identifies pre- weatherization barriers, then they can ask for a waiver to use funding to address those barriers to move the project forward. Funding will be granted based on what the issue is, how severe it is, and how much the cost is to remediate it.

Quality check ratings are:

- **Good** – ES missed no measure opportunities, and the work meets program standards
- **Poor** – ES work does not meet program standards or client files are incomplete
- **Fail** – ES missed major weatherization measure opportunities without explaining the omissions in the client file or uninstalled health and safety measures required to protect the family, or ES identified pre- weatherization barriers that must be addressed before installation of measures

Either the CAP or the state will identify specific areas of training for the ES, as needed. The state has the authority to require these trainings.

Post-Installation Inspection

Through the Post Installation Inspection, the LV conducts an **in-program QA/QC** to ensure that the IIC installed the correct measures according to the work order and confirms the customer's approval. The state conducts a **third-party QA/QC** to verify that measures are installed in a safe, effective, and neat way, proper testing is done after installation, and all project tasks are completed.

Quality check ratings are:

- **Good** – IIC installations meet program standards
- **Poor** – IIC installations do not meet standards
- **Fail** – IIC reported installations the inspector did not find, missed major weatherization opportunities without explaining the omissions in the client file or uninstalled health and safety measures required to protect the family

In the event of a "Poor" or "Fail" rating, the inspector will notify the CAP within 30 days of the inspection. The CAP must immediately create a work order and remediate the issues within five days. Once remediation is complete, the CAP notifies the customer to schedule a re-inspection. Failure to adhere to this policy could result in the CAP being removed from the state's weatherization program. A CAP's removal from the state's program does not imply removal from RI Energy's program, although that CAP would no longer be able to braid funding in accordance with RI Energy's program design. In that case, RIE would review the

performance of the CAP's work and decide, along with CLEAResult and DHS, whether the contractor would stay in the EE programs.

Table 6 provides an overview of these inspections.

Table 6. Income Eligible Single Family QA/QC Overview

QA/QC Factors	In-Process HEA Inspection	Post Installation Inspection
Purpose	• Audit ES during HEA • Ensure compliance with program requirements • Ensure ES reviews all potential energy measures with customer • Confirm no measure opportunities are missed • Confirm customer approval of work order • Ensure ES provides customer with educational literature	• Conduct follow-up visit after installation • Verify installed measures comply with work order & program requirements
Whose work is checked	ES	IIC
Who conducts the check	CAP	CLEAResult, DHS/DOE
Remediation Steps for Failed Inspections	ES participates in training	• CAP reviews inspection report • IIC creates remediation work order • IIC completes remediation • Re-inspection conducted
	• Identification and communication of installation & quality issues • Initiate corrective action	
Outputs	• Identification & report of any quality issues • Confirmation that the program offered &, per customer approval, installed all direct install & weatherization measures	
	• Information to improve or maintain good ES practices • Customer approval of work order based on ES recommendations & their own needs/preferences • Completed Audit Review Checklist	• Completed Field Inspection Report • Photos of installed measures
Outcomes/ Benefits	• Assurance to RIE and LV that ES & IICs follow protocols & meet program standards • Ensure proper installation & address any issues immediately • On-the-job training for ES • Increased likelihood that all jobs provided comprehensive measures that will result in the most energy savings	

Income Eligible Multifamily (IEMF)

IEMF Introduction

RI Energy's IEMF program provides cost-effective, energy efficiency improvements that benefit income-eligible tenants and owners of multifamily buildings. The program offers energy efficiency products and services within common areas and residential units. The program requires participating multifamily buildings to have at least 50% of occupants at or below 60% of the SMI. RI Energy provides up to 100% of the funding for cost-effective projects with funding caps established based on projected savings.

IEMF QA/QC Overview

CMC conducts four QA/QC procedures for the IESF program:

- In-Process HEA Inspection
- Lighting Installation Inspection
- QA/QC Weatherization Installation Inspection
- Heating System Replacement Inspection

Key Players

Role	Company
Program implementer and LV	RISE Engineering
Installation contractors	RI licensed contractor
Third-party QA/QC vendor	CMC Energy

Inspection Selection

CMC randomly selects 5% of jobs for inspection. It is unclear in the documentation if a job would receive all inspections or if different jobs are selected for different inspections.

In-Process HEA Inspection

The In-Process HEA Inspection takes place during the HEA and is similar to the EWMF Assessment Inspection and the EWSF In-Process HEA Inspection, according to program materials and RI Energy program staff. CMC arrives at the job site and enters the building at the same time as the ES to check ES processes and procedures during the HEA. CMC ensures that the ES does not miss any measure opportunities. As in EWMF, CMC also verifies the building's pre-existing conditions by taking digital photos to document insulation levels, mechanical equipment, fixtures, and thermostats. CMC checks findings from the sample of building units that the ES evaluates. For example, CMC verifies counts of existing appliances, HVAC units, and water heaters that the ES flagged for replacement.

CMC submits a copy of the work order to the LV. The LV reviews work orders for completion. CMC audits the ES to ensure their performance and customer interactions meet program standards. The ratings are:

- **Pass** - Project meets program standards; the ES understood the task and executed according to protocol
- **Pass with Note** - CMC may find that the ES work was executed satisfactorily, but that the task or process could have been completed more efficiently using the proper tools or procedure.
- **Fail** – The ES did not perform the task or procedure accurately and/or does not clearly understand the task. CMC notes any issues and discusses them with the ES supervisor within 48 hours. As needed, the ES will meet with the ES supervisor for a refresher on program expectations and standards. If CMC identifies issues that could cause a safety or hazardous environment, CMC advises the ES on the spot and requests that they follow proper procedure. CMC will notify RIE and the LV of any health and safety issues within the same business day.

In-Process Lighting & Weatherization Installation Inspections

The Lighting Installation Inspection[5] and the Weatherization Installation Inspection take place while the respective IICs install measures. Both inspections ensure measure installations match or document changes to the project work order, occur during the specified timeframe, and meet program standards. Prior to arrival, CMC reviews the project work order to get familiar with what equipment, lighting, and/or weatherization measures should be installed. During the inspection, CMC confirms that all measures match the work order and any changes to the work order are documented. CMC observes the installation work to ensure that the IIC does the work according to program standards. CMC reports photos and notes of any issues to Salesforce and assigns an inspection rating. The ratings are:

- **Pass** - Project meets program standards; the IIC understood the task and executed according to protocol
- **Pass with Note** - CMC may find that the IIC work was executed satisfactorily, but that the task or process could have been completed more efficiently using the proper tools or procedure.
- **Fail** – The IIC did not perform the task or procedure accurately and/or does not clearly understand the task. CMC notes any issues and discusses them with the LV within 48 hours. If CMC identifies issues that could cause a safety or hazardous environment, CMC advises the IIC on the spot and requests that they follow proper procedure. CMC will notify RIE and the LV of any health and safety issues within the same business day.

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[5] RI Energy IEMF currently offers common area lighting installations only.

Heating System Replacement Post Inspection

The Heating System Replacement Post Inspection verifies the installation of the correct equipment. CMC conducts a site visit after the IIC completes installation activities to ensure that all invoiced measures are installed. CMC takes photos to document assessed buildings, units and common areas, and measures. CMC also ensures that the installation areas are clean. CMC notifies the LV and RIE of any issues within 48 hours. CMC assigns an inspection rating and uploads a report including photos and notes of any issues to Salesforce. The ratings are:

- **Pass** - Project meets program standards; the IIC understood the task and executed according to protocol
- **Pass with Note** - CMC may find that the IIC work was executed satisfactorily, but that the task or process could have been completed more efficiently using the proper tools or procedure.
- **Fail** – The IIC did not perform the task or procedure accurately and/or does not clearly understand the task. CMC reports any issues with installation back to the LV within 48 hours explaining what remediation or corrective steps the IIC needs to complete. CMC will notify RIE and the LV of any health and safety issues within the same business day.

The LV creates a repair service appointment through Salesforce and attaches the report. This alerts the IIC of the new service appointment. The IIC reviews the report to prepare for the appointment. The IIC completes the appointment, addresses the issues, and uploads photos of the repair and a document with the customer's sign-off to Salesforce. The LV conducts an **in-program QA/QC** to review these documents for completeness and to ensure that the repair is fully addressed. If there is an issue with the photos or documentation, the LV will schedule a follow-up visit with the customer for the LV to check the repair in person and/or gather any missing information (for example, the customer's signature). Examples of issues with photos or documentation include photos that do not clearly show the repair or repair quality or a missing customer signature. Once the LV approves the job, the project is complete.

Table 7 provides an overview of these inspections.

Table 7. Income Eligible Multifamily QA/QC Overview

QA/QC Factors	In-Process HEA Inspections	Lighting Installation Inspection	Weatherization Installation Inspection	Heating System Replacement Post Inspection
Purpose	• Audit ES during HEA • Confirm pre-existing conditions • Confirm no missed measure opportunities • Verify assessment findings • Verify number of existing equipment evaluated for replacement	• Verify installations comply with program standards • Ensure changes to installed measures or practices are documented • Photograph installations (weatherization only) • Conduct a thermal scan of insulated walls & attics		• Verify manufacturer, model number & efficiency rating of heating system equipment installed • Photograph installed heating system(s)
Whose work is checked	ES	IIC	IIC	IIC
Who conducts the check	CMC	CMC	CMC	CMC
Remediation Steps for Failed Inspections	• ES addresses issues while still on site • LV provides ES training	IIC addresses issues while still on site		• LV reviews CMC report & schedules repair service appointment for IIC • IIC completes the appointment and reports updates to LV • LV ensures repairs meet program standards
Outputs	Identification and communication of installation & quality issues			
	• Information to improve or maintain good ES practices • Photos of existing fixtures to replace • Completed Audit Review Checklist	Photos of a sample of installed light fixtures	• Thermal scan images of installed insulation • Photo verification of weatherization spaces	• Completed DOE QC Inspection Form • Completed Field Inspection Report • Completed Heating Replacement Post Inspection Form • Photos of installed heating systems
Outcomes/ Benefits	• Assurance to RIE & implementers that ESs & IICs followed protocols & met standards • Increased likelihood that all jobs provided comprehensive measures that will result in the most energy savings			
	• Ensure proper installation & address any issues • On-the-job training for ES and/or IIC			

Residential New Construction (RNC)

RNC Introduction

RI Energy's RNC program strives to increase the construction of energy efficient single family and multifamily homes that exceed the efficiency of the User Defined Reference Home (UDRH), a baseline determined by assessing the efficiency of RI homes. The program's primary objectives are to provide builders and other allied professions with training, targeted incentives, and associated technical assistance to increase the adoption of high efficiency technologies and construction practices in the residential market.

RI Energy administers the initiative through an LV. The LV oversees the development and deployment of training, education, and outreach efforts, as well as tracking and reporting program activity to RI Energy. The LV also recruits and enrolls projects. The LV assigns high-rise projects via account managers who work directly with larger developers and builders.

RI Energy leverages their Trade Ally network of Home Energy Rating System (HERS) Raters to conduct **in-program QA/QC** of the IICs' work. HERS Raters also play a critical role in recruiting builders to enroll low-rise projects via an online intake tool. A RESNET Quality Assurance Designee (QAD) conducts a **third-party QA/QC** of the HERS Rater's work during the final inspection.

RNC QA/QC Overview

Program-approved HERS Raters conduct two QA/QC procedures for the RNC program on 100% of projects, both of which inform the RESNET Certified HERS Rating process:

- Midpoint Inspection for active projects (**in-program QA/QC**)
- Final Inspection for completed projects; these encompass:
    - RESNET HERS Rating Quality Assurance Check by a RESNET QAD (**third-party QA/QC**)
    - Data and Field Quality Control (DFQC) Check by the LV (**in-program QA/QC**)

Key Players

Role	Company
Program implementer and LV	CLEAResult
In-program QA/QC vendors	RIE Trade Ally network of HERS Raters
Installation contractors	Design and Construction Team
Third-party QA/QC inspectors	RESNET QAD

Inspection Selection

HERS Raters conduct at least one Midpoint Inspection and one Final Inspection on every project and may conduct more than one of these inspections on a single project depending on how the project progresses and whether all measures were in place at the time of final inspection. For example, a HERS Rater will conduct an additional Final Inspection if all measures are not in place at the time of the first Final Inspection.

Midpoint Inspection

HERS Raters conduct Midpoint Inspections prior to the installation of drywall to assess project eligibility and to verify that IICs installed specific measures according to program requirements. This check must be done for a home to receive an approved RESNET Certified HERS Rating.

Final Inspection

Final Inspections must meet specific program requirements, such as ventilation and achieving savings over the RNC baseline. Final Inspections are also a requirement of the RESNET-certified HERS Ratings and include a RESNET HERS Rating Quality Assurance Check conducted by a RESNET QAD to ensure project plans, modeling, and field inspections meet expectations. If a RESNET QAD finds errors, they communicate those to the HERS Rater who makes corrections. If a HERS Rater fails to make corrections to meet program requirements, they lose their ability to perform official HERS Ratings for the RNC program.

As part of the Final Inspection, the LV completes the DFQC Check to review project paperwork prior to submission to RNC Operations. The LV will correct any mistakes they find in project paperwork. Once RNC Operations processes the paperwork, they will upload it into iEnergy.

If a project does not meet program expectations during either the Midpoint or the Final Inspection, the HERS Rater informs the LV Field Manager. The LV Field Manager informs RNC Operations. RNC Operations works with program staff and project teams to address any errors identified during inspection. RNC Operations will deactivate any project that fails to complete requirements including completing necessary paperwork accurately and addressing inspection errors from the RNC Program Database. Projects deactivated from the RNC Database are closed and no further action is taken.

Table 8 provides an overview of these inspections.

Table 8. Residential New Construction QA/QC Overview

QA/QC Factors	Midpoint Inspection	Final Inspection	Final Inspection: DFQC Check	Final Inspection: RESNET QAD
Purpose	• Verify installed measures comply with program requirements prior to drywall installation • Assess project/unit eligibility	• Verify installed measures comply with program requirements • Complete blower door & duct blaster test	• Ensure program & RESNET standards are met • Review invoicing data • Review final paperwork	• Ensure preliminary modeled plans are submitted, reviewed, & approved • Ensure photos & documentation are stored in compliance with RESNET • Ensure HERS Rater corrects errors
Whose work is checked	IIC	IIC	IIC, HERS Rater	HERS Rater
Who conducts the check	HERS Rater	HERS Rater	LV	RESNET QAD
Remediation Steps for Failed Inspections	HERS Rater informs RNC Operations		Corrections to invoicing data & final paperwork	HERS Rater could lose ability to do RNC HERS Ratings
	• RNC Operations ensures any errors found during inspection are corrected. • RNC Operations will deactivate any project from the RNC Program Database that fails to address inspection errors. Projects deactivated from the RNC Database are closed & no further action is taken.			
Outputs	• Complete RNC Data Collection Form • Updated RNC Program Database	• Complete paperwork to RNC Operations • Generate reports from RNC Program Database for iEnergy • Share report with ENERGY STAR • Forward final project paperwork for Data & Field QC • Determine energy efficiency & incentive amounts	• Data extract & invoice saved in iEnergy • Approved field paperwork & final reports	• Assessment of HERS Rater performance
Outcomes/ Benefits	• Assurance to RIE & implementers that HERS Raters & IICs followed protocols & met standards • Increased likelihood that all jobs provided comprehensive measures that will result in the most energy savings			