

# MULTIFAMILY PERFORMANCE PROGRAM

## Standards and Quality Assurance Checklist Specifications — June 2022



**For informational use by:** Participating Providers and their installation contractors, as a reference guide to understanding the quality assurance scoring criteria, and specific requirements when installing measures in the Multifamily Performance Program (MPP).

NYSERDA maintains the integrity of the Multifamily Performance Program (MPP) through an independent standards and quality assurance team, which manages the quality assurance (QA) system. The QA system includes verifying compliance with program and installation standards using comprehensive field inspections and photo desk reviews. QA field inspections and desk reviews of installations are conducted by a qualified independent third-party competitively selected by NYSERDA and will use these checklists as their guide. Participating Providers are required to submit proof of all corrective action taken when a specific installation requirement has not been met and is deemed to be a major or critical system failure. The checklist specifications contained in this document are for reference purposes only.

### Field Definitions

**Measure** – Represents a specific component that the inspector is reviewing.

**Task** – The Task field falls under a Measure and represents the specific inspection checkpoints that an inspector would rate as Pass or Fail for a given component.

**Task Description** – A detailed description of the task for the inspector to reference in determining if a task should be marked as failed.

**Reference** – The basis for each task requirement is linked to the project workscope, a program guideline, manufacturer instructions, or code.

**Non-Conformance Category** – Each task is assigned a non-conformance rating of either incidental, minor, major or critical. Refer to the Non-Conformance Rating Descriptions below for additional detail.

Non-Conformance Category Description	Energy Impact	Non-Energy Impact
<b>Incidental</b>	May result in a savings shortfall, but the impact will be small and may not be measurable.	Not expected, on its own, to pose a substantial risk of system failure or hazard.
<b>Minor</b>	Will result in a savings shortfall, but the impact will be small and may not be measurable.	Requires modifications to address but not expected to pose a substantial risk of system failure or hazard.
<b>Major</b>	Will result in a measurable shortfall in energy savings.	Presents an increased risk of system failure or hazard but not determined to be in imminent danger of failure or hazard.
<b>Critical</b>	N/A	Presents an imminent hazard

### Quality Assurance Scoring Matrix

*(Scores are determined by counting the number of non-conformances with the highest severity rating. Applies to the whole project, not each individual measure)*

Score	Incidental	Minor	Major	Critical
<b>5</b>	Up to 3	Up to 2	0	0
<b>4</b>	More than 3	Up to 3	0	0
<b>3</b>	N/A	More than 3	0	0
<b>2</b>	N/A	N/A	Up to 1	0
<b>1</b>	N/A	N/A	More than 1	More than 0

### Quality Assurance Score Descriptions

**5: System Meets All Program Criteria** – An inspection receiving a score of 5 is generally well-installed, with no noticeable defects in workmanship or expected energy output. These projects are examples of best practices.

**3: System Meets Key Program Requirements** – An inspection achieving a score of 3 meets basic Program requirements, but the project may require some modification to be considered fully compliant.

**1: System Does Not Meet Program Requirements** – An inspection receiving a score of 1 indicates a project that has failed to meet key Program requirements and is not expected to meet the expected energy savings. These projects may require urgent attention to address safety concerns.

## Checklist Specifications Table of Contents

Appliances.....	2	Envelope.....	11	Lighting.....	28
Distribution.....	4	Heating.....	15	Motors.....	29
Domestic Hot Water (DHW).....	6	Heating and Cooling.....	20	Ventilation.....	30

### Instructions:

1. Follow and submit all requirements per the Standards and Quality Assurance Checklist Specifications and the Inspection Request Workbook.
2. For all requirements in the Program Guidelines where Providers are asked to record information, a photograph verifying that information should be submitted. (e.g. Guidelines say “Hot Water Heating Systems: Measure and report supply water temperature, return water temperature, and outdoor air temperature in the shade. Record control set points.” Photos should be submitted showing supply water temp, return water temp, outdoor air temp in the shade, control setpoints. Some of those, like the control setpoints, may require multiple photos to show all required information.)
3. In ADDITION to the above, submit a photo of every item sampled (e.g. Under these rules, Providers should submit a photo of each appliance inspected and a photo of each appliance’s label. 10% of appliances must be sampled for the Provider sampling. Photographs of appliances should include an overall photo of the appliance, a photo of its nameplate, and a photo of its ENERGY STAR® label, if visible, of each appliance inspected.)
4. If photos are not available for in-unit measures, it is acceptable to submit a log from the contractor listing the items installed, where installed, and quantity, or an invoice showing a description of the items and how many items were purchased.
5. For measures not included on this checklist, please provide checklist information in a similar format on a separate sheet. Include, at a minimum, photographs of the installation and nameplates, as well as cutsheets to show successful installation in compliance with project requirements. Non-Conformance Category is Major if less than less than 75% of the work is complete, and Minor if more than 75%, but less than 100% is complete.

### Standards and Quality Assurance Checklist

Appliances				
Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Clothes Washer</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Clothes washers are ENERGY STAR.	Verify ENERGY STAR clothes washers are installed, per workscope.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Installed in all inspected apartments. Submit a photo of each washer inspected. Follow sampling requirements in Program Guidelines. Alternatively, for in-unit clothes washers, submit an invoice or contractor’s log showing where new washers were installed.	Verify that all clothes washers were installed per workscope. Minor defect if at least 75% of the clothes washers were installed.	Project workscope	Minor
	Installed in all inspected apartments. Submit a photo of each washer inspected. Follow sampling requirements in Program Guidelines. Alternatively, for in-unit clothes washers, submit an invoice or contractor’s log showing where new washers were installed.	Verify that all clothes washers were installed per workscope. Major defect if fewer than 75% of the clothes washers were installed.	Project workscope	Major
	Meet or exceed energy factor and/or water factor.	Verify the rating meets the requirement of the workscope.	Project workscope	Minor

**Appliances (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Dishwashers, ENERGY STAR</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Installed dishwashers are ENERGY STAR.	Verify ENERGY STAR dishwashers are installed, per workscope.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Installed in all inspected apartments. Submit a photo of each dishwasher inspected; also submit a photo of the nameplate of each dishwasher inspected. Alternatively, submit an invoice and/or contractor's log showing which apartments had a new dishwasher installed	Verify that all dishwashers were installed per workscope. Minor defect if at least 75% of the dishwashers were installed.	Project workscope	Minor
	Installed in all inspected apartments. Submit a photo of each dishwasher inspected; also submit a photo of the nameplate of each dishwasher inspected. Alternatively, submit an invoice and/or contractor's log showing which apartments had a new dishwasher installed.	Verify that all dishwashers were installed per workscope. Major defect if fewer than 75% of the dishwashers were installed.	Project workscope	Major
<b>Refrigerators</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Installed refrigerators are ENERGY STAR.	Verify ENERGY STAR refrigerators are installed, per workscope.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Installed in all inspected apartments. Submit a photo of each refrigerator inspected; also submit a photo of the nameplate of each refrigerator inspected. Alternatively, submit an invoice and/or contractor's log showing which apartments had new refrigerators installed.	Verify with all refrigerators were installed per workscope. Minor defect if at least 75% of the refrigerators were installed.	Project workscope	Minor
	Installed in all inspected apartments. Submit a photo of each refrigerator inspected; also submit a photo of the nameplate of each refrigerator inspected. Alternatively, submit an invoice and/or contractor's log showing which apartments had new refrigerators installed.	Verify that all refrigerators were installed per workscope. Major defect if fewer than 75% of the refrigerators were installed.	Project workscope	Major
	Meets kWh/year requirements of workscope.	Verify the installed refrigerator kWh/year rating is equal to or less than the assumed kWh/year in the workscope.	Project workscope	Minor

**Distribution**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Pipe Insulation</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	The rated thermal resistance (R-value) of the insulation is equal to or greater than proposed in the workscope. Submit the following photos from a minimum of 3 separate sites where insulation was installed: 1. overall photo showing pipes that were insulated 2. photo showing depth of insulation using a ruler, spray foam depth gauge, or other measurement tool 3. photo showing circumference of insulated pipe using a flexible ruler	Verify the rated R-value of the installed insulation. Minor defect if the installed insulation's R-value is at least 75% of the proposed R-value.	Project workscope	Minor
	The rated thermal resistance (R-value) of the insulation is equal to or greater than proposed in the workscope. Submit the following photos from a minimum of 3 separate sites where insulation was installed: 1. overall photo showing pipes that were insulated 2. photo showing depth of insulation using a ruler, spray foam depth gauge, or other measurement tool 3. photo showing circumference of insulated pipe using a flexible ruler	Verify the rated R-value of the installed insulation. Major defect if the installed insulation's R-value is less than 75% of the proposed R-value.	Project workscope	Major
	The area of insulation is equal to or greater than in the workscope. Submit an invoice to show how many linear feet of pipe were insulated.	Verify the area of the installed insulation. Minor defect if at least 50% of the insulation has been installed.	Project workscope	Minor
	The area of insulation is equal to or greater than in the workscope. Submit an invoice to show how many linear feet of pipe were insulated.	Verify the area of the installed insulation. Major defect if less than 50% of the insulation has been installed.	Project workscope	Major
	Pipe insulation shall be installed. Submit a minimum of 3 photos showing accessible heating piping in different areas of the building.	Pipes are insulated (no exposed piping). Minor defect if at least 50% of the piping insulation was installed.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R403.4 or C403.210, as applicable	Minor
	Pipe insulation shall be installed. Submit a minimum of 3 photos showing accessible heating piping in different areas of the building.	Pipes are insulated (no exposed piping). Major defect if less than 50% of the piping insulation was installed.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R403.4 or C403.210, as applicable	Major

**Distribution (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Pipe Insulation (continued)</b>	Meets manufacturer specifications and is continuous.	Pipe insulation should be installed per manufacturer instructions and be continuous. For example, it needs to be fastened securely, have insulated elbows, be cut properly, etc.	NYS Energy Conservation Code C404.4	Minor
<b>Pumps, VFD Install</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Variable Frequency Drive is installed.	Verify VFD is installed.	Project workscope	Minor
	Meets part-load requirements specified in the work scope.	Verify the control is programmed to reduce pump motor speed.	Project workscope	Minor
	For pumps in hydronic systems over 500,000 Btu/hr, with pump motors with a combined capacity 10 HP or larger, vary speed by at least 50%.	Verify that the speed varies by at least 50% in systems over 500,000 Btu/hr and minimum combined pump motor capacity of 10 HP.	NYS Energy Conservation Code C403.4.2.4	Minor

**Domestic Hot Water (DHW)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>DHW Controls</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	DHW temperature meets project workscope target. Submit a minimum of 3 photos showing the temperature of DHW at the tap.	Verify DHW water temperature.	Project workscope	Minor
	Recirculation control installed.	Verify recirculation control has been installed.	Project workscope	Minor
	Recirculation control set to prevent continuous pump operation.	Verify recirculation control settings.	Project workscope	Minor
	Recirculation control installed meets energy code requirements.	Verify that pump only operates on flow and is set at 104 F maximum.	NYS Energy Code C404.7 or R403.5.2	Minor
<b>DHW Water Heater</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	The rated efficiency of the installed water heater shall be equal to or higher than the modeled efficiency.	Verify that the efficiency meets or exceeds the proposed efficiency.	Project workscope	Minor
	Replacement domestic hot water heating plant(s) shall be ENERGY STAR labeled, where applicable. For all other systems where the ENERGY STAR label is not available, the specified heating plant(s) shall have a minimum rated efficiency no less than that required by the ECCC NYS C404.2.	Verify that hot water heater is ENERGY STAR rated (if applicable). If not applicable, verify that the rated efficiency is no less than required by the energy code.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Pipe insulation is installed. Submit a minimum of 3 photos showing accessible DHW piping in different areas of the building.	All hot water piping in mechanical room and accessible piping in unconditioned spaces shall be insulated to ECCC NYS 404.5. Minor defect if at least 50% of the piping insulation was installed.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Pipe insulation is installed. Submit a minimum of 3 photos showing accessible DHW piping in different areas of the building.	All hot water piping in mechanical room and accessible piping in unconditioned spaces shall be insulated to ECCC NYS 404.5. Major defect if less than 50% of the piping insulation was installed.	MPP Existing Building Program Guidelines (minimum performance standards)	Major
	Pipe insulation meets the manufacturer's specifications, meets the correct thickness, and is code compliant. Submit photos of insulation depth (using a ruler or spray foam depth gauge) and insulated pipe diameter or circumference in a minimum of 3 different locations for each diameter of pipe.	Insulation is installed correctly, of the correct thickness, and meets code and manufacturer requirements. Minimum R3 (typically 1" of fiberglass, or equivalent) in residential buildings, 1.5" thick in commercial buildings (< 1.5" pipe) and 2" thick in commercial buildings >= 1.5" pipe.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R403.4 or C403.210, as applicable	Minor
	SSE testing report is provided.	At a minimum for condensing boilers: efficiency testing for high and low fire.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor

**Domestic Hot Water (DHW) (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>DHW Water Heater (continued)</b>	The owner was provided a copy of the Operational and Maintenance Handbook, including start-up and any test reports and preventive maintenance.	The owner was given a copy of the manufacturer Operation and Maintenance manual and provided with contact information for emergency service needs.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R303.3/C303.3	Incidental
<b>Heat Pump Water Heater</b>	Installed equipment matches workscope.	Verify installed equipment is as proposed on application, quantity, make and model information	Photo Documentation	Major
	Condensate lines meet program requirements.	Observe condensate line where accessible for leaks. Confirm condensate lines terminate in either a domestic drain or external location. External locations must not terminate onto another heat pump unit or onto a walking surface that could cause slips if condensate freezes. Confirm with the homeowner that there is no indication of condensate line leakage.	Site Observation/ Photo Documentation	Major
	Safety valves are installed and set correctly.	Verify temperature and pressure relief valve are installed and that the relief valve terminates within 6" of the floor. Verify thermostatic mixing valve (for anti scalding) is installed and set to no higher than 125°F. If using a municipal water supply, verify that the cold-water pressure regulating valve is installed.	Site Observation	Minor
	The equipment is safely accessible.	Verify that safe access to the site and associated equipment has been provided	Site Observation	Critical
	Hot water lines are insulated to program requirements.	Verify that the first 6 feet of hot-water line from the unit has been insulated or is a non-conductive piping material (e.g. PEX). Verify that any exposed hot and cold water lines are not in direct contact, regardless of material.	Site Observation	Minor
	Equipment is correctly secured.	Verify all exposed equipment and pipe supports appear to be properly secured	Site Observation	Major
	System is not leaking.	Verify water heater connections and system are leak free	Site Observation	Major
	Ducts meet program requirements.	For ducted indoor units, verify air outlet of ducted HPWH exhausts to the outdoors, and that duct size is appropriate	Site Observation	Major
	Booster fan is installed on outlet duct.	For ducted indoor units, verify booster fan installed on outlet duct if required	Site Observation	Major

**Domestic Hot Water (DHW) (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Heat Pump Water Heater (continued)</b>	Electrical disconnect is accessible.	Verify that electrical disconnect is installed in an accessible location for service. If located outside of view from the unit, the disconnect is lockable.	Site Observation	Major
	Equipment is functioning as proposed.	Observe functional testing of equipment.	Site Observation	Major
	Heat trace has been installed on water lines to outdoor unit.	For split / outdoor units, verify heat trace has been installed on water lines to the outdoor unit if applicable.	Site Observation	Major
	No refrigerant leaks found.	For split units, sample for refrigerant leaks at exposed field connections.	Refrigerant detector	Critical
	Outdoor unit is installed with sufficient clearances.	For split / outdoor units, verify outdoor unit is installed with sufficient clearances.	Site Observation	Major
	The outdoor unit is protected from water/ice/snow beyond normal precipitation.	Observe that the outdoor unit is away from or protected from increased sources of water/ice/snow from above (i.e. more than normal precipitation, e.g. beneath drip edge, beneath snow-slide, beneath another heat pump, etc.). The presence of gutters does not provide sufficient protection.	Site Observation/ Photo Documentation	Major
	The outdoor unit is installed above snow depth.	Verify that units are above snow depth level according to ACCA Weather Station data.	Site Observation/ Photo Documentation	Major
	Outdoor unit is installed level.	For split / outdoor units, verify outdoor unit is installed level.	Site Observation	Major
	Vibration dampeners are installed.	If unit is connected to the building's framing (e.g. wall mounted, or on a connected deck), vibration dampeners are installed.	Site Observation	Minor
	Height difference between outdoor unit and storage tank is less than maximum allowed.	For split / outdoor units, verify height difference between outdoor unit and storage tank are within specified limits.	Site Observation	Major
	Review documentation to verify the work was performed according to code.	Verify approval of work in accordance with applicable codes.	Cert. of Completion /CoO/Letter of Attestation	Critical
	Owner shall be supplied with the Manufacturer's Warranty.	Verify Manufacturer's Warranty has been provided to owner.	Manufacturers Warranty	Major
	Operator has been trained.	Confirm customer/ operator has been provided with training on operation of system.	Site Observation/ Customer Confirmation	Major
	Owner shall be supplied with owners manual and maintenance instructions.	Confirm that the system owners manual and maintenance instructions are available on site.	Approved construction documents	Major



**Domestic Hot Water (DHW) (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Health and Safety</b>	Ensure that water is delivered at less than 130 degrees, to prevent scalding. Submit a photo of the thermometer at the mixing valve or of taking the temperature at faucet.	Verify that water is delivered at less than 130 degrees.	U.S. Consumer Product Safety Commission, <a href="https://www.cpsc.gov/s3fs-public/5098.pdf">https://www.cpsc.gov/s3fs-public/5098.pdf</a>	Minor
<b>Low Flows</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Showerhead must not exceed 2.0 gallons per minute (GPM).	Verify that showerhead rating does not exceed 2 GPM. If rating is not available, measure water flow.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Code Supplement March 2017, Table P2903.2	Minor
	Kitchen faucets must not exceed 2.0 gallons per minute (GPM).	Verify that kitchen faucet rating does not exceed 2 GPM. If rating is not available, measure water flow.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Bathroom faucets must not exceed 1.5 gallons per minute (GPM).	Verify that bathroom faucet rating does not exceed 1.5 GPM. If rating is not available, measure water flow.	NYS Code Supplement March 2017, Table P2903.2	Minor
	Installed quantity matches workscope in all inspected apartments. Submit an invoice of fixtures purchased OR a contractor's log of where low flows were installed.	Verify quantity of low-flow fixtures. Minor defect if at least 75% of the proposed devices were installed correctly (or at least 75% of the proposed water savings will be achieved, if measurable). Note: Do not fail this task if the occupant replaced the fixture themselves, unless you confirm that the occupant did not remove the low-flow fixture.	Project workscope	Minor
	Installed quantity matches workscope in all inspected apartments. Submit an invoice of fixtures purchased OR a contractor's log of where low flows were installed.	Verify quantity of low-flow fixtures. Major defect if fewer than 75% of the proposed devices were installed correctly (or less than 75% of the total water savings proposed will be achieved, if measurable). Note: Do not fail this task if the occupant replaced the fixture themselves, unless you confirm that the occupant did not remove the low-flow fixture.	Project workscope	Major
	Pause valve is installed, if specified.	Verify that faucet/shower has a pause valve, if specified by the workscope.	Project workscope	Minor

**Domestic Hot Water (DHW) (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Low Flows (continued)</b>	Bathroom faucets installed before March 2017 must not exceed 2.0 gallons per minute (GPM).	Verify that bathroom faucet rating does not exceed 2 GPM. If rating is not available, measure water flow. (If installed before March 2017.)	MPP Existing Building Program Guidelines (Minimum Performance Standards)	Minor
	Bathroom faucets installed during or after March 2017 must not exceed 1.5 gallons per minute (GPM).	Verify that bathroom faucet rating does not exceed 1.5 GPM. If rating is not available, measure water flow. (If installed after or in March 2017.)	NYS Code Supplement March 2017, Table P2903.2	Minor

Envelope				
Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Air Conditioner Sleeve Sealing</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Air conditioner sleeves sealed per project workscope in all inspected apartments. Submit a photo of each AC sleeve inspected. Follow sampling requirements in the Program Guidelines.	Verify that AC sleeves have been sealed. Minor defect if at least 75% of the AC sleeves were installed properly.	Project workscope	Minor
	Air conditioner sleeves sealed per project workscope in all inspected apartments. Submit a photo of each AC sleeve inspected. Follow sampling requirements in the Program Guidelines.	Verify that AC sleeves have been sealed. Major defect if fewer than 75% of the AC sleeves were installed properly.	Project workscope	Major
	Air conditioner sleeve sealing meets energy code requirements.	Verify that seal meets energy code requirements. For buildings four stories and higher, acceptable seals include: Plywood or OSB (3/8"), rigid insulation (1/2"), closed cell foam (1.5"), open cell foam (4.5"), gyp board or cement board (1/2"), sheet metal or aluminum, or other materials allowed in energy code.	NYS Energy Code C402.5.1.2	Minor
<b>Air-sealing</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Specific air-sealing shall be installed per the workscope. Submit a minimum of 3 photos from different places in the building for each type of airsealing performed.	Minor defect if at least 75% of the air-sealing was completed.	Project workscope	Minor
	Specific air-sealing shall be installed per the workscope. Submit a minimum of 3 photos from different places in the building for each type of airsealing performed.	Major defect if less than 75% of the air-sealing was completed.	Project workscope	Major
	Specific air-sealing shall be installed per the workscope. Submit a minimum of 3 photos from different places in the building for each type of airsealing performed.	Critical defect if no air-sealing was completed.	Project workscope	Major
<b>Exterior Door(s) Replacement</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Replacement exterior door(s) meet NYS Energy Code.	Verify door(s) comply with the energy code.	NYS Energy Code R402.3 or C402.4, whichever applies	Minor
	Replacement exterior door(s) are ENERGY STAR.	Verify that doors comply with ENERGY STAR	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Replacement exterior door(s) meet the requirements of the workscope.	Verify that door(s) meet the requirements of the workscope.	Project workscope	Minor

**Envelope (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Exterior Door(s) Replacement (continued)</b>	Quantity of installed doors matches workscope in all inspected areas. Submit a photo of each door inspected. Follow sampling requirements in Program Guidelines.	Verify that all doors were installed per workscope (if there are any non-inspected areas). Minor defect if at least 75% of the doors were installed.	Project workscope	Minor
	Quantity of installed doors matches workscope in all inspected areas. Submit a photo of each door inspected. Follow sampling requirements in Program Guidelines.	Verify that all doors were installed per workscope (if there are any non-inspected areas). Major defect if fewer than 75% of the doors were installed.	Project workscope	Major
<b>Exterior Door(s) Weather-strip</b>	Exterior doors are weather-stripped. Submit a photo of the weather-stripping on each door inspected. Follow sampling requirements in Program Guidelines.	Verify that exterior door(s) are weather-stripped per the workscope. Minor defect if at least 75% of the doors were weather-stripped.	Project workscope	Minor
	Exterior doors are weather-stripped. Submit a photo of the weather-stripping on each door inspected. Follow sampling requirements in Program Guidelines.	Verify that exterior door(s) are weather-stripped per the workscope. Major defect if fewer than 75% of the doors were weather-stripped.	Project workscope	Major
	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
<b>Insulation</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	The rated thermal resistance (R-value) of the insulation is equal to or greater than proposed in the workscope. Submit a photo of the insulation depth (taken with a ruler or a spray foam depth gauge) in a minimum of 3 separate locations.	Verify the rated R-value of the installed insulation. Minor defect if the installed insulation's R-value is at least 75% of the difference between the existing and proposed R-value.	Project workscope	Minor
	The rated thermal resistance (R-value) of the insulation is equal to or greater than proposed in the workscope. Submit a photo of the insulation depth (taken with a ruler or a spray foam depth gauge) in a minimum of 3 separate locations.	Verify the rated R-value of the installed insulation. Major defect if the installed insulation's R-value is less than 75% of the difference between the existing and proposed R-value.	Project workscope	Major
	The area of insulation is equal to or greater than in the workscope. Submit an invoice to show how many square feet were insulated.	Verify the area of the installed insulation. Minor defect if at least 75% of the insulation has been installed.	Project workscope	Minor
	The area of insulation is equal to or greater than in the workscope. Submit an invoice to show how many square feet were insulated.	Verify the area of the installed insulation. Major defect if less than 75% of the insulation has been installed.	Project workscope	Major
	The area of insulation is equal to or greater than in the workscope. Submit an invoice to show how many square feet were insulated.	Verify the area of the installed insulation. Critical defect if no insulation has been installed.	Project workscope	Major
<b>Window Replacement</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Windows are installed. Submit a photo of each window inspected. Follow sampling requirements from the Program Guidelines. Alternatively, submit an invoice and/or contractor's log showing which apartments had new windows installed.	Verify windows were installed in all spaces specified in the workscope. Minor defect if at least 75% of the windows were installed per the workscope.	Project workscope	Minor

**Envelope (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Window Replacement (continued)</b>	Windows are installed. Submit a photo of each window inspected. Follow sampling requirements from the Program Guidelines. Alternatively, submit an invoice and/or contractor's log showing which apartments had new windows installed.	Verify windows were installed in all spaces specified in the workscope. Major defect if fewer than 75% of the windows were installed per the workscope.	Project workscope	Major
	Installed windows are code-compliant and have the correct U-Factor & SHGC.	Verify windows comply with the energy code at the time of installation. (Max U-factor: Three stories and lower - 0.35 NYC/Westchester/Long Island, 0.32 upstate. Four stories and higher, fixed windows - 0.38 climate zones 4 and 5, 0.36 climate zone 6)*. (Four stories and higher, operable windows - 0.45 climate zones 4 and 5, 0.43 climate zone 6)*. Verify that windows meet the requirements of the workscope. Minor defect if the average U-Factor and SHGC of the windows are 75% of the required values and/or at least 80% of the windows are code-compliant.	NYS Energy Code R402.3 or C402.4, whichever applies	Minor
	Installed windows are code-compliant and have the correct U-Factor & SHGC.	Verify windows comply with the energy code at the time of installation. (Max U-factor: Three stories and lower - 0.35 NYC/Westchester/Long Island, 0.32 upstate. Four stories and higher, fixed windows - 0.38 climate zones 4 and 5, 0.36 climate zone 6)*. (Four stories and higher, operable windows - 0.45 climate zones 4 and 5, 0.43 climate zone 6)*. Verify that windows meet the requirements of the workscope. Major defect if the average U-Factor and SHGC of the windows are less than 75% of the required values and/or fewer than 80% of the windows are code-compliant.	NYS Energy Code R402.3 or C402.4, whichever applies	Major
	ENERGY STAR windows installed.	For buildings of 3 stories or less, verify that windows comply with ENERGY STAR. Mark N/A if the building type is greater than 4 stories.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Air seal around windows. Submit a photo of airsealing from each window inspected. Follow sampling requirements in the Program Guidelines.	Verify that air sealing is complete around windows, either through open-wall inspection, photos, or infrared scan. Minor defect if at least 75% of the air-sealing was completed.	Project workscope	Minor
	Air seal around windows. Submit a photo of airsealing from each window inspected. Follow sampling requirements in the Program Guidelines.	Verify that air sealing is complete around windows, either through open-wall inspection, photos, or infrared scan. Major defect if less than 75% of the air-sealing was completed.	Project workscope	Major

**Envelope (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Window Replacement (continued)</b>	Insulate cavity around windows. Submit a photo of open-wall or infrared scan from each window inspected. Follow sampling requirements in the Program Guidelines.	Verify that insulation is complete around windows. Either through open-wall inspection, photos, or infrared scan. Minor defect if at least 75% of the insulation was installed.	Project workscope	Minor
	Insulate cavity around windows. Submit a photo of open-wall or infrared scan from each window inspected. Follow sampling requirements in the Program Guidelines.	Verify that insulation is complete around windows. Either through open-wall inspection, photos, or infrared scan. Major defect if less than 75% of the insulation was installed.	Project workscope	Major
	Interior Finish Restored. Submit a photo of trim from each window inspected. Follow sampling requirements in the Program Guidelines.	The interior trim has been replaced and repaired to the extent that it is indistinguishable from the surrounding finish.	Project workscope	Minor
<b>Windows, Weather-Strip or Air Seal</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Weather-strip or seal windows. Submit a photo of each window inspected. Follow sampling requirements from the Program Guidelines.	Verify that exterior windows are weather-stripped or air sealed per the workscope. Minor defect if at least 75% of the windows were weather-stripped or sealed.	Project workscope	Minor
	Weather-strip or seal windows. Submit a photo of each window inspected. Follow sampling requirements from the Program Guidelines.	Verify that exterior windows are weather-stripped or air sealed per the workscope. Major defect if fewer than 75% of the windows were weather-stripped or sealed.	Project workscope	Major

## Heating

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Boiler Replacement</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	The rated efficiency of the installed boiler is equal to or higher than the modeled efficiency.	Efficiency must meet or exceed proposed efficiency.	MPP Existing Building Program Guidelines (minimum performance standards)	Major
	Boiler is not atmospheric, e.g. boiler has a draft inducer.	Atmospheric equipment can be identified because there is no draft inducer, and the flame is usually visible.	MPP Existing Building Program Guidelines (minimum performance standards)	Major
	If applicable, boiler is Energy Star labeled.	Energy Star is not required for equipment in size and type ranges where Energy Star is not available. In-unit boilers are typically within the Energy Star label size and type of equipment.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	A separate thermostat is provided for each heating system (in-unit) or zone. The thermostat shall be programmable. Submit a series of photos of each thermostat in common areas. This should include a photo showing where the thermostat is installed and a photo showing the settings on the thermostat. For in-unit thermostats submit a contractor's invoice for thermostats purchased or a contractor's log to verify quantity installed.	Thermostat must allow programming down to 55 F.	NYS ECCC R403.1 or C403.2.4, as applicable	Minor
	Reset control is provided. Submit a photo showing where the outdoor reset control is installed and a photo showing where the outdoor temperature sensor is installed.	Verify that reset control has been installed.	NYS ECCC R403.2 or C403.2.5, as applicable	Major
	Reset control is enabled. Submit a photo (or multiple photos, if needed) of the outdoor reset control settings.	The boiler water temperature shall be lowered based on the outdoor temperature. Verify either through (a) measuring supply water temperature and outdoor air temperature; or (b) by checking the settings on the outdoor reset control.	NYS ECCC R403.2 or C403.2.5, as applicable	Minor
	Pipe insulation shall be installed. Submit a minimum of 3 photos showing accessible heating piping in different areas of the building.	Pipes are insulated (no exposed piping). Minor defect if at least 50% of the piping insulation was installed.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R403.4 or C403.210, as applicable	Minor

**Heating (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Boiler Replacement (continued)</b>	Pipe insulation shall be installed.	Pipes are insulated (no exposed piping). Major defect if less than 50% of the piping insulation was installed.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R403.4 or C403.210, as applicable	Major
	Pipe insulation meets the manufacturer's specifications, meets the correct thickness, and is code compliant. Submit photos of insulation depth (using a ruler or spray foam depth gauge) and insulated pipe diameter or circumference in a minimum of 3 differ.	Insulation is installed correctly, of the correct thickness, and meets code and manufacturer requirements. Minimum R3 (typically 1" of fiberglass, or equivalent) in residential buildings, 1.5" thick in commercial buildings (< 1.5" pipe) and 2" thick in commercial buildings >= 1.5" pipe.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R403.4 or C403.210, as applicable	Minor
	SSE testing report is provided.	At a minimum for condensing boilers: efficiency testing for high and low fire.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Boiler is operating at condensing efficiency.	At a minimum for condensing boilers: efficiency testing for high and low fire.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	The owner was provided a copy of the Operational and Maintenance Handbook, including start-up and any test reports and preventive maintenance.	The owner was given a copy of the manufacturer Operation and Maintenance manual and provided with contact information for emergency service needs.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R303.3/C303.3	Incidental
	The boiler shall have adequate combustion air.	Verify that combustion testing shows acceptable levels of carbon monoxide in the vent stream. Minor defect if CO test shows 51-100ppm.	NY State Mechanical Code, Section 701	Minor



**Heating (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Boiler Replacement (continued)</b>	The boiler shall have adequate combustion air.	Verify that combustion testing shows acceptable levels of carbon monoxide in the vent stream. Major defect if CO test shows 101-200ppm.	NY State Mechanical Code, Section 701 BPI Technical Standards for Multifamily Building Analysts	Major
	The boiler shall have adequate combustion air.	Verify that combustion testing shows acceptable levels of carbon monoxide in the vent stream. Critical defect if CO test shows >200ppm.	NY State Mechanical Code, Section 701	Critical
<b>Burner</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Burner replaced per workscope.	Verify burner was replaced.	Project workscope	Minor
	Replacement burner meets required energy code specifications.	Verify the burner is multi-stage or modulating, for boilers over 500,000 Btu/hr, for buildings four stories and higher.	NYS Energy Code C403.4.2	Minor
<b>Fuel Conversion</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	DRAF with new heating account shall be provided.	Verify that a signed DRAF that includes the new heating fuel account has been provided.	Program guidelines	Minor
	Fuel conversion completed per workscope.	Verify that conversion is complete.	Project workscope	Major
	Fuel conversion cannot be converted back to original fuel source.	Verify that old connections have been removed or capped off to prevent using the old fuel source.	Project workscope	Major
	New equipment installed meets program requirements.	Verify that new equipment meets program minimum performance standards: ENERGY STAR requirements apply to boilers smaller than 300,000 Btu/hr input, and are 87% minimum AFUE for oil boilers and 90% minimum AFUE for gas boilers. Boilers larger than 300,000 Btu/hr do not fall within ENERGY STAR and requirements are per the Energy Code.*	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Code R403.2.3	Minor
	New equipment must meet energy efficiency of project workscope.	Verify that new equipment meets efficiency requirement of project workscope. Minor defect if new equipment is at least 75% if the energy efficiency in the workscope.	Project workscope	Minor
	New equipment must meet energy efficiency of project workscope.	Verify that new equipment meets efficiency requirement of project workscope. Major defect if new equipment is less than 75% of the energy efficiency in the workscope.	Project workscope	Major

**Heating (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Furnace Replacement</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	The rated efficiency of the installed furnace is equal to or higher than the modeled efficiency.	Efficiency must meet or exceed proposed efficiency.	Project workscope	Major
	Draft inducer installed.	A draft inducer must be installed. Atmospheric equipment can be identified because there is no draft inducer, and the flame is usually visible.	MPP Existing Building Program Guidelines (minimum performance standards)	Critical
	Replacement furnace shall be ENERGY STAR labeled, where applicable. For all other systems where the ENERGY STAR label is not available, the specified heating plant(s) shall have a minimum rated efficiency no less than that required by the ECCC NYS C404.2.	Energy Star is not required for equipment in size and type ranges where Energy Star is not available. In-unit furnaces are typically within the Energy Star label size and type of equipment.	MPP Existing Building Program Guidelines (minimum performance standards)	Major
	A separate programmable thermostat is provided for each heating system. Submit a photo showing the settings of each thermostat inspected. Follow sampling requirements in the Program Guidelines. Also submit a photo showing the settings on each thermostat inspected.	Thermostat must allow programming down to 55 F.	NYS ECCC R403.1 or C403.2.4, as applicable	Minor
	SSE testing report is provided.	At a minimum for condensing furnaces: efficiency testing for high and low fire.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	Furnace is operating at condensing efficiency.	At a minimum for condensing furnaces: efficiency testing for high and low fire.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	The owner was provided a copy of the Operational and Maintenance Handbook, including SSE test and any test reports and preventive maintenance.	The owner was given a copy of the manufacturer Operation and Maintenance manual and provided with contact information for emergency service needs.	1. MPP Existing Building Program Guidelines (minimum performance standards) 2. NYS Energy Conservation Code R303.3/C303.3	Incidental
	Required regular maintenance actions are clearly stated and incorporated on a readily accessible label.	The label shall include the title or publication number for the operation and maintenance manual for that particular model and type of product.	NYS Energy Conservation Code R303.3/C303.3	Incidental
<b>Reset Control</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Reset control is provided. Submit a photo showing where the outdoor reset control is installed and a photo showing where the outdoor temperature sensor is installed.	Do not mark as fail if you have failed the reset control task under the boiler measure. Verify that reset control has been installed.	NYS ECCC R403.2 or C403.2.5, as applicable	Major

**Heating (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Reset Control (continued)</b>	Reset control is enabled. Submit a photo (or multiple photos, if needed) of the outdoor reset control settings.	The boiler water temperature shall be lowered based on the outdoor temperature. Verify either through (a) measuring supply water temperature and outdoor air temperature; or (b) by checking the settings on the outdoor reset control.	NYS ECCC R403.2 or C403.2.5, as applicable	Minor
<b>Thermostatic Radiator Valve</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Thermostatic radiator valves installed. Submit a photo of each TRV inspected. Follow sampling requirements from Program Guidelines.	Verify that thermostatic radiator valves were installed. Minor defect if at least 75% of the thermostatic radiator valves were installed.	Project workscope	Minor
	Thermostatic radiator valves installed. Submit a photo of each TRV inspected. Follow sampling requirements from Program Guidelines.	Verify that thermostatic radiator valves were installed. Major defect if fewer than 75% of the thermostatic radiator valves were installed.	Project workscope	Major
	Thermostatic radiator valves include lockout function. Submit a photo of each TRV inspected. Follow sampling requirements from Program Guidelines.	Verify that thermostatic radiator valves have the upper limit pin installed if required by the scope of work.	Project workscope	Minor

## Heating and Cooling

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Air Conditioners</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Air conditioners are installed in all inspected apartments. Submit a photo of each AC inspected; also submit a photo of the nameplate of each AC inspected. Alternatively, submit an invoice and/or contractor's log showing which apartments had new AC units installed.	Verify that all air conditioners were installed per workscope. Minor defect if at least 75% of the AC units were installed.	Project workscope	Minor
	Air conditioners are installed in all inspected apartments. Submit a photo of each AC inspected; also submit a photo of the nameplate of each AC inspected. Alternatively, submit an invoice and/or contractor's log showing which apartments had new AC units installed.	Verify that all air conditioners were installed per workscope. Major defect if fewer than 75% of the AC units were installed.	Project workscope	Major
	Air conditioners are ENERGY STAR.	Verify ENERGY STAR air conditioners are installed, per workscope.	Project workscope	Minor
	Air conditioners meet efficiency requirements in workscope.	Verify the installed air conditioner efficiency is equal to or more than the assumed efficiency in the workscope.	Project workscope	Minor
<b>Air Source Heat Pumps</b>	Installed equipment matches workscope.	Verify installed equipment is as proposed on application, quantity, make and model.	Site Observation/ Photo Documentation	Major
	Condensate lines meet program requirements.	Observe condensate line where accessible for leaks. Confirm condensate lines terminate in either a domestic drain or external location. External locations must not terminate onto another heat pump unit or onto a walking surface that could cause slips if condensate freezes. Confirm with the homeowner that there is no indication of condensate line leakage.	Site Observation/ Photo Documentation	Major
	The equipment is safely accessible.	Verify that safe access to the site and associated equipment has been provided.	Site Observation	Critical
	Site conditions are consistent with Load Sizing Analysis.	Verify site conditions are consistent with Load Sizing Analysis or a revised energy analysis has been completed. Review of ACCA (Manual J, S, and D) or other approved heating and cooling calculation methodologies, with observed site conditions.	Site Observation/ NYC ECC EN2/TR8 forms or equivalent	Major
	No refrigerant leaks found.	Sample for refrigerant leaks at exposed field connections.	Refrigerant detector	Critical
	Ductwork is sealed and insulated.	Verify that exposed new or retrofitted ductwork is properly sealed and insulated if located outside the building's thermal envelope.	Site Observation / Photo Documentation	Major

**Heating and Cooling (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Air Source Heat Pumps (continued)</b>	Refrigerant line installation meets program requirements.	Verify all accessible refrigerant line (indoor and outdoor) set is insulated. Verify that all outdoor refrigerant line set is protected from UV. To comply, no more than 12" of any accessible refrigerant line may be left un-insulated/protected from UV at the outdoor unit connection.	Site Observation/ Photo Documentation	Major
	Refrigerant lines are protected at outdoor unit connections	Verify no more than 1" of any refrigerant line is unprotected at the outdoor unit connection.	Site Observation/ Photo Documentation	Minor
	Air filters are installed.	Verify the presence of equipment air filters if applicable.	Site Observation/ Photo Documentation	Minor
	Equipment is correctly secured.	Verify all exposed equipment and pipe supports appear to be properly secured.	Site Observation/ Photo Documentation	Major
	Outdoor unit is installed with sufficient clearances.	Verify outdoor unit is installed with sufficient clearances.	Site Observation/ Photo Documentation	Major
	The terminal units have sufficient clearance above and below.	Verify that the top and bottom clearance of ASHP Terminal Units meet the manufacturer's installation requirements, are sufficient for proper function, and that service panels are clearly accessible.	Site Observation/ Photo Documentation	Major
	The terminal units have sufficient clearance to the side.	Verify that the side clearances of ASHP Terminal Units meet the manufacturer's installation requirements.	Site Observation/ Photo Documentation	Minor
	The outdoor unit is protected from water/ice/snow beyond normal precipitation.	Observe that the outdoor unit is away from or protected from increased sources of water/ice/snow from above (i.e. more than normal precipitation, e.g. beneath drip edge, beneath snow-slide, beneath another heat pump, etc.). The presence of gutters does not provide sufficient protection.	Site Observation/ Photo Documentation	Major
	The outdoor unit is installed above snow depth.	Verify that units are above snow depth level according to ACCA Weather Station data as provided by the NYS Clean Heat program.	Site Observation/ Photo Documentation	Major
	Outdoor unit is installed level.	Verify outdoor unit is installed level.	Site Observation/ Photo Documentation	Major
	Vibration dampeners are installed.	If unit is connected to the building's framing (e.g. wall mounted, or on a connected deck), vibration dampeners are installed.		Minor
	Units run as intended.	Observe functional testing of equipment in either cooling or heating mode as conducted by contractor or operator, if conditions allow.	Site Observation	Major
	Electrical disconnect is accessible.	Verify that electrical disconnect is installed in an accessible location for service.	Site Observation/ Photo Documentation	Major

**Heating and Cooling (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Air Source Heat Pumps (continued)</b>	Owner shall be supplied with the Manufacturer's Warranty.	Verify Manufacturer's Warranty has been provided to owner.	Manufacturers Warranty	Major
	Operator has been trained.	Confirm customer/ operator has been provided with training on operation of system.	Site Observation/ Customer Confirmation	Major
	Owner shall be supplied with owners manual and maintenance instructions.	Confirm that the system owners manual and maintenance instructions are available on site.	Approved construction documents	Major
	Operator has been trained on controls.	Confirm customer/operator has been provided instructions on controls integration of supplemental heat sources to provide primacy of the ASHP equipment.	Site Observation / NYC ECC EN2/TR8 forms or equivalent	Major
	Integrated control system has been installed.	Confirm integrated control system has been installed and is operational. Contractor documentation must specify the controls settings on-site, referencing set points and control type.	Site Observation / Contractor-Provided Documentation	Major
	Integrated control system matches application.	Confirm integrated control system matches that of the application.	Site Observation/ Photo Documentation	Major
	The Decommissioning Guidance Checklist has been filled out and submitted.	Confirm the contractor-completed Decommissioning Guidance Checklist has been submitted, and has been filled out in its entirety.	Decommissioning Guidance Checklist	Major
	The Decommissioning Guidance checklist matches site conditions.	Confirm the contractor-completed Decommissioning Guidance Checklist matches conditions on site.	Decommissioning Guidance Checklist	Major
	Fossil fuel is no longer able to heat the space.	Verify fossil fuel space heating appliance has been removed from site or fuel lines to appliance have been cut and capped.	Site Observation/ Photo Documentation	Major
	Fossil fuel is no longer able to heat DHW.	(if applicable) Verify fossil fuel domestic hot water appliance has been removed from site or fuel lines to appliance have been cut and capped.	Site Observation/ Photo Documentation	Major
	The fossil fuel heating thermostat shall be removed or used to control the heat pump system.	Verify the thermostat controlling the fossil fuel heating appliance has been removed or confirm it will be used to control the heat pump system.	Contractor Attestation	Minor
	All exhaust vents for fossil fuel heating appliances shall be sealed.	Confirm any exhaust vent openings for the fossil fuel heating appliance have been sealed.	Site Observation/ Photo Documentation	Major

**Heating and Cooling (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Air Source Heat Pumps (continued)</b>	If fossil fuel DHW is retained, the exhaust vents shall be resized to prevent carbon monoxide spillage.	(In the event that the fossil fuel DHW system is retained) confirm that the contractor attests to adequately resizing exhaust vents as needed to prevent carbon monoxide spillage.  - If resizing of the exhaust vents is required, contractor must provide the original and final dimensions of the vents.	Site Observation/ Contractor Attestation	Critical
	All wall and ceiling penetrations shall be sealed where piping has been removed.	Verify pipe penetrations of walls and ceilings (where visible) have been sealed where piping has been removed.	Site Observation/ Photo Documentation/ Contractor Attestation	Major
<b>Chiller</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Replacement chiller installed meets workscope.	Verify replacement chiller was installed.	Project workscope	Major
	Chiller must meet Energy Code efficiency requirements.	Verify the replacement chiller meets the energy code requirements.	MPP Existing Building Program Guidelines (minimum performance standards)	Major
	Chiller must meet efficiency of the project workscope.	Verify the replacement chiller meets the efficiency of the project workscope.	Project workscope	Minor
<b>Energy Management Systems</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Energy Management System (EMS) Installed.	Verify that EMS was installed.	Project workscope	Major
	Energy management system (EMS) controls are set properly. Submit a photo of EMS in the boiler room, including showing where the EMS is installed and any settings it has.	Review the plan for the new controls, including a careful examination of sensor locations, set points, and zones. Review the EMS settings; make sure they have been adjusted to reflect the needs of the building and the settings in the workscope. Ensure that the installed EMS provides a significantly different control strategy than the old control system; otherwise, savings will not be achieved. Minor defect if at least 50% of the energy savings will be achieved.	Project workscope	Minor

**Heating and Cooling (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Energy Management Systems (continued)</b>	Energy management system (EMS) controls are set properly. Submit a photo of EMS in the boiler room, including showing where the EMS is installed and any settings it has.	Review the plan for the new controls, including a careful examination of sensor locations, set points, and zones. Review the EMS settings; make sure they have been adjusted to reflect the needs of the building and the settings in the workscope. Ensure that the installed EMS provides a significantly different control strategy than the old control system; otherwise, savings will not be achieved. Major defect if less than 50% of the energy savings will be achieved.	Project workscope	Major
	Energy management system (EMS) sensors are installed. Submit a photo of each sensor inspected, including showing where the equipment is installed and any settings it has (i.e. apartment sensors and any other sensors installed with the new system).	In 2-pipe and hot water systems, sensors should be installed in no fewer than 10% of apartments and on a variety of floors and in a variety of apartment lines. In 1-pipe steam systems, sensors should be installed in no fewer than 25% of apartments and on a variety of floors, and there must be a sensor in the apartment at the end of each steam line.	Project workscope	Minor
<b>Ground Source Heat Pumps</b>	Bore well/ground loop design documents shall be submitted.	Confirm the bore well/ ground loop design document was submitted and matches the project site (address, physical description).	Bore well/ground loop design document	Major
	Bore well/ground loop design document shall show soil type and conductivity.	Confirm soil type and conductivity assumptions are listed in the bore well/ground loop design document.	Bore well/ground loop design document	Major
	Bore well/ground loop design document shall show the flow rate determination and min/max entering temperatures.	Confirm the bore well/ ground loop design document shows the flow rate determination and min/max entering temperatures.	Bore well/ground loop design document	Major
	Bore well/ground loop design document shall show the acceptable type and concentration of antifreeze.	Confirm the bore well/ ground loop design document shows the acceptable type and concentration of antifreeze.	Bore well/ground loop design document	Major
	Bore well/ground loop design document shall show manifold design and location.	Confirm the bore well/ ground loop design document shows manifold design and location.	Bore well/ground loop design document	Major



**Heating and Cooling (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Ground Source Heat Pumps (continued)</b>	Startup checklist shall meet program requirements.	Verify if a startup checklist was provided, that contained the following elements: 1. Heat exchanger water flow test and test method 2. Water quality documentation 3. Water temperature differential, pressure, flow documentation 4. Antifreeze concentration and type documentation 5. Flushing/purging procedure documentation 6. Ground heat exchanged leak test documentation and test method 7. Condensate drain function testing 8. Refrigerant charge testing and refrigerant leak-detection documentation (DX systems only) 9. Observed functional testing in heating and cooling modes 10. Air filter installation verification if applicable	NYC ECC EN2/TR8 forms or equivalent/Startup Checklist	Major
	Installed equipment matches workscope.	Verify that installed equipment matches application and construction documents in quantity, make and model.	Field Observation or Photo Documentation	Major
	The equipment is safely accessible.	Verify that safe access to the site and associated equipment has been provided	Site Observation	Critical
	Site conditions are consistent with Load Sizing Analysis.	Verify site conditions are consistent with Load Sizing Analysis, or a revised energy analysis has been completed.	Design report referencing ACCA (Manual J, S, and D) or other approved heating and cooling calculation methodologies. Site observation	Major
	Manifold shall be consistent with design documentation.	If accessible - confirm manifold are consistent with design documentation.	Approved construction documents and photo documentation	Minor
	Condensate lines meet program requirements.	Observe condensate line where accessible for leaks. Confirm condensate lines terminate in either a domestic drain or external location. External locations must not terminate onto another heat pump unit or onto a walking surface that could cause slips if condensate freezes. Confirm with the homeowner that there is no indication of condensate line leakage.	Site Observation/ Photo Documentation	Major

**Heating and Cooling (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Ground Source Heat Pumps (continued)</b>	All wall and floor penetrations shall be sealed.	Verify piping through wall or floor surfaces is properly sealed.	Approved construction documents and photo documentation	Minor
	Ductwork is sealed and insulated.	Verify that exposed new or retrofitted ductwork is properly sealed and insulated if located outside the building's thermal envelope.	Site Observation/ NYC ECC EN2/TR8 forms or equivalent	Major
	Equipment is correctly secured.	Confirm all exposed equipment appears to be properly secured; unit and associated piping and ductwork are secured in a manner to prevent damage.	Site Observation	Major
	Electrical disconnect is accessible.	Verify that electrical disconnect is installed in an accessible location for service.	Site Observation	Major
	Cathodic protection shall be installed on piping where applicable.	Verify cathodic protection on piping where applicable (DX Systems).	Approved construction documents/Site Observation/Photo Documentation	Major
	Refrigerant line installation meets program requirements.	Verify refrigerant line set is insulated and protected from UV when outdoors when applicable (DX systems)	Site Observation/ Photo Documentation	Major
	Safety valves are installed and set correctly.	Verify temperature and pressure relief valve and discharge tube are installed on the pre-fill or water tank as required.	Site Observation	Major
	Water heater, tank, and heat exchanger shall not leak.	Verify water heater connections, tank, and heat exchanger (if applicable) are leak free.	Site Observation	Minor
	Owner shall be supplied with owners manual and maintenance instructions.	<p>Confirm that the system owners manual and maintenance instructions are available on site. The maintenance log must detail loop location description, loop piping material, required maintenance schedule on loop field and heat pump.</p> <p>For DX units, also include: loop field refrigerant content, type, volume, planned decommissioning data and process (refrigerant recovery).</p>	Site Observation/ Startup Checklist	Major
	Operator has been trained.	Confirm customer/ operator has been provided with training on operation of system.	Site Observation/ Customer Confirmation/ Startup Checklist	Major

**Heating and Cooling (continued)**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Programmable Thermostat</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Programmable thermostats installed per workscope. Submit a photo of each thermostat inspected, including showing where the equipment is installed. Follow sampling requirements in the Program Guidelines.	Verify that programmable thermostats were installed for all units in workscope. Minor defect if at least 75% of the thermostats were installed.	Project workscope	Minor
	Programmable thermostats installed per workscope. Submit a photo of each thermostat inspected, including showing where the equipment is installed. Follow sampling requirements in the Program Guidelines.	Verify that programmable thermostats were installed for all units in workscope. Major defect if fewer than 75% of the thermostats were installed.	Project workscope	Major
	A separate thermostat is provided for each dwelling unit and is programmable. Submit a photo showing the settings of each thermostat inspected. Follow sampling requirements in the Program Guidelines.	Mark as Fail if at least 75% but not all of the thermostats allow programming down to 55 F.	NYS ECCC R403.1 or C403.2.4, as applicable	Minor
	A separate thermostat is provided for each dwelling unit and is programmable. Submit a photo showing the settings of each thermostat inspected. Follow sampling requirements in the Program Guidelines.	Mark as Fail if more than 75% of the thermostats do not allow programming down to 55 F.	NYS ECCC R403.1 or C403.2.4, as applicable	Major
	Installed thermostat is lockable and/or has function to restrict maximum allowable temperature.	Verify that thermostat is either locking or has a maximum allowable temperature, if specified by the workscope.	Project workscope	Minor
	Programmable thermostats have been programmed. Submit a photo showing the settings of each thermostat inspected. Follow sampling requirements in the Program Guidelines.	Mark as Fail if at least 75% but not all of the thermostats have been programmed to reflect the needs of the building, and the settings in the workscope.	Project workscope	Minor
	Programmable thermostats have been programmed. Submit a photo showing the settings of each thermostat inspected. Follow sampling requirements in the Program Guidelines.	Mark as Fail if more than 75% of the thermostats have been programmed to reflect the needs of the building, and the settings in the workscope.	Project workscope	Major

**Lighting**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Lighting Fixtures</b>	All lighting cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Lighting power (watts) shall match or be less than the power in the workscope.	Verify that the lighting power (watts) matches, or is less than, the power in the workscope.	Project workscope	Minor
	Installed quantity matches workscope. For common areas, submit an invoice of fixtures purchased. For apartment lights, submit an invoice of fixtures purchased OR a contractor's log of where low flows were installed.	Verify that the number of fixtures installed matches the workscope. Incidental defect if at least 75% of proposed fixtures were replaced.	Project workscope	Incidental
	Installed quantity matches workscope. For common areas, submit an invoice of fixtures purchased. For apartment lights, submit an invoice of fixtures purchased OR a contractor's log of where low flows were installed.	Verify that the number of fixtures installed matches the workscope. Minor defect if less than 75% of proposed fixtures were replaced.	Project workscope	Minor
	Screw-in compact fluorescent lamps are not eligible for NY-SERDA funding and may not be included in project work scopes.	Verify that installed compact fluorescent lighting does not include screw-in lamps but rather are pin-type. Only valid for V5 and V6 of the program guidelines.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
<b>Lighting Controls</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Controls are installed in all proposed spaces.	Verify that lighting controls have been installed in all places proposed in the project workscope. Incidental defect if at least 95% of the lighting controls were installed in the correct place (allow up to 2 uninstalled units if there are more than 5 total units).	Project workscope	Incidental
	Controls are installed in all proposed spaces.	Verify that lighting controls have been installed in all places proposed in the project workscope. Minor defect if fewer than 95% of the lighting controls were installed in the correct place.	Project workscope	Minor
	Occupancy sensors: Occupancy sensors are set correctly. Lights turn on or off appropriately when the room is occupied or empty, respectively.	Verify that lights turn on automatically when the space is occupied and/or turn off automatically once the space is no longer occupied.	Project workscope	Minor
	Timers: On- and off-time settings are correct. Lights are appropriately on or off for the time of day at the inspection.	Verify that lights turn on and off at the correct time, or that settings on timers are correct, compared to the workscope.	Project workscope	Minor
	Photocells shall turn lights on when ambient lighting is low and shall turn lights off when ambient light is high.	Verify that photocells are working by covering their sensor and seeing if lights come on. Verify that photocells are working by flooding their sensor with light and seeing if lights turn off.	Project workscope	Minor
<b>Safety</b>	Replacement lamps should be labeled as to whether the ballast has been removed.	Verify that LED replacements for fluorescent lamps have a label indicating if the ballast has been removed. If the ballast has been removed, then there is a risk if fluorescent lamps are ever used again, inadvertently.	Health and safety	Minor

**Motors**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>High-Efficiency Motors</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	High-efficiency motors were installed. Submit a photo of each motor inspected. Follow sampling requirements in Program Guidelines.	Verify the quantity of motors replaced matches the workscope. Minor defect if at least 75% of the total motor power from the workscope was installed.	Project workscope	Minor
	High-efficiency motors were installed. Submit a photo of each motor inspected. Follow sampling requirements in Program Guidelines.	Verify the quantity of motors replaced matches the workscope. Major defect if less than 75% of the total motor power from the workscope was installed.	Project workscope	Major
	High-efficiency motors installed meet NEMA premium efficiency (>1hp) and match the workscope.	Verify the efficiency of new motors meets the NEMA premium requirements and the project workscope. Minor defect if efficiency rating is at least 75% of NEMA premium requirements and the project workscope.	MPP Existing Building Program Guidelines (minimum performance standards)	Minor
	High-efficiency motors installed meet NEMA premium efficiency (>1hp) and match the workscope.	Verify the efficiency of new motors meets the NEMA premium requirements and the project workscope. Major defect if efficiency rating is less than 75% of NEMA premium requirements and the project workscope.	MPP Existing Building Program Guidelines (minimum performance standards)	Major

**Ventilation**

Measure	Task	Task Description	Reference	Non-Conformance Category
<b>CAR Dampers</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Constant airflow regulator (CAR) dampers for automatic balancing installed. Submit a photo of each CAR inspected. Follow sampling requirements from the Program Guidelines. Alternatively, submit an invoice or contractor's log showing where CARs were installed.	Verify quantity of CAR dampers replaced. Minor defect if at least 75% of the CAR dampers were replaced.	Project workscope	Minor
	Constant airflow regulator (CAR) dampers for automatic balancing installed.	Verify quantity of CAR dampers replaced. Major defect if fewer than 75% of the CAR dampers were replaced.	Project workscope	Major
	Set airflow on CAR dampers. Submit a photo of each CAR inspected. Follow sampling requirements from the Program Guidelines. Alternatively, submit an invoice or contractor's log showing where CARs were installed.	Verify airflow settings match workscope, either from balancing report or by examining CARs.	Project workscope	Minor
<b>Duct Sealing</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Duct sealing was completed per workscope requirements. Submit a photo of each place duct work was inspected. Follow sampling requirements in the Program Guidelines.	Verify the duct sealing was done, either through leakage test report (e.g. Aeroseal or other) or by visible inspection of sealing (if only exposed ducts were sealed) or by photographs. Minor defect if at least 75% of the duct sealing was completed per workscope.	Project workscope	Minor
	Duct sealing was completed per workscope requirements. Submit a photo of each place duct work was inspected. Follow sampling requirements in the Program Guidelines.	Verify the duct sealing was done, either through leakage test report (e.g. Aeroseal or other) or by visible inspection of sealing (if only exposed ducts were sealed) or by photographs. Major defect if less than 75% of the duct sealing was completed per workscope.	Project workscope	Major
	Masonry ducts are sealed between the take-off and the wall and from the grill to the wall. Submit a photo of each take-off and grill that was inspected. Follow the sampling requirements in the Program Guidelines.	For masonry ducts, verify sealing between the take-off and the wall and sealing the grill to the wall.	NYS Energy Code R403.3.2 or C403.2.9.1, depending on the building type	Minor
<b>Exhaust Fan Timers</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Exhaust fan timers were installed per workscope. Submit photos of all timers inspected. Photos should show where the timer was installed and the settings on each.	Verify that at least 50% of total fan power in workscope is controlled by timers.	Project workscope	Minor

Ventilation (continued)				
Measure	Task	Task Description	Reference	Non-Conformance Category
<b>Exhaust Fan Timers (continued)</b>	Exhaust fan timers were installed per workscope. Submit photos of all timers inspected. Photos should show where the timer was installed and the settings on each.	Mark as fail if less than 50% of total fan power in workscope is controlled by timers.	Project workscope	Major
	Timers were programmed per the project workscope.	Verify timers are programmed - either examine timer program and/or check if fans are on and off at the correct times.	Project workscope	Major
<b>Ventilation Fan(s) Replacement</b>	Cutsheets shall be provided.	Verify that cutsheets have been provided.	Project workscope	Incidental
	Ventilation fans were installed per the workscope. Submit a series of photos showing the entire roof area. Additionally, submit a photo of each fan inspected and a photo of the nameplate of each fan inspected.	Verify quantity of fans replaced. Minor defect if at least 75% of the ventilation fans were installed per workscope.	Project workscope	Minor
	Ventilation fans were installed per the workscope. Submit a series of photos showing the entire roof area. Additionally, submit a photo of each fan inspected and a photo of the nameplate of each fan inspected.	Verify quantity of fans replaced. Major defect if fewer than 75% of the ventilation fans were installed per workscope.	Project workscope	Major
	Install fans meet minimum efficiency per NYS energy code.	Verify the efficiency of fans. 10-90 CFM in buildings 3 stories and less: minimum 1.4 CFM/watt. Over 90 CFM in buildings 3 stories and less: minimum 2.8 CFM/watt. Buildings four stories and more, per Energy Code.*	NYS Energy Code R403.6.1, C403.2.12	Minor