

Attachment A: Measure Package Requirement Details

I. Envelope Package Requirement Details

Required Measure Installation

Projects **must** meet **both** measure installation requirements listed below.

1. Meet specified area weighted U-value target based on envelope measure package and tier. The area weighted U-value is a package specific value. The target considers the U-value of all above grade exposed building envelope components applicable to the specific measures package. The Envelope Workscape Tool will be used to confirm whether a project meets the target. The Applicant will determine the workscape to reach this target, e.g. add wall and/or roof insulation, install new windows, etc.

Envelope Measure Package	Tier-1 U-value	Tier 2 U-value
Roof Improvements	Target of ≤ 0.025	Target of ≤ 0.02
Wall Improvements	Target of ≤ 0.05	Target of ≤ 0.03
Window Improvements	N/A	Target of ≤ 0.27

2. For all projects receiving incentives for wall and/or window improvements, provide code-compliant ventilation for each bathroom and kitchen OR demonstrate existing ventilation system is operational to the specifications indicated in the table below. Projects that are only receiving incentives for roof improvements do not need to meet this ventilation requirement.

Existing Ventilation	Required Measure	Operational Test Out Specifications
Central Exhaust System	<ul style="list-style-type: none"> • Clean and seal the ductwork to 5 CFM50/register + 5 CFM50/floor leakage and provide adjustable constant airflow regulator (CAR) to provide code-compliant mechanical exhaust at each terminal. 	<ul style="list-style-type: none"> • 25 CFM continuous ventilation for each kitchen • 20 CFM continuous ventilation for each bathroom
Unitized Exhaust System	<ul style="list-style-type: none"> • Provide code-compliant mechanical exhaust of 25 CFM continuous or 100 CFM intermittent ventilation for each kitchen. • Provide code-compliant 20 CFM continuous or 50 CFM intermittent ventilation for each bathroom. 	<ul style="list-style-type: none"> • 25 CFM continuous or 100 CFM intermittent ventilation for each kitchen • 20 CFM continuous or 50 CFM intermittent ventilation for each bathroom
Naturally-ventilated Bathrooms and Kitchens	<ul style="list-style-type: none"> • Kitchens with recirculating hood vents are considered naturally ventilated. • No action required for naturally ventilated bathrooms and kitchens. 	N/A

Operational Test Out Specifications

If the project chooses the operational test-out pathway for ventilation compliance, then they must follow Option A or B below.

Option A Prescriptive Duct Sizing – For unitized systems only – in lieu of physical testing, the prescriptive duct sizing compliance path described by ENERGY STAR Multifamily New Construction may be used. (See Guidance on Item 8.1 of the National Rater Field Checklist.)

Option B Field Testing

1. Notify Program staff at least two weeks prior to testing. Program staff will be in attendance when testing occurs.
2. If failures are detected during field testing, the test-out procedure shall be discontinued. Corrections must be made to the ventilation system so that code-compliant flows are achieved in all bathrooms and kitchens, and a third-party Testing and Balancing contractor must be contracted to balance and verify flow rates, as described in the minimum installation standards below.
 - i. Central systems – Testing must follow the latest version of the Residential Energy Services Network (RESNET) sampling protocols and must include, at a minimum, the top and bottom floors served by the riser.
 - ii. Unitized systems – Testing must follow the latest version of the RESNET sampling protocols.
 - Testing equipment must be capable of measuring within a $\pm(3\% + 5 \text{ cfm})$ tolerance at flow rates as low as 20 CFM (e.g., low-flow balometer, powered flow hood). Documentation of equipment to be used must be submitted and approved before testing begins.
3. Special Circumstances:
 - i. Registers Inaccessible Due to Immovable Objects (e.g., a Cabinet):
 - If you anticipate that an immovable object will prevent access to a register for testing, please contact your Project Manager before scheduling the Ventilation Test Out. Include the total number of registers and specify how many cannot be tested due to these obstructions.
 - ii. Commercial Spaces Within the Scope of Work:
 - Projects may choose to include or exclude commercial spaces from ventilation testing within their scope of work; however, testing these spaces is not mandatory.

Minimum Installation Standards

All Improvement Projects must meet the following program minimum installation standard:

1. System and system components must be installed in accordance with manufacturer specifications and installation requirements, and in compliance with all applicable laws, regulations, codes, licensing and permit requirements including, but not limited to, the New York State Environmental Quality Review, the Statewide Uniform Fire Prevention and Building Code and State Energy Conservation Construction Code, the National Electric Code, Fire Codes, and all applicable State, City, and Town ordinances or permit requirements.

Roof Improvement Projects must also meet the following program minimum installation standards:

1. Thermal bridging at bulkheads must be mitigated.
2. Provide a continuous air barrier system across the attic floor or roof surface.
3. If installed, cavity insulation must be installed without compression or slumping (refer to grade 1 condition according to the latest RESNET standards).

Wall Improvement Projects must also meet the following program minimum installation standards:

1. Thermal bridging at major connections must be mitigated. Major connections include slab edges, bulkheads, rim joists, and roof-to-wall connections.
2. If installed, exterior insulation must be continuous. Metal z-girts are not allowed.
3. Provide a continuous air barrier system, including at the roof-to-wall connection.
4. If installed, cavity insulation must be installed without compression or slumping (refer to grade 1 condition according to the latest RESNET standards).

Recommendation: If installing exterior insulation, extend exterior insulation to cover any exposed slab edge and extend 24" below slab on grade.

Window Improvement Projects must also meet the following program minimum installation standards:

1. New windows must be air sealed to the opening with either 2x backer rod and caulk sealant joints or applicable tapes.

Ventilation Improvement Projects must also meet the following program minimum installation standards:

1. New ventilation exhaust penetrations must be air sealed.
2. Ventilation exhaust must vent to the outside.
3. For any project that upgraded the ventilation system but did not follow the test out procedure above, a third-party testing and balancing (TAB) contractor must be contracted to verify the flow rate in each dwelling unit meets the design rates in the plans, specifications, and project narrative. All parts of the test out procedure described above must be followed, except that NYSERDA staff is NOT required to observe the testing.

Required Deliverables: Pre-construction

Prior to construction or installation beginning, the Applicant must submit the following documentation to confirm the workscope eligibility. If **any** construction or installation on the incentivized measure is started prior to submittal of this deliverable the measure will be deemed **ineligible** for NYSERDA incentives. **Any** construction or installation completed **after** submittal but before pre-construction approval **is at your own risk** as approval in this stage confirms measure eligibility.

Envelope Pre-construction Deliverable	Deliverable Description
Utility Data Release Authorization Forms (DRAFTs)	<ul style="list-style-type: none"> Submit Owner DRAFTs for all master metered and house meter accounts for each building. Submit Resident DRAFTs for at least 10% of each size (e.g. 1-bedroom, 2- bedroom, etc.) of direct metered apartments with a minimum of 7 total for each building. If a project is in Consolidated Edison (Con Ed) territory, then Con Ed aggregated data files can be submitted in lieu of apartment DRAFTs.
Rent Affordability Documentation	<ul style="list-style-type: none"> LCP Evaluations Commitment. LCP Rent Affordability Plan Verification.
Bulk Fuel and District Steam usage, if applicable	<ul style="list-style-type: none"> Submit two years of complete delivery records for oil, propane, or other bulk fuels. Submit two years of billing records for district steam.
Workscope Tool	<ul style="list-style-type: none"> Includes weighted U-value calculations. Describes the existing conditions and proposed upgrades.
Ventilation Test-out Results, if applicable	<ul style="list-style-type: none"> Results of optional test-out sampling procedure.
Design Documents	<ul style="list-style-type: none"> Drawings, specifications, and contract documents. Documents should include how thermal bridging will be mitigated.
Photo Template	<ul style="list-style-type: none"> Photos of existing envelope conditions for each unique envelope assembly. Photos of existing ventilation system. Specific photo and sampling requirements by equipment type can be found in the photo template.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the Manufacturer and Model Number. Any specific features and/or options that were installed <ul style="list-style-type: none"> Relevant energy rating information.
Other Incentive Offerings Documentation	<ul style="list-style-type: none"> NYSERDA requires a copy of the executed award letter(s) and all submittal documentation from any other funding sources supporting the project.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Partial Installation

Applicants are required to notify NYSERDA when at least 30% but no more than 50% of the insulation is installed. The approved Envelope Workscape Tool will list what the trigger is for a particular project. NYSERDA **will** then conduct a **field inspection** to verify minimum installation standards are being met. When notifying NYSERDA, projects are required to submit the following deliverables.

Envelope Partial Installation Deliverable	Deliverable Description
Updated Workscape Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos of current envelope installation progress. Include photos of all upgraded unique envelope assembly and fastener systems, if applicable. Be sure to submit photos of any component that will not be visible when construction is complete. Photos of ventilation system upgrade, if applicable. Specific photo and sampling requirements by equipment type can be found in the photo template.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Construction Complete

NYSERDA will conduct a final field inspection or desk review upon project completion. Projects are required to notify NYSERDA when this milestone is reached and submit the following deliverables.

Envelope Construction Complete Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos of upgraded unique envelope assembly and fastener systems, if applicable. Be sure to submit photos of any component that will not be visible when construction is complete. Photos of ventilation system upgrade, if applicable. Specific photo and sampling requirements by equipment type can be found in the photo template.
Ventilation testing and balancing (TAB) Results, if applicable	<ul style="list-style-type: none"> Inspection reports including TAB report and duct sealing results. Documentation showing that the test equipment used by the TAB contractor meets Program requirements.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted, including fastener system if applicable. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Final Invoices	<ul style="list-style-type: none"> Invoices for the installed measures within the workscope. Invoices must separate labor from material costs. Invoices must include the following information: <ul style="list-style-type: none"> Measure description and quantity (e.g. 5,000 sq ft of 1-inch EFIS) Labor for each measure installation (e.g. installation of EFIS, installation of roof insulation, etc.)
Updated DRAFTs	<ul style="list-style-type: none"> Submit Owner DRAFTs for all new master metered and house meter accounts for each building. Consult with NYSERDA to determine how many tenant DRAFTs are required.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

II. Heating and Cooling Package Requirement Details

Required Measure Installation

Projects are **required** to replace the building's current heating and cooling system with one of the following:

Technology Type	Minimum Performance Requirement
Variable Refrigerant Flow (VRF)	Follow NYS Clean Heat Requirements (https://cleanheat.ny.gov)
Air Source Heat Pump (ASHP)	
Low-temp hydronic with Air to Water Heat Pump (AWHP)	Follow ASHRAE 90.1-2019 Table 6.8.1-16 for Heat Pump and Heat Recovery Chiller Packages.
Package Heat Pump	Follow ASHRAE 90.1-2019 Table 6.8.1-4 and heat pump must continue to operate down to 0°F
Water-to-Water Heat Pump (WWHP) ¹ and Ground Source Heat Pump	Follow Tier 3 ENERGY STAR for Ground Source Heat Pump (https://www.energystar.gov/sites/default/files/specs/private/Geothermal_Heat_Pumps_Program_Requirements%20v3.1.pdf) or ASHRAE 90.1-2019 Table 6.8.1-15 for WWHP

Projects are **required** to meet the following building load requirements based on the measure tier:

Measure Tier	Building Load Requirement
Tier 1 – Partial Electrification	<ul style="list-style-type: none"> Must be designed and installed to meet full load heating and cooling down to 30°F with one of the high efficiency electric sources listed in the table above. Other heating source must not prevent future full load electrification.
Tier 2 – Full Electrification	<ul style="list-style-type: none"> Must be designed and installed to meet both the full heating and cooling loads of the project with one of the high efficiency electric sources listed in the table above. For water-to-water heat pumps the initial heating source cannot be a fluid that was previously heated by fossil fuels. <ul style="list-style-type: none"> Unless from waste heat recovery from service hot water, heat-recovery chillers, or other building equipment.

¹ The initial heat source for water-to-water heat pumps cannot be a fluid that was previously heated by fossil fuels, unless when used for waste heat recovery from service hot water, heat recovery chillers, or other building equipment

Minimum Installation Standards

1. Projects **must** meet the below minimum installation standards. System and system components must be installed in accordance with manufacturer specifications and installation requirements, and in compliance with all applicable laws, regulations, codes, licensing and permit requirements including, but not limited to, the New York State Environmental Quality Review, the Statewide Uniform Fire Prevention and Building Code and State Energy Conservation Construction Code, the National Electric Code, Fire Codes, and all applicable State, city, town ordinances or permit requirements.
2. Based upon best practices and manufacturers installation manuals, outdoor units should be installed above the local snow line.
3. Outdoor units must be installed such that melting defrost condensate does not drip onto other outdoor units.
4. If the equipment includes integrated electric resistance, the control sequence for the electric resistance must be set to ensure the electric resistance is used for back-up only when the equipment cannot maintain adequate space temperature. The system must include a time delay allowing adequate time for equipment to bring space temperature up. Back-up electric resistance cannot be used to bring up a space to temperature.

Recommendation: Ensure installed equipment has connectivity capabilities to connect with an energy or building management system.

Required Deliverables: Pre-construction

Prior to the start of construction or installation, the Applicant must submit the following documentation to confirm the workscope eligibility. If **any** construction or installation on the incentivized measure is started prior to submittal of this deliverable the measure will be deemed **ineligible** for NYSERDA incentives. **Any** construction or installation completed **after** submittal but before pre-construction approval **is at your own risk** as approval in this stage confirms measure eligibility.

Heating and Cooling Pre-construction Deliverable	Deliverable Description
Utility Data Release Authorization Forms (DRAFTs)	<ul style="list-style-type: none"> Submit Owner DRAFTs for all master metered and house meter accounts for each building. Submit Resident DRAFTs for at least 10% of each size (e.g. 1-bedroom, 2- bedroom, etc.) of direct metered apartments with a minimum of 7 total for each building. If a project is in Consolidated Edison (Con Ed) territory, then Con Ed aggregated data files can be submitted in lieu of apartment DRAFTs.
Rent Affordability Documentation	<ul style="list-style-type: none"> LCP Evaluations Commitment LCP Rent Affordability Plan Verification
Bulk Fuel and District Steam usage, if applicable	<ul style="list-style-type: none"> Submit two years of complete delivery records for oil or other bulk fuels Submit two years of billing records for district steam
Workscope Tool	<ul style="list-style-type: none"> Describes the existing conditions and proposed upgrades
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of proposed products with model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information
Design Documents	<ul style="list-style-type: none"> Drawings, specifications, and contract documents. <ul style="list-style-type: none"> Must include load calculations and control sequence, if applicable.
Photo Template	<ul style="list-style-type: none"> Photos to show existing heating and cooling system. Specific photo and sampling requirements by equipment type can be found in the photo template.
Other Incentive Offerings Documentation	<ul style="list-style-type: none"> NYSERDA requires a copy of the executed award letter(s) and all submittal documentation from any other funding sources supporting the project.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Partial Installation (optional stage)

Applicants have the option of requesting a partial installation inspection for an early partial construction payment. To be eligible, the project must be at least 30% complete with installation of the workscope. NYSERDA will then conduct a field inspection or desk review to verify minimum installation standards are being met. When notifying NYSERDA, projects are required to submit the following deliverables.

Heating and Cooling Partial Installation Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos of installed system and system components. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Construction Complete

NYSERDA will conduct a final field inspection or desk review upon project completion. Projects are **required** to notify NYSERDA when this milestone is reached and submit the following deliverables.

Heating and Cooling Construction Complete Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos of installed system and system components. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Final design specifications	<ul style="list-style-type: none"> Submit documentation of actual piping sizes, lengths, and calculations of actual refrigerant charge needed.
Testing	<ul style="list-style-type: none"> Submit documentation of pressure testing of refrigerant lines, including photos of gauges pre- and post-pressure testing, duration of pressure test, dates of testing, and ambient outdoor temperature at time of testing (beginning and end).
Checklists	<ul style="list-style-type: none"> Submit completed manufacturer start-up checklists. Submit completed pre-functional and functional commissioning checklists.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Final Invoices	<ul style="list-style-type: none"> Invoices for the installed measures within the workscope. Invoices must separate labor from material costs. Invoices must include the following information: <ul style="list-style-type: none"> Measure description and quantity (e.g. 3 condensers units) Labor for each measure installation (e.g. testing for refrigerant lines, etc.)
Updated DRAFTs	<ul style="list-style-type: none"> Submit Owner DRAFTs for all new master metered and house meter accounts for each building. Consult with NYSERDA to determine how many tenant DRAFTs are required.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

III. Domestic Hot Water Package Requirement Details

Required Measure Installation

Projects are **required** to replace their domestic hot water (DHW) systems with heat pump technology. The system requirements are based on the tier selected. In all cases, the new system must be a split Heat Pump Water Heater; integrated tank-type HPWHs and hybrid DHW heaters are not permitted.

Existing Conditions	DHW Annual Consumption Displacement	Equipment Requirement	Performance Requirement
Tier 1 – Partial Electrification ²	Minimum 30%	Air-to-Water Heat Pump	Follow NYS Clean Heat Requirements: (https://cleanheat.ny.gov)
		Water-to-Water Heat Pump	Follow Tier 3 ENERGY STAR for GSHP (https://www.energystar.gov/sites/default/files/speccs/private/Geothermal_Heat_Pumps_Program_Requirements%20v3.1.pdf) or ASHRAE 90.1-2019 Table 6.8.1-15 for WWHP.
Tier 2 – Full Electrification	100%	Air-to-Water Heat Pump	ENERGY STAR labeled if applicable; otherwise, must be a split system.
		Water-to-Water Heat Pump ³	Follow Tier 3 ENERGY STAR for GSHP (https://www.energystar.gov/sites/default/files/speccs/private/Geothermal_Heat_Pumps_Program_Requirements%20v3.1.pdf) or ASHRAE 90.1-2019 Table 6.8.1-15 for WWHP.

² For partial electrification systems, other heating sources must not prevent future full load electrification.

³ The heat source for water-to-water heat pumps cannot be a fluid that was previously heated by fossil fuels, unless when used for waste heat recovery (e.g. from service hot water or heat-recovery chillers).

For Partial Electrification projects with central DHW systems, projects **must** install at least the minimum capacity from the table below. Projects can use either the per bedroom or per dwelling unit calculation method.

Building Location ⁴	Minimum Installed Capacity (MBH/Bedroom)	Minimum Installed Capacity (MBH/Dwelling Unit)
Climate Zone 4 (A-C)	1.7	2.0
Climate Zone 5 (A-C)	1.8	2.2
Climate Zone 6 (A-B)	1.8	2.2

Minimum Installation Standards

Projects **must** meet the below minimum installation standards.

1. System and system components must be installed in accordance with manufacturer specifications and installation requirements, and in compliance with all applicable laws, regulations, codes, licensing and permit requirements including, but not limited to, the New York State Environmental Quality Review, the Statewide Uniform Fire Prevention and Building Code and State Energy Conservation Construction Code, the National Electric Code, Fire Codes, and all applicable State, city, town ordinances or permit requirements.
2. Based upon best practices and manufacturers installation manuals, outdoor units should be installed above the local snow line.
3. Control system must be set-up such that the heat pump system operates nights and weekends, at minimum.

Recommendation: Ensure installed equipment has connectivity capabilities to connect with an energy or building management system.

⁴ Climate zones are based on the International Energy Conservation Code (IECC). Climate zone by NYS counties can be found in Appendix A.

Required Deliverables: Pre-construction

Prior to construction or installation beginning, the Applicant must submit the following documentation to confirm the workscope eligibility. If **any** construction or installation on the incentivized measure is started prior to submittal of this deliverable the measure will be deemed **ineligible** for NYSERDA incentives. **Any** construction or installation completed **after** submittal but before pre-construction approval **is at your own risk** as approval in this stage confirms measure eligibility.

DHW Pre-construction Deliverable	Deliverable Description
Utility Data Release Authorization Forms (DRAFTs)	<ul style="list-style-type: none"> Submit Owner DRAFTs for all master metered and house meter accounts for each building. Submit Resident DRAFTs for at least 10% of each size (e.g. 1-bedroom, 2- bedroom, etc.) of direct metered apartments with a minimum of 7 total for each building. If a project is in Consolidated Edison (Con Ed) territory, then Con Ed aggregated data files can be submitted in lieu of apartment DRAFTs.
Rent Affordability Documentation	<ul style="list-style-type: none"> LCP Evaluations Commitment. LCP Rent Affordability Plan Verification.
Bulk Fuel and District Steam usage, if applicable	<ul style="list-style-type: none"> Submit two years of complete delivery records for oil or other bulk fuels. Submit two years of billing records for district steam.
Workscope Tool	<ul style="list-style-type: none"> Describes the existing conditions and proposed upgrades, including a description of the thermal loads and thermal storage.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of proposed products with proposed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that are proposed Relevant energy rating information.
Design Documents	<ul style="list-style-type: none"> Drawings, specifications, and contract documents Calculations showing how the proposed system will meet 30% of the DHW load, including the control strategy for the overall DHW system.
Photo Template	<ul style="list-style-type: none"> Photos of existing domestic hot water system. Specific photo and sampling requirements by equipment type can be found in the photo template.
Other Incentive Offerings Documentation	<ul style="list-style-type: none"> NYSERDA requires a copy of the executed award letter(s) and all submittal documentation from any other funding sources supporting the project.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Partial Installation (optional stage)

Applicants have the option of requesting a partial installation inspection for an early partial construction payment. To be eligible, the project must be at least 30% complete with installation of the workscope. NYSERDA will then conduct a field inspection to verify minimum installation standards are being met. When notifying NYSERDA, projects are required to submit the following deliverables.

Domestic Hot Water Partial Installation Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos of installed system and system components. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Construction Complete

NYSERDA will conduct a final field inspection or desk review upon project completion. Projects are **required** to notify NYSERDA when this milestone is reached and submit the following deliverables.

Domestic Hot Water Construction Complete Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos of installed system and system components. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Final design specifications	<ul style="list-style-type: none"> If applicable, submit documentation of actual piping sizes, lengths, and calculations of actual refrigerant charge needed. Submit documentation of controls set-up for central systems.
Testing	<ul style="list-style-type: none"> If applicable, submit documentation of pressure testing of refrigerant lines, including photos of gauges pre- and post-pressure testing, duration of pressure test, dates of testing, and ambient outdoor temperature at time of testing.
Checklists	<ul style="list-style-type: none"> Submit completed manufacturer start-up checklists. Submit completed pre-functional and functional commissioning checklists.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Final Invoices	<ul style="list-style-type: none"> Invoices for the installed measures within the workscope. Invoices must separate labor from material costs. Invoices must include the following information: <ul style="list-style-type: none"> Measure description and quantity (e.g. 3 condensers units) Labor for each measure installation (e.g. testing for refrigerant lines, etc.)
Updated DRAFTs	<ul style="list-style-type: none"> Submit Owner DRAFTs for all new master metered and house meter accounts for each building. Consult with NYSERDA to determine how many tenant DRAFTs are required.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

IV. Appliance Electrification Package Requirement Details

Required Measure Installation

Projects **must replace all** existing gas stoves with comparably sized induction stoves and/or Gas Dryers with comparable sized ENERGY STAR heat pump dryers. Projects seeking to participate in the Induction Stove Pilot with existing electric stoves will be considered on a case-by-case basis.

Minimum Installation Standards

Projects **must** meet the below minimum installation standards.

1. System and system components must be installed in accordance with manufacturer specifications and installation requirements, and in compliance with all applicable laws, regulations, codes, licensing and permit requirements including, but not limited to, the New York State Environmental Quality Review, the Statewide Uniform Fire Prevention and Building Code and State Energy Conservation Construction Code, the National Electric Code, Fire Codes, and all applicable State, city, town ordinances or permit requirements.

Required Deliverables: Pre-construction

Prior to construction or installation beginning, the Applicant must submit the following documentation to confirm the workscope eligibility. If **any** construction or installation on the incentivized measure is started prior to submittal of this deliverable the measure will be deemed **ineligible** for NYSERDA incentives. **Any** construction or installation completed **after** submittal but before pre-construction approval **is at your own risk** as approval in this stage confirms measure eligibility.

Appliance Electrification Pre-construction Deliverable	Deliverable Description
Workscope Tool	<ul style="list-style-type: none"> Describes the existing conditions and proposed workscope.
Photo Template	<ul style="list-style-type: none"> Photos of existing stoves. Specific photo and sampling requirements by equipment type can be found in the photo template.
Utility Data Release Authorization Forms (DRAFTs)	<ul style="list-style-type: none"> Submit Owner DRAFTs for all master metered and house meter accounts for each building. Submit Resident DRAFTs for at least 10% of each size (e.g. 1-bedroom, 2- bedroom, etc.) of direct metered apartments with a minimum of 7 total for each building. If a project is in Consolidated Edison (Con Ed) territory, then Con Ed aggregated data files can be submitted in lieu of apartment DRAFTs.
Rent Affordability Documentation	<ul style="list-style-type: none"> LCP Evaluations Commitment. LCP Rent Affordability Plan Verification.
Bulk Fuel and District Steam usage, if applicable	<ul style="list-style-type: none"> Submit two years of complete delivery records for oil or other bulk fuels. Submit two years of billing records for district steam.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed. Relevant energy rating information.
Other Incentive Offerings Documentation	<ul style="list-style-type: none"> NYSERDA requires a copy of the executed award letter(s) and all submittal documentation from any other funding sources supporting the project.
Additional Documents (As Requested)	<ul style="list-style-type: none"> Participants in the Induction Stove Pilot must submit a detailed Electrical Upgrade Scope and Cost form, which will be supplied by the Pilot implementation service provider. NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Construction Complete

NYSERDA will conduct a final field inspection upon project completion. Projects are **required** to notify NYSERDA when this milestone is reached and submit the below deliverables. Deliverables and inspections should be submitted and conducted in conjunction with the Heating and Cooling package documentation and inspection.

Appliance Electrification Construction Complete Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos of installed components. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Utility Data Release Authorization Forms (DRAFTs)	<ul style="list-style-type: none"> Submit Owner DRAFTs for all master metered and house meter accounts for each building. Submit Resident DRAFTs for at least 10% of each size (e.g. 1-bedroom, 2- bedroom, etc.) of direct metered apartments with a minimum of 7 total for each building. If a project is in Consolidated Edison (Con Ed) territory, then Con Ed aggregated data files can be submitted in lieu of apartment DRAFTs.
Bulk Fuel and District Steam usage, if applicable	<ul style="list-style-type: none"> Submit two years of complete delivery records for oil or other bulk fuels. Submit two years of billing records for district steam.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

V. Optional Recommended Measures Details

The following are the measure requirements for the optional recommended measures. Projects can choose to install the optional measures in addition to a primary package for an additional incentive. Please refer to Program Opportunity Notice (PON) documentation for further details.

1.1 Air Sealing

Required Measure Installation

Projects **must** evaluate and install all applicable air sealing (including caulking, weatherstripping, thermal barriers) of repeatable penetrations. This includes the following building areas:

1. Tops of shafts/bulkheads
2. Exterior doors
3. Air conditioner sleeves
4. Windows
5. Floor of attic or ceiling of top floor penetrations (attic door, hatch, electrical, piping, ventilation, etc.)
6. Plumbing and electrical penetrations in the apartments
7. Penetrations and openings between all mechanical equipment rooms, including the boiler room, and the conditioned space
8. Basement perimeter
9. Fire sprinkler penetrations

Minimum Installation Standards

Projects **must** meet the below minimum installation standards.

1. System and system components must be installed in accordance with manufacturer specifications and installation requirements, and in compliance with all applicable laws, regulations, codes, licensing and permit requirements including, but not limited to, the New York State Environmental Quality Review, the Statewide Uniform Fire Prevention and Building Code and State Energy Conservation Construction Code, the National Electric Code, Fire Codes, and all applicable State, city, town ordinances or permit requirements.
2. 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.
3. Door weather stripping shall be mechanically fastened, foam-filled tubular gasket vinyl weather stripping along all sides and tops of all doors.
4. Large openings that cannot be sealed with spray foam should be sealed with another appropriate air sealing strategy such as rigid foamboard or caulk.
5. Attics shall be thoroughly checked for air leakage locations by moving existing insulation as needed. Once air sealing has been completed, insulation shall be replaced to provide continuous coverage of an even depth throughout the attic.

Required Deliverables: Pre-construction

Prior to construction or installation beginning, the Applicant must submit the following documentation, **in conjunction** with the primary package (e.g. Envelope or Heating and Cooling) documentation to confirm the workscope eligibility. If **any** construction or installation on the incentivized measure is started prior to submittal of this deliverable the measure will be deemed **ineligible** for NYSERDA incentives. **Any** construction or installation completed **after** submittal but before pre-construction approval **is at your own risk** as approval in this stage confirms measure eligibility.

Air Sealing Pre-Construction Deliverable	Deliverable Description
Workscope Tool	<ul style="list-style-type: none"> Describes the existing conditions and installation workscope. Includes why any measures were not recommended or deemed not applicable.
Photo Template	<ul style="list-style-type: none"> Photos of existing condition of all existing repeatable penetrations. Specific photo and sampling requirements by equipment type can be found in the photo template.
Other Incentive Offerings Documentation	<ul style="list-style-type: none"> NYSERDA requires a copy of the executed award letter(s) and all submittal documentation from any other funding sources supporting the project.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Construction Complete

NYSERDA will conduct a final field inspection or desk review upon project completion. Projects are **required** to notify NYSERDA when this milestone is reached and submit the below deliverables. Deliverables and inspections should be submitted and conducted in conjunction with the primary package (e.g. Envelope, Ventilation, or Heating and Cooling) documentation and inspection.

Air Sealing Construction Complete Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information
Photo Template	<ul style="list-style-type: none"> Photos of installed components. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

1.2 Ventilation Package Requirement Details Required Measure Installation

Projects are **required** to provide balanced ventilation, resulting in equal whole dwelling unit supply and exhaust, with heat and/or energy recovery to each dwelling unit. Balanced ventilation **requires** providing both supply and exhaust ventilation with supply airflow within 10% of the exhaust airflow.

Minimum Installation Standards

Projects **must** meet the following program minimum installation standards:

1. System and system components must be installed in accordance with manufacturer specifications and installation requirements, and in compliance with all applicable laws, regulations, codes, licensing and permit requirements including, but not limited to, the New York State Environmental Quality Review, the Statewide Uniform Fire Prevention and Building Code and State Energy Conservation Construction Code, the National Electric Code, Fire Codes, and all applicable State, city, town ordinances or permit requirements.
2. Heat or energy recovery ventilator (HRV or ERV) must have minimum 77% sensible heat recovery efficiency at manufacturer rated design conditions.
3. Total fan power for the ERV at design external static pressure and design CFM must be less than 1 Watt per CFM.
4. Bathrooms shall be continuously ventilated to a minimum of 20 CFM, respectively.
5. Kitchens shall be continuously ventilated to a minimum of 25 CFM or intermittently ventilated (controlled by the occupant) to a minimum of 100 CFM, as required by code.
6. Adjustable constant airflow regulators (CARs) are required on exhaust vents with continuous ventilation to maintain balanced operation.
7. Seal all central ventilation duct work (e.g. aerosolized sealant product) to meet duct leakage limit of 5 CFM50 per register + 5 CFM50/floor leakage OR a maximum leakage of 10% of total design air flow for system, whichever is lower.
8. Typical 24/7 operation total supply and exhaust flows must be within +15% of required airflow at each terminal, +/- 15% of total required design flows at the system level, and within 10% of each other on a per dwelling unit basis.
9. Third party testing and balancing (TAB) contractors must be contracted by the owner (not the contractor) to balance and verify flow rates meet the design rates in the plans, specifications, and project narrative. Testing equipment used must be capable of measuring within a $\pm(3\% + 5 \text{ cfm})$ tolerance at flow rates as low as 20 CFM (e.g., low-flow balometer, powered flow hood). Documentation of equipment used must be provided.
10. Exterior outdoor air intake louver must be at least 4 feet above grade or roof deck, at least 10 feet away from known contamination sources (dryer, garage exhaust, etc.), and no closer to the exhaust port than recommended by the manufacturer.
11. Ducts between an interior HRV or ERV and the exterior must be insulated to a minimum of R-8 and covered with an airtight vapor tight material that is carefully sealed to the exterior wall.
12. Ducts between an exterior mounted HRV or ERV and the building envelope must be insulated to a minimum of R-8.
13. Frost protection should be installed for the heat exchanger core.

14. Install a minimum MERV 8 filter in the intake air duct and in the extract air duct for all ventilation systems.
15. Duct to sheetrock connection must be air sealed prior to the installation of grilles.
16. Electric resistance heating can be used to raise supply air temperature (post-core) at winter design condition by no more than 5°F.

Recommendation:

- Supply air leaving the HRV or ERV should be no colder than 62°F at winter design conditions to ensure occupant comfort.
- When possible, install a minimum MERV 13 filter in the intake air duct and in the extract air duct for all ventilation systems. During design phase, consider the static pressure drop across the filter.

Required Deliverables: Pre-construction

Prior to construction or installation beginning, the Applicant must submit the following documentation, **in conjunction** with the primary package (e.g. Envelope or Heating and Cooling) documentation to confirm the workscope eligibility. If **any** construction or installation on the incentivized measure is started prior to submittal of this deliverable the measure will be deemed **ineligible** for NYSERDA incentives. **Any** construction or installation completed **after** submittal but before pre-construction approval **is at your own risk** as approval in this stage confirms measure eligibility.

Ventilation Pre-construction Deliverable	Deliverable Description
Utility Data Release Authorization Forms (DRAFTs)	<ul style="list-style-type: none"> Submit Owner DRAFTs for all master metered and house meter accounts for each building. Submit Resident DRAFTs for at least 10% of each size (e.g. 1-bedroom, 2- bedroom, etc.) of direct metered apartments with a minimum of 7 total for each building. If a project is in Consolidated Edison (Con Ed) territory, then Con Ed aggregated data files can be submitted in lieu of apartment DRAFTs.
Bulk Fuel and District Steam usage, if applicable	<ul style="list-style-type: none"> Submit two years of complete delivery records for oil or other bulk fuels. Submit two years of billing records for district steam
Workscope Tool	<ul style="list-style-type: none"> Describes the existing conditions and proposed upgrades.
Cut sheets	<ul style="list-style-type: none"> Cut sheets of proposed products should be submitted with the proposed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Design Documents	<ul style="list-style-type: none"> Drawings, specifications, and contract documents. Must include supply and exhaust air flows and commissioning requirements.
Photo Template	<ul style="list-style-type: none"> Photos of existing ventilation system. Specific photo and sampling requirements by equipment type can be found in the photo template.
Other Incentive Offerings Documentation	<ul style="list-style-type: none"> NYSERDA requires a copy of the executed award letter(s) and all submittal documentation from any other funding sources supporting the project.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Partial Installation (optional stage)

Applicants have the option of requesting a partial installation inspection for an early partial construction payment. To be eligible, the project **must** be at least 30% complete with installation of the workscope. NYSERDA will then conduct a field inspection or desk review to verify minimum installation standards are being met. When notifying NYSERDA, projects are required to submit the following deliverables.

Ventilation Partial Installation Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos including installed HRV or ERV, installed CARs, installed duct insulation, installed filters as applicable. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Cut Sheets	<ul style="list-style-type: none"> Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> Manufacturer Model Number Any specific features and/or options that were installed Relevant energy rating information.
Additional Documents (As Requested)	<ul style="list-style-type: none"> NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Required Deliverables: Construction Complete

NYSERDA will conduct a final field inspection upon project completion. Projects are required to notify NYSERDA when this milestone is reached and submit the following deliverables.

Ventilation Construction Complete Deliverable	Deliverable Description
Updated Workscope Tool	<ul style="list-style-type: none"> Describes installation status.
Photo Template	<ul style="list-style-type: none"> Photos including installed HRV or ERV, installed CARs, installed duct insulation, installed filters as applicable. Specific photo and sampling requirements by equipment type can be found in the photo template. Be sure to submit photos of any component that will not be visible when construction is complete.
Equipment Testing Reports	<ul style="list-style-type: none"> Pre- and post-sealing testing results of leakage for each riser, if applicable. Inspection reports including TAB report and duct sealing results.

Cut Sheets	<ul style="list-style-type: none"> • Cut sheets of installed products with installed model and options highlighted. Cut sheets must include the following information: <ul style="list-style-type: none"> ○ Manufacturer ○ Model Number ○ Any specific features and/or options that were installed ○ Relevant energy rating information.
Final Invoices	<ul style="list-style-type: none"> • Invoices for the installed measures within the workscope. Invoices must separate labor from material costs. Invoices must include the following information: <ul style="list-style-type: none"> ○ Measure description and quantity (e.g. ERV, aerosolized sealant product) ○ Labor for each measure installation (e.g. testing for each riser, installation of ERV, etc.)
Updated DRAFTs	<ul style="list-style-type: none"> • Submit Owner DRAFTs for all new master metered and house meter accounts for each building. • Consult with NYSERDA to determine how many tenant DRAFTs are required.
Additional Documents (As Requested)	<ul style="list-style-type: none"> • NYSERDA reserves the right to request additional documentation to confirm eligibility requirements are met.

Appendix A – Climate Zones by New York State County

Climates zones are determined by county, based on the International Energy Conservation Code (IECC).

County	Climate Zone	County	Climate Zone
Albany	5A	Niagara	5A
Allegany	6A	Oneida	6A
Bronx	4A	Onondaga	5A
Broome	6A	Ontario	5A
Cattaraugus	6A	Orange	5A
Cayuga	5A	Orleans	5A
Chautauqua	5A	Oswego	5A
Chemung	5A	Otsego	6A
Chenango	6A	Putnam	5A
Clinton	6A	Queens	4A
Columbia	5A	Rensselaer	5A
Cortland	5A	Richmond	4A
Delaware	6A	Rockland	5A
Dutchess	5A	Saratoga	5A
Erie	5A	Schenectady	5A
Essex	6A	Schoharie	6A
Franklin	6A	Schuyler	6A
Fulton	6A	Seneca	5A
Genesee	5A	St. Lawrence	6A
Greene	5A	Steuben	6A
Hamilton	6A	Suffolk	4A
Herkimer	6A	Sullivan	6A
Jefferson	6A	Tioga	5A
Kings	4A	Tompkins	6A
Lewis	6A	Ulster	6A
Livingston	5A	Warren	6A
Madison	6A	Washington	5A
Monroe	5A	Wayne	5A
Montgomery	6A	Westchester	4A
Nassau	4A	Wyoming	6A
New York	4A	Yates	5A

Appendix B – On-Site Generation Data Requirements

Data submittal requirements for solar photovoltaics and combined heat and power (CHP) systems.

1.1 On-Site Solar PV

Projects with on-site, behind-the-meter solar photovoltaic system during the pre-construction and/or construction complete, are required to submit the following additional site data:

A. Solar PV system monitoring

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.

If a PV solar system has a functioning internet connection that uploads daily solar production values in kWh to an internet-based monitoring system, the Applicant and Consultant shall assure that NYSERDA is provided with log-in access to obtain system production values during the pre-construction and/or construction complete period.

B. Utility data associated with solar PV systems

A signed Data Release Authorization Form ([DRAF](#)) for the electric utility meter is required so 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).

If NYSERDA is unable to independently obtain kWh values for both consumption and export of electricity, the Participant and Provider shall ensure NYSERDA is provided with copies of the monthly billing invoices from any utility meter that is connected to on-site, behind-the-meter generation solar, 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. Type of meter reading (i.e., actual, estimated)
6. Net sum value, in kWh, of the total consumption and export of electricity during the billing period, or
 - Total consumption, in kWh, during the billing period
 - Total exported generation, in kWh, during the billing period

1.2 Combined Heat and Power (CHP) Systems

Projects with a CHP system during the baseline and/or performance period are required to submit the following additional daily values from the installed CHP monitoring system:

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 values listed.

Quantification of parasitic loads is optional but highly recommended. If parasitic loads are not measured, 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 site energy savings achieved.

Please refer to NYSERDA's *Monitoring and Data Collection Standard for Distributed Energy Resource (DER) Systems* (January 2020) for best practices on measuring the CHP system data required by the Program, including parasitic loads.