

Amendment - Updated Inspection Protocol Requirements

9.3 Stage 3: 100% Construction Complete

Stage 3 is 100% construction complete, meaning that all of the energy improvements are installed and functional (or capable of functioning) to the intent of the measures described in the SAV-IT. An improvement is considered installed when it adheres to the American Institute of Architects (AIA) definition of Substantial Completion, which is the “stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with Contract Documents so that the Owner can occupy or utilize the Work for its intended use.” For energy savings measures, the “intended use” is to generate the proposed level of energy savings. All measures must be installed per these Guidelines, including the Minimum Performance Standards, and as outlined by the approved SAV-IT. There is no verification of savings (i.e. utility bill analysis) associated with 100% Completion.

9.3.1 Stage 3 Deliverables

Stage 3 deliverables must be submitted to NYSERDA after the Partner has verified completion of energy improvements, in accordance with the intent of the SAV-IT. Incomplete submissions will be returned to the Partner without review, and incentives will not be paid by NYSERDA. Refer to Section 8 for site inspection protocols, required measure documentation, and Partner responsibilities. The following deliverables are required for approval of the Stage 3:

- Inspection Request workbook
- Photo Documentation
- Common Area Data Release Authorization Forms (DRAFTs)
- Additional measure documentation as required by Section 8.4

The Filename Convention must be followed.

Document	File Name Convention	Example
Inspection Request	Project Name – 100% Inspection.xls	NY Apts – 100% Inspection_rev0.xls
Photo Documentation	Project Name – Photos _100%.pdf	NY Apts – Photos_50%.pdf
Measure Documentation	Project Name - (per Section 8.4)	NY Apts – Boiler cut sheets.pdf
Common Area DRAFTs	Project Name – DRAFTs	NY Apts - DRAFTs

TABLE 1: STAGE 3 DELIEVERABLES

9.3.2 Stage 3 Approval

The following procedure explains each step of the 100% Construction Complete approval process.

1. The Partner submits Stage 3 Deliverables and all associated files to NYSERDA for review. Email all project submittals to MultifamilyPrograms@nyserda.ny.gov.
2. NYSERDA reviews the documents and, if complete, schedules a site inspection. On a case-by-case basis, if the Partner submits quality inspection documentation, NYSERDA will waive the 100% field inspection and will instead conduct a desk review. The building owner will always have the option of requesting a final field inspection if they choose.

2. The site inspection or desk review occurs.
3. NYSERDA reviews results of the inspection and determines if the project achieved the milestone.
4. If achieved, NYSERDA approves the Stage 3 incentive and begins the payment process.

10 SITE INSPECTION

10.1 Partner Responsibilities

The Partner is responsible for confirming that work is installed according to the scope of work described in the approved SAV-IT. Partners are required to verify the installation of measures with one of the following:

- Performing an on-site inspection of installed measures.

OR

- Obtaining a *Statement of Substantial Completion* from the installation contractor or other qualified representative.

Section 10.4 describes the specific Partner requirements, based on measure type, for the *Statement of Substantial Completion* and the on-site inspection documentation. A *Statement of Substantial Completion* or approved proxy may be submitted to establish completion of the work.

A cut sheet must be provided for each product installed as part of the scope of work. At a minimum, the cut sheet must show the manufacturer, model number, and any relevant energy rating information. The specific model installed must be clearly marked on the cut sheet.

10.2 System Testing

System testing can be performed by the installing contractor, the Partner, the Participant (i.e. owner), or third parties. The individual conducting the specific testing shall be appropriately qualified and trained in the test or have proven experience and expertise. If completion is documented by someone other than the Partner, the Partner shall submit a *Statement of Substantial Completion* signed by the individual who performed the system testing.

10.3 Statement of Substantial Completion

The installation contractor or other qualified representative must complete the Statement of Substantial Completion. When submitting a signed Statement of Substantial Completion, the Partner is still responsible for performing the necessary due diligence to ensure that the Statement of Substantial Completion is accurate and complete. The exact steps taken to gain this assurance will depend on the measure installed and the Partner's experience working with the installation contractor. Steps for due diligence can include, but is not limited to, requesting to see contractor field notes and checklists, random sampling to compare the statement to what is seen on site during an inspection, asking the installation contractor for their quality control techniques.

A signed Statement of Substantial Completion is defined as a written and signed statement from the installing contractor, the owner's general contractor, the commissioning agent, or another third-party inspector. The Statement of Substantial Completion must confirm that the specified measures are fully installed and fulfilling its intended use. For the purpose of energy efficiency measures, the "intended use" is to generate the proposed level of energy savings.

Unless based on industry-standard document such as AIA's G702, this Statement must be on the contractor's letterhead and must include all of the information described below and must cover 100% of the installation.

1. Information Required in the *Statement of Substantial Completion*

- Statement must be made on Contractor/agent's letterhead
- Statement must contain the name and address of the project
- Statement must contain the name and contact information of the individual completing the statement
- Statement must confirm that all fixtures and equipment have been installed and tested to demonstrate confirmation with all construction specifications
- Individual's signature and date signed

In some cases, there may be documents already in use by the contractors or Participant that satisfy some or all of the requirements of the signed Statement of Substantial Completion. In such cases, it is sufficient to submit a copy of such documents in lieu of a separate Statement of Substantial Completion. If there are specific submission requirements for the Statement of Substantial Completion that are not included in the proxy documents, such as are listed in the measure-specific documentation requirements elsewhere in this document, then additional documentation should be submitted with the proxy documents as attachments.

2. Approved Proxy Documents for *Statement of Substantial Completion*

- AIA Documents G702 (Application and Certification for Payment) and G703 (Application and Certification for Payment Continuation Sheet)

The Partner should contact the project's Case Manager if there is documentation used for a specific project which the Partner believes satisfy some or all of the requirements for a Statement of Substantial Completion, but is not currently listed as an eligible proxy.

10.4 Inspection Request Documentation Requirements

APPLIANCES ENERGY STAR® Appliances	
Equipment Covered	Refrigerators, dishwashers, and compactors, etc.
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Confirm that the appliance is ENERGY STAR® labeled. If a label is not present, the following website can be used to check for an ENERGY STAR® rating for a particular make/model: http://www.energystar.gov/index.cfm?c=appliances.pr_appliances • Compare the consumption data of the appliances to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Partner sampling requirements provided it meets at least the stated documentation requirements for 100% of the installed appliances. • Partner should be satisfied that the signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record make, model number, and count of all appliances. • Record location (for example, an apartment number) and serial number for each appliance inspected. • Photograph one representative appliance and ENERGY STAR® label, if visible, of each type of appliance being inspected. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling Requirements	<ul style="list-style-type: none"> • Inspect 10% of appliances of each type and size, but no fewer than five (5) appliances of each type. Sample must be random and statistically representative. • Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Record make, model number, and count of inspected appliances. • Record location (for example, an apartment number) and serial number for each appliance inspected. • Photograph one representative appliance and ENERGY STAR® label, if visible, of each type of appliance inspected. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

LIGHTING		Common Area, Apartment and Exterior Lighting	
Equipment Covered	Common Area (hallway, stairwells, lobby, etc.), in-unit, exterior decorative and security lighting. LED (solid state) lighting is covered in a separate section.		
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the quantities and wattages of the lamps and fixtures to the assumptions made in the SAV-IT and note conformance/deviation. • For retrofitted fixtures, due diligence should include confirmation of electronic ballasts using ballast checker. 		
Option 1: Statement of Substantial Completion			
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Partner sampling requirements provided it meets at least the stated documentation requirements for 100% of the installed lighting. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section. 		
Required Attachments	<ul style="list-style-type: none"> • Record quantities, locations, types, and wattages for all lamps and fixtures. • Record make/model information on all in-unit lighting to confirm ENERGY STAR® label. • Photograph one sample of each fixture type (with ENERGY STAR® label affixed, if visible). • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet. 		
Option 2: Partner Sampling			
Partner Sampling Requirements	<ul style="list-style-type: none"> • Inspect all unique common areas (basements, lobbies) and a representative 20% sample (minimum five (5)) of similar, or repetitive, areas (stairwells and stairwell landings, corridors, trash chute rooms, etc.). • Inspect 10% of apartments to include, at a minimum, one representative apartment from each line. A minimum of five (5) apartments must be visited. • Problems with installations found during random inspections will require an expanded sample to determine extent of problem. 		
Required Attachments	<ul style="list-style-type: none"> • Record quantities, locations, types, and wattages for inspected lamps and fixtures. • Record make/model information on all inspected in-unit lighting to confirm ENERGY STAR® label. • Photograph one sample of each fixture type inspected (with ENERGY STAR® label affixed, if visible). • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet. 		

LIGHTING	Exit Signs and Emergency Lighting
Equipment Covered	Exit signs and emergency lighting
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the quantities and wattages of the lamps and fixtures to the assumptions made in the SAV-IT and note conformance/deviation. • Due diligence should include opening fixtures to confirm lamp type and wattage. • Due diligence should include confirming emergency power provision, when applicable, by turning off power or using test buttons on equipment.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed lighting. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record quantities, locations, make/model, types, and wattages of all signs and fixtures. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling Requirements	<ul style="list-style-type: none"> • Inspect all unique common areas (basements, lobbies) and a representative 20% sample (minimum five of similar, or repetitive, areas (stairwells and stairwell landings, corridors, trash chute rooms, etc.). • Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Record quantities, locations, make/model, types, and wattages of inspected signs and fixtures. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

LIGHTING	LED Lighting
Equipment Covered	LED (solid state) lamps and fixtures
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the quantities and wattages of the lamps and fixtures to the assumptions made in the SAV-IT and note conformance/deviation. • Due diligence should include opening fixtures to confirm lamp type and wattage. • Due diligence should include confirming emergency power provision, when applicable, by turning off power or using test buttons on equipment.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed lighting. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record quantities, locations, make/model, types, and wattages of all lamps and fixtures. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet. • One of the following: <ol style="list-style-type: none"> 1. Proof of ENERGY STAR® listing; or 2. Proof of DesignLights™ Consortium's Qualified Products Listing; or 3. LM79 test results for the product from a certified independent test laboratory; LM80 test results for the SSL product or LED module package; AND unconditional three-year warranty on product (from either manufacturer or installer).
Option 2: Partner Sampling	
Partner Sampling Requirements	<ul style="list-style-type: none"> • Inspect all unique common areas (basements, lobbies) and a representative 20% sample (minimum five (5)) of similar, or repetitive, areas (stairwells and stairwell landings, corridors, trash chute rooms, etc.). • Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Record quantities, locations, make/model, types, and wattages of all lamps and fixtures. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet. • One of the following: <ol style="list-style-type: none"> 1. Proof of ENERGY STAR® listing; or 2. Proof of DesignLights™ Consortium's Qualified Products Listing; or 3. LM79 test results for the product from a certified independent test laboratory; LM80 test results for the SSL product or LED module package; AND unconditional three-year warranty on product (from either manufacturer or installer).

LIGHTING	Lighting Controls
Equipment Covered	Occupancy sensors, timers and, photocell controls
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the quantities, types and, settings of the lighting controls to the assumptions made in the SAV-IT and note conformance/deviation. • Due diligence should include confirming that each control type is operable. • For occupancy sensors, step in and out of the zone and confirm that lights switch off within a time period equivalent to the specified ON time. • For timers, set timer to current time and confirm control of fixture. • For photocells, cover or blackout photocell and confirm control of fixture • For switches and dimmers, operate control to confirm control of fixture. • For day lighting controls, dim or blackout location to observe change in fixture light level.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed controls. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section. • The Statement of Substantial Completion should include a description of tests, calibrations, and lighting control settings.
Required Attachments	<ul style="list-style-type: none"> • Record location, make/model, and type of each lighting control. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • Inspect all unique common areas (basements, lobbies) and a representative 20% sample (minimum five (5)) of similar, or repetitive, areas (stairwells and stairwell landings, corridors, trash chute rooms, etc.). Inspect 10% of apartments to include, at a minimum, one representative apartment from each line. A minimum of five (5) apartments must be visited. Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Record location, make/model, and type of each inspected lighting control. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

ENVELOPE	Roof and Cavity Insulation
Equipment Covered	Roof insulation, attic insulation and, cavity insulation
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the insulation type, thickness, and R-value to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from insulation/air-sealing contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed insulation. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record insulation type, thickness, and R-value. • Photograph depth of blown insulation using tape measure or other depth measurement, minimum one photograph per attic. • Photograph roof deck insulation before it is covered. • Photograph cavity insulation before it is covered. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • Each unique roof or cavity assembly shall be inspected. For example, if unique sections of the building are constructed differently, all distinct areas must be inspected. If insulation specifications are different for different areas, each different specification shall be inspected. • Sampling may be used to inspect roof or cavity assemblies that are consistent throughout large sections of the building. At each stage of the inspection process, a minimum of 20% of total roof and cavity area must be inspected for each unique roof and cavity type. Problems with installations found during random inspections will require an expanded sample. • An interim inspection (prior to area being enclosed) is required when insulated area will be inaccessible after completion.
Required Attachments	<ul style="list-style-type: none"> • Record insulation type, thickness and, R-value for each area inspected. • Photograph depth of blown insulation using tape measure or other depth measurement, minimum one photograph per inspected attic. • Photograph roof deck insulation before it is covered. • Photograph cavity insulation before it is covered. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

ENVELOPE	Windows
Equipment Covered	Exterior windows, sliding glass doors
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the energy performance specifications and actual installation to the assumptions made in the SAV-IT and note conformance/deviation. • Due diligence should include testing operating sashes, screens, and hardware for a tight fit at contact points and weather stripping for smooth operation and weather-tight closure. • Due diligence should include confirming proper fit and effective connection to building envelope weather and air barriers.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed windows. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record quantities and locations of all new windows. • Record energy performance specifications (window type, frame type, U-value, gas fill, SHGC, low-e type, and location) for all windows. • Provide copies of NFRC or other relevant rating agency's label(s). For large jobs, provide certificates from NFRC or other relevant rating agency, which should be on file. • Provide copies of low-e glass from manufacturer's cut sheets. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • At least 10% of new windows (minimum 10) shall be inspected and shall include, at a minimum, one of each different type of window installation based on different window types (fixed, double hung, etc.) and different energy performance specifications (e.g. if low-e glass is specified on part of the building but not all). • The sample set shall include, at a minimum, the inspection of new windows in one representative apartment from each line. • Problems with installations found during random inspections will require an expanded sample to determine extent of problem.

Required Attachments	<ul style="list-style-type: none">• Record quantities and locations of new windows inspected.• Record energy performance specifications (window type, frame type, U-value, gas fill, SHGC, low-e type, and location) for inspected windows.• Provide copies of NFRC or other relevant rating agency's label(s). For large jobs, provide certificates from NFRC or other relevant rating agency, which should be on file.• Provide copies of low-e glass from manufacturer's cut-sheets.• Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
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ENVELOPE	Exterior Doors
Equipment Covered	Exterior doors and interior doors opening onto common areas
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the energy performance specifications and actual installation to the assumptions made in the SAV-IT and note conformance/deviation. • Due diligence should include inspecting for proper operation, fit, and weather stripping.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed doors. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record quantities and locations of all new doors. • Record make/model, type, and U-value for all new doors. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • Verify proper installation of 50% of all new common area exterior doors. • Inspect 10% of new apartment exterior doors (minimum of 5) where garden style apartments exist. Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Record quantities and locations of inspected doors. • Record make/model, type, and U-value for inspected doors. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

ENVELOPE	Air Sealing
Equipment Covered	Weatherstripping, caulk, thermal barriers, and stops
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Where quantitative measures of air sealing effectiveness are available, compare the actual installation to the assumptions made in the SAV-IT and note conformance/deviation. • For weather stripping of windows or doors, due diligence should include confirming that all latches, hinges, and self-closing mechanisms operate smoothly and properly and confirming that weather stripping is secured with screws.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from insulation/air-sealing contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed air sealing. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section. • Statement should explain how work was performed and what quality control mechanisms were in place. If blower doors were used, statement should list test-in and test-out blower door readings.
Required Attachments	<ul style="list-style-type: none"> • Record location and description of air sealing activities. • Record quantities and description of materials used. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • For elements that provide central services to the building (e.g. entry doors, central duct chases, utility service penetrations, etc.) a minimum 50% sample shall be inspected. • For elements that are repeated throughout the building or occur in every living unit (e.g. windows, wall/floor connections, air conditioner sleeves, etc.) a minimum 10% sample shall be inspected. A minimum of five (5) apartments must be visited. • Problems found during random inspections will require an expanded sample to determine extent of problem. • Where general in-unit air sealing was specified in the SAV-IT, the sample set shall be representative of the variety of apartment types in the building, including end/corner units and inside units; top-floor, middle-floor, bottom-floor units; and at least one unit of each size/type (studios, 1-bed, 2-bed, etc.).
Required Attachments	<ul style="list-style-type: none"> • Record location or areas inspected and description of observed evidence of air sealing activities. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

HVAC & DHW	Combustion, Steam and Hydronic Systems
Equipment Covered	Boilers and furnaces
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the energy performance specifications and actual installation to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record make and model information on all installed equipment. • Record nameplate efficiency or measured efficiency if nameplate efficiency is not available. • Confirm all applicable operating and specification manuals are delivered to building staff. Where applicable, summarize the training performed and personnel involved. • Provide steady state efficiency testing for high and low fire. • Condensing boilers: Provide outdoor reset curves. • Hot Water Heating Systems: Measure and report supply water temperature, return water temperature, and outdoor air temperature in the shade. Record control set points. For outdoor reset controls, record design set points, and actual settings. • Steam Systems: Record system pressure and control set points. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • All primary equipment (boilers, etc.) should be inspected. • A representative sample of 10% of in-unit terminal devices (radiators, unit heaters, etc.) should be included. A minimum of five (5) apartments must be visited.
Required Attachments	<ul style="list-style-type: none"> • Collect make and model information on inspected equipment. • Record nameplate efficiency, or measured efficiency if nameplate efficiency is not available. • Confirm all applicable operating and specification manuals are delivered to building staff. Where applicable, summarize the training performed and personnel involved. • Provide steady state efficiency testing for high and low fire. • Condensing Boilers: Provide outdoor reset curves. • Hot Water Heating Systems: Measure and report supply water temperature, return water temperature, and outdoor air temperature in the shade. Record control set points. For outdoor reset controls, record design set points and actual settings. • Steam Systems: Record system pressure and control set points.

	<ul style="list-style-type: none"> • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
HVAC & DHW	Cooling
Equipment Covered	Common area and apartment cooling equipment
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the energy performance specifications and actual installation to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Partner sampling requirements provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record make and model information on all installed equipment • Record nameplate efficiency. • Confirm all applicable operating and specification manuals are delivered to building staff. Where applicable, summarize the training performed and personnel involved. • Cooling Systems: Refer to air conditioner test instructions. Follow instructions for 100% of installed equipment. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • All primary equipment (chillers, air handling units, etc.) should be inspected. A representative sample of 10% of in-unit terminal devices (fan coils, PTACs, room air conditioners, etc.) should be included in the process. A minimum of five (5) apartments must be visited. • Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Collect make and model information on inspected equipment. • Record nameplate efficiency and efficiency proposed in the SAV-IT. • Confirm all applicable operating and specification manuals are delivered to building staff. Where applicable, summarize the training performed and personnel involved. • Cooling Systems: Refer to air conditioner test instructions. Follow instructions for all inspected equipment. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

Air Conditioner Test Instructions	
All types of air conditioners	The temperature difference between the room air temperature and the supply air temperature should be greater than 20°F. Record measurements.
Central air conditioners	<ul style="list-style-type: none"> • Check the capacity of the equipment against the design cooling load to confirm proper size. If output capacity of the installed cooling plant is more than 10% larger than the modeled design load, record the designer's justification for over-sizing the cooling plant. • Confirm that duct seams are sealed per the energy code. • Record duct insulation material and thickness. • <u>Optional but recommended</u>: Record outside air temperature, refrigerant superheat and subcooling, and unit amps. Compare to manufacturer's data at outside air conditions. If measurements do not match manufacturer's data, adjust refrigerant charge and/or identify airflow obstructions. • <u>Optional but recommended</u>: Measure supply airflow to all zones. Compare to design values, and adjust to within 5%.
Room air conditioners	<ul style="list-style-type: none"> • <u>Optional but recommended</u>: Visually inspect sealing around air conditioner sleeve. No daylight should be visible from indoors. • <u>Optional but recommended</u>: Test for air leakage from outdoors: Shut outside air damper, if any; run unit on fan only (no compressor); measure outdoor air temperature in the shade, supply air temperature, and room temperature. Supply air temperature should equal room air temperature; if not, this indicates air leakage from outdoors. Record measurements.

HVAC & DHW	Ventilation and Heat Recovery
Equipment Covered	Heating, ventilation and air conditioning equipment
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the energy performance specifications and actual installation to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record make and model information on all installed equipment. • Record nameplate efficiency, or measured efficiency if nameplate efficiency is not available. • Confirm all applicable operating and specification manuals are delivered to building staff. Where applicable, summarize the training performed and personnel involved. • Heat Recovery: Record entering and leaving air temperatures for both intake and exhaust air streams. Measure exhaust and intake air flows. Calculate heat recovery efficiency and compare to manufacturer's rating at measured airflow and temperature conditions. Ensure supply air is 70 F ± 5 F. • Roof Fan Timers: Record timer set points. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • All primary equipment (central fans, air handling units, HRVs, etc.) should be inspected. A representative sample of 10% of in-unit terminal devices (individual room fans, grilles, roof fans, etc.) should be included in the process. A minimum of five (5) apartments must be visited. • Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Collect make and model information on installed equipment. • Record nameplate efficiency, or measured efficiency if nameplate efficiency is not available, and efficiency proposed in the SAV-IT. • Confirm all applicable operating and specification manuals are delivered to building staff. Where applicable, summarize the training performed and personnel involved. • Heat Recovery: Record entering and leaving air temperatures for both intake and exhaust air streams. Measure exhaust and intake air flows. Calculate heat recovery efficiency and compare to manufacturer's rating at measured airflow and temperature conditions. Ensure supply air is 70 F ± 5 F.

	<ul style="list-style-type: none">• Roof Fan Timers: Record time of day and whether fan was found on or off. Record timer set points.• Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
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HVAC & DHW	Domestic Hot Water
Equipment Covered	Domestic hot water systems
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the capacity, efficiency, water temperature, and actual installation to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • For new equipment, record make/model, nameplate efficiency, or measured efficiency if nameplate efficiency is not available. • Record water temperature at a faucet nearest and a faucet farthest from the water heater (as measured along the distribution system) and the location where that measurement was made. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • All primary equipment (boilers, hot water heaters, etc.) should be inspected. • A minimum of two faucets should be tested for water temperature.
Required Attachments	<ul style="list-style-type: none"> • For inspected equipment, record make/model, nameplate efficiency, or measured efficiency if nameplate efficiency is not available. • Record water temperature at a faucet nearest and a faucet farthest from the water heater (as measured along the distribution system) and the location where that measurement was made. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

HVAC & DHW	Pipe Insulation, Duct Insulation
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the insulation type, thickness, and R-value to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed insulation. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record insulation type, thickness, and R-value of all insulation. • Photograph insulation in areas that will be hidden at the end of construction. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • Each unique device assembly shall be inspected. For example: DHW pipes, heating pipes, and ductwork should all be inspected independently. • Sampling may be used to inspect device assemblies that are consistent throughout large sections of the building. At each stage of the inspection process, a minimum of 20% of total insulated area must be inspected for each unique device type. • An interim inspection (prior to area being enclosed) is required when insulated area will be inaccessible after completion.
Required Attachments	<ul style="list-style-type: none"> • Record insulation type, thickness, and R-value of inspected insulation. • Photograph insulation in areas that will be hidden at the end of construction. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

OTHER	Energy / Building Management Systems
Equipment Covered	Energy Management Systems, Building Management Systems
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the control sequence, energy performance specifications, and actual installation to the assumptions made in the SAV-IT and note conformance/deviation. • Due diligence could include being present during the EMS/BMS communication and functionality test.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from controls contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record location, make/model, and type of each energy management system device or control. • Printout of submetering communication and functionality test that demonstrates all meters are functioning properly. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	Visually inspect a representative sample of 20% of the installed monitoring points.
Required Attachments	<ul style="list-style-type: none"> • Record location, make/model, and type of each energy management system device or control. • Printout of submetering communication and functionality test that demonstrates all meters are functioning properly.
Communication and Functionality Test	<ul style="list-style-type: none"> • All EMS/BMS contractors must perform a communication and functionality test at the completion of the installation. The test provides proof of communication between the monitoring points, controls, equipment, and the system controller. Most of these systems are tied to a computer on site or to a recording device. The controller can scroll through connection points and provide data (e.g. outside and inside temperatures, set points, run times of equipment, etc.). A print screen of these points confirms connectivity to the sensors and equipment. Successful adjustments to these settings confirm functionality and response of the system. • A copy of these print screens and test would serve as a good commissioning tool. It would also be useful for the Partner or construction manager to be present when the controls company conducts the test. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

HVAC & DHW	Low-Flow Aerators & Showerheads
Equipment Covered	Low-flow aerators and low-flow showerheads
Partner Requirements	<ul style="list-style-type: none"> • Prepare Inspection documentation as required or ensure that the signed Statement of Substantial Completion is accurate and complete. • Compare the rated GPM to the assumptions made in the SAV-IT and note conformance/deviation.
Option 1: Statement of Substantial Completion	
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Partner sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed devices. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record location, type, and quantity of all devices. • Record rated GPM of all devices. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.
Option 2: Partner Sampling	
Partner Sampling	<ul style="list-style-type: none"> • A representative sample of 10% of all installed aerators and low-flow devices is required. A minimum of five apartments must be visited. Sample must be random and statistically representative. • Problems with installations found during random inspections will require an expanded sample to determine extent of problem.
Required Attachments	<ul style="list-style-type: none"> • Record location, type, and quantity of inspected devices. • Record rated GPM of inspected devices. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.

OTHER	Elevator Drive Systems
Partner Requirements	<ul style="list-style-type: none"> • Ensure that the Statement of Substantial Completion is accurate and complete. • Compare the energy performance specifications and actual installation to the assumptions made in the SAV-IT and note conformance/deviation.
Statement of Substantial Completion	<ul style="list-style-type: none"> • A signed Statement of Substantial Completion or commissioning statement from elevator contractor or commissioning agent is required that meets at least the stated documentation requirements for 100% of the installed equipment. • Partner should be satisfied that signed Statement of Substantial Completion is thorough and accurate. See description of signed Statements of Completion in the introduction of this section.
Required Attachments	<ul style="list-style-type: none"> • Record system type and size. • Record efficiency minimums for elevator drives and motors, where applicable. • Record control system manufacturer and model. • Record elevator drive manufacturer and drive capacity. • Photograph completed installation and drive nameplate. • Basic elevator test results should be provided by installation contractor, including commissioning of control system. • Evidence of elevator safety inspection should be provided. • Cut sheet showing the manufacturer, model number, and relevant energy rating information must be provided for each installed product. The model number that was installed must be clearly marked on the cut sheet.