NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Multifamily Performance Program High-Performance Component Guidelines

Version 8

October 2017

High-Performance Component Guidelines

MULTIFAMILY PERFORMANCE PROGRAM, VERSION 8

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1 MULTIFAMILY PERFORMANCE PROGRAM OVERVIEW

NYSERDA's Multifamily Performance Program High-Performance Component (HPC) helps developers, building owners, and their representatives to plan and implement innovative, deep energy saving projects within existing affordable multifamily buildings.

The High-Performance Component participants select and work with a technical service provider who is an approved member of the NYSERDA Multifamily Building Solutions Network (Provider). Participants choose the Provider with whom they want to work. Providers shepherd projects through the Program from beginning to end, performing or overseeing the performance of all the Program's technical service requirements.

The High-Performance Component focuses on improving the energy usage of existing affordable multifamily buildings with a minimum performance target defined as **a minimum of 40% source energy savings with a maximum post-construction source energy use intensity (EUI) of 100 kBtu/sq ft./yr**. Projects follow a process, which is also represented in Figure 1-1:

- Plan - The building owner works with a Provider to conduct an energy assessment using industry best practices and standards. The Provider identifies improvements that will reduce the building's source energy consumption to meet the minimum performance target. Building owners can choose which improvements they would like to install so long as the overall work scope meets or exceeds the minimum performance target. The results of this planning phase are submitted to NYSERDA using the Program's Savings Verification and Information Tool (SAV-IT).

- Install - The Provider conducts limited construction oversight and inspection services during installation of the improvements identified in their approved work scope. The Provider is not responsible for installing the measures, but is responsible for ensuring that installation is properly completed by whomever the building owner chooses to do the work. The project must also submit proof, as defined in Section 7, that a construction manager is being used to ensure project work is installed correctly.

- Measure - One year after construction completion, the project's energy performance is analyzed. If actual performance meets or exceeds the Program's minimum performance target, building owners are eligible to receive a final Performance Payment incentive.

Multifamily Performance Program
High-Performance Component At-A-Glance

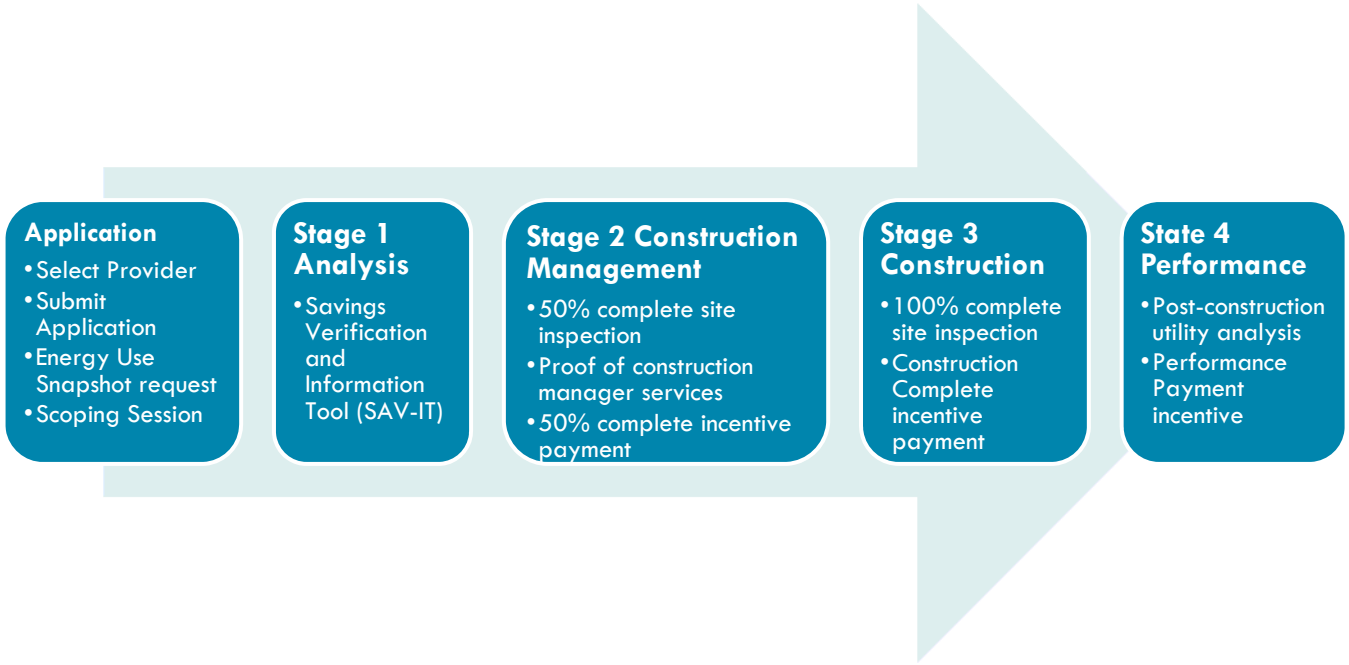


FIGURE 1-1: HIGH-PERFORMANCE COMPONENT AT-A-GLANCE

2 GENERAL REQUIREMENTS

2.1 High-Performance Component Rules

The following rules apply to all projects accepted under the High-Performance Component. This list focuses on programmatic requirements. It is not intended to cover all of the Program's eligibility requirements as listed in the remainder of this document, the Terms and Conditions, and/or the Provider Agreement.

All references to the "performance target" refer to the minimum percent reduction and maximum allowable post-construction source energy use intensity (EUI) required by the High-Performance Component.

1. When assembling a scope of work in the Savings Verification and Information Tool (SAV-IT), the following performance target criteria must be met:

    a. The SAV-IT must identify a scope of work that will achieve a minimum **40%** source energy use reduction for the project from energy efficiency measures only.

    b. The SAV-IT must identify a scope of work that will achieve a maximum source EUI of **100 kBtu/sqft/yr** for the project from energy efficiency measures and, if applicable, on-site generation.

    c. If the NYSERDA-approved SAV-IT indicates that there are insufficient opportunities in the project to achieve the High-Performance Component minimum performance targets, the participant is ineligible to receive incentives under the High-Performance Component. The project may still meet the minimum performance target of the Multifamily Performance Program Comprehensive Option, which has different Program rules and incentive levels.

2. Providers must use the energy use baseline provided via NYSERDA's Energy Use Snapshot service.

    a. The pre-construction energy use baseline analysis of utility bills will be provided by NYSERDA via the Energy Use Snapshot service and must be used in the SAV-IT.

    b. The pre-construction energy use baseline may be requested by the Provider up to 12 months prior to High-Performance Component Application approval.

    c. NYSERDA's Energy Use Snapshot will provide the post-construction energy use analysis, which will be used to determine if a building is eligible to receive a Performance Payment in Stage 4.

3. Providers must perform improvement analyses, including cost and savings projections.

    a. Energy efficiency measure savings calculations must adhere to the technical standards of the Provider's professional certification (AEE CEM, AEE CEA, or BPI MFBA).

    b. Energy efficiency measure savings calculations and modeling must adhere to the standards outlined in the Simulation Guidelines and be modeled using Program approved software. The list of approved software is in Simulation Guidelines.

    c. Energy efficiency measures installed and functional within 12 months prior to NYSERDA approving an application may be included in the SAV-IT to contribute to the performance target. The cost of these previously installed measures must be excluded from the incentive cap that limits NYSERDA's incentives under the High-Performance Component.

    d. Submetering may only be included as an eligible measure once all regulatory approvals are complete.

4. Milestones:

    a. Stage 1 deliverables must be submitted within 120 calendar days of NYSERDA's *Application Approval*. Projects that do not meet this deadline will be terminated from the Program and unpaid incentives will be forfeited.

    b. Stage 3 deliverables must be submitted within two years of the NYSERDA's Application Approval. Projects that do not meet this deadline will be terminated from the Program and unpaid incentives forfeited.

    c. Performance Payment submittals are due within 14 months of the Stage 3 submittal to NYSERDA. Projects that do not meet this deadline will be terminated from the Program and unpaid incentives forfeited.

    d. The deadlines in (a) and (b) can only be extended by a written or emailed request from the Provider to NYSERDA that is then approved in writing by NYSERDA. There are no extensions allowed for the deadline in (c) for any reason.

5. Any changes to the approved work scope that alter the project's percent source savings reduction, source EUI, or adds or removes measures must be submitted as a revision to the SAV-IT via a Scope Change Request. The project must continue to meet minimum performance targets.

6. The audit must be conducted or supervised by a certified energy professional (AEE CEM, AEE CEA, or BPI MFBA) and the audit must be conducted in accordance with the certification's standards. This individual may be directly employed by, or a subcontractor to, the Provider responsible for the project. At any time, NYSERDA or its agents may request proof of the auditor certification.

7. All recommended and installed improvements must comply with the Minimum Performance Standards for the High-Performance Component.

2.2 Deadlines

Provider performance is tracked to determine rate of compliance with Program deadlines. NYSERDA expects projects to meet the following guidelines for deliverables. The Provider is responsible for assuring that their projects move through Stages 1, 2, 3, and 4 in a timely manner to assure that the two-year construction completion deadline is met. SAV-IT revisions should be submitted to NYSERDA within 30 days of receiving NYSERDA comments.

3 ELIGIBILITY

3.1 Eligibility Requirements

This section provides the requirements for establishing a project. At the onset of their relationship with a potential Program Participant, Providers should determine whether a property is eligible for the High-Performance Component.

The eligible property types listed in this section is not comprehensive. Special circumstances may be reviewed on a case-by-case basis. Contact NYSERDA at **MultifamilyPrograms@nyserda.ny.gov** for a review.

3.1.1 System Benefits Charge

All buildings within a project must pay into the NYS System Benefits Charge fund on their electric utility bill.

3.1.2 Building Characteristics

- The project must be an existing affordable multifamily, residential building(s) with five or more units in each building.

3.1.3 Construction Type

Buildings may contain nonresidential commercial space if that space does not consist of more than 50% of the gross heated square footage of the entire building.

3.1.4 Market Type (Affordable vs. Market Rate)

Buildings must qualify as affordable housing to participate in the High-Performance Component. NYSERDA defines affordable housing as projects in which at least 25% of the units are, or are expected to be, occupied by households earning not more than 80% of the area or state median income, whichever is higher. All other properties are considered market rate and ineligible for the High-Performance Component.

Affordable housing documentation must be submitted with the application package. There are three ways to qualify a project for Affordable Housing incentives:

1. Proxy – NYSERDA allows certain proxies to represent compliance with the above definition. Table 3-1 lists eligible proxies and supporting documentation.

Eligibility Proxy	Details	Documentation Required
A. US HUD, USDA-RD, and other Federally Regulated LMI Housing	Properties that receive subsidies from HUD or USDA-RD based on household income may be defined as LMI, based on household income criteria detailed in the contract or award, including regulatory control or structures such as: • Section 8 Contract • Sections 202, 236, 811 • Public Housing Authorities	Copy of the HUD contract or contract award notice
B. NYS HCR-Regulated Affordable Housing	Properties with subsidized mortgages or contracts that place them under the regulatory control of HCR may be defined as LMI, based on household income criteria detailed in the HCR contract or award	Copy of HCR contract or contract award notice
C. Low Income Housing Tax Credits	Properties that receive tax credits may be defined as LMI based on household income criteria detailed in the tax credit award notice	Copy of tax credit award notice from HCR or HPD.
D. NYCHPD-Regulated LMI Housing (or similar local housing agencies)	Properties with loans, mortgages, or deeds of purchase (HDFC incorporation) from NYCHPD or similar local housing agencies may be defined as LMI, based on household income criteria detailed in the award documentation	Documentation of current mortgage, loan closing, HDFC incorporation, or deeds
E. SONYMA Mortgage Insurance	Properties subsidized for low- to moderate-income multi-family residents with SONYMA subsidized financing through the HFA	Copy of loan closing/mortgage insurance award documents
F. Participation in NYS HFA's 80/20 Program or similar HFA-regulated offerings	Properties that have been accepted into the HFA's 80/20 Program, or similar HFA-regulated offering, may be defined as LMI based on household income criteria detailed in the contract or award.	Copy of the award letter or HFA contract documents.
G. Participation in NYC HDC's 80/20 or Mixed Income Programs or similar HDC-regulated offerings	Properties that have been accepted into the NYC HDC's 80/20 or Mixed Income Program, or similar HDC-regulated offering, may be defined as LMI based on household income criteria detailed in the contract or award.	Copy of the award letter or HDC contract documents.

TABLE 3-1: AFFORDABILITY ELIGIBLE PROXIES

2. Rent Roll – This type of qualification may be used by projects that do not meet the proxy requirements or resident income requirements.

   Applications must include the annual rent, size, and occupancy for each apartment in the property. Twenty-five percent of the units must have a calculated household income no more than 80% of the State or Area Median Income, based on the assumption that 30% of household income is applied to housing costs (i.e., rent). A calculation spreadsheet tool is available on the Provider Portal for determining Rent Roll income eligibility. NYSERDA reserves the right to request further documentation demonstrating affordability. The Rent Roll method may not be combined with the Resident Income method.

3. Resident Income – This type of qualification may be used by projects that do not meet the proxy or Rent Roll requirements. This method requires the submission of signed *Resident Income Certification* forms with supporting documentation for 25% of a project's units. See the *Resident Income Certification Instructions* and related forms (available on the Provider Portal). The Resident Income method may not be combined with the Rent Roll method.

3.1.5 Extent of Renovation

The High-Performance Component will accept renovations to existing structures defined as changes, additions, or deletions to any system or process that impacts an existing building's energy consumption and/or cost not defined as New Construction or Substantial Renovations (gut rehabs).

Substantial Renovations (gut rehabs) are not eligible for the High-Performance Component. These types of projects may be eligible for the incentives through other NYSERDA or utility programs serving New Construction buildings. Substantial Renovations are defined as one of the following types of projects:

- Change of use and reconstruction of an existing building or space within;
- Construction work of a nature requiring that the building or space within be out of service for at least 30 consecutive days;
- Reconstruction of a vacant structure or space within.

Contact the New Construction Team at NYSERDA (ResMFNCP@nyserda.ny.gov) for more information about New Construction Programs for Multifamily Buildings.

3.1.6 Intended Use

The intended use of the building must be for residential purposes. Commercial facilities, such as motels/hotels, group homes, dormitories, shelters, monasteries, nunneries, assisted living facilities, and nursing homes are typically not eligible for the High-Performance Component. Supportive housing, Single Room Occupancy (SRO) facilities, and senior living residences that do not include nursing or hospitalization amenities are typically eligible for the High-Performance Component. Supportive housing is defined as residences that are owned and operated by nonprofit organizations.

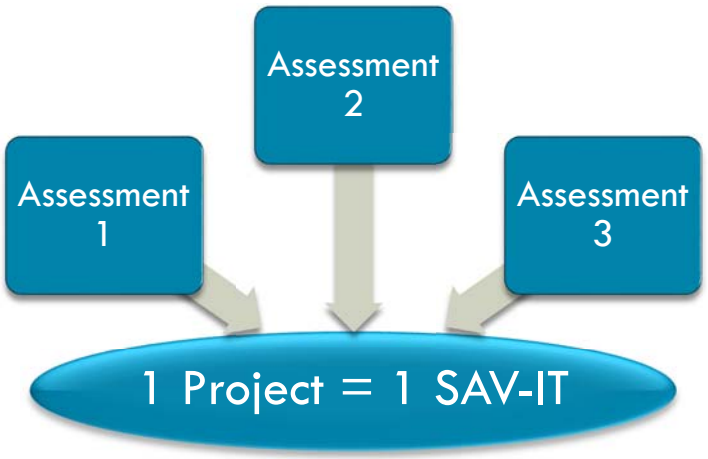
Tenants are individuals and families who require affordable permanent housing and support services, have lease agreements, pay rent (often a percentage of their income), and abide by the terms of their lease. This group includes people who have been homeless, have histories of substance abuse, are coping with mental illness, have chronic physical illness, are young adults aging out of foster care, are homeless veterans, or are grandparents raising grandchildren.

3.2 Definition of a Project

A High-Performance Component project is defined as a building or group of buildings where energy assessments are performed by a Provider for a single Program Participant. The Provider will develop one SAV-IT per project.

One project can include multiple buildings with multiple energy assessments.

- Project can consist of multiple buildings.
- One High-Performance Component application is allowed per project.
- One SAV-IT is allowed per project.
- One SAV-IT can include multiple buildings.
- One SAV-IT can include multiple energy assessments.



3.3 Coordination with other NYS Energy Efficiency Programs

3.3.1 AMP, ResTech, GEPP, and MPP Existing Buildings Versions 1-7

Projects that participated in NYSERDA's Assisted Multifamily Program (AMP), Residential Technical Assistance (ResTech), or MPP EB Versions 1 - 7 and received funding must fulfill their current contract before applying to Version 8. Projects participating in MPP EB Versions 1 – 7 that have not received funding may terminate their contract and reapply to Version 8. These re-application projects will not retain their previous funding, but will by applying anew for Version 8 funding.

3.3.2 Coordination with NYSERDA On-Site Generation Programs

Projects participating in the High-Performance Component may participate in both the High-Performance Component and one or several of the NYSERDA renewable programs including combined heat and power, ground source heat pump, solar electric, and others. Energy generation from these systems may contribute to the source EUI minimum performance target. Costs and source energy savings associated with on-site generation programs may not contribute to the total project costs used in calculating a project's incentive cap or the source energy savings minimum performance target of the High-Performance Component.

3.3.3 Coordination with Utility Program incentives

Projects that received utility program incentives for energy efficiency measures installed and functional within one year (12 months) prior to NYSERDA's Application approval may include those measures in the project's High-Performance Component scope of work. The energy savings and cost of the measures may contribute to the source energy savings requirement of the High-Performance Component project. The utility incentive will be deducted from the total eligible incentive.

Coordination with Previously Installed Measures and Other Energy Efficiency Programs				
	Measure savings may be used to reach 40% source energy savings	Measure savings may be used to reach 100 kBtu/sqft/yr EUI	Measure costs may be included in Incentive Cap	Incentive Adjustments
Previously Installed Measures	Yes	Yes	No	N/A
Utility Programs	Yes	Yes	Yes	Incentives deducted from HPC Incentive
NYSERDA On-Site Generation Programs	No	Yes	No	No incentive adjustment
Other NYSERDA Programs (Legacy MPP, Targeted Option)	Yes	Yes	Yes	Incentives deducted from HPC Incentive

TABLE 3-2: PROGRAM INTERACTIONS

3.4 Contact Information

Email all application, intake, and eligibility questions to **MultifamilyPrograms@nyserda.ny.gov**.

A project Case Manager is assigned upon application approval to coordinate all project-related tasks. All correspondence and questions about a project after an Application Approval email is received must be directed to the project's Case Manager. Contact information will be provided upon assignment. Email all project submittals to **MultifamilyPrograms@nyserda.ny.gov**.

4 INCENTIVES

4.1 Payment Schedule

Projects are eligible to receive financial assistance through a schedule of incentives. Incentives are distributed via the schedule of payments in Table 4-1. This schedule is subject to modification.

Stage 1 Analysis (per unit)	Stage 2 Construction Management (per unit)	Stage 3* Construction Complete (per unit)	Stage 4 Performance Payment (per unit)	Total Incentive (per unit)
$100	$1,400	$1,500	$500	$3,500

* If the project is also participating in NYSERDA Real Time Energy Management (RTEM), then half of the Stage 4 incentive ($250) will be awarded during Stage 3 approval.

TABLE 4-1: INCENTIVE PAYMENT SCHEDULE

4.2 Performance Payment (Stage 4)

All projects are eligible to receive a Performance Payment. If a project's one-year post-construction analysis demonstrates an actual energy reduction and EUI meeting the minimum performance target, then the Performance Payment incentive is awarded. If the project does not show energy reduction and EUI meeting the minimum performance target, the project is not eligible for a Performance Payment. The project can submit their Performance Payment documentation on time and request a 6-month extension to meet the minimum performance target. Providers will have to resubmit a Performance Payment documentation.

Refer to Section 9.4 for more information on deliverables.

4.3 Incentive Cap

NYSERDA incentives will not exceed $500,000 or 50% of the total costs of eligible measures, whichever is less. For the purposes of calculating the incentive cap, the total project cost includes the total cost of improvements in the proposed SAV-IT. The following are not included in the total project cost for the purposes of calculating the incentive cap: previously installed measures, on-site generation measures associated with other NYSERDA programs, Provider fees for delivering required Program services; and construction management fees.

5 APPLICATION

Before submitting a project application package to NYSERDA on behalf of a Participant, Providers should work with the Participant to determine eligibility and potential incentives as outlined in Sections 3 and 4. The Provider is expected to take the lead role in the project application process.

5.1 Application Documents and Processing

Upon identifying an eligible project, the Provider (in consultation with the Participant) should submit an application. The Application package consists of the following:

Project Information Form	Use this form to help gather basic information about the project. (Does not need to be submitted with the online application.)
Comprehensive Terms and Conditions Terms and Conditions Addendum	These are the contract documents where the Participant accepts the rules and requirements of the High Performance Component. There are two documents that need to be signed, the Comprehensive Terms and Conditions and the Addendum to the Terms and Conditions.
W-9	Establishes the Federal Tax Identification Number of the Participant.
Affordable Housing Documentation	Required for all projects.
Energy Use Snapshot Request (if applicable)	This package of materials allows NYSERDA to establish the project's energy use baseline. Projects are required to use NYSERDA's baseline as a basis for energy savings calculations. A new Energy Use Snapshot request is not required if a project submits a request prior to HPC application submission.

TABLE 5-1: APPLICATION PACKAGE REQUIREMENTS

5.1.1 Application Submittal

NYSERDA uses an online application submittal system called CRIS (Comprehensive Residential Information System). Providers receive a CRIS login and password after attending a mandatory Provider Orientation.

5.1.2 Terms and Conditions

Providers are required to keep an original signed copy of the Terms and Conditions as well as the Addendum to the Terms and Conditions for seven years for each project. Signed originals need not be sent to NYSERDA, but Providers must keep them on file.

5.2 Energy Use Baseline

Projects participating in the High-Performance Component must also apply to NYSERDA's Energy Use Snapshot service. Information from the report generated by NYSERDA's Energy Use Snapshot service must be used as a basis for energy savings calculations in the SAV-IT. A new Energy Use Snapshot request is not required if a project submitted a request prior to submitting a High-Performance Component application and the baseline energy use that was established was within two years of Application Approval. Refer to the Energy Use Snapshot service section on the NYSERDA website for more information.

5.3 Scoping Session

Upon application acceptance, the project Case Manager will schedule a Scoping Session with the Participant and Provider. The Scoping Session is an in-person meeting with the intent of establishing Participant interest, identifying likely energy efficiency measures, reviewing Program requirements and responsibilities, and determining sources of potential funding.

Knowledgeable representatives of both the Provider and Participant are required to attend the Scoping Session.

5.4 Application Approval

Upon completion of a successful Scoping Session, NYSERDA issues an Application Approval to the Provider and Participant. The Application Approval is an email that contains the Incentive Award letter and Terms & Conditions as attachments. Projects that proceed with development of the Savings Verification and Information Tool prior to receipt of NYSERDA's Application Approval do so at their own risk.

6 STAGE 1 - BUILDING ANALYSIS & SAVINGS VERIFICATION AND INFORMATION TOOL (SAV-IT)

6.1 Overview

Upon Application Approval, the Provider will work with the Participant to complete the Stage 1 submittal, including the SAV-IT. The SAV-IT is a spreadsheet workbook that serves as the primary vehicle for providing detailed information about the project. All projects are required to use the SAV-IT. It may not be used as a means of cost or savings estimation. It must only be used as a place for Providers to record their outside custom energy savings calculations.

The SAV-IT is located on the Provider Portal. Providers should always use a new spreadsheet from the Provider Portal for each new project. The development process consists of:

- Completing a comprehensive building assessment.
- Calculating the proposed energy savings for each improvement.
- Completing the SAV-IT spreadsheet.
- Reviewing proposed scope of work with Participant.
- Finalizing all required submittal documentation and submit it to NYSERDA.

The complete SAV-IT will summarize the results of a comprehensive building assessment and represents the work scope that the Participant is willing to undertake.

A building assessment is a necessary first step, but is only one component of the SAV-IT. After the building assessment is complete, a work scope is developed that incorporates the Participant's financial and contracting abilities. These post-audit components of the SAV-IT are critically important and must be developed in close consultation with the Participant to ensure that the project moves through to construction.

The SAV-IT standardizes information, data, and documentation across the entire Program and from Provider to Provider. The SAV-IT components are:

- Energy use baseline (provided by NYSERDA through the Energy Use Snapshot service)
- Existing and post-retrofit building energy use
- Existing conditions
- Complete descriptions of all improvements
- Cost effectiveness calculations
- Quality control analysis

6.2 Auditing Requirements

This section describes the requirements for completing a comprehensive building assessment of a High-Component project. The comprehensive building assessment(s) must be conducted or supervised by a certified energy professional (AEE CEM, AEE CEA, or BPI MFBA) and be conducted in accordance with the certification's standards. Any instrumented testing must use equipment that is built for the tolerances required and is accurate and verified in calibration.

The Provider may conduct the audit directly or use a subcontractor to perform the audit on the Provider firm's behalf. All requirements outlined in this section must be adhered to by Providers and their subcontractors. It is the Provider's responsibility to oversee subcontractors and ensure compliance with all Program rules.

6.2.1 Documentation and data entry

All building information collected via on-site observation, surveys, and performance testing, must be documented and serve as a reference for data entry into an energy analysis tool. It is recommended that the auditor who performs the on-site assessment be responsible for entering building data into the analysis tool, as much of the data entry requires interpretation of occupant/management responses to queries, visual indicators of systems performance, and analytical performance testing. As an example, the overall efficiency of the distribution system is based on occupant comfort, system design and controls, insulation levels, and system leakage. In cases where field staff and modelers are distinct functions, it is important for the field auditor to take detailed notes so that this interpretative information can be transferred.

Photo documentation is a required part of Stage 1 documentation and must consist of a representative sample of the existing conditions of the project. It is important to include photo documentation of existing conditions that will be updated through the scope of work or that diverge from what would be expected in a normal building. As an example, if a baseline assumption of a building model shows a very high infiltration rate that will be reduced with air sealing, a photo is required to document the source of such high baseline infiltration.

6.3 Work Scope Development

The scope of work presented in the SAV-IT should consist of energy savings measures. The recommended scope of work should be developed in consultation with the Participant to meet the financial and implementation goals for the property. Geothermal systems and on-site generation improvements (cogeneration, photovoltaics, wind, and ground source heat pump) may contribute to the source EUI requirement but may not contribute to the source energy reduction target. Measures must meet all Program rules and requirements. If the project's scope of work cannot meet the projected EUI or projected energy savings requirements, it may be eligible to enter the MPP Comprehensive Option.

6.3.1 Utility Cost Analysis

Providers are required to provide energy costs for the purposes of calculating the annual cost savings of the proposed measures. When reporting energy cost, the Provider should use a blended rate analysis in the SAV-IT.

6.3.2 Cost Estimation

The projected cost of installing measures during stage 1 work scope development relies on estimates that are based on previous experience and knowledge of current pricing of building materials, equipment and labor. Although there are likely other costs associated with installing measures, these can usually be aggregated into a simple percent increase above the estimated cost of materials and labor. The Provider Portal contains Tech Tips with guidance and best practices for construction cost estimating. Final cost reporting will be required during the Stage 3 100% Construction Complete stage. For more information, refer to Section 7.

6.3.3 Health and Safety Measures

The Program intends to ensure that energy-related health and safety measures are addressed, even if they do not lead to fuel, electricity, or monetary savings. Where health and safety issues are identified through the building assessment process, the Provider has an obligation to inform the Participant and to encourage them to address these issues prior to the completion of the specified work scope. Special attention should be paid to situations where building code violations are uncovered.

Health and safety improvements with no associated energy savings may not be included in the High-Performance Component scope of work.

6.3.4 Operation and Maintenance (O&M) Savings

Cost savings associated with reduced O&M expense can be difficult to predict and quantify and should be claimed only in cases where solid documentation can be provided to substantiate the savings estimate.

An example might involve the removal of a central boiler plant and replacement with building-based boilers. If the central plant involved underground distribution of heated water or steam and the underground piping was in a deteriorated condition, annual repairs could be regular and expensive. In such a case, it may be reasonable to quantify the savings associated with no longer needing to maintain the underground distribution piping based on historical costs for such maintenance and repair.

If O&M savings are claimed, calculations and documentation must be included in the SAV-IT as an Outside Calculation.

6.3.5 Photovoltaic and Combined Heat and Power Additional Energy Monitoring Requirements

Any project that has an on-site behind-the-meter solar photovoltaic system or a combined heat and power (CHP) system during the baseline must refer to Appendix B for additional data submittal requirements.

6.3.6 Minimum Performance Standards

All recommended improvements shall comply with the Minimum Performance Standards where applicable.

The Provider is responsible for ensuring that all performance assumptions made in the comprehensive energy assessment are translated into bid and construction documents. A work scope should contain performance specifications or references to the specifications for the materials and equipment to be installed. Additionally, the work scope should include enough information about installation standards to ensure that competitive bidding is fair in scope and pricing and that potential contractors understand the importance of performance contracting.

The Minimum Performance Standards for the High-Performance Component (version 8.0) are included in the following pages.

Multifamily Performance Program Version 8
Minimum Performance Standards for Existing Buildings – High-Performance Component

These Minimum Performance Standards establish the measure-by-measure parameters which apply only to those building components or systems for which recommended improvements are being proposed. For projects where one of the specific components listed below is recommended within the proposed energy efficiency work scope, this component must at least meet the indicated performance requirements.

These Minimum Performance Standards are also intended:
1) To ensure that buildings are built to the requirements of specific, applicable codes.
2) To provide a reference for Providers to describe to owners what will be required to participate in High-Performance Component.
3) To promote the installation of ENERGY STAR appliances, lighting, and equipment where available.

*All references to ECCC NYS are in reference to the Energy Conservation Construction Code of New York State effective January 1, 2015.

TABLE 6-1: MINIMUM PERFORMANCE STANDARDS FOR EXISTING BUILDINGS

RECOMMENDED MEASURE	**MINIMUM PERFORMANCE STANDARD** Recommended measures shall AT LEAST meet each of these requirements for each indicated measure or system, including BPI, Inc. Technical Standards for MFBA or applicable Local, State, or National Codes, whichever is more stringent. For building components or systems not addressed in this document, the recommended measure must meet or exceed applicable Local, State, or National code.
APPLIANCES	Appliances shall be ENERGY STAR labeled when available. Refrigerators and air conditioning units must be removed and decommissioned in compliance with EPA Clean Air Act and other relevant NY State regulations.
DOMESTIC HOT WATER	
Domestic Hot Water Boiler System	All hot water piping in mechanical room and accessible piping in unconditioned spaces shall be insulated to ECCC NYS 404.5.
Domestic Hot Water Boiler System	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 404.2.
Domestic Hot Water Temperature	The temperature of the stored DHW shall be just sufficient to deliver DHW to the apartments when measured at the tap to within a temperature range 110°-125° F and as required by ECCC NYS 404.3.
ENEVELOPE	
Build Envelope Sealing	Projects with air sealing shall consider and evaluate infiltration reduction via stack effect, wind effect, and bypasses when applying product.

Windows & Exterior Doors	Specified windows & doors shall be ENERGY STAR labeled where available, and comply with ECCC NYS 402.3.
HEATING & COOLING	
Boiler & Furnace Systems	Atmospherically vented gas furnaces and boilers shall not be specified.
	Steam piping, cooling system piping, and all hot water piping in mechanical room and accessible piping in unconditioned spaces shall be insulated to ECCC NYS 403.2.8
Heating Systems Efficiency	Replacement heating plants(s) shall be ENERGY STAR labeled, where applicable. Boiler systems (hot water and steam) larger than 300,000 Btuh input shall have a thermal efficiency of ≥ 80%. Exception: steam systems with input capacities between 300,000 Btuh and 2.5 MBtuh shall have a thermal efficiency of ≥ 79%. 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 403.2.3 Tables 1-7.
Steady State Efficiency Testing	Replacement condensing boilers shall provide at a minimum steady state efficiency testing for high and low fire. For replacement condensing boiler(s), provide system in optimal performance (per the design) or operating conditions to minimize return water temperature.
Condensing Boilers	Condensing boiler systems shall be designed, installed and operated in a manner to minimize return water temperature.
	Condensing furnaces shall be installed with electronically commutated motors (ECMs).
Owner's Manual	When replacing HVAC systems & equipment provide an Owner's Manual that contains (at a minimum) the following: Condensing boilers shall provide a minimum of efficiency testing for high and low fire; As built equipment and control cut sheets; Statement of the system's Sequence of Operations.
Heat Pumps	Equipment shall be ENERGY STAR labeled where appropriate for size of equipment. Where sizing does not allow ENERGY STAR labeling, equipment shall comply with ECCC NYS minimum efficiencies.
Heating System Combustion Air Intake	When replacing heating appliance/plant, provide a motorized damper to the outside "free air" louver that is wired to the burner ignition OR ensure mechanical room (unconditioned space) is compartmentalized from rest of building/conditioned spaces.
Distribution System Replacements	When replacing existing distribution systems or installing new systems, terminal heating & cooling distribution equipment serving an apartment shall be controlled by a thermostat(s) located within the same apartment as per ECCC NYS 403.2.4. Such terminal heating & cooling distribution equipment must be separated from the riser or distribution loop by a control valve, or terminal distribution pump, so that heated or cooled fluid is not delivered to the apartment distribution equipment when there is no call from the apartment thermostats.
Cooling- Room Air Conditioners	Room air conditioners shall be ENERGY STAR labeled (for all model sizes covered by the ENERGY STAR label). Air conditioning units must be removed and decommissioned in compliance with EPA Clean Air Act and other relevant NY State regulations (ECCC NYS 403.2.1 Table 1).
Packaged Terminal Air Conditioners	Equipment shall be ENERGY STAR labeled where appropriate of size of equipment. Where sizing does not allow ENERGY STAR labeling, equipment shall comply with ECCC NYS 403.2.3 Table 3 minimum efficiencies.
Cooling-Chillers	Equipment shall meet the requirements of ECCC NYS 403.2.3 Table 7.

LIGHTING	
Lighting - General	Removed fluorescent lamps and ballasts must be disposed of in an environmentally sensitive manner, adhering to a relevant Local, State and National codes.
Lighting Controls	When replacing or upgrading lighting in frequently unoccupied areas, i.e. storage closets, compactor rooms, etc., provide occupancy controls when cost-effective.
Linear Fluorescent Lighting	Linear fluorescent systems shall have the following minimum efficacies: 2 foot- 75 lumens per watt 4-foot (including U-lamps)-79 lumens per watt
Compact Fluorescent Lighting	Compact fluorescent fixtures shall be ENERGY STAR labeled. Screw-in compact fluorescent lamps are not eligible for NYSERDA funding and may not be included in project work scopes.
LED Lighting (general illumination)	Solid State Lighting products must be listed by either ENERGY STAR® or Design Lights™ Consortium's Qualified Projects List (DLCQPL). If neither ENERGY STAR® nor Design Lights™ certifies the type of solid state lighting installed, the following must be submitted: LM-79 test data (for entire luminaire); LM-80 test data (for the LED device or module package); and an unconditional 3-year manufacturer's warranty.
Emergency Lighting	All exit signs shall be specified LED (not to exceed 5W per face) or photo luminescent and shall conform to local building code fixtures located above stairwell doors and other forms of egress shall contain a battery back-up feature.
Outdoor Security & Decorative Lighting	Exterior lighting shall have an efficacy of greater than or equal to 60 lumens/watt per ECCC NYS 405.6.1. Fixtures must include automatic switching on timers or photocell controls except fixtures intended for 24-hour operation, required for security, or located on apartment balconies.
MOTORS	All replacement or newly installed three phase motors 1 HP or larger shall be NEMA Premium efficiency or greater. Motors that are packaged as an integral component of mechanical equipment are exempt from this requirement.
WATER CONSUMPTION	Common area and in-unit faucets and showerheads must not exceed 2.0 gallons per minute (GPM).

6.4 Simulation Guidelines

Providers are required to calculate savings as per the technical standards in the Simulation Guidelines. The Simulation Guidelines are found in a separate document that contains a methodology for energy simulation and model calibration. The document must be used to evaluate energy reduction measures and to calculate the projected savings and cost effectiveness of recommendations included in the SAV-IT.

The Simulation Guidelines serve as a resource to ensure that:

- Consistent simulation methodology is used from Provider to Provider and from building to building
- Energy simulation and model calibration best practices are followed
- Modeling assumptions are within reasonable ranges
- Savings projections are realistic

6.5 Modeling Requirements

Providers are required to use simulation software to model energy savings. Only approved software is allowed. A list of approved software can be found in the Simulation Guidelines. NYSERDA Multifamily Performance Program staff will not provide assistance with software-related questions or model troubleshooting.

6.5.1 Side Calculations

The modeling software must be used to calculate savings for all measures that can be simulated by that software. Some energy improvements cannot be calculated by the modeling software. For such measures, Partners may perform side calculations to analyze those improvements.

6.5.2 Modeling Software Requirements

New analytical tools may apply to the Program by submitting an application describing tool capabilities and demonstrating compliance with the listed program requirements. Based on Program review, the tool may be accepted for use on one or several pre-approved pilot projects. Deliverables for projects that are not identified as pilot projects prior to preparing the comprehensive energy assessment and that utilize software not approved for use in the Program will not be accepted. Only analytical tools that satisfy the requirements outlined below may be used.

- Compliance with ASHRAE 90.1 Appendix G simulation and documentation requirements; OR
  Approval for EPAct Federal Tax Deductions; OR
  DOE approval for use in Weatherization Assistance Program for multifamily buildings.
- Support of systems and configurations that are typical for multifamily buildings in the northeastern United States.
- Support of Multifamily Performance Program business process and reporting requirements.
- Availability of technical support, training, and/or user manual and documentation.
- Built-in troubleshooting tools and errors/warnings reports.
- Integrated support for evaluation of design alternatives (improvements).

6.6 Quality Control

NYSERDA conducts quality control reviews of all submittals. The SAV-IT contains quality control flags that identify measures falling outside the range of typical measures costs and typical measure savings based on previous multifamily installations and industry standards. NYSERDA reserves the right to request further information about savings calculations and measure costs. Final approval of the SAV-IT is at the discretion of the reviewer.

Providers are subject to the Terms and Conditions of the Provider Application including the Provider Status Designation policy. Providers must conduct a comprehensive review of their deliverables and are responsible for the accuracy, timeliness, and completeness of submittals. Providers who repeatedly provide false, inaccurate, or incomplete information to NYSERDA will be subject to the appropriate disciplinary action as defined in the Provider Status Designation Policy.

6.7 Stage 1 Approval

6.7.1 Stage 1 Deliverables

Stage 1 submittals are due within 120 calendar days following Application Approval after the Scoping Session. The Participant and Provider are notified of this date when the Application Approval is issued.

Required deliverables include:

- Savings Verification and Information Tool (SAV-IT)
- Modeling file and/or additional calculation files
- Provider Contract
- Photographs

Incomplete submittals will be returned without review.

The Filename Convention must be followed. File submissions that do not adhere to the Filename Convention will be returned to the Provider without review. With the volume of projects participating in the High-Performance Component, strict adherence to the Filename Convention is required. Providers are urged to develop a similar requirement internally that aligns with the requirements set forth for this program.

Document	Filename Convention	Example
SAV-IT	Project Name - SAVIT_rev0.xls	NY Apts - SAVIT_rev0.PDF
Model/Calculation files	Project Name - Model_rev0.xx	NY Apts - Model_rev0.xx
Provider-Participant Contract	Project Name - Provider Contract.PDF	NY Apts - Provider Contract.pdf
Photographs (using Template)	Project Name - Photos.pdf	NY Apts - Photos.pdf

TABLE 6-2: STAGE 1 DELIVERABLES

Upon resubmission of project documents, the next revision number must be applied to all deliverables (e.g., Rev0 becomes Rev1). See Appendix A for a complete list of deliverables.

6.7.2 Stage 1 Approval

The following procedure explains each step of the Savings Verification and Information Tool approval process. **The SAV-IT must be approved before the project can continue to construction.**

1. The Provider submits Stage 1 Deliverables and all associated files to NYSERDA for review. Email all project submittals to **MultifamilyPrograms@nyserda.ny.gov**.

2. NYSERDA completes a technical and financial review with three options for response:
   a. Approved as Noted: Stage 1 Deliverables are approved as proposed.
   b. Revise and Submit: The project is not ready to be approved as proposed. Comments are returned to the Provider and Participant with direction to resubmit. The revised SAV-IT must be submitted within 30 days.
      - If the resubmittal meets Program requirements and addresses comments, the SAV-IT is approved.
      - If the resubmittal does not present an approvable project as directed in the review comments, it will be returned to the Provider for correction and the Provider's performance file will be noted.
   c. Rejected: Deliverables contain serious deficiencies and do not meet Program requirements.
      - NYSERDA will notify the Participant and Provider to seek mutually acceptable terms for a fundable project. This discussion occurs primarily with the Participant, with input from the Provider. NYSERDA may choose to allow resubmittal of the Stage 1 deliverables as a result of this discussion. If a project is not meeting the energy savings target or the EUI target, it will have the option of entering MPP's Comprehensive Option.
      - If no agreement is reached, the project is rejected and its participation in the High-Performance Component is terminated.

3. Once the Stage 1 deliverables are approved, NYSERDA issues a Notice to Proceed to Construction. The Notice to Proceed will include an email that the SAV-IT has been received and approved and that the project may now proceed to installation of the improvements detailed in the SAV-IT.

7 STAGES 2 & 3 - CONSTRUCTION PHASE

7.1 Provider Responsibilities

Energy saving measures must be implemented per the approved SAV-IT. Providers must remain engaged with the project through the construction phase. Providers are expected to maintain a high level of interaction with the Participant during the development of the scope and construction to ensure that the scope of work is installed on-schedule and in accordance with the SAV-IT.

Providers should work with Participants and design engineers to develop specifications and contracts that address the documentation needs of the High-Performance Component. For example, a contract for insulation contractors may include a requirement for photo documentation at various stages of installation.

Final cost reporting is a requirement for installed measures. Cost should include building materials, equipment, and labor. The final cost for installed measures is expected to be different from the estimated cost provided in the SAV-IT. The final cost reporting is intended to assist the Program in determining realistic costs for deep energy retrofit projects expected in the High-Performance Component.

Providers should review equipment submittals from installing contractors before construction begins to ensure that the installed work meets the intent of the SAV-IT. Submittals may consist of equipment cut sheets, product literature, etc., specifying make/model and energy-related characteristics (for example, kWh/year for refrigerators). Ideally, the submittal should also reference the SAV-IT requirements for the equipment and compare to the proposed equipment to be installed.

7.2 Changes to the Scope of Work

Any changes in the approved work scope that affect the overall project savings or the measures identified in the approved SAV-IT must be communicated to NYSERDA.

Scope Changes may occur at any time after the approval of the SAV-IT. The revised scope of work must meet all rules and requirements for the High-Performance Component, including energy performance targets. If a change to the scope of work results in a project not meeting all the rules and requirements, the project will be terminated and any unpaid incentives shall be forfeited.

Participant cannot start or continue work on the revised measure(s) until they receive approval from NYSERDA.

7.2.1 Scope Change Document Submission

The following documents are required for consideration of scope changes:

- Scope Change Cover Sheet
- Revised SAV-IT
- Revised Modeling file and/or additional calculation files

The following Filename Convention must be followed:

Document	Filename Convention	Example
Scope Change Cover Sheet	Project Name – Scope Change #.pdf	NY Apts – Scope Change 1.pdf
SAV-IT	Project Name – SAVIT_rev#.xls	NY Apts – SAVIT_rev3.xls
Model/Calculation files	Project Name – Model_rev#.xx	NY Apts Model_rev0.xx

TABLE 7-1: SCOPE CHANGE DELIVERABLES

7.3 Stage 2: Construction Management Incentive and 50% Complete

Stage 2 Construction Management and 50% Complete stage is achieved when a project can demonstrate that they have a construction manager overseeing the project and have completed 50% of construction. Stage 2 deliverables must be submitted to NYSERDA after the Provider has verified 50% of the construction is complete, but prior to completion of 75% of the construction. The Stage 2 50% Construction Management incentive is a mandatory stage to be submitted separately from the Stage 3 100% complete. Incomplete submissions will be returned to the Provider without review, and incentives will not be paid by NYSERDA. Refer to Section 8 for site inspection protocols, required measure documentation, and Provider responsibilities.

7.3.1 50% Complete

Fifty percent (50%) complete is defined as the point at which 50% of the energy savings as recorded in the SAV-IT are installed and saving energy. Measures that are designated as Previously Installed as defined in the rules for the High-Performance Component may not contribute to the required 50% of installed energy savings measures to qualify for this inspection.

7.3.2 Construction Manager

Construction Manager Services must adhere to the American Institute of Architects (AIA) definition of a Construction Manager, who “is responsible for coordinating the work of multiple prime construction contracts and for overseeing quality control.” There are two options for complying with the requirements of the Stage 2 incentive.

Option 1: AIA Construction Manager Contract

Projects must provide a copy of a signed contract between the building owner and a Construction Manager whose scope of work is defined in an American Institute of Architects (AIA) Standard Form of Agreement between Owner and Construction Manager as Advisor.

Option 2: Other Construction Manager Contract

Projects must provide a copy of a contract between the building owner and a Construction Manager whose scope of work includes, at a minimum, the following:

1. Review scope of work documents and assist in determining contractor requirements for each measure.
2. Create Construction Management Plan:
   a. Preliminary evaluation of schedule and budget
   b. Cost estimations
   c. Recommendation for project delivery method
   d. Contractor(s) scope of work
3. Update Construction Management Plan periodically, including schedule updates.
4. Prepare and receive bid analysis and make recommendations to the owner for the awarding of contracts.
5. As needed, conduct periodic inspections and construction meetings and provide minutes.

6. Coordinate activities among contractors and owner in accordance to outlined schedule, including sequencing of operations, allocation of labor and materials, etc.
7. Obtain building permits and special permits for improvements, except those required to be obtained directly by contractors.
8. Monitor safety among the contractors.
9. When possible, coordinate ordering and delivery of materials.
10. Schedule and conduct meetings to discuss procedures, progress, schedule or work.
11. Schedule testing and inspections as required.
12. Confirm with owner the progress of work in accordance SOW to determine when/if contactors should receive payment.
13. Monitor that all work is being done in accordance to SOW outlined in SAV-IT and with Energy Efficiency in mind.
14. The Construction Manager shall record the progress of the project. On a monthly, or otherwise as agreed to by the owner, the Construction Manager will provide progress reports:
    a. Work complete for the project
    b. Project schedule status
    c. Remaining and outstanding items
    d. Request for changes
    e. Test and inspection reports
    f. Status of nonconforming and rejected work

7.3.3 Stage 2 Deliverables

Stage 2 deliverables must be submitted to NYSERDA after the Provider has verified completion of energy improvements, in accordance with the SAV-IT, and a Construction Manager is hired. Deliverables must be submitted prior to completion of 75% of the construction. The following deliverables are required for approval of the Stage 2 milestone:

- Inspection Request Workbook, including final cost reporting for completed measures (invoices)
- Signed Construction Manager Contract that meets requirements in Section 7.3.2
- Photo documentation of installed measures
- Additional measure documentation as required by Section 8.4

The Filename Convention must be followed:

Document	Filename Convention	Example
Inspection Request	Project Name – 50% Inspection Request_rev0.xls	NY Apts 50% Inspection Request_rev0.xls
Signed Construction Manager Contract	Project Name – Construction Manager Contract.pdf	NY Apts – Construction Manager Contract.pdf
Photo Documentation	Project Name – Photos _100%.pdf	NY Apts – Photos_100%.pdf
Measure Documentation	Project Name - (per Section 8.4)	NY Apts – Boiler cut sheets.pdf
Invoices	Project Name – Measure XX invoice.pdf	NY Apts – DHW invoice.pdf

TABLE 7-2: STAGE 2 DELIEVERABLES

7.3.4 Stage 2 Approval

The following procedure explains each step of the Construction Manager and 50% complete approval process:

1. The Provider 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.

3. The site inspection occurs.

4. NYSERDA reviews results of the inspection and determines if the project achieved the milestone.

5. If achieved, NYSERA approves the Stage 2 incentive and begins the payment process.

7.4 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.

Projects participating in NYSERDA Real Time Energy Management (RTEM) are eligible to receive half of the Stage 4 incentive ($250) during Stage 3 approval. Participation in RTEM is subject to RTEM funding availability. Contact NYSERDA's RTEM team for more information. Projects participating in RTEM will be required to submit proof of participation in conjunction with other Stage 3 deliverables.

7.4.1 Stage 3 Deliverables

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

The following deliverables are required for approval of the Stage 3:

- Inspection Request workbook, including final cost reporting for completed measures (invoices)
- Photo Documentation of installed measures
- Common Area Data Release Authorization Forms (DRAFs)
- Additional measure documentation as required by Section 8.4
- Proof of participation in NYSERDA's RTEM program, if applicable

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_100%.pdf
Measure Documentation	Project Name - (per Section 8.4)	NY Apts – Boiler cut sheets.pdf
Common Area DRAFs	Project Name – DRAFs	NY Apts - DRAFs
Invoices	Project Name – Measure XX invoice.pdf	NY Apts – DHW invoice.pdf

TABLE 7-3: STAGE 3 DELIEVERABLES

7.4.2 Stage 3 Approval

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

1. The Provider 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.

3. The site inspection occurs.

4. NYSERDA reviews results of the inspection and determines if the project achieved the milestone.

5. If achieved, NYSERDA approves the Stage 3 incentive and begins the payment process.

8 SITE INSPECTION

8.1 Provider Responsibilities

The Provider is responsible for confirming that work is installed according to the scope of work described in the approved SAV-IT. Providers 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 8.4 describes the specific Provider 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.

8.2 System Testing

System testing can be performed by the installing contractor, the Provider, 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 Provider, the Provider shall submit a *Statement of Substantial Completion* signed by the individual who performed the system testing.

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

8.4 Inspection Request Documentation Requirements

APPLIANCES	ENERGY STAR® Appliances
Equipment Covered	Refrigerators, dishwashers, and compactors, etc.
Provider Requirements	• 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	• A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Provider sampling requirements provided it meets at least the stated documentation requirements for 100% of the installed appliances. • Provider 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	• 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: Provider Sampling	
Provider Sampling Requirements	• 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	• 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.
Provider Requirements	• 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	• A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Provider sampling requirements provided it meets at least the stated documentation requirements for 100% of the installed lighting. • Provider 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	• 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: Provider Sampling	
Provider Sampling Requirements	• 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	• 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed lighting. • Provider 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	• 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: Provider Sampling	
Provider Sampling Requirements	• 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	• 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed lighting. • Provider 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	• 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: 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: Provider Sampling	
Provider Sampling Requirements	• 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	• 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: 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from lighting contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed controls. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from insulation/air-sealing contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed insulation. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed windows. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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.

ENVELOPE	**Exterior Doors**
Equipment Covered	Exterior doors and interior doors opening onto common areas
Provider Requirements	• 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	• A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed doors. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from insulation/air-sealing contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed air sealing. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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. • 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Provider sampling requirements provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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 20ºF. Record measurements.
Central air conditioners	• 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. • Optional but recommended: 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. • Optional but recommended: Measure supply airflow to all zones. Compare to design values, and adjust to within 5%.
Room air conditioners	• Optional but recommended: Visually inspect sealing around air conditioner sleeve. No daylight should be visible from indoors. • Optional but recommended: 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
Provider Requirements	• 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	• A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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. • 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.

HVAC & DHW	**Domestic Hot Water**
Equipment Covered	Domestic hot water systems
Provider Requirements	• 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	• A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• All primary equipment (boilers, hot water heaters, etc.) should be inspected. • A minimum of two faucets should be tested for water temperature.
Required Attachments	• 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**
Provider Requirements	• 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	• A signed Statement of Substantial Completion from HVAC contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed insulation. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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.

HVAC & DHW	**Low-Flow Aerators & Showerheads**
Equipment Covered	Low-flow aerators and low-flow showerheads
Provider Requirements	• 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	• A signed Statement of Substantial Completion from installing contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed devices. • Provider 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	• 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: Provider Sampling	
Provider Sampling	• 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	• 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	**Energy / Building Management Systems**
Equipment Covered	Energy Management Systems, Building Management Systems
Provider Requirements	• 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	• A signed Statement of Substantial Completion from controls contractor or commissioning agent may reduce the Provider sampling requirements, provided it meets at least the stated documentation requirements for 100% of the installed equipment. • Provider 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	• 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: Provider Sampling	
Provider Sampling	Visually inspect a representative sample of 20% of the installed monitoring points.
Required Attachments	• 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	• 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 Provider 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.

OTHER	Elevator Drive Systems
Equipment Covered	Elevator Drive Systems
Provider Requirements	• 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	• 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. • Provider 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	• 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.

OTHER	On-Site Generation
Equipment Covered	On-site generation technologies include photovoltaic systems, combined heat and power, etc.
Provider Requirements	• 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	• A signed Statement of Substantial Completion or commissioning statement from the installing contractor or commissioning agent is required that meets at least the stated documentation requirements for 100% of the installed equipment. • Provider 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. • See additional requirements in Appendix B.
Required Attachments	• Record system type and size. • Record capacity and quantity. • Photograph completed installation. • 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. • If participating in NYSERDA's on-site generation programs, include combined heat and power and NY-Sun, provide final measurement and verification documentation submitted to those programs. • See additional requirements in Appendix B.

9 STAGE 4 - PERFORMANCE PAYMENT

The Performance Payment is an incentive available to projects that demonstrate a reduction in energy use meeting the minimum performance target of the High-Performance Component 12-months post-construction. Post-retrofit utility data is compared to pre-retrofit data to determine actual energy savings in the projects.

9.1 Overview

Section 4 identifies the Performance Payment incentives for which a project would be eligible.

9.2 Performance Payment Analysis

The Performance Payment Analysis repeats the utility baseline analysis initially performed for the SAV-IT. Providers must request an updated Energy Use Snapshot report from NYSREDA after the post-construction monitoring period has ended. This report will provide an energy use analysis for the 12-month period following the Stage 3 submittal. Providers will use the Energy Use Snapshot report to populate the post-construction portion of the SAV-IT. The SAV-IT will then calculate the achieved percent energy savings.

9.2.1 PV and CHP Additional Required Monitoring Requirements

Any project that has an on-site behind-the-meter solar photovoltaic system or a combined heat and power (CHP) system must refer to Appendix B for additional data submittal requirements.

9.3 Non-Achieving Projects

If the energy savings do not achieve the minimum performance target after 12 months the Provider may request a six-month extension to allow adjustments within the building. Providers will be required to submit the Performance Payment submittal when requesting the six-month extension. NYSERDA will only use the most recent 12 months of energy use and disregard the initial six-months post-construction energy use.

9.4 Stage 4 Approval

9.4.1 Stage 4 Deliverables

Stage 4 submittals are due within 14 months of the Stage 3 submittal to NYSERDA. If an extension is granted, the deliverables must be submitted within 20 months of Stage 3 submittal to NYSERDA. Required deliverables include:

- Utility bill analysis request documentation package.
- Performance Payment Worksheet – completed by the Provider to account for any known changes that would affect the energy use analysis. This includes, but is not limited to, tenant vacancy.

The Filename Convention must be followed.

Document	File Naming Convention	Example
Utility bill analysis request package	Project Name – Utility bill analysis request.zip	NY Aps – Utility bill analysis request.zip
Performance Payment Worksheet	Project Name – PP Worksheet.xls	NY Apts – PP Worksheet.xls

TABLE 9-1: STAGE 4 DELIEVERABLES

9.4.2 Stage 4 Approval

The following procedure explains each step of the Performance Payment approval process.

1. The Provider obtains data required for NYSERDA to perform the utility bill analysis. The data must be from the 12-month period starting upon one full month of metered utility data following the Stage 3 submittal to NYSERDA.

2. The Provider completes and submits the Performance Payment Worksheet and associated deliverables to NYSERDA.

3. NYSERDA reviews documentation and conducts an energy use analysis
   a. If analysis shows the Performance Payment has been achieved, the payment process will begin and the project is closed.
   b. If the analysis shows the Performance Payment has not been achieved, the project is eligible to request a 6-month extension. Providers will have to resubmit a Performance Payment documentation.

4. If the analysis shows the Performance Payment was still not achieved after the 6-month extension, the project is ineligible for the Performance Payment. The project is closed.

10 APPENDIX A – CONSOLIDATED LIST OF DELIVERABLES

	Document	Filename Convention	Example
Application	Terms and Conditions	Project Name – Terms and Conditions.pdf	NY Apts – Terms and Conditions.pdf
	W-9	Project Name – W-9.pdf	NY Apts – W-9.pdf
	Electronic Funds Transfer (EFT) Form	Project Name – EFT.pdf	NY Apts – EFT.pdf
	Affordable Housing Documentation	Project Name - * (as appropriate)	NY Apts – NYSDHCR Contract.pdf
Stage 1	Savings Verification and Information Tool	Project Name – SAVIT_rev0.xls	NY Apts – SAVIT_rev0.PDF
	Provider-Participant Contract	Project Name – Provider Contract.PDF	NY Apts – Provider Contract.pdf
	Model/Calculation Files	Project Name – Model_rev0	NY Apts – Model_rev0
	Photographs (multiple in zip file or Template)	Project Name – Photos.zip Project Name – Photos.pdf	NY Apts – Photos.zip NY Apts – Photos.pdf
Stage 2	50% Complete Verification Workbook	Project Name – 50% Complete Verification.xls	NY Apts – 50% Complete Verification_rev0.xls
	Measure Documentation:	Project Name - * (per Site Inspection Protocols)	NY Apts – Boiler cut sheets.pdf NY Apts – Blower Door.pdf
	Photo Documentation	Project Name – Photos _100%.pdf	NY Apts – Photos_100%.pdf
	Invoices	Project Name – Measure XX invoice.pdf	NY Apts – DHW invoice.pdf
	Signed Construction Manager Contract	Project Name – Construction Manager Contract.pdf	NY Apts – Construction Manager Contract.pdf
Scope Change	Scope Change Cover Sheet	Project Name – Scope Change #.pdf	NY Apts – Scope Change 1.pdf
	SAV-IT	Project Name – SAVIT_rev#.xls	NY Apts – SAVIT_rev3.xls
	Model/Calculation Files	Project Name – Model_rev0	NY Apts – Model_rev0
Stage 3	Site Inspection Request	Project Name – 100% Inspection.xls	NY Apts – 100% Inspection_rev0.xls
	Photo Documentation	Project Name – Photos _100%.pdf	NY Apts – Photos_100%.pdf
	Common Area DRAFs	Project Name – Common Area DRAFs	NY Apts – Common Area DRAFs.pdf
	Invoices	Project Name – Measure XX invoice.pdf	NY Apts – DHW invoice.pdf
	Measure Documentation:	Project Name - * (per Site Inspection Protocols)	NY Apts – Boiler cut sheets.pdf NY Apts – Blower Door.pdf
Stage 4	Utility Bill Analysis Request	Project Name – Utility Bill Analysis Request.zip	NY Apts – Utility Bill Analysis Request.zip
	Performance Payment Worksheet	Project Name – Performance Payment_rev#.pdf	NY Apts – Performance Payment_rev0.pdf

11 APPENDIX B – DATA SUBMITTAL REQUIREMENTS FOR SOLAR PHOTOVOLATICS AND COMBINED HEAT AND POWER SYSTEMS

11.1 On-Site Solar PV

Projects with on-site, behind-the-meter solar photovoltaic system during either the baseline or performance period, are required to submit the following additional site data.

11.1.1 Solar PV system monitoring

All solar PV systems shall include a functioning internet connection that will upload daily solar production values in kWh to an internet based monitoring system. The Participant and Provider shall assure that NYSERDA is provided with log-in access in order to obtain system production values during the monitored baseline period and/or performance period.

The following daily values from the solar PV monitoring system shall be made available to NYSERDA:

1) Total electricity produced per day by the installed solar PV system, in kWh.
2) The date of production for each daily kWh value.

11.1.2 Utility data associated with solar PV systems

A signed Data Release Authorization Form for the electric utility meter is required so that NYSERDA can obtain electricity consumption data recorded by the utility meter (in kWh), as well as the data for excess on-site solar electricity generation that is exported to the utility grid (in kWh).

In the event that NYSERDA is unable to independently obtain kWh values for both consumption and export of electricity, the Participant and Provider shall assure that NYSERDA is provided with copies of the monthly billing invoices from any utility meter that is connected to behind-the-meter on-site solar generation, for all months during the monitoring period.

The kWh value for consumption and export can be reported as two separate values, or as a single net sum of both values (in kWh). All kWh data must be clearly labeled as being either consumption-only, export-only, or the net sum of consumption and export.

The following values from the utility company shall be made available to NYSERDA, for each billing cycle during the monitoring period:

1) Account number
2) Service address
3) Billing period start date
4) Billing period end date (i.e., the meter reading date)
5) The type of meter reading (i.e., "actual," "estimated")
6) The net sum value, in kWh, of the total consumption and export of electricity during the billing period, or:
    a. The total consumption, in kWh, during the billing period, and
    b. The total exported generation, in kWh, during the billing period.

11.2 Combined Heat and Power (CHP) Systems

Projects with a CHP system during either the baseline or performance period, is required to submit additional site data associated with the CHP system.

The measurement, collection and reporting of data related to the CHP system shall comply with NYSERDA's *Monitoring and Data Collection Standard for Distributed Generation/Combined Heat and Power (DG/CHP) Systems* (December 29, 2004 Revised), herein called the CHP data collection standard.

All data necessary to meet the objectives shown in Table 2 in the CHP data collection standard are required for the MPP High-Performance Component, except for the quantification of external parasitic loads created by the installed CHP system. (See Table 2 in the CHP data collection standard, "Primary (NYSERDA Required) Monitoring Objectives.") Quantification of parasitic loads is optional but highly recommended. If parasitic loads are not measured as specified in the CHP data collection standard, then these parasitic loads will necessarily be included in the overall measurement of whole-building energy consumption during the performance period, and will therefore reduce the measured percent source energy savings achieved.

The following daily values from the installed CHP monitoring system must be made available to NYSERDA:

1) Total electricity produced per day by the installed CHP system, in kWh.
2) Total useful heat recovery from the CHP system, per day, that was measured as being delivered to heating or DHW systems serving the multifamily facility; reported in kBtu.
3) Total unused heat recovery from the CHP system, per day; reported in kBtu. This is recovered heat that was measured as being unused by the multifamily facility and rejected to the atmosphere through dump radiators.
4) Total input fuel used by the CHP system, per day; measured in either cubic feet, CCF, Therms or kBtu (Site Energy values). Specify the unit of measure used.
5) The date of measurement for each of the above values.