



Inspection Manual

Green Rewards Mortgage Loans: Verification of Green Rewards Repairs





About the Manual

This Manual has four main components:

- Inspection Requirements;
- Documentation Requirements;
- Inspection and Verification Workflow; and
- Energy and Water Efficiency Measure Inspection and Verification Requirements.

This Manual is a companion piece to the two-half-day instructor-led Verification Inspection Trainings. These trainings cover key aspects of the process including data gathering, efficiency measure Verification training, and reporting. Servicers will have access to the slide decks, and additional photos and illustrations to supplement this Manual.

For further general questions, please contact: Green_AM@fanniemae.com

For specific questions about inspections, please contact: Green_Inspections@fanniemae.com

Glossary

EWEM

Energy and Water Efficiency Measures (EWEM) are the required efficiency measures that the Borrower commits to install at a Property as part of a Green Rewards Mortgage Loan. The EWEMs selected by the Borrower for installation are referred to in the Fannie Mae Multifamily Loan Agreement as “Green Rewards Repairs”. For the purposes of inspection, EWEMs are split between “Basic” and “Complex” measures. In general, Basic EWEMs are limited to fixture-level installations, such as low-flow water fixtures and lighting upgrades. Complex EWEMs include upgrades and adjustments to building systems, such as heat recovery ventilation systems or boiler controls.

ENERGY STAR®

ENERGY STAR is an official Environmental Protection Agency/Department of Energy (EPA/DOE) program that provides credible and unbiased information about energy efficiency. ENERGY STAR products meet EPA’s energy efficiency requirements and are independently certified. For more information on ENERGY STAR products see: <https://www.energystar.gov/products>. To find out if a product is ENERGY STAR certified, look up the model number online.).

Fannie Mae COVID-19 Policy

Fannie Mae has a COVID-19 safety policy described on page 5 and in Supplement 20-14: COVID-19 Temporary Inspection Protocols. All program participants must follow this policy until further notice.

Form 4099 – Instructions for Performing a Multifamily Property Condition Assessment (PCA)

Form 4099 sets forth the Instructions for Performing a Multifamily Property Condition Assessment (PCA). The Form 4099 includes additional modules necessary for a Green Rewards Mortgage Loan, including:

- High Performance Building (HPB) Report t and Appendix H – Analysis Tool for a High Performance Building Report (Form 4099.H).
- Technical Solar Assessment and Appendix I – Analysis Tool for a Technical Solar Assessment (Form 4099.I).



Form 4099.H

Form 4099.H is the Analysis Tool completed with the High Performance Building Report, and is required for all Green Rewards Mortgage Loans. The 4099.H analyzes the recommended EWEMs and gives estimated energy, water, and cost savings. The Borrower uses this analysis to choose EWEMs to install.

Form 4099.I

Form 4099.I is the Analysis Tool completed with the High Performance Building Report for all Green Rewards Mortgage Loans that include a Solar Photovoltaic System (Solar PV System) as an EWEM.

GPM/GPF

Gallons per minute (GPM) or gallons per flush (GPF) are used to define the efficiency ratings for faucets, aerators, showerheads, and toilets.

High Performance Building Report (HPB)

The HPB Report is an ASHRAE Level 2 “energy audit” that identifies and quantifies recommendations (EWEMs) to improve the energy and water efficiency of the Property. EWEMs are selected by the Borrower and installed at the Property per the Required Repair Schedule. Installed EWEMs are inspected during the Verification Inspection.

Inspection Form

The Inspection Form is an Excel file that is pre-filled with Property and Mortgage Loan data by Fannie Mae. The Inspection Form is completed by the Verification Inspector to document compliance with the Required Repair Schedule – Schedule 6 to the Multifamily Loan and Security Agreement.

Required Repair Schedule

Schedule 6 to the Multifamily Loan and Security Agreement that specifies all Repairs required to be completed by the Borrower at the Property, including the Green Rewards Repairs selected by the Borrower for installation as part of the Green Rewards Mortgage Loan.

Supplement 20-14

This document outlines COVID-19 temporary inspection protocols and provides additional detail on Fannie Mae’s COVID-19 Safety Policy. It is a supplement to the Fannie Mae Multifamily Selling and Servicing Guide.

Verification Inspections

Verification Inspections are visual observations made to determine if EWEMs have been installed as required in the Borrower’s Loan Agreement.

WaterSense®

This is an official EPA program that certifies equipment for water efficiency. WaterSense is similar to ENERGY STAR, but for water-saving equipment. For more information on WaterSense products, see: <https://www.epa.gov/watersense/watersense-products>.



Overview of the Program

[Fannie Mae's Green Rewards Program](#) is a financing product feature that provides lower pricing, additional loan proceeds, and a free High Performance Building Report (energy and water audit) to finance smarter and greener Property improvements. Eligible improvements include new ENERGY STAR® appliances, energy efficient HVACs, WaterSense® labeled low-flow fixtures, LED lighting, solar photovoltaic (PV) systems, and more.

Projected Environmental Impact	
	Cumulative Since 2012
Source Energy Saved	9.5 billion kBtu
Greenhouse Gas Emissions Avoided	630,000
Water Saved	8.5 billion gallons

The goal of Green Rewards Verification is to ensure that all the Energy and Water Efficiency Measures (EWEMs) selected by Borrowers as Green Rewards Repairs and included in the Required Repair Schedule are installed correctly in quantity and specification. Correct installation of the EWEMs helps the Property meet its goals for energy and water savings. Verification also provides an opportunity to correct any errors that occurred during the original installation and helps the Property Owner achieve its projected savings and benefits.



Roles and Responsibilities

The table below summarizes roles and responsibilities of each stakeholder in performing EWEM Verifications for Green Rewards Mortgage Loans starting in 2021.

Role	Key Verification Activities
Servicers	<ul style="list-style-type: none"> Review documents in advance of inspections Assist Inspectors with scheduling and conducting Verification Inspections Review the completed Inspection Form, and submit it to Fannie Mae Conduct Verification noncompliance remediation as needed
Inspectors	<ul style="list-style-type: none"> Inspect Properties for Verification of all EWEMs as prescribed by this Verification Inspection Manual Gather and report cost and material specifications Complete the Inspection Form Submit the Inspection Form to the Servicer
Fannie Mae Green Asset Management	<ul style="list-style-type: none"> Define program rules and processes Provide pre-filled Inspection Forms to Servicers Receive completed Inspection Forms and perform quality control review Provide completed Inspection Forms to Bright Power for compilation and reporting
Bright Power	<ul style="list-style-type: none"> Develop and maintain Inspection Form Receive completed Forms from Fannie Mae Prepare monthly Verification reports Provide training, educational materials, and technical assistance as needed Conduct Green Impact Inspections for a pre-defined sample of properties

Inspector Qualifications

The program has two levels of Inspector qualifications corresponding to EWEMs that are denoted as either Basic or Complex. In general, Basic EWEMs are limited to fixture level installations, such as low-flow water fixtures and lighting upgrades. Complex EWEMs include upgrades and adjustments to building systems, such as heat recovery ventilation systems or boiler controls. A full list of the Basic and Complex EWEMs is included in the Appendix to this Manual.

Qualification Level – Basic EWEMs

If the Green Rewards Repairs include a Basic EWEM, the Inspector must meet the minimum requirements for third-party inspectors as detailed in Part V Section 502.05 (A) and (B) of Fannie Mae’s Multifamily Selling and Servicing Guide:

Any third-party inspector must:

- Have no financial interest in the Property to be inspected;
- Demonstrate experience in multifamily real estate property inspections;
- Be experienced in the market in which the Property is located; and
- Either:
 - Possess a professional certification from any one of the following:
 - Real Estate Assessment Center for HUD as a Certified Home Inspector;



- American Society of Home Inspectors ("ASHI");
- International Association of Certified Home Inspectors ("InterNACHI"); or
- State certified home inspector;
- Be a registered architect;
- Be a civil engineer; or
- Have successfully completed an acceptable in-person training course in lieu of the above. Acceptable training courses include the Fannie Mae approved inspection course provided by the MBA.

Fannie Mae reserves the right, in its sole discretion, to notify the Servicer that a third-party inspection firm is no longer acceptable to Fannie Mae.

Qualification Level – Complex EWEMs

If the Green Rewards Repairs include a Complex EWEM, the Inspector must have the following minimum skills, credentials, and experience, which are the same qualifications as the High Performance Building Consultant in Form 4099 Section 5.10-B in addition to the qualifications set forth above for the Basic EWEMs. **NOTE:** These additional qualifications pertain to the Inspection project team, and not to any single individual.

The Inspector must have effectively completed not less than five multifamily energy and water audits within the prior two years that included:

- An energy audit equivalent in scope to the guidelines of the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Level 2 - Energy Survey Analysis;
- A water audit equivalent in scope to the ASHRAE Level 2 using industry-accepted analytical methods;
- An industry-accepted energy modeling software; and
- An ENERGY STAR Portfolio Manager benchmark.

The Inspector must hold at least one of the following professional designations, in good standing:

- Certified Energy Manager (CEM) or Certified Energy Auditor (CEA), certified by the Association of Energy Engineers (AEE);
- Multifamily Building Analyst (MFBA), certified by the Building Performance Institute, Inc. (BPI);
- High-Performance Building Design Professional (HPBD) certified by ASHRAE; or
- Building Energy Assessment Professional (BEAP) certified by ASHRAE.

Inspector Conduct Standards: The Inspector must comply with applicable professional standards for ethics as defined by the Association of Energy Engineers Code of Ethics for Certified Energy Managers and/or the Building Performance Institute, Inc. (BPI) Code of Ethics.

Required Training

In addition to the above qualifications, Inspectors are required to attend Fannie Mae's Green Rewards Loan Verification Inspection Training on program requirements, processes, and documentation.

COVID-19 Safety Policy for On-Site Inspections

Until further notice, all Inspections must follow Fannie Mae's COVID-19 Safety Policy rules. Please refer to Supplement 20-14 to the Fannie Mae Multifamily Selling and Servicing Guide for additional detail.

- No Inspector may enter an occupied unit.
- Vacant units can be used to meet the sample size.
- If there are not enough vacant units to meet the sample size, the Inspector may coordinate with the Property staff to have them enter the unit or obtain the needed photographs from the tenant. Sample size requirements remain the same for in-unit measures even if data is collected with assistance from Property staff or residents.
- Inspector must follow all required local ordinances.



- Inspector must follow appropriate safety precautions when onsite including wearing a mask and practicing social distancing at all times.

COVID-19 Policy for “Virtual” Inspections

Until further notice, Inspectors are allowed to perform “virtual” Inspections. In a virtual Inspection, the Inspector is not on-site, but obtains the required information using a combination of video calls, photographs, and installed equipment information.

- In a virtual Inspection, Inspectors must collect the same information they would in a physical Inspection, including the Inspection Form.
- If available, use a virtual walkthrough, such as Zoom, FaceTime, WebEx, or other video call platforms with a Property representative to get live information and the best views of the equipment.
- Coordinate with a Property representative to obtain descriptive photos and equipment documentation, which allow the Inspection to be accurately completed and the Inspection Form to be fully completed.
- Sample size requirements remain the same for in-unit measures even when information is collected through “virtual” inspections.

Verification Documentation

The Verification Inspection process utilizes two documents that organize the process, assist in the collection of information, and provide background on Property building systems and improvements funded by the Green Rewards Program:

- Inspection Form (MS Excel file); and
- Form 4099.H.

Inspection Form

The Inspection Form is the primary document used during the Verification Inspection process of a Property's EWEMs. The Inspection Form is pre-filled with the Property-level information needed to conduct and report on the installed efficiency measures. This standardized template file is the only accepted format to submit Verification Inspection data to Servicers and to Fannie Mae.

The Inspection Form includes user-interface guides to ensure completeness and accuracy. The Excel workbook is pre-filled with basic information about the Property, Green Rewards Loan, and installed EWEMs.

The Inspection Form is described in detail in the section below titled, “Working with the Inspection Form”.

High Performance Building (HPB) Report

A High Performance Building Report gives an overview of the building’s current systems and identifies and quantifies the recommendations for energy or water efficiency improvements. The HPB Report may provide context and additional information on measures, which may be needed during the Inspection to confirm that the EWEM was installed as intended.

Sampling Requirements

For in-unit measures, inspectors are only required to inspect a sample of the units at a Property. The required sample size for a building is determined based on the Property unit count. The Inspection Form calculates the number of units required automatically, and tracks the number completed based on user input.



Table 1: Unit Sampling Requirements (from Table 5.08.C.4.1 in Fannie Mae Form 4099)

Total Number of Units	Minimum Number of Units in Sample
Less than 20 units	Minimum of 3 units
21 to 99 units	10% of units, with a minimum of 5 units
100 or more units	5% of units, with a minimum of 10, but a maximum of 30 units

Some Properties only have EWEMs installed in a subset of units. These are called “partial measures.” For example, a building with 100 units may be required to install ENERGY STAR Refrigerators in 40 units. For partial measures, the Verification Inspection should only be conducted in units that received the installations. Request a rent roll or other documentation from the Property Owner to identify units that received partial measures.

For common area EWEMs (e.g., common area lighting) or central systems (e.g. boilers or ventilation systems) inspectors are expected to confirm that 100% of the required installation has been completed.

Determining Compliance

An EWEM is deemed to be compliant if it is verified by an Inspector to meet the requirements of the Required Repair Schedule in the Loan Agreement and as outlined in a Property’s Inspection Form. An Inspector must verify each EWEM within the sample units using product information and field observation to determine compliance.

Information Sources include:

Product Information	<ul style="list-style-type: none"> • Specifications and datasheet • Product manuals • Invoices
Field Observation	<ul style="list-style-type: none"> • Product labels, such as ENERGY STAR® or WaterSense® • Visible nameplate showing rated efficiency • Product is installed • Installed EWEM is operational

For common water EWEMs such as low-flow showerheads, faucets and toilets, the efficiency rating is typically visible on the equipment itself. For other types of equipment, such as appliances or heating and cooling equipment, a nameplate on the equipment may include a model number but the efficiency rating must be looked up online or on the box or other product information. If the efficiency rating is not visible on the equipment itself, then some identifying information (e.g., model number) must be matched to product information to ensure that the correct equipment was installed.

The following general guidance can be used to check whether an EWEM is compliant or noncompliant for the purposes of fulfilling the requirements of the program. Refer to the section “Inspecting the EWEMs,” for detailed guidance on the Inspection of each type of EWEM.

An EWEM is **compliant** if all of the following are true:

- The observed installed equipment matches the required specification;
- The observed installed equipment matches the required quantity; AND
- The EWEM is installed and functional.



An EWEM is **noncompliant** if any of the following are true:

- Installation does not match the specification in the Inspection Form;
- Wrong equipment was installed;
- Installation is incomplete, or it is not properly installed;
- Installed measure is broken or not fully functional; OR
- Missing EWEMs.

Note: If an EWEM is missing a part, does not turn on, or is otherwise incomplete, you must mark it as noncompliant. The Property will have the opportunity to correct or complete the installation and get a compliant determination as part of the Fannie Mae remediation process.

Special Guidance for 0.5 GPM aerators

Green Rewards prohibited the selection of 0.5 GPM aerators as an EWEM in 2019. This rule change was implemented in order to better align with EPA's WaterSense program, which does not certify 0.5 GPM fixtures, and because it was found that these aerators often led to complaints or were removed. Verifications may still be taking place for installations for Green Rewards Mortgage Loans that were originated before this rule change, however. For these cases, use the following guidance:

If the EWEM recommendation is for a 0.5 GPM aerator:

- A 0.5 GPM aerator should be considered compliant. Despite the later rule change, the Property has followed through on its selected EWEM installation which was allowed at the time the Mortgage Loan closed.
- A 1.0 GPM WaterSense aerator is also considered compliant, since this is now thought to produce results equivalent to a 0.5 GPM product.
- Any aerator above 1.0 GPM is not compliant.

If the EWEM recommendation is for a 1.0 GPM aerator but the inspector observes a 0.5 GPM aerator:

- This will NOT be considered compliant, because no 0.5 GPM aerator is certified as WaterSense.
- This is a rare instance where installing a "more efficient" piece of equipment will cause the EWEM observation to be noncompliant. In other cases a Property that installed equipment with higher efficiency than required will be considered compliant.

Working with the Inspection Form

The Inspection Form is the primary document used during the Inspection and Verification process of an EWEM. For each Property, the Inspector will receive an Inspection Form pre-filled with the Property and Mortgage Loan information needed to conduct the Inspection. A sample Green Rewards Verification Inspection form (Form 4221) may be found on [the Fannie Mae Green Measurement and Verification Service](#) website.

The form includes the following basic information:

- Property;
- Green Rewards Mortgage Loan attributes; and
- EWEMs to be installed.

The Inspection Form organizes the Inspection workflow across six worksheets or tabs. Four active tabs are used for data entry and determining compliance:

- Property Information;
- EWEMs;
- Observations; and
- Photos.

"Observations" in the context of a Verification Inspection refer to the Verification of a specific piece of equipment at the Property and are typically completed through visual inspection rather than functional testing of the equipment. The final two tabs are "Units - Print Sheet" and "Common Areas - Print Sheet." These are printable worksheets to organize offline data collection during the site Inspection.



On all tabs, required data cells are yellow. They automatically change color when data is entered. When the form is complete, no yellow cells should be in the workbook.

The Property Info Tab

The Property Info Tab has general information about the Property and the Inspection team.

Required Fields

- Name of Inspector;
- Inspection company;
- Date of Inspection;
- Date when all EWEMs were completed;
- On-site personnel interviewed; and
- General Inspection comments field.

PROPERTY INFORMATION

Enter the Fannie Mae Loan ID here	Property Name	
Enter the Property Linkage ID here	Street Address	
	City	
	State	
	Zip	
	Origination Date	
	Original Expected EWEM Completion Date	
	Servicer	
	HPB Consultant	
	Number of Units	

INSPECTION INFORMATION

Name of Inspector		Total EWEMs	0
Inspection Company		Noncompliant EWEMs	0
Date of Inspection		Noncompliant EWEM %	#DIV/0!
Date when all EWEMs were Completed		Minimum number of units to inspect	30
On-site personnel with whom I interacted		Number of units inspected	0

General Inspection Comments

The comments field on the Property Tab should be used for notes that apply to the entire building, such as items related to the building, the staff, etc. Comments for individual EWEMs will be entered on the Observations Tab.

Another feature of the Property Tab is an Inspection tracker noting the sample size and number of non-compliant EWEMs. The tracker updates automatically based on information entered on the other tabs.

Warnings on the Property Info Tab

The Property Info tab contains some warnings for your information. Please look out for them to guide the inspection.

- “This property contains a complex EWEM”. This warning will show under the Property Linkage ID.



- “This property may contain a partial EWEM”. This warning will show under the Property Linkage ID. If you see this warning, review the EWEM installed units, and inquire to the Property about the quantity installed. This means that one of the EWEM installed units is less than the total units in the Property.
- “Number of units inspected” – This automatic counter field will be red until the number of units inspected, as shown in the Observations tab, is at least the minimum.

The EWEMs Tab

This tab has a detailed list of the EWEMs installed on the Property requiring inspection. There is pre-filled information for each EWEM, as well as blank fields that must be completed using information gathered during the Inspection process.

Number	EWEM Name	EWEM Description	Nameplate Specification**	EWEM Estimated Cost	EWEM ACTUAL Cost	EWEM ACTUAL Date Completed	Space Category
1	Install programmable thermostats	Install ENERGY STAR certified smart thermostats (Nest or similar) in 80% of apartments and common areas to control heating and cooling.		\$ 44,270			Apartments and C
2	Add pipe insulation	Insulate all exposed domestic hot water lines and exposed cold water lines up to 3 feet for each system with R3 foam insulation.		\$ 5,780			Apartments
3	Install low-flow bath faucets	Install low flow, 0.5 gallon per minute aerators in 100% of apartment bathroom faucet fixtures.		\$ 5,060			Apartments
4	Install low-flow kitchen faucets	Replace the 27% of kitchen faucets with integrated sprayers with new fixtures. In addition, install low flow, 1.0 gallon per minute aerators in 100% of apartment kitchen faucet fixtures.		\$ 13,814			Apartments
5	Install low-flow showerheads	Install low flow, 1.25 GPM EPA WaterSense-certified showerheads in 100% of apartment bathrooms.		\$ 25,300			Apartments
6	Add or upgrade controls	Replace the continuous-speed pool/spa pumps with VFD models.		\$ 10,250			Common Areas
7							

Pre-filled fields

- EWEM Number;
- EWEM Name;
- EWEM Description + “BASIC” or “COMPLEX”;
- EWEM Estimated Cost;
- Space Category (Units/Common Areas);
- Estimated Quantity Installed;
- Number of units in which the equipment is installed; and
- Inspection Instructions (short description).

Required Fields

Information entered on the EWEMs Tab is at the Property level (not the Unit level). The required fields include information gathered by the Inspector from the Property Owner and during field observations. The table below outlines the inputs and sources. The required entries are measure specific. Blacked out cells are not required.



Heading Name (Column)	Input Description	Source
Nameplate Specification (Column E)	The flow rate for water fixture in gallons-per-minute (GPM) or gallons-per-flush (GPF)	Specifications, product datasheets, or invoices from the Property Owner
EWEM Actual Cost (Column G)	Total installed cost including material and labor	Invoices from the Property Owner, documentation from the Servicer
EWEM Actual Date Completed (Column H)	The day when this specific EWEM was completed	Interview with the Property, work orders, or calendars, etc.
Inspection Result Description (Column L)	Summary comments regarding the Inspection findings for the EWEM for the whole Property	Inspector field observations

Adding EWEM Comments/Descriptions

You will be asked to write a short description of each EWEM that you inspected and what you saw. *Do not use generic copy-and-pasted phrases.*

Examples of acceptable EWEM descriptions:

- Of the eight (8) apartments observed, none are complaint, the cold water lines were not insulated. Four (4) did have complete pipe insulation on the hot water lines installed.
- Sensi ST55 Smart Thermostats were installed in all units. These thermostats are Energy Star qualified. However, none of the thermostats were connected to Wifi, although tenants are required to provide their own internet.
- Bathroom aerators in 6 out of the 10 sampled residential apartments have been replaced with 1.0 gpm aerators.
- All in unit lighting has been upgraded to LED lamps in a variety of fixtures. Wall sconces on all interior hallways, all lobby lighting, and parking lot lighting were observed. In units: bathroom lighting, kitchen lighting, and ceiling living area lighting.

Examples of unacceptable EWEM descriptions:

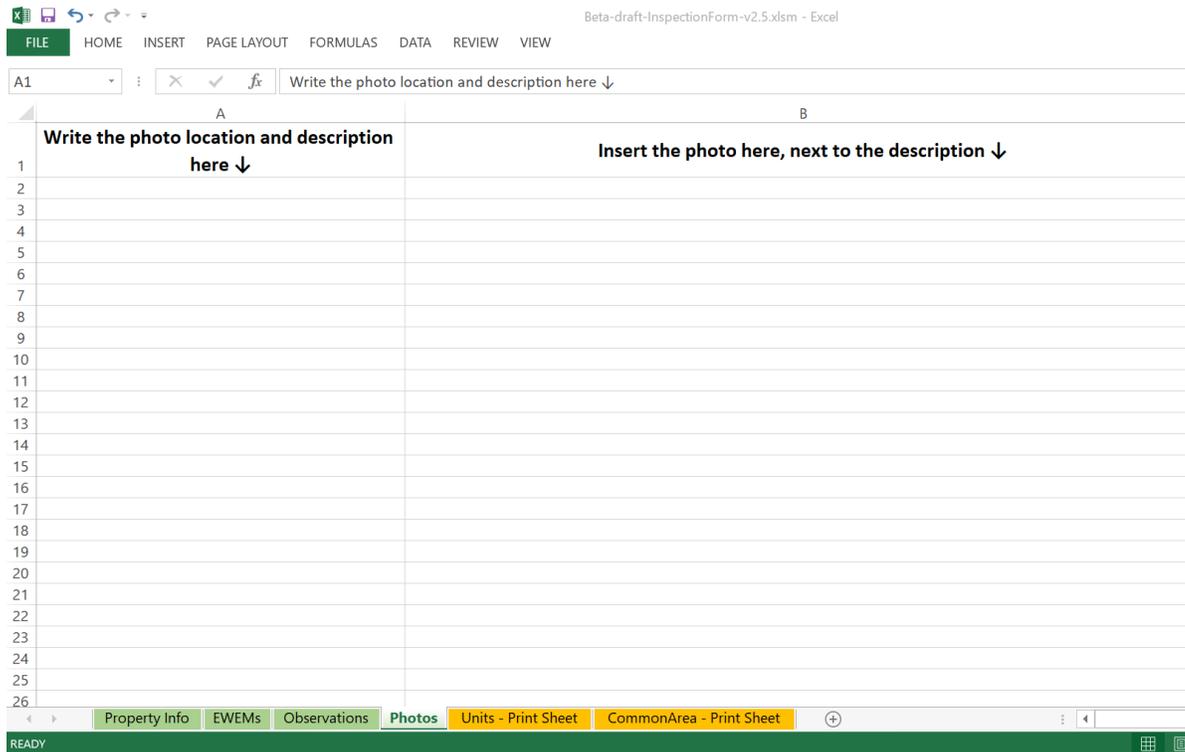
- Lighting upgrades are complete.
- All faucets installed
- Smart thermostats have been installed.



On the EWEM Tab, the Inspection Form will automatically add up the number of observations entered per EWEM on the Observation Tab (Column M). Use this summation to confirm that all required observations are entered.

The Photos Tab

This section of the Inspection Form has the most flexible formatting for you to be able to include different numbers of photos.



The Inspection reporting must include the following photos:

- At least one photo of each type of observed equipment.
- A photo of each non-compliant EWEM.

In Column A, write where the photo was taken. Include the common area space or the unit number.

In Column B, insert the corresponding photo.

To insert a picture in Excel, go to the Insert menu, and select Pictures. “Insert > Pictures > This Device.”

User Tip: Where was I?

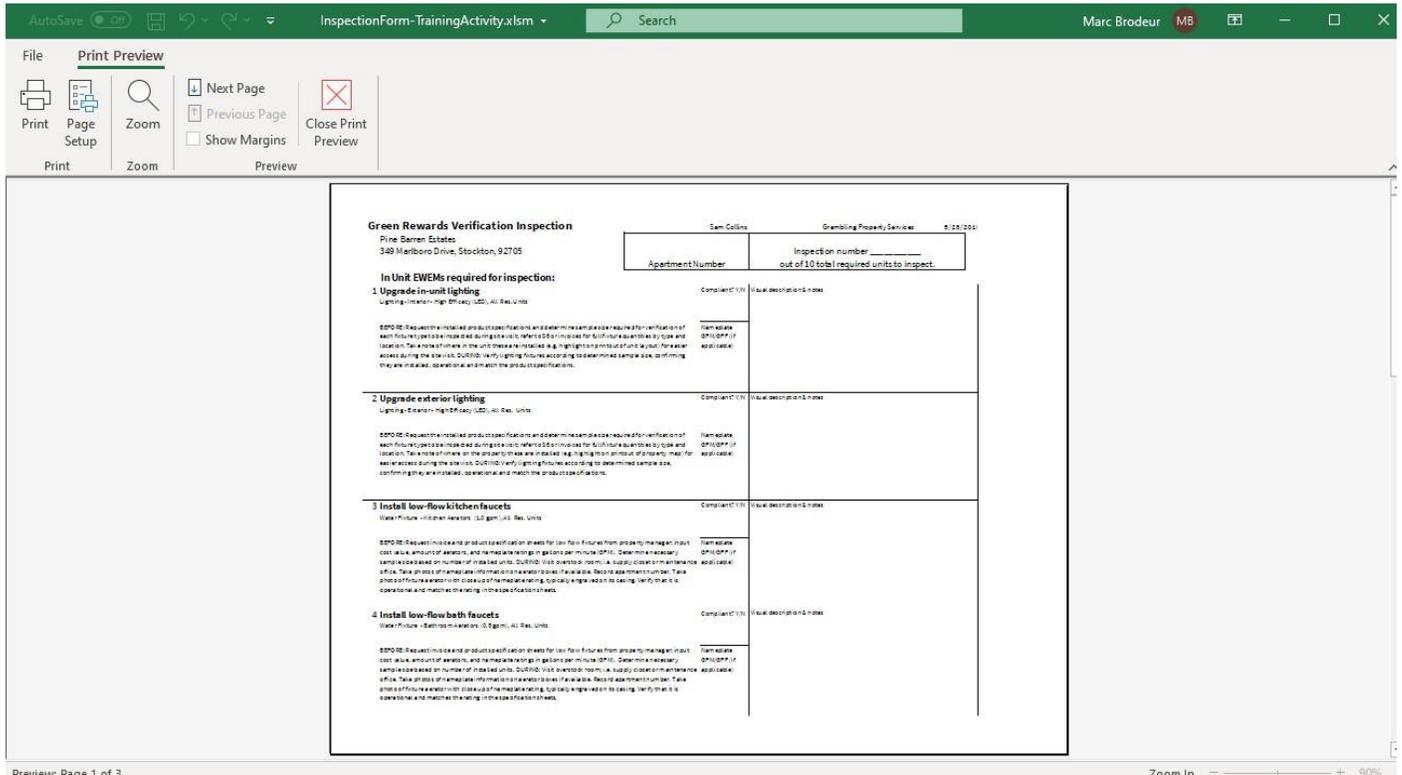
It is easy to forget where a photo was taken. Take a photo of the Unit number or common area name signage when entering a space. The image will serve as a bookmark later when photos are viewed in sequence.



Unit Data Collection and Common Area Data Tabs

The Unit Data Collection and Common Area Data tabs are printable worksheets to collect data during the inspection. They are pre-filled with a list of the unit level and common area EWEMs that require Inspections. The information gathered using the worksheet correlates to the required data entry on the Observations Tab. Unlike the other tabs, no information is required to be entered on the “print sheets”. They are for your convenience to use during the inspection.

D	E
<input type="button" value="Print 'Apartments' worksheets"/>	
<i>n enter the inspection information.</i>	
<input type="button" value="Print 'Common Area' worksheet"/>	
<hr/>	
Pine Barren Estates	
349 Marlboro Drive	



The worksheets are an alternative to entering data directly into the Inspection Form on a laptop or other device during the Verification Inspection.

You can use the “Print” buttons directly on the Property Info Tab to directly bring up the print screen.

The Verification Inspection Workflow Checklist

The Verification Inspection workflow checklist has three steps:

1. Set-up;
2. Field Inspection; and
3. Data Entry, Review and Submission.

Step 1: Set-Up

Refer to the COVID-19 Safety Policy if applicable.

Description: Preparation is the key to a successful inspection. Take time to review project details, gather information, and review the EWEM inspection requirements to prevent errors and save time in the field.

- Review Property Inspection Form:
 - o Complete the Inspection Information section on the Inspection Form’s Property Tab.
- Review the EWEM Tab and identify any partial measures:
 - o Enter the cost and specification information on the EWEMs Tab when received.



- o Request information from the Property:
 - Total Cost (Parts and Labor) of each EWEM type.
 - Product information for all installed EWEMs (material datasheet or product literature or invoices).
 - Property rent roll to identify a diversity of unit types (e.g., studio, 1 bedroom, etc.) for inspection.

User Tip: Identify Any Partial EWEMs

Some EWEMs are only installed in a subset of units. If this is the case, identify units that have the measure to inspect. This will ensure that only units that are required to receive an installation are assessed. Inspecting units that did not receive the installation may cause a property to appear non-compliant when the proper partial measure was installed in other units.

- Plan the inspection:
 - o Note sample size and estimated time per/unit to set expectations for how long the visit will take.
 - o Schedule the inspection with on-site Property staff, or coordinate a virtual walk through.
 - o Coordinate entry to units to be inspected.
 - o Review Verification requirements for each EWEM.

Use the Rent Roll to Select Units to Inspect

Request a copy of the rent roll from the Property and use this document to select units for Inspection. If there are any partial EWEMs, ask the Property to identify which EWEMs were installed in which units.

Step 2: Inspection

Description: During the inspection, information is gathered to determine if the Property has complied with the program requirements. Organization and attention to detail will result in a successful Verification Inspection.

- Inspect In-Unit EWEMs:
 - o Complete a Unit Collection Worksheet for each Unit.
 - or
 - o If entering data directly into the Inspection Form, enter data and observations directly into the Observations Tab.
- Photograph each EWEM type installed in the units:
 - o Photograph each non-compliant EWEM installed in the Units.
- Inspect Common Area EWEMs:
 - o Complete a Common Area Collection Worksheet for the building. Or
 - o If entering data directly into the Inspection Form, enter data and observations directly into the Observations Tab.
- Photograph each EWEM type installed in the common areas.
- Check before you go:
 - o Count the number of Unit Inspections conducted and compare to the required number.
 - o If the project includes partial measures, verify that the appropriate number of Inspections were completed.

User Tip: Getting the shot - photographing EWEMs

Representative photographs of each EWEM type are required as part of the Verification documentation. A good photograph shows details about the installed EWEM that will allow a reviewer to see why a certain determination was made. In general, photos should show the same things that you will look for when determining compliance. The following make for good photographs:

- Labels or inscriptions on the product to show its specification.
- The setting of the product showing that it is installed.
- A photograph of the product operating or powered on, showing that it is operational.



Step 3: Data Entry, Review and Submission

Description: The final step of the Verification Inspection is to update and review all data entered into the Inspection Form including uploading the required photographic documentation. The Inspector will then submit the completed Inspection Form to the Servicer for review.

- Update the Inspection Form’s Observations Tab based on inspection data and notes.
- Update the Inspection Form’s EWEM Tab with any additional information or documentation gathered during the inspection.
- Upload the required photos to the Inspection Form’s Photos Tab.
- Review all tabs of the Inspection Form:
 - Review each EWEM line on the Observations Tab for completeness and errors.
 - Verify the number of Units inspected matches the number required (Compare Cells 4 and 5 in Column D, they should match).
 - Review each EWEM on the EWEMs Tab for completeness and errors.
 - Verify that each measure has the required number of observations recorded (Compare Column L to the sample size required).
 - Double check that all yellow cells have been filled in.
- Return Inspection Form to the Servicer for review.

Resource Documents

Form 4099: Instructions for Performing a Multifamily Property Condition Assessment (PCA)

<https://multifamily.fanniemae.com/media/8456/display>

Supplement 20-14: COVID-19 Temporary Inspection

Protocols <https://mfguide.fanniemae.com/node/14171/changesummary/build/pdf>



Appendix: EWEM Inspection Reference

The inspection form Unit Data Collection and Common Area Data tabs populate with descriptions of key Verification steps for each measure for before and during inspection. For reference, these descriptions are included in a table form in the following pages for basic and complex measures, sorted alphabetically.

Basic Measures

Basic EWEM	Before Inspection	During Inspection
Add attic insulation	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	Access the attic space within apartments to confirm that insulation is installed and confirm it matches the product specifications. Take photos of insulation.
Add duct insulation	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	Access the attic space and/or HVAC access panel within apartments to confirm that insulation is installed. Measure thickness of insulation wrapped around ducts to confirm it matches the product specifications.
Add pipe insulation	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e., highlight on printout of Property map if in common areas) for easier access during the inspection (e.g., domestic hot water utility closets and/or boiler room).	Take photos of pipe insulation around the boiler or hot water tank; measure thickness and length of insulated and non-insulated sections and verify these match the product specifications.
Add storm windows	Request the installed product specifications and determine sample size required for verification of each window type to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e., highlight on printout of unit layout if in apartments or on Property map if in common areas) for easier access during the inspection.	Take photo of windows according to minimum sample size; verify these are operable and match the specifications.
Add VSD motor controller	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e. highlight on Property map) for easier access during the inspection (e.g., rooftop).	Take photo of variable speed drive nameplate; verify these match the product specifications. If needing to cycle through speed settings, consult Property staff and refer to user manual prior to doing so, as this can impact default or custom conditions.
Add window films	Take note of where these are installed (i.e., highlight on printout of unit layout if in apartments or on Property map if in common areas) for easier access during the inspection.	Take photo of windows according to minimum sample size; visually confirm that films are installed on panes.
Air seal envelope/weather-strip	Take note of where these are installed (e.g., highlight on printout of unit layout if in apartments or on Property map if in common areas) for easier access during the inspection.	Take photo of windows according to minimum sample size; visually confirm that weather strip forms a proper seal around fenestration.
Implement water efficient irrigation	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	Take photos of nameplate to confirm model matches with product specifications, as well as photo documentation of irrigation system on landscape. If needing to cycle through control settings on irrigation console, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.



Basic EWEM	Before Inspection	During Inspection
Increase roof insulation	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	Take photos of roof exterior and interior if safely accessible.
Increase wall insulation	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	If visual confirmation is necessary, request that staff turn off power circuit to an electrical outlet and confirm that power is off using a voltmeter. Only after power is off, outlet cover can be safely removed and photos can be taken around outlet box to confirm insulation.
Install low-flow bath faucets	Request invoice and product specification sheets for low flow fixtures from Property manager; input cost value, number of aerators, and nameplate ratings in gallons per minute (GPM). Determine necessary sample size based on number of installed units. If the specification is for 0.5 GPM: a 1.0 GPM fixture will be considered compliant.	Record apartment number. Take photo of fixture aerator in-unit with close up of nameplate rating, typically engraved on its casing. Verify that it is operational and matches the rating in the specification sheets. Visit overstock room; i.e. supply closet or maintenance office. Take photos of nameplate information on aerator boxes if available. If the recommendation is for complete faucets, ensure that faucets have been installed with the correct GPM. If the faucet contains a cache (locking) aerator that does not have a stamp on the housing, request confirmation from the site contact and verify the GPM.



Basic EWEM	Before Inspection	During Inspection
Install low-flow kitchen faucets	Request invoice and product specification sheets for low flow fixtures from Property manager; input cost value, number of aerators, and nameplate ratings in gallons per minute (GPM). Determine necessary sample size based on number of installed units.	Record apartment number. Take photo of fixture aerator in-unit with close up of nameplate rating, typically engraved on its casing. Verify that it is operational and matches the rating in the specification sheets. Visit overstock room (i.e., supply closet or maintenance office). Take photos of nameplate information on aerator boxes if available. If the recommendation is for complete faucets, ensure that new faucets have been installed with the correct GPM. If the faucet contains a cache (locking) aerator that does not have a stamp on the housing, request confirmation from the site contact and verify the GPM.
Install low-flow showerheads	Request invoice and product specification sheets for low flow fixtures from Property manager; input cost value, number of showerheads and nameplate ratings in gallons per minute (GPM). Determine necessary sample size based on number of installed units.	Record apartment number. Take photo of showerhead in-unit with close up of nameplate rating, typically engraved on its casing. Verify that it is operational and matches the rating in the specification sheets. Visit overstock room; i.e. supply closet or maintenance office. Take photos of nameplate information on aerator boxes if available.
Install low-flush toilets	Request invoice and product specification sheets for low flush toilets from Property manager; input cost value, number of toilets and nameplate ratings in gallons per flush (GPF). Determine necessary sample size based on number of installed units.	Record apartment number. Take photo of toilet with close up of nameplate rating, typically between the seat and tank or engraved within the tank. Verify that it is operational and matches the rating in the specification sheets.
Install or replace heat pumps	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where on the Property these are installed (i.e., highlight on printout of property map) for easier access during the inspection (e.g., patio or rooftop).	Verify models installed match the product specifications and are operational; i.e., ensure that fan on indoor air handler is blowing, and the air is hot or cool based on thermostat setpoint temperature, by feeling the air as it exits the ducts. For water-based heat pump systems, where ducts may not be present, use an infrared thermometer or simply touch the radiator, domestic hot water outlet, or radiant floor depending on application to confirm that the system is functioning as intended according to thermostat setpoints.
Install or replace solar screens	Take note of where these are installed (i.e., highlight on printout of unit layout if in apartments or on Property map if in common areas) for easier access during the inspection.	Take photo of windows according to minimum sample size; visually confirm that these are installed on panes.
Install plug load controls	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices.	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Install pool cover	Request invoice and product specification for pool cover.	Take photos of pool cover to confirm this matches the product specifications.
Install programmable thermostats	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Programmable thermostats are not Smart thermostats.	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through thermostat settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.



Basic EWEM	Before Inspection	During Inspection
Install sensors/controls	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map for easier access during the inspection (e.g., boiler or domestic hot water utility closet).	Take photos of sensors and controls including nameplate, where visible, verifying that this matches with specification. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions. Visit stock room to document surplus sensors if those installed are inaccessible (e.g., inline temperature sensors).
Install smart thermostats	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Smart thermostats “learn” and are Wi-Fi enabled. Programmable thermostats do not learn and are not Wi-Fi enabled. A comprehensive list of Smart thermostats may be found here: https://www.energystar.gov/productfinder/product/certified-connected-thermostats/	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through thermostat settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions. If there is building-wireless-internet, or the model uses a wireless system such as zigbee, then internet connectivity is REQUIRED for compliance. If there is only tenant internet, then internet connectivity is not required for compliance.
Install thermostatic radiator valves	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location.	Take photo of the thermostatic valve, typically found on the inlet pipe to the radiator, and verify these match the product specifications. Adjust the setting of the valve, by turning its head from the lowest number or off to a higher setpoint, and confirm operability of the unit by measuring temperature of the pipe downstream of valve in both settings using an infrared thermometer.
Insulate boiler	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e., highlight on printout of Property map if in common areas) for easier access during the inspection (e.g., hot water utility closets and/or boiler room).	Take photos of insulation around the boiler or hot water tank; measure thickness and length of insulated and non-insulated sections and verify these match the product specifications.
Insulate boiler room	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	Take photos of insulation around the boiler, access points, distribution pipes, pumps, walls and surrounding any openings; measure thickness and length of insulated and non-insulated sections and verify these match the product specifications.
Insulate foundation	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	Access the crawl space within apartments to confirm that insulation is installed and confirm it matches the product specifications. Take photos of insulation.
Other	Review the specification in the HPB and Inspection Form.	Take photos of nameplate to confirm model matches with product specifications. Verification of operability contingent on type of upgrade.
Other cooling	Review the specification in the HPB and Inspection Form.	Take photos of nameplate to confirm model matches with product specifications. Verification of operability contingent on type of upgrade.
Other heating	Review the specification in the HPB and Inspection Form.	Take photos of nameplate to confirm model matches with product specifications. Verification of operability contingent on type of upgrade.



Basic EWEM	Before Inspection	During Inspection
Replace clothes dryers with ENERGY STAR rated	Look at the appliance for the product tag and labeling. Look for an ENERGY STAR designation. Look up the product model number online to confirm if ENERGY STAR.	Confirm that the system is operational and working properly. Take photos of nameplate found within the appliance to confirm it matches the product specifications.
Replace dishwashers with ENERGY STAR rated	Look at the appliance for the product tag and labeling. Look for an ENERGY STAR designation. Look up the product model number online to confirm if ENERGY STAR.	Confirm that the system is operational and working properly. Take photos of nameplate found within the appliance to confirm it matches the product specifications.
Replace doors	Request the installed product specifications and determine sample size required for verification of each door type to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e. highlight on printout of unit layout if in apartments or on Property map if in common areas) for easier access during the inspection.	Take photo of doors according to minimum sample size; verify these are operable and match the specifications.
Replace exhaust or ventilation fans	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where in the apartments these are installed (i.e. highlight on printout of unit layout) for easier access during the inspection (e.g., bathroom ceiling).	Verify models installed match the product specifications and are operational; i.e. ensure that fan on ventilation unit is blowing when wall switch or unit dial is switched on.
Replace furnace	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where in the apartments these are installed (i.e., highlight on printout of unit layout) for easier access during the inspection (e.g., utility closet).	Verify models installed match the product specifications and are operational (i.e., ensure that fan on indoor air handler is blowing, and the air is hot based on thermostat setpoint temperature, by feeling the air as it exits the ducts).
Replace individual heating boiler	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e., highlight on printout of unit layout if in apartments) for easier access during the inspection (e.g., hot water utility closets).	Take photos of nameplate to confirm model matches with product specifications. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions; if using a thermostat, operability can be verified by adjusting from off state to the temperature setpoint.
Replace or upgrade individual water heater	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e., highlight on printout of unit layout if in apartments) for easier access during the inspection (e.g., hot water utility closets).	Take photos of nameplate to confirm model matches with product specifications. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions; if using a thermostat, operability can be verified by adjusting from off state to the temperature setpoint.
Replace package units	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where on the Property these are installed (i.e. highlight on printout of Property map) for easier access during the inspection (e.g., rooftop).	Verify models installed match the product specifications and are operational; i.e. ensure that the duct air in the apartment is cool, based on thermostat setpoint temperature, by feeling the air as it exits the ducts. Check that the packaged unit, outside of the apartment, is functioning and heat is being expelled by the unit.



Basic EWEM	Before Inspection	During Inspection
Replace PTACs	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where in the apartments these are installed (i.e. highlight on printout of unit layout) for easier access during the inspection.	Verify models installed match the product specifications and are operational; i.e. ensure that fan on PTAC unit is blowing, and the air is hot or cool based on PTAC setpoint temperature, by feeling the air as it exits the unit.
Replace refrigerators with ENERGY STAR rated	Look at the appliance for the product tag and labeling. Look for an ENERGY STAR designation. Look up the product model number online to confirm if ENERGY STAR.	Confirm that the system is operational and working properly. Take photos of nameplate found within the appliance to confirm it matches the product specifications.
Replace roof	Request the installed product specifications; refer to Inspection Form or invoices. Take note on which buildings this is installed at the Property.	Take photos of roof exterior and interior if safely accessible.
Replace split system AC	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where on the Property these are installed (i.e., highlight on printout of Property map) for easier access during the inspection (e.g., patio or rooftop).	Verify models installed match the product specifications and are operational; i.e. ensure that fan on indoor air handler is blowing, and the air cool based on thermostat setpoint temperature, by feeling the air as it exits the ducts. Check that the condenser fan, outside of the apartment, is functioning and heat is being expelled by the unit.
Replace split system AC with furnace	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where in the apartments these are installed (i.e., highlight on printout of unit layout) for easier access during the inspection (e.g., utility closet).	Verify models installed match the product specifications and are operational; i.e. ensure that fan on indoor air handler is blowing, and the air is hot based on thermostat setpoint temperature, by feeling the air as it exits the ducts.
Replace steam traps	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location.	Take photo of the steam traps, typically found on the inlet pipe to the radiator, and verify these match the product specifications. Confirm there is no condensate discharge or steam leaks. Verify operability of the unit by measuring temperature of the trap inlet using an infrared thermometer; condensate temperature should approximate that of saturated steam.
Replace wall/window AC	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where in the apartments these are installed (i.e. highlight on printout of unit layout) for easier access during the inspection.	Verify models installed match the product specifications and are operational; i.e. ensure that fan on AC unit is blowing, and the air is hot or cool based on AC setpoint temperature, by feeling the air as it exits the unit.
Replace washing machines with ENERGY STAR rated	Look at the appliance for the product tag and labeling. Look for an ENERGY STAR designation. Look up the product model number online to confirm if ENERGY STAR.	Confirm that the system is operational and working properly. Take photos of nameplate found within the appliance to confirm it matches the product specifications.



Basic EWEM	Before Inspection	During Inspection
Replace windows	Request the installed product specifications and determine sample size required for verification of each window type to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e. highlight on printout of unit layout if in apartments or on Property map if in common areas) for easier access during the inspection.	Take photo of windows according to minimum sample size; verify these are operable and match the specifications.
Replace with higher efficiency pump	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e., highlight on Property map) for easier access during the inspection (e.g., boiler room).	Take photo of pump; verify these match the product specifications.
Replace with variable speed pump	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e., highlight on Property map) for easier access during the inspection (e.g., pool room).	Take photo of variable speed pump; verify these match the product specifications. If needing to cycle through speed settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Seal ducts	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices.	Access the attic space and/or HVAC access panel within apartments to confirm that duct sealant is installed; for internal duct sealant, check for foam rubber or sealant by carefully removing grilles on supply and return registers. For external duct sealant, check for tape or mastic around duct exterior. Take photos verifying that this matches product specifications.
Upgrade common area lighting	Request the installed product specifications and determine sample size required for verification of each fixture type to be inspected during inspection; refer to Inspection Form or invoices for full fixture quantities by type and location. Take note of where on the Property these are installed (e.g., highlight on printout of Property map) for easier access during the inspection.	Verify lighting fixtures according to determined sample size, confirming they are installed, operational and match the product specifications.
Upgrade exterior lighting	Request the installed product specifications and determine sample size required for verification of each fixture type to be inspected during inspection; refer to Inspection Form or invoices for full fixture quantities by type and location. Take note of where on the Property these are installed (e.g., highlight on printout of Property map) for easier access during the inspection.	Verify lighting fixtures according to determined sample size, confirming they are installed, operational and match the product specifications.
Upgrade in-unit lighting	Request the installed product specifications and determine sample size required for verification of each fixture type to be inspected during inspection; refer to Inspection Form or invoices for full fixture quantities by type and location. Take note of where in the unit these are installed (e.g. highlight on printout of unit layout) for easier access during the inspection.	Verify lighting fixtures according to determined sample size, confirming they are installed, operational and match the product specifications.



Basic EWEM	Before Inspection	During Inspection
Upgrade whole building lighting	Request the installed product specifications and determine sample size required for verification of each fixture type to be inspected during inspection; refer to Inspection Form or invoices for full fixture quantities by type and location. Take note of where on the Property these are installed (e.g., highlight on printout of Property map) for easier access during the inspection.	Verify lighting fixtures according to determined sample size, confirming they are installed, operational and match the product specifications.



Complex Measures

Complex EWEM	Before Inspection	During Inspection
Add drive controls	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection.	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Add economizer	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where on the Property these are installed (i.e., highlight on printout of Property map) for easier access during the inspection (e.g., rooftop).	Take photos of nameplate and temperature sensor, if accessible, to confirm models installed match the product specifications and visually confirm the unit is operational.
Add energy recovery	Review the specification in the HPB and Inspection Form.	Take photos of nameplate to confirm model matches with product specifications. Verification of operability contingent on type of upgrade.
Add or replace cooling tower	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where on the Property these are installed (i.e., highlight on printout of Property map) for easier access during the inspection (e.g., rooftop).	Take photos of nameplate to confirm models installed match the product specifications and visually confirm these are operational (i.e., cooling tower fan is on and exhaust is released from air outlet).
Add or upgrade BAS/EMS/EMCS	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection.	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Add or upgrade controls	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection.	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Add recirculating pumps	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e., highlight on Property map) for easier access during the inspection (e.g., domestic hot water utility closets).	Take photo of recirculating pump; verify these match the product specifications.



Complex EWEM	Before Inspection	During Inspection
Balance distribution system	Request the installed product specifications; refer to Inspection Form or invoices for full quantities by type and location.	Take photos of any physical upgrades made as part of the system balancing.
Convert fuels	Request the installed product specifications; refer to Inspection Form or invoices.	Contingent on type of fuel conversion.
Convert pneumatic controls to DDC	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection.	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Convert system from steam to hot water	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e. highlight on printout of Property map if in common areas) for easier access during the inspection (e.g., hot water utility closets and/or water heater room).	Take photos of nameplate to confirm model matches with product specifications. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Install advanced metering systems	Review the specification in the HPB and Inspection Form. Document any digital infrastructure with Property staff with screenshots or login information (e.g., meter data management system).	Take photo confirming the correct equipment was installed based on product specifications (e.g., advanced/smart meters and/or load control devices in utility closets or exterior of building).
Install battery storage	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e. highlight on printout of Property map) for easier access during the inspection; e.g. rooftop and/or ground mounted.	Take photos of batteries including nameplate of components where visible. Verify these are operable and match the specifications.
Install CHP/cogeneration systems	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection.	Take photos of CHP turbine or engine and balance of system components (i.e., inverters, heatexchangers, charge controller/regulator, AC/DC disconnects, AC panel and storage tanks (if applicable) including nameplate of components where visible). Take photos of meter connections and readings. Verify these are operable and match the specifications.



Complex EWEM	Before Inspection	During Inspection
Install cool/green roof	Request the installed product specifications; refer to Inspection Form or invoices. Take note on which buildings this is installed at the Property.	Take photos of roof exterior and interior if safely accessible.
Install fuel cells	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e. highlight on printout of Property map) for easier access during the inspection.	Take photos of fuel cells and balance of system components (i.e., inverters, heat exchangers, charge controller/regulator, AC/DC disconnects, AC panel and storage tanks (if applicable) including nameplate of components where visible). Take photos of meter connections and readings. Verify these are operable and match the specifications.
Install ground source heat pump system	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where on the Property these are installed (i.e. highlight on printout of Property map) for easier access during the inspection; e.g. patio or rooftop.	Verify models installed match the product specifications and are operational (i.e., ensure that fan on indoor air handler is blowing, and the air is hot or cool based on thermostat setpoint temperature, by feeling the air as it exits the ducts). For water-based heat pump systems, where ducts may not be present, use an infrared thermometer or simply touch the radiator, domestic hot water outlet, or radiant floor depending on application to confirm that the system is functioning as intended according to thermostat setpoints.
Install microturbines	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection.	Take photos of microturbines and balance of system components (i.e., inverters, batteries, charge controller/regulator, AC/DC disconnects, and AC panel including nameplate of components where visible). Take photos of meter connections and readings. Verify these are operable and match the specifications.
Install or replace condensate return system	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e., highlight on Property map) for easier access during the inspection (e.g., rooftop).	Take photo of variable speed pump; verify these match the product specifications. If needing to cycle through settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.



Complex EWEM	Before Inspection	During Inspection
Install photovoltaic system	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection; e.g. rooftop and/or ground mounted.	Take photos of PV panels and balance of system components; i.e. racks, inverters, batteries, charge controller, AC/DC disconnects, power conditioning units and AC panel including nameplate of components where visible. Take photos of meter connections and readings. Verify these are operable and match the specifications.
Install photovoltaic system with battery storage	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e., highlight on printout of Property map) for easier access during the inspection (e.g., rooftop and/or ground mounted).	Take photos of PV panels and balance of system components (i.e., racks, inverters, batteries, charge controller, AC/DC disconnects, power conditioning units and AC panel including nameplate of components where visible). Take photos of meter connections and readings. Verify these are operable and match the specifications.
Install solar hot water system	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e. highlight on printout of Property map) for easier access during the inspection; e.g. rooftop and/or ground mounted.	Take photos of solar hot water panels and balance of system components (i.e., racks, circulation pumps and panels, plumbing, mixing valves and storage tank including nameplate of components where visible). Verify these are operable and match the specifications.
Install VSD on electric centrifugal chillers	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e., highlight on Property map) for easier access during the inspection (e.g., rooftop).	Take photo of variable speed drive nameplate; verify these match the product specifications. If needing to cycle through speed settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Install wind energy system	Request the installed product specifications; refer to Inspection Form or invoices. Take note of where the system is installed (i.e. highlight on printout of Property map) for easier access during the inspection; e.g. rooftop and/or ground mounted.	Take photos of wind turbine and balance of system components; i.e. inverters, batteries, charge controller/regulator, AC/DC disconnects, and AC panel including nameplate of components where visible. Take photos of meter connections and readings. Verify these are operable and match the specifications.



Complex EWEM	Before Inspection	During Inspection
Other distribution	Review the specification in the HPB and Inspection Form.	Take photos of nameplate to confirm model matches with product specifications. Verification of operability contingent on type of upgrade.
Other ventilation	Review the specification in the HPB and Inspection Form.	Take photos of nameplate to confirm model matches with product specifications. Verification of operability contingent on type of upgrade.
Replace burner	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e. highlight on printout of unit layout if in apartments or on Property map if using a central system) for easier access during the inspection; e.g. furnace utility closets.	Take photos of nameplate to confirm model matches with product specifications. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions; if using a thermostat, operability can be verified by adjusting from off state to the temperature setpoint.
Replace central heating boiler	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e., highlight on printout of Property map if in common areas) for easier access during the inspection (e.g., hot water utility closets and/or boiler room).	Take photos of nameplate to confirm model matches with product specifications. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Replace chiller	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location. Take note of where these are installed (i.e., highlight on Property map) for easier access during the inspection (e.g., rooftop).	Take photo of chiller nameplate; verify these match the product specifications. If needing to cycle through settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.



Complex EWEM	Before Inspection	During Inspection
Replace or modify AHU	Request the installed product specifications and determine sample size required for verification of each model type to be inspected during inspection; refer to Inspection Form or invoices for quantities by type and location. Take note of where on the Property these are installed (e.g., highlight on printout of Property map) for easier access during the inspection (e.g., rooftop or basement).	Verify models installed match the product specifications and are operational; i.e. ensure that the duct air in the apartment is hot and/or cool, based on thermostat setpoint temperature and model features, by feeling the air as it exits the ducts. Check that air intake and exhaust on AHU are functioning properly.
Replace or upgrade central water heater	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e., highlight on printout of Property map if in common areas) for easier access during the inspection (e.g., hot water utility closets and/or water heater room).	Take photos of nameplate to confirm model matches with product specifications. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.



Complex EWEM	Before Inspection	During Inspection
Separate DHW from heating	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices. Take note of where these are installed (i.e. highlight on printout of Property map if in common areas) for easier access during the inspection; e.g. domestic hot water utility closets and/or boiler room.	Take photos of nameplate to confirm model matches with product specifications. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Upgrade and balance ventilation system	Request the installed product specifications and determine type of upgrades performed on ventilation system; refer to Inspection Form or invoices.	Access the attic space to confirm upgrades accounting for separation in ventilation and air handling systems. Take photos verifying that this matches product specifications and, if part of the upgrade, document both ductwork as well as supply and exhaust fans.
Upgrade controls	Request the installed product specifications and user manual if applicable; refer to Inspection Form or invoices. Take note of where the system is installed (i.e. highlight on printout of Property map) for easier access during the inspection.	Take photos of controls including nameplate, verifying that this matches with specification. If needing to cycle through control settings, consult Property staff and refer to user manual prior to doing so as this can impact default or custom conditions.
Upgrade elevator technology	Request the installed product specifications and determine sample size required for verification to be inspected during inspection; refer to Inspection Form or invoices for full quantities by type and location.	Take photos in elevator room of nameplates for any upgrades; e.g. regenerative drives, or microprocessor controls in place of electromechanical relays.