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NYS Clean Heat

Statewide Heat Pump Program Manual

Contents

1. Introduction

What is the NYS Clean Heat Statewide Heat Pump Program?

Heat pumps have been an efficient source of heating and cooling for years but advances in technology now allow them to effectively address heating needs in cold climates, helping customers lower their energy costs and reduce greenhouse gas emissions. To achieve the statewide heat pump goals and build the market infrastructure for a low-carbon future, the NYS Clean Heat Statewide Heat Pump Program ("NYS Clean Heat Program" or "Program") will be implemented in coordination with a portfolio of market development initiatives. Across its component initiatives, the NYS Clean Heat Program aims to build market capacity to deliver building electrification solutions. The NYS Clean Heat Program, a collaborative effort between the New York Electric Utilities,[1] and the New York State Energy Research & Development Authority ("NYSERDA") (collectively, "Joint Efficiency Providers"[2]), is designed to provide customers, contractors, and other heat pump solution providers a consistent experience and business environment throughout New York State ("NYS").

The NYS Clean Heat Program includes of a range of initiatives to advance the adoption of efficient electric heat pump systems that are designed and used for space and water heating in NYS. Core to the Program is the suite of incentives that support customer adoption of eligible heat pump technologies – both cold climate air source and ground source systems as well as their promotion and pricing by contractors and other heat pump solution providers. The market development effort includes support for training and qualification of contractors, processes to assure quality installations, and marketing and education to help customers understand and select among options and to operate systems optimally.

2. Program Summary

Heat pumps transfer heat from a source (or sink) including outdoor air, the ground, or a mechanically heated or cooled fluid loop rather than producing it (e.g. via an electric resistance coil or by burning fossil fuels). In the heating season, heat is extracted from the heat source and supplied to the conditioned space. During the cooling season, heat is extracted from the conditioned space and rejected to the heat sink. By participating in the NYS Clean Heat Program, Participating Contractors will be able to provide customers with multiple benefits at lower costs. Heat pump technology can provide customers with the following:

- Less volatile annual energy bills, especially advantageous for customers with fixed, low, or moderate incomes and service-oriented institutions like nonprofits, schools, community

[1] The New York Electric Utilities consist of Central Hudson Gas & Electric Corporation ("Central Hudson), Consolidated Edison Company of New York, Inc.("Con Edison"), Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid"), New York State Electric & Gas Corporation ("NYSEG"), Orange and Rockland Utilities, Inc. ("Orange & Rockland"), and Rochester Gas and Electric Corporation ("RG&E") (collectively, "Electric Utilities").

[2] The New York Electric Utilities and NYSERDA are referred to as "Joint Efficiency Providers" for purposes of their partnership in the NYS Clean Heat Program.

centers, and houses of worship.
- Greater comfort and health because of added air conditioning and improved indoor air quality delivered by emissions-free technology.
- A long-term solution to heating and cooling needs that is easier to maintain than alternatives.

The NYS Clean Heat Program funding has been designated by the New York State Public Service Commission through the Joint Efficiency Providers. Incentives are offered for both Air-Source Heat Pumps ("ASHP") and Ground-Source Heat Pumps ("GSHP") for both space heating and cooling as well as for Heat Pump Water Heaters ("HPWH") for water heating.

To apply for incentives under this Program, ASHP installers, ASHP designers, GSHP installers, GSHP designers, and GSHP drillers must first become "Participating Contractors" by submitting one Participating Contractor Application for each electric utility indicating in which service territories they plan to perform work and a Contractor Participation Agreement for each of those specified territories (available at http://saveenergyny.ny.gov/nyscleanheat). Upon approval, the applicant will receive an approval notification from the electric utility and become eligible to apply for incentives in the Program.

Contractors installing only HPWH do not have to be a Participating Contractor to submit an Incentive Application on behalf of a customer. GSHP drillers must also be approved through this process to become a "participating driller," but are not eligible to submit for and receive incentives. Each GSHP installation must be completed by a participating driller.

The Joint Efficiency Providers recommend that site owners contact a heat pump professional to assess and implement energy efficiency opportunities related to building envelope and HVAC distribution system before, or in coordination with, installing a heat pump system. Common thermal efficiency upgrades include attic and wall insulation, air sealing, and duct sealing. Making these types of improvements can significantly help meet the goal to provide cost-effective heating with the installation of a cold-climate heat pump. Site owners can access programs and assistance through their local utility.

Note: The Joint Efficiency Providers may modify the content of this Program Manual at any time. Participating Contractors will be notified electronically of any modification or change.

2.1 Available Incentive Funding

Incentives are available on a first-come, first-served basis. Table 1 details the Total Incentive amount available per technology and installation type. Each Participating Contractor may retain up to the Participating Contractor Reward amount shown in Table 2. The balance of the Total Incentive less the Participating Contractor Reward must be passed or otherwise credited to the customer in their entirety. Incentives listed in Table 1 and Table 2 will be provided beginning April 1, 2020.[3]

[3] The values contained in this table are subject to modification as program changes are implemented. A process for making such changes and posting revised incentive values will be developed by the Joint Management Committee in the coming months.

Table 1: Total Incentives

Category	Technology	Incentive	Central Hudson	Con Edison	National Grid	NYSEG/ RGE	Orange & Rockland
1	ccASHP: Partial Load Heating[4]	$/outdoor condenser unit	$800	$500[5]	$500	$500	$500
2	ccASHP: Full Load Heating[6]	$/10,000 BTUH of maximum heating capacity at NEEP 5°F	$1,600	$2,000[7]	$1,000	$1,000	$1,600
3	GSHP: Full Load Heating	$/10,000 BTUH of full load heating capacity as certified by AHRI	$2,000	$2,850	$1,500	$1,500	$2,000
4	Custom Incentive	$/MMBTU of annual energy savings	$80	Per project[8]	$80	$80	$80
5	Air-Source HPWH (<120 gal)	$/unit	$1,000	$1,000	$700	$700	$1,000
6	Commercial Air-Source HPWH (>120 gal)	$/MMBTU of annual energy savings	$80	$80	$80	$80	$80
7	GSHP Desuperheater	$/unit	$150	$150	$100	$100	$150
8	Ground-Source HPWH	$/unit	$1,000	$1,000	$900	$900	$1,000
9	Simultaneous Installation of ccASHP & Air-Source HPWH	Additional bonus per combination installation	$250	$250	$250	$250	$250

[4] See section 3.2.1.2 for definition, pg.11.
[5] For Con Edison and O&R, there will be additional distributor level incentives available for this program.
[6] See section 3.2.1.2 for definition, pg. 11.
[7] For Con Edison and O&R, there will be additional distributor level incentives available for this program.
[8] Incentives for custom projects will be determined by Con Edison on a per project basis.

Table 2: Participating Contractor Reward

Incentives listed in this table are included in the total incentives listed in Table 1.

Category	Technology	Incentive	Central Hudson	Con Edison	National Grid	NYSEG/ RGE	Orange & Rockland
1	ccASHP: Partial Load Heating	**$/outdoor condenser unit**	$100/ outdoor unit	$250/ outdoor unit	$100/ outdoor unit	$100/ outdoor unit	$250/ outdoor unit
2	ccASHP: Full Load Heating	**$/10,000 BTUH of maximum heating capacity at NEEP 5°F**	$500/ project	$1,000/ project	$500/ project	$500/ project	$500/ project
3	GSHP: Full Load Heating	**$/10,000 BTUH of full load heating capacity as certified by AHRI**	$500/ project	$500/ project	$500/ project	$500/ project	$500/project
4	Custom Incentive	**$/MMBTU of annual energy savings**	$500/ project	Per project[9]	$500/ project	$500/ project	$500/ project
5	Air-Source HPWH (<55 gal)	$/unit	N/A	N/A	N/A	N/A	N/A
6	Commercial Air-Source HPWH (>120 gal)	**$/MMBTU of annual energy savings**	N/A	N/A	N/A	N/A	N/A
7	GSHP Desuperheater	**$/unit**	N/A	N/A	N/A	N/A	N/A
8	Ground-Source HPWH	**$/unit**	N/A	N/A	N/A	N/A	N/A
9	Simultaneous Installation of ccASHP & Air-Source HPWH	**Additional bonus per combination installation**	$250/ project	$250/ project	$250/ project	$250/ project	$250/ project

[9] Participating Contractor Reward for custom projects will be determined by Con Edison on a per project basis.

2.2 Modifications to Incentives

The Electric Utilities reserve the right to change the incentive offering (including but not limited to total incentive amount, Participating Contractor Reward, timing, recipient, structure, and cap) at any time. The Electric Utilities reserve the right to further limit the number of incentives per Participating Contractor, site owner, site, or meter.

If changing the incentive structure becomes necessary, the Electric Utilities will give a minimum of 30 days of notice to Participating Contractors via email. Program changes, including changes to this Program Manual, will also be e-mailed to Participating Contractors and posted at http://saveenergyny.ny.gov/nyscleanheat. The incentive amount for any project will be based on the incentive offering and program rules that are in effect at the time the project application is submitted. Participating Contractors are prohibited from cancelling submitted incentive applications and re-applying if the new incentive payment results in a higher amount. The Electric Utilities reserve the right to structure incentive payments differently to accommodate unique situations.

2.3 Green Jobs – Green New York Financing

The Green Jobs - Green New York ("GJGNY") Loan Fund for Residential Financing (the "GJGNY Loan Fund"), which was authorized by Title 9-A of Article 8 of the Public Authorities Law of the State of New York, as amended (known as the Green Jobs-Green New York Act) to finance energy audits and energy efficiency retrofits or improvements, including solar energy and other renewable installations, for the owners of residential 1-4 family buildings ("GJGNY Loan"). This GJGNY Loan Fund administered by NYSERDA.

The ability to provide access to GJGNY loans and other participant financing options ("Program Financing") and incentives through the GJGNY Program is reserved exclusively for Participating Contractors, including the NYS Clean Heat Program Participating Contractors. At no time may a non-participating subcontractor of a Participating Contractor represent itself as having the ability to access GJGNY Program Financing or incentives.

The Participating Contractor shall ensure that the GJGNY Program Financing options and incentives are utilized only for the installation of those eligible measures and accessories identified in the work scope submitted to, and satisfactorily approved by, the GJGNY Program.

If a Participating Contractor wishes to offer financing other than GJGNY financing, they will need to comply with all applicable NYS and federal laws and regulations including NYS Banking Law, if applicable.

The terms and conditions of offering a GJGNY Loan to these customers can be found in the Green Jobs Green New York Loan Fund Residential Financing Manual, located on NYSERDA's GJGNY Homepage.

3. Eligibility and Requirements

Projects and Participating Contractor must meet the requirements in this Program Manual for incentive eligibility.

3.1 Site Eligibility

Eligible sites include new and existing buildings that are installing a heat pump system for space heating, hot water heating, and/or process heating, and are an active electric utility customer. Sites must be occupied year-round (or, in the case of planned installations at new construction sites, site owners must plan to have the site occupied year-round). GSHP systems used for processing heat must operate for more than 1,000 hours per year.

3.2 Eligible Technologies

This section describes the heat pump technologies that are eligible for the NYS Clean Heat Program. Eligible equipment is grouped into three major categories:

(1) Air-Source Heat Pumps ("ASHP") for space conditioning, including mini-split heat pumps ("MSHP");
(2) Ground Source Heat Pumps ("GSHP") for space conditioning; and
(3) Heat Pump Water Heaters ("HPWH") for domestic and service hot water.

Program incentive structures are described in terms of their applicability to various building types, which are:

- Residential (R – one to four units);
- Multifamily (MF – five or more units);
- Small commercial businesses (small commercial); and
- Large commercial and industrial buildings ("C&I").

To be eligible for incentives, heat pump projects must comply with the requirements described in this document. For projects installed at new construction sites, all components installed as part of an approved ASHP, GSHP and HPWH system must be new. For projects installed at existing sites, the heat pumps must be new and any system subcomponent or subassembly that is replaced should be replaced by a new subcomponent or subassembly. The use of used or refurbished equipment is not permitted under the program.

Heat pump projects are eligible for incentives no matter which heating fuel (e.g., fuel oil, natural gas, propane, biomass, or electricity) they are either transitioning from in the case of retrofits or declining to include in the case of new construction. For retrofit applications, the pre-existing heating source must be documented. For new construction, the baseline heating fuel will be determined on a case-by-case basis, based on contemporary construction practice in the area.

3.2.1 Air-Source Heat Pumps (ASHP)

Air-source heat pumps transfer heat between the inside of a building and outside air. A heat pump's refrigeration system consists of a compressor and two coils made of copper tubing (one inside and one outside), which are surrounded by aluminum fins to aid heat transfer. In the heating mode, liquid refrigerant in the outside coils extracts heat from the air and evaporates into a gas. The inside coils release heat from the refrigerant as it condenses back into a liquid. A reversing valve, near the compressor, can change the direction of the refrigerant flow for cooling as well as for defrosting the outside coils in winter.

Under the NYS Clean Heat Program, to be eligible for a program incentive, ASHP systems must either be listed on the Northeast Energy Efficiency Partnership Cold Climate Air Source Heat Pump Specification and Product List ("NEEP Product List") or meet the criteria established in this Program Manual and the NYS Clean Heat Implementation Plan for those commercially available product classes that are not covered by the NEEP Product List. [10]

There are several categories of ASHP eligible for the Statewide Heat Pump Program, including:

(1) Residential and Small Commercial Central ccASHP identified on the NEEP Product List;

(2) Ductless or Partially Ducted Mini-Split Heat Pumps ("MSHP") identified on the NEEP Product List, which include "single-head" (one indoor air handler per outdoor compressor) and "multi-head" or "multi-split" (more than one indoor air handler per outdoor compressor);

(3) Commercial Unitary and Applied (i.e., Large Commercial) ASHP (Split or Single Package);

(4) Variable Refrigerant Flow Heat Pumps ("VRF").

In some instances, the customer may decide to keep their existing heating system in service to provide back-up or emergency heat, or they may decide to remove the existing system altogether. The Electric Utilities acknowledge that the removal of existing systems will be subject to additional requirements and refer Participating Contractor to the applicable jurisdictional programs, codes and requirements (e.g., federal, state, municipal, etc.).

The use of ASHPs in cold climates is growing rapidly, but system sizing and selection practices have not always kept up with the wide range of applications that are now available. System performance, comfort, and energy efficiency can be significantly impacted by poor sizing and system selection. The ASHP and connected ductwork must be properly sized for the application to meet the building heat load requirements, ensure occupant comfort and satisfaction, and optimize system performance and energy savings. The Joint Efficiency Providers therefore require Participating Contractors to review and to use the *NEEP Guide to Sizing and Selecting Air-Source Heat Pumps in Cold Climates* to assist in sizing and selecting ccASHP equipment.

3.2.1.1 Cold Climate Central ASHP (Residential and Small Commercial)

[10] The current specification and listed eligible units are available at https://neep.org/ASHP-Specification.

Residential and Small Commercial ccASHP have capacities less than 65,000 Btuh and are not contained within the same cabinet as a furnace with rated capacity greater than 225,000 Btuh.[11] These are defined as "Residential" units under the ENERGY STAR® Key Product Criteria.[12] These units are typically sized to provide heating and cooling to the whole building through a central network of air ducts. They are a retrofit solution for existing homes and small businesses that are replacing central air conditioners, which were installed in conjunction with a separate heating system (typically a fossil fuel or electric furnace) that shares the same ductwork distribution system.

Eligibility, Sizing and Installation Requirements

Equipment Eligibility: Residential and small commercial central ccASHP are eligible for incentives in this Program under Category 2 "ccASHP – Full Load Heating." To be eligible for an incentive under this Category, ccASHP units must be rated as a residential units under the ENERGY STAR Key Product Criteria and must be listed on the NEEP Product List.

Equipment Sizing: The Participating Contractor shall select equipment and size the ccASHP system to satisfy 90-120% of the building's design heating load using Air Conditioning Contractors of America (ACCA) Manual S based on building design loads calculated in accordance with ACCA Manual J or equivalent code-approved heating and cooling calculation methodologies. [13, 14] The Participating Contractor is required to submit documentation of the load calculations with the application for incentives.

Participating Contractors are also encouraged to use additional design manuals as applicable to the system, including ACCA Manual D: Duct Design[15] ACCA Manual T: Air Distribution[16] and ACCA Manual B: Test, Adjust and Balance[17]

Equipment Installation: Systems 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 (SEQR), 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, or local ordinances or permit requirements.

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[11] Code of Federal Regulations ("CFR") 10 CFR part 430, Subpart A, § 430.2 Definitions: definition of central air conditioner or central air conditioning heat pump: https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=29d99fa0a367f0166b9cc8528ad29023&mc=true&n=pt10.3.430&r=PART&ty=HTML#se10.3.430_12.

[12] ENERGY STAR "Air-Source Heat Pumps and Central Air Conditioners Key Product Criteria." Current link: https://www.energystar.gov/products/heating_cooling/heat_pumps_air_source/key_product_criteria.

[13] ACCA Manual S: Residential Equipment Selection: the ANSI-recognized, national standard for interpreting and applying manufacturers' expanded performance data in order to select equipment which meet a building's heating, sensible cooling and latent cooling loads.

[14] ACCA Manual J: ANSI-recognized, national standard for calculating a building's design heating and cooling loads.

[15] ACCA Manual D: Duct Design: Method used to determine the overall duct lay-out including the individual duct sizes.

[16] ACCA Manual T: Air Distribution: Method used to determine how to distribute airflow.

[17] ACCA Manual B: Test, Adjust and Balance: Method designed to test and balance HVAC equipment in an order that speeds up and improves the balancing process.

The Participating Contractor shall verify and document the system's operation with the equipment manufacturer's specifications via one or both of the following methods:

1. direct measurement of the system airflow across a dry indoor heat exchanger coil in CFM/ton; OR
2. measurement of the total external static pressure drop (air handler unit entering pressure minus the air handler unit exiting pressure) in Pascals or inches of water column.

Based upon best practices and manufacturers installation manuals, outdoor units should be installed above the local snow line. A map of the New York State average snow depth can be found here.

3.2.1.2 Cold Climate Mini-Split Heat Pumps (Residential and Small Commercial)

Cold climate mini-split heat pumps ("MSHP") are ccASHP that can circulate refrigerant between an outdoor unit containing a variable capacity compressor and one or more indoor air handlers ("indoor units"). Cold climate MSHP are often referred to as "ductless mini-splits" because they are typically ductless. These units can also be installed with short duct runs that enable single air handlers to serve more than one room at a time. For existing homes and businesses that have no central ductwork, cold climate MSHP are a viable and energy efficient solution. Under the NYS Clean Heat Program, eligible cold climate MSHP installations fall into the following two categories:

- Partial load heating: Cold climate MSHP installed in addition to existing heating systems to provide both efficient cooling and < 90% of heating load. In this application, an existing heating system is kept in operation to provide supplemental heating and/or to provide heating to zones in which the cold climate MSHP are not installed.
- Full load heating: Cold climate MSHP systems with multiple indoor units to provide 90-120% heat load.

Eligibility, Sizing and Installation Requirements

Equipment Eligibility: Cold climate MSHP are eligible for incentives in this Program under Category 1 "ccASHP – Partial Load Heating" and Category 2 "ccASHP – Full Load Heating." In order to be eligible for an incentive in these Categories, cold climate MSHP units must be rated as residential units under the ENERGY STAR Key Product Criteria and must be listed on the NEEP ccASHP Product List.

Equipment Sizing: The Participating Contractor shall size and select equipment for the cold climate MSHP system using Air Conditioning Contractors of America (ACCA) Manual S based on building design loads calculated in accordance with ACCA Manual J or equivalent code-approved heating and cooling calculation methodologies.[18, 19] The Participating Contractor is required to submit documentation of the load calculations with the application for incentives. In order to be eligible for the whole-load heating incentive, the system must be documented to satisfy 90-120% of the design building heating load, per

[18] ACCA Manual S: Residential Equipment Selection: the ANSI-recognized, national standard for interpreting and applying manufacturers' expanded performance data in order to select equipment which meet a building's heating, sensible cooling and latent cooling loads.
[19] ACCA Manual J: ANSI-recognized, national standard for calculating a building's design heating and cooling loads.

code-approved sizing methodology.[20] If the system satisfies < 90% of design heating load, it will be eligible for the partial displacement incentive.

Equipment Installation: Systems 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 (SEQR), 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, or local ordinances or permit requirements.

Based upon best practices and manufacturers installation manuals, outdoor units should be installed above the local snow line. A map of the New York State average snow depth can be found here.

3.3.1.3 Commercial Unitary and Applied (Large Commercial)

Large commercial ASHP have capacities of at least 65,000 Btuh. Large commercial ASHP are a retrofit solution for businesses and MF buildings that currently have rooftop or central air conditioners, which were often installed in conjunction with a separate heating system.

Eligibility, Sizing and Installation Requirements

Equipment Eligibility: The eligibility criteria for commercial ASHP is equivalent to the ENERGY STAR specification for Light Commercial HVAC, which covers heat pumps ranging from 65,000 Btuh up to 240,000 Btuh.[21] For sizes of 240,000 Btuh and above, eligibility will be determined through custom project analysis developed by each Electric Utility for their service territory.

Equipment Sizing: The Participating Contractor applying for incentives shall document that non-residential systems are sized according to the following requirements:

- Heating and cooling load calculations must be performed in accordance with the procedures described in ASHRAE/ACCA Standard 183-2007.
- Calculation of the building's design heating load should be at the 99% dry bulb heating design temperature for the most relevant ACCA location. Heating set point may be between 68° F and 72° F.

[20] In general, heat pumps installed in residences are required to be sized per ACCA Manual S. The intent is to match the equipment capacity closely to the load calculations of ACCA Manual J. Manual S requires that the maximum heat pump cooling capacity be 115% of the total Manual J cooling load for single-speed heat pumps, or that the lowest-speed cooling capacity be no more than 115% of the total Manual J cooling load for multi-speed or variable-speed heat pumps. For open loop GSHP systems, the maximum size is 125% of total cooling load for single-speed heat pumps; the same 115% applies to the lowest-speed cooling capacity for multi- or variable-speed heat pumps. The minimum size of the heat pump at design conditions is 90% of the total cooling load and 90% of the Manual J heating load (excluding supplemental electric resistance heat coil if present). Where Manual J calculations clearly demonstrate latent loads less than 5% of total cooling load, the maximum sizing permitted is Manual J total cooling load plus 15,000 Btuh. For multi- or variable-speed heat pumps the lowest speed cooling capacity applies. Participating Contractors must highlight latent loads if less than 5% in the Manual J Calculations

[21] ENERGY STAR Light Commercial HVAC, specification: https://www.energystar.gov/products/heating_cooling/light_commercial_heating_cooling/light_commercial_hvac_key_product_criteria.

Equipment Installation: Systems 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 (SEQR), 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, or local ordinances or permit requirements.

Based upon best practices and manufacturers installation manuals, outdoor units should be installed above the local snow line. A map of the New York State average snow depth can be found here.

3.2.1.4 Variable Refrigerant Flow (VRF) Heat Pump Systems

Variable Refrigerant Flow ("VRF") systems are an engineered direct exchange (DX) multi-split system that circulate refrigerant between a variable capacity compressor and multiple indoor air handlers, each capable of individual zone temperature control. They provide some major advantages, including the ability for heat recovery that allows them to heat and cool different zones simultaneously; optimized performance across a range of zonal comfort levels and part load conditions; and the avoidance of ductwork or the need for secondary circulation fluids such as chilled or heated water. Because they circulate refrigerant and allow for a separate outside air ventilation system, they require less ceiling space than conventional systems.

Eligibility, Sizing and Installation Requirements

Equipment Eligibility: For systems up to 240,000 Btuh capacity (20 tons), the current ENERGY STAR specification for VRF systems is the standard for determining eligibility for incentives offered under this Plan. For sizes > 240,000 Btuh, eligibility will be determined through a custom project analysis developed by each Electric Utility for their service territory.

Equipment Sizing: The Participating Contractor applying for incentives shall document that non-residential systems are sized according to the following requirements:

- Heating and cooling load calculations must be performed in accordance with the procedures described in ASHRAE/ACCA Standard 183 - 2007.
- Calculation of the building's design heating load should be at the 99% dry bulb heating design temperature for the most relevant ACCA location. Heating set point may be between 68° F and 72° F.

Equipment Installation: Systems 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 (SEQR), 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, or local ordinances or permit requirements.

In addition, the VRF systems must be in compliance with ASHRAE Standard 15 (packaged with Standard 34): Safety Standard for Refrigeration Systems and Designation and Classification of Refrigerants, which addresses refrigerant capacities and possible leakage, especially if the system serves small rooms, which could cause oxygen depletion. ASHRAE Standard 34-2013 Addendum L establishes the maximum refrigerant concentration limit ("RCL") of 26 lbs./1,000 ft3 of room volume for occupied spaces.

3.2.2 Ground Source Heat Pumps (GSHP)

GSHP, also known as geothermal heat pumps, achieve high efficiency by exchanging heat with the ground or with groundwater instead of outside air. GSHP systems work in cold climates because of their ability to maintain capacity at low ambient air temperature. GSHP are used in all building sectors and are expected to provide heat to the whole home or/whole building.

GSHP units also take advantage of the heat generated by the indoor compressor, particularly in cooling mode, by providing a desuperheater loop that pre-heats domestic hot water and/or a swimming pool. GSHP distribute heating and cooling in the building through a ducted air system or a water loop. System performance depends on an effective ground heat exchanger design and proper installation. The ground heat exchanger design can be highly site-specific, given the variability of site conditions that affect ground conductivity or loop designs.

Eligibility, Sizing and Installation Requirements

Equipment Eligibility: To be eligible for the program, a GSHP must meet current ENERGY STAR specification criteria,[22] either by being listed on the ENERGY STAR qualifying product list or by meeting or exceeding the minimum Energy Star Tier 1 specifications for Energy Efficiency Ratio ("EER") and Coefficient of Performance ("COP") based on standard test procedures:

- Closed and Open Loop Systems:
    - ISO 13256-1-1998 "Water-source heat pumps – Testing and rating for performance – Part 1: Water-to-air and brine-to-air heat pumps" for water to air models; OR
    - ISO 13256-2-1998 "Water-source heat pumps – Testing and rating for performance – Part 2: Water-to-water and brine-to-water heat pumps" for water-to-water models.
- Direct Exchange Systems: ANSI/AHRI 870/871 "Performance Rating of Direct GeoExchange Heat Pumps."

Eligibility for any GSHP less than 10 tons of cooling capacity may be obtained from an AHRI rating certificate. For units larger than 10 tons of cooling capacity, which are not rated by AHRI, manufacturer specification sheets may be used instead, provided the units have been tested in accordance with the applicable test procedure.

For systems for which AHRI certificates are not available, the EER and COP must be calculated using the following equations:

- EER = (full load EER + part load EER)/2

[22] ENERGY STAR Program Requirements for Geothermal Heat Pumps, Rev. March 2012. GSHP intended for commercial use (i.e., three-phase) are not eligible for ENERGY STAR, per section 2B of the Requirements document. Available at https://www.energystar.gov/sites/default/files/specs//private/Geothermal_Heat_Pumps_Program_Requirements%20v3.1.pdf.

- COP = (full load COP + part load COP)/2

Systems that are sized for full load heating capacities of <135,000 Btuh are eligible for prescriptive full load incentives. Those that have heating capacities ≥135,000 Btuh will be eligible for custom incentives, if they receive a favorable custom project analysis developed and performed by each Electric Utility for their service territory.

Equipment Sizing: For GSHP equipment installed at residential sites in buildings that shall comply with the residential requirements of the NYS or NYC Energy Conservation Construction Code (ECCC), such systems must be sized and selected using Air Conditioning Contractors of America (ACCA) Manual S based on building design loads calculated in accordance with ACCA Manual J or equivalent code-approved heating and cooling calculation methodologies. The Participating Contractor is required to submit documentation of the load calculations with the application for incentives.

For non-residential systems, the Participating Contractor applying for incentives shall document that the system is sized according to the following requirements:

- Heating and cooling load calculations must be performed in accordance with the procedures described in ASHRAE/ACCA Standard 183 - 2007.
- Calculation of the building's design heating load should be at the 99% dry bulb heating design temperature for the most relevant ACCA location. Heating set point may be between 68° F and 72° F.
- In accordance with the applicable Energy Conservation Construction Code or approved computational method, systems generally shall be sized such that the smallest available equipment required to meet such calculated loads is selected.

Equipment Installation: Systems 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 (SEQR), 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, or local ordinances or permit requirements.

However, GSHP have additional requirements because of their heat exchange with the ground or with groundwater. These vary by type of ground heat exchanger.

General Well/Borehole/Loop Field Requirements

- All projects must comply with New York State Department of Environmental Conservation; DEC regulations for geothermal well drilling, which can be found at www.dec.ny.gov/energy/43303.html.
- Projects in New York City must comply withNYC Department of Environmental Project ("DEP") rules concerning drilling and excavation, including insurance requirements.
- For non-DX systems, only polyethylene piping is appropriate for underground loop field piping.
- For large scale systems, Participating Contractors must show rated walls and ceilings and specify firestopping of pipe penetrations.
- Any vertically bored, closed-loop GSHP system must have a borehole depth that is sufficient to

provide a minimum entering water temperature to the heat pump of 30°F in heating mode and a maximum entering water temperature to the heat pump of 90°F in cooling mode.

- All well/bore fields must provide adequate well/bore spacing and thermal dispersion to accommodate the thermal load and thermal balance.
- For large GSHP systems, provide emergency eye washes on site as required by OSHA.
- Piping must be stored on site in a manner that prevents damage and the introduction of foreign matter. Piping shall be kept free from damage, debris, and foreign matter during installation.
- Grout and admixtures must be received and stored in a way that protects them from moisture and contamination.
- Manifolds installed underground or in a buried enclosure must have proper valves, pressure, and temperature ports.
- All equipment and system parts should be labeled per IGSHPA and ASHRAE guidelines.
- Performance tests must be verifiable. Temperatures, pressures, flow rates, control valve operation, controls, balancing reports, sequence or operations, power measurements, software, start-up and commissioning efforts and reports are all subject to review and observation.
- Projects must meet all setback requirements by the local jurisdiction having authority or those requirements specified in the ANSI/CSA/IGSHPA C448 Series-16 Standard—whichever is stricter—and can be found at http://saveenergyny.ny.gov/nyscleanheat.
- It is also recommended that GSHP systems meet the ANSI/CSA C448 Series-16 standard.

Closed-Loop Systems: Unless specifically superseded by the requirements detailed in this manual, the design and installation of closed loop GSHP systems (including ground-loop and interior systems) must comply with the standards and practices outlined in the most recent edition of the Closed-Loop/Geothermal Heat Pump Systems: Design and Installation Standards edited by the IGSHPA Standards Committee and published by the International Ground Source Heat Pump Association. These standards are available online at https://igshpa.org/manuals on the IGSHPA website.

Pumping power at design conditions—rated power (based on duty point):

- Small-scale systems: 90 watts per AHRI rated cooling ton; and
- Large-scale systems: 85 watts per AHRI rated cooling ton.

Closed Loop Antifreeze Protection Requirements: Propylene glycol (CAS No. 57-55-6), methanol (CAS No. 67-56-1) and ethanol (CAS No. 64-17-5) are the three presumptively acceptable antifreeze additives for use in the loop field. Use of any other antifreezes requires prior approval from the Joint Efficiency Providers. The acceptable denaturants for ethanol additives are denatonium benzoate (CAS No. 3734-33-6), ethyl acetate (CAS No. 141-78-6), isopropanol (CAS No. 67- 63-0), pine oil (CAS No. 8002-09-3), and tertiary butyl alcohol (CAS No. 75-65-0).

Large systems with ethanol and methanol must comply with Section 1207 of the 2015 Mechanical Code of New York State and, therefore, “the flash point of transfer fluid in a hydronic piping system shall be not less than 50°F above the maximum system operating temperature.”

The maximum allowable concentration of methanol is 12.5% by weight. The maximum allowable loop

field temperature in small systems using methanol as an antifreeze is 75°F. In addition, the designer and installer should ensure the loop field operating temperature is at least 50°F lower than the flash point of methanol at all times.

The maximum allowable concentration of ethanol is 10% by weight. The maximum allowable loop field temperature in a small system using ethanol as an antifreeze is 70°F. In addition, the designer and installer should ensure that the loop field operating temperature is at least 50°F lower than the flash point of ethanol at all times.

For loop fields with glycol or organic antifreeze, the Participating Contractor must sterilize with a chlorine shocking protocol that is similar to what is required in potable water plumbing systems. If the manufacturer recommends specific disinfection, the Participating Contractor should follow the manufacturer's protocols.

Horizontal-Loop Systems: Horizontal loops must be installed below the frost line and have a surface area that is sufficient to provide a minimum entering water temperature of 30°F to the heat pump in heating mode and a maximum entering water temperature of 90°F to the heat pump in cooling mode. Incentive applications must include the file from the horizontal-loop design software showing inputs and system design specifications.

Open-Loop Systems: A standing column well must include a bleed circuit, drywell, or locally approved receptor to maximize thermal efficiency based on available water production.

Incentive applications must quantitatively explain the method for determining pressure and flow rate. All projects must comply with DEC regulations for geothermal well drilling, which can be found at www.dec.ny.gov/energy/43303.html on the DEC website.

All projects must comply with ANSI/CSA/IGSHPA C448.6, *Installation of open-loop systems ground water heat pump systems.* All standing column well projects must comply with ANSI/CSA/IGSHPA C448.7, *Installation of standing column well heat pump system.*

DX System: Direct exchange heat pumps, which circulate a refrigerant typically through a closed-loop copper pipe system (whereas most systems utilize plastic pipes that circulate water or a water-antifreeze mixture), must meet the following additional conditions:

- DX systems must have a minimum loop field length of 100 feet per 12,000 Btuh of heating capacity.
- DX wells require cathodic protection ensuring a minimum expected well life of 25 years.
- DX system owners must certify that they will undergo an end-of-life decommissioning that includes full-refrigerant recovery.
- The refrigerant must be R-410A unless otherwise approved by the Joint Efficiency Providers.
- The entire well depth interval for DX wells is grouted with thermally enhanced grout with hydraulic conductivity below 1 x 10-7 centimeters/second.
- A permanent placard must be attached to the heat pump unit, detailing the following:
    - loop field refrigerant content, type, and volume
    - loop location description
    - loop piping material
    - required maintenance schedule on loop field, refrigerant, and heat pump

    - planned decommissioning date and process, consistent with loop field useful life.
- DX systems must also comply with ANSI/CSA/IGSHPA C448.8, “Installation of direct expansion heat pump systems.”
- DX GSHP systems must use only ACR B280 Copper Piping for Underground Loop Field.
- DX GSHP systems must conform to requirements and standards of ASHRAE 15.

Large GSHP System-Specific Requirements

- For large systems, a loop field design includes:
    - Loop/site plan
    - Loop sizing report (flexible)
    - Loop field pressure drop calculations
    - Antifreeze type and concentration
    - System documentation must include a piping schematic accurately representing below grade and above grade piping strategy
- Large systems with ethanol and methanol must comply with Section 1207 of the 2015 Mechanical Code of New York State and, therefore, “the flash point of transfer fluid in a hydronic piping system shall be not less than 50^{o}F above the maximum system operating temperature.”
- Large systems must implement the following:
    - Show rated walls and ceilings and specify firestopping of pipe penetrations
    - Detail cross connection control devices in the design
    - Conform to the requirements and standards of ASHRAE 15

Thermal Conductivity Tests: For any new construction or retrofit for which a new vertically bored, closed-loop ground loop greater than 360,000 Btuh (30 tons) cooling capacity is being installed, a test borehole must be drilled prior to system design to more accurately determine the soil’s thermal conductivity and enable accurate system modeling and design optimization. Testing should conform to the requirements detailed in the latest edition of the ASHRAE Applications Handbook and must report undisturbed ground temperature.

Test boreholes are recommended, but not required, for projects with capacities between 10 and 30 cooling tons.

3.2.3 Air Source and Ground Source Heat Pump Water Heaters (HPWH)

In addition to space heating, the NYS Clean Heat Program also promotes the use of heat pump technology for heating domestic hot water (DHW), as a replacement or in new construction in lieu of common electric resistance or fossil fuel water heaters. As with HVAC heat pump technologies, for retrofits, the program will require that applicants report the existing water heating fuel that is being replaced; for new construction, the replaced unit will be determined on a case-by-case basis, based on contemporary construction practice in the area.

As with HVAC equipment, heat pump water heaters can be air source or ground source technology.

3.3.3.1 Air Source Heat Pump Water Heater (HPWH)

Air Source HPWH are water heater tanks that heat domestic hot water through the use of an onboard air source heat pump that extracts heat from the air in the building surrounding the unit. They use a secondary electric resistance as a back-up to ensure that the water temperature meets the desired setpoint during times of high demand. Air source HPWH models come in two versions (integrated and split-system HPWH) and both versions are eligible for incentive under the program.

System eligibility: To be eligible for a program incentive, Air Source HPWH must be an ENERGY STAR Certified Product.

Residential Air Source HPWH (defined as a tank ≤120 gallons, 24 amps and 250 volts) shall receive incentives based on $/unit.[23]

Commercial Air Source HPWH (>120 gallons) shall receive incentives based on $/MMBTU of energy savings.[24]

Equipment Sizing: Systems shall be sized according equipment manufacturer recommendations.

Equipment Installation: Systems 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 (SEQR), 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, or local ordinances or permit requirements. They shall be installed in spaces that provide sufficient make up air to support efficient heat pump operation, per manufacturer specifications.

3.2.3.2 Ground Source Heat Pump Water Heater (HPWH)

Ground Source HPWH are water heater tanks that heat domestic hot water through the use of a ground heat exchanger and an onboard water source heat pump. They come in two versions, desuperheaters and full-demand water heaters.

Desuperheaters are a relatively simple add-on available on most GSHP models. A desuperheater recovers heat from the GSHP's compressor during cooling and part-load heating mode and transfer it to the DHW tank. Thus, they provide a portion of the building's DHW – they require some form of complimentary water heating.

Full-demand Ground Source HPWH can either be installed as a priority zone on a GSHP HVAC system, or as a stand-alone system. They are designed to provide all of the building's DHW needs.

[23] https://www.energystar.gov/products/water_heaters/residential_water_heaters_key_product_criteria
[24] https://www.energystar.gov/products/water_heaters/commercial_water_heaters/key_product_criteria

System eligibility: Any desuperheater that is installed on a GSHP system shall be eligible for a desuperheater incentive.

Full-demand Ground Source HPWH must be an ENERGY STAR Certified Product. Ground Source HPWH are covered in the ENERGY STAR specification for Geothermal Heat Pumps.[25] For residential Ground Source HPWH (up to 120 gallons), there are two tiers of incentives, one for tanks ≤55 gallons, and one for tanks >55 gallons and ≤120 gallons. These will receive $/unit incentives.

Commercial Ground Source HPWH (>120 gallons) shall receive incentives based on $/MMBTU of energy savings.

Equipment Sizing: Systems shall be sized according equipment manufacturer recommendations.

Equipment Installation: Systems 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 (SEQR), 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, or local ordinances or permit requirements.

Ground Source HPWH loop requirements shall be the same as those for GSHP, as described above in Section 3.2.2.

3.3 Warranty Requirements

Small ASHP & GSHP Systems, HPWH Systems

For small ASHP & GSHP systems (including all systems installed at single-family residential sites), HPWH systems, Participating Contractors must transfer to the system owner the manufacturer's and/or distributor's/dealer's warranty. At a minimum, such warranty must cover all parts and equipment against breakdown or malfunction and the warranty period must be no less than five years. In addition, the warranty will cover the full costs, including labor and repair or replacement of components or systems.

The Participating Contractor must also provide additional warranty coverage that fully covers the labor and design services provided by the Participating Contractor (and any of its subcontractors). The warranty period must be no less than three years. Participating Contractors must present to the site owner any optional extended warranty up to the maximum supported by the manufacturer.

Large ASHP and GSHP Systems

[25] ENERGY STAR Program Requirements for Geothermal Heat Pumps, available at https://www.energystar.gov/sites/default/files/specs//private/Geothermal_Heat_Pumps_Program_Requirements%20v3.1.pdf

For large systems, the minimum manufacturer's warranty must be at least one-year parts and labor, as required by law. Participating Contractors must present to the customer any optional extended warranty up to the maximum supported by the manufacturer.

3.4 Operation and Maintenance Requirements

Electrified heating systems are often a new type of appliance for the site owner and can be complicated, so it is important that owners understand how to effectively operate and maintain their new systems. Participating Contractors must inform site owners on system operation and maintenance, including on the use of these systems in both heating and cooling modes. A detailed manufacturer operation handbook as well as a maintenance manual containing information on the major components and a schedule of required system maintenance must be provided by the Participating Contractor. Based upon best practices and manufacturers installation manuals, outdoor units should be installed above the local snow line. A map of the New York State average snow depth can be found here.

The manual includes maintenance and testing requirements of antifreeze solutions used on the project. It includes any start-up/commissioning documentation for the system(s). For large systems, the O&M manual must include as-built drawings.

For ccASHP and cold climate MSHP installations under incentive Categories 1 and 2, the Joint Efficiency Providers require that Participating Contractors provide site owners with the "Get the Most Out of Your Air Source Heat Pump" tip sheet which can be found at http://saveenergyny.ny.gov/nyscleanheat.

The Joint Efficiency Providers strongly recommend that GSHP systems include a performance monitoring system. Recommended best practices for performance monitoring of GSHP systems can be found at http://saveenergyny.ny.gov/nyscleanheat.

Participating Contractors should strongly encourage system owners to purchase a maintenance agreement.

4. Participating in the Program

To apply for incentives under this Program, ASHP Installers, ASHP designers, GSHP installers, GSHP designers, and GSHP drillers must first become Participating Contractors.

Contractors installing only HPWH do not have to be a Participating Contractor to submit an Incentive Application on behalf of a customer.

Each GSHPH loop field installation must be completed by a participating driller, but drillers are not eligible to apply for or receive incentives under this Program.

Step 1. Become a Participating Contractor

To apply for incentives under this program, ASHP installers, ASHP designers, GSHP installers, GSHP designer and GSHP drillers must first apply to become a Participating Contractor. If you, as a customer, would like to install an ASHP or GSHP system in your home or property, the Joint Efficiency Providers encourage you to learn more about the different technologies and look for an approved Participating Contractor. You can also encourage potential contractors to apply to become approved Participating Contractors in the program.

Visit the NYS Clean Heat landing page at http://saveenergyny.ny.gov/nyscleanheat for a list of approved Participating Contractors.

Please note that Participating Contractors receiving the Total Incentive amount for a project may retain up to the Participating Contractor Reward amount. The balance of the Total Incentive must be passed on or otherwise credited to the customer in its entirety.

The process by which installers, designers, and drillers are approved by the Electric Utilities as "Participating Contractors" is through the submission of the Participating Contractor Application, a Contractor Participation Agreement for each electric utility territory in which they plan to perform work, and all required supporting documentation (including a W-9). These can be accessed at http://saveenergyny.ny.gov/nyscleanheat.

On the Participating Contractor Application, contractors must indicate which utility service territories in which they plan to perform work. They must also indicate the type/s of contractor for which they intend to qualify. Contractors must be separately approved by the Electric Utilities for each specific contractor type and are listed separately on NYS Clean Heat landing page by type if approved.

Upon acceptance into the program, the Participating Contractor will receive an approval notification email that contains the incentive application from the respective Electric Utility with which they apply and become eligible to apply for incentives in the program.

New Participating Contractors (except participating drillers) are initially granted provisional status until the successful completion of three projects. New participating drillers approved by the Electric Utilities are immediately granted full status. If the contractor is not approved by Electric Utilities, the opportunity to re- apply is an option. More information on this process can be found

in Section 6.

Information on the requirements and qualifications for the application—to become a Participating Contractor (installer, designer, or driller)—can be found in the following section of this Program Manual.

Transition

Contractors who have been eligible to participate in NYSERDA's ASHP and GSHP Incentive Programs will be eligible to participate in the NYS Clean Heat Statewide Heat Pump Program beginning on April 1, 2020 and must submit a signed Contractor Participation Agreement to each electric utility in which they plan to submit Incentive Applications by May 15, 2020.

Contractors installing residential ASHP equipment who have participated in a NYS Electric Utility heat pump program prior to April 1, 2020 will remain eligible to apply for incentives for ASHP installation under Category 1 (ccASHP: Partial Load Heating) and Category 2 (ccASHP: Full Load Heating) under NYS Clean Heat Program through June 15, 2020. They will be required to submit their credentials and documentation as detailed in the Participating Contractor Requirements section and a signed Contractor Participation Agreement no later than May 15, 2020 to continue to be eligible to participate in the program.

GSHP installers, designers and drillers installing residential or commercial GSHP equipment who have not been eligible to participate in NYSERDA's GSHP Incentive Program must submit their Participating Contractor Application, credentials and documentation, and Contractor Participation Agreement for each electric utility territory in which they plan to perform work to be eligible to participate in the NYS Clean Heat Pump Program beginning April 1, 2020.

Contractors installing commercial ASHP equipment must submit their Participating Contractor Application credentials and documentation and Contractor Participation Agreement for each electric utility territory in which they plan to perform work to be eligible to participate in the NYS Clean Heat Program beginning April 1, 2020.

Participating Contractor Requirements

Air Source Heat Pump Contractors

ASHP installation contractors seeking to become Participating Contractors must complete and submit a NYS Clean Heat Program Participating Contractor Application to one of the Electric Utilities. They must also submit a signed Contractor Participation Agreement for each of the electric utilities in whose territory they indicate they plan to work. The documents are available on the NYS Clean Heat landing page.

The application must include the following documents:

- A copy of the U.S. Environmental Protection Agency Section 608 Technician Certification that is appropriate for the size of the system being installed.
- A signed copy of the NYS Clean Heat Statewide Heat Pump Program Contractor Participation Agreement.
- ASHP Manufacturer-sponsored Installation Training Certificate or comparable proof of training

completion documentation covering the following areas:

- Condensate Management;
- Controls;
- Electrical Wiring;
- Evacuation and Charging;
- Field Settings;
- Piping and Charging;
- Product Introduction;
- R-410A and PVE Oil;
- System Start-Up;
- Tools;
- Troubleshooting; and
- Unit Location Considerations.

- A certificate of insurance satisfying the requirements outlined under Article 4 of the NYS Clean Heat Statewide Heat Pump Program Contractor Participation Agreement is also required.
- Participating Contractors are required to review and use the *NEEP Guide to Sizing and Selecting Air-Source Heat Pumps in Cold Climates.*

Ground Source Heat Pump Contractors

Installer Credentials: A GSHP installer seeking to become a Participating Contractor must complete and submit one Participating Contractor Application and a Contractor Participation Agreement for each electric utility in whose territory they plan to perform work, with a copy of a current (and in good standing) International Ground-Source Heat Pump Association ("IGSHPA") accredited installer certificate. The above-mentioned documents can be found at on the NYS Clean Heat landing page.

Designer Credentials

Small GSHP Systems: A designer seeking to become a Participating Contractor for small GSHP systems must complete and submit one Participating Contractor Application and Contractor Participation Agreement, for each electric utility in whose territory they plan to perform work, with a copy of a current (and in good standing) IGSHPA accredited installer certificate. The above-mentioned documents can be found on the NYS Clean Heat landing page.

Large GSHP Systems: A designer seeking to become a Participating Contractor for large GSHP systems must complete and submit one Participating Contractor Application and a Contractor Participation Agreement for each electric utility in whose territory they plan to perform work, including a copy of one of the below. The above-mentioned documents can be found at on the NYS Clean Heat landing page.

- An active Certified GeoExchange Designer ("CGD") certificate from the Association of

Energy Engineers (AEE)/IGSHPA

- An active NYS Professional Engineering license and references for at least three GSHP projects designed, each more than 10 tons
- An active NYS Registered Architect license and references for at least three projects designed, each more than 10 tons

Designers must have an active CGD certificate from the Association of Energy Engineers (AEE)/IGSHPA to be promoted to full status.

Driller Credentials

Vertical Loop Field Drillers: Drillers seeking to become Participating Contractors (not eligible to receive incentives) must complete and submit one Participating Contractor Application and a Contractor Participation Agreement for each electric utility in whose territory they wish to perform work, including a copy of one of the below. The above-mentioned documents can be found on the NYS Clean Heat landing page.

- Active registration (in good standing) and certification for open-loop geothermal well drilling by the NYS Department of Environmental Conservation
- National Ground Water Association Certified Vertical Closed-Loop Driller (CVCLD) certificate
- IGSHPA accredited vertical loop installer certificate

Direct Exchange (DX) Requirements: Since there are currently no available industry trainings or certifications, designers, installers and drillers seeking to become Participating Contractors must submit a training certificate from a DX Ground Source Heat Pump manufacturer. The NY Electric Utilities reserve the right to review the training curriculum provided.

It is optional, but strongly encouraged that applicants also submit additional documentation verifying completion of training programs, including the following:

- Ground-loop designer
  - CGD
  - Geology or engineering degree (BS or higher)
  - Heat pump manufacturer/distributor training
- HVAC system designer
  - HVAC excellence residential heat load analyst
  - NYS licensed PE with a focus in mechanical engineering
  - Heat pump manufacturer/distributor training
- Heat pump/mechanical installer
  - North American Technician Excellence (“NATE”) ground source heat pump loop installer
  - NYS licensed PE with a focus in mechanical engineering
  - Heat pump manufacturer/distributor training

    - EPA 608 Certification
- Distributions system installer
    - HVAC excellence duct and envelope testing
    - Plumbing license (hot water pipes)

Heat Pump Water Heater Contractors

Contractors installing air source HPWHs are not required to submit a Participating Contractor Application or a Contractor Participation Agreement to be eligible to receive incentives under this program.

Contractors installing an air source HPWH are required to be a NYS Licensed Contractor.

Site owners may install their own air source HPWH and apply for an incentive.

Step 2. Confirm Project Eligibility and Submit Project Applications

To apply for an incentive, the Participating Contractor must submit the incentive application and associated documents to the respective electric utility based on directions on the application. Detailed instructions for completing and submitting incentive applications can be accessed through the NYS Clean Heat landing page or following utility websites:

- Central Hudson
- ConEdison
- National Grid
- Orange and Rockland
- NYSEG and RG&E

Incentive applications are accepted for eligible projects that meet the requirements set forth in Section 3 of this Program Manual. Incentive applications must include the following:

- **NYS Clean Heat Incentive Application:** To be completed and signed by the Participating Contractor, site owner and the system owner (as applicable)—and includes contact information for key project staff, site information, and data on the proposed system.
- **Documentation:**
    - ASHP applications – Each ASHP application must include a completed ACCA Manual J indicating systems percentage of heat load covered. Full load applications must be between 90% and 120% of peak heating load.
    - Single-family residential GSHP applications – Each single-family residential GSHP application must include the ACCA Manual J calculation of heating, cooling, dehumidification, and domestic hot water load, as described in Section 3. If a project is selected for a design review, design documents will be requested. Documents should be submitted in PDF format, unless otherwise requested.
    - Large-scale or non-residential GSHP applications – Each large-scale or non-residential GSHP application must include a preliminary assessment of technical

viability conforming to Section 3 of this Program Manual. Additionally, each application must include designs for the GSHP system, including, at minimum, the following:

- Heating and cooling load calculations performed utilizing methodologies in compliance with ASHRAE/ACCA Standard 183
- Loop field sizing report
- Equipment schedule
- Schematic of location of boreholes
- Piping schematic for piping in loop field
- Preliminary above-grade mechanical plans

Note: Incentive applications for large GSHP systems will not be accepted if construction of the loop field for such project has begun before the Electric Utilities send the Participating Contractor an approval notice.

- **Invoice:** The invoice or contract with the Site Owner[26] must be submitted with each Incentive Application and demonstrate that at least the Total Incentive less the Participating Contractor Reward was passed on or credited in its entirety.
- **Commissioning Checklist (ASHP only):** To be completed and signed by the Participating Contractor and Site Owner.

Step 3. Project Applications Reviewed / Receive Pre-Project Approval

Residential ASHP, HPWH: This step is not applicable for residential and small commercial ASHP and HPWH. Incentive applications for these systems should be submitted after completion of the project. Residential GSHP incentive applications can be submitted before project start or after project completion.

Commercial ASHP and all GSHP Systems: The Electric Utilities will notify Participating Contractors of the status of each incentive application within 30 business days of receipt. If the incentive application meets all program requirements and funding remains available, the Electric Utilities issue an approval notification (for small GSHP systems and commercial ASHP) or an award letter (for large GSHP systems) to the Participating Contractor via email that provides incentive details, including the incentive amount.

The Electric Utilities will not approve incentive applications with missing or inaccurate information. The Electric Utilities will contact the Participating Contractor and request the missing and/or correct information. The incentive application will be rejected if the information is not provided or corrected within 15 business days after the request or after three requests by the Electric Utilities. A rejected incentive application can be resubmitted.

If the incentive application is for a small GSHP or commercial ASHP project, the Electric Utilities strongly recommends that the Participating Contractor wait to start installation until after the electric utility has reviewed the application and notified the Participating Contractor of the approval or rejection. If the incentive application is for a large GSHP system, it will not be accepted if construction of the loop field for the project has begun before the electric utility sends the Participating Contractor an approval notice. Projects that do not meet the requirements in this Program Manual are not eligible to receive

[26] The Site Owner must have title to the site at which the ASHP or GSHP is installed.

incentives.

Step 4. Complete Project/ Submit Post-Project Application

Commercial ASHP and all GSHP Systems: Commercial ASHP and small GSHP projects must be completed within 12 months of the date of the approval email for projects at existing buildings and within 24 months for projects at to-be-constructed buildings. In the event of unusual delays, the Participating Contractor may request an extension of time to complete the project by submitting an email to their respective electric utility listed in Section 9 explaining the reason for the delay. Extensions may be granted or denied at the Electric Utilities' discretion.

Upon project completion, the Participating Contractor in cooperation with the system owner and/or site owner completes and submits (1) the project completion form; and (2) a completed GSHP manufacturer or distributor start-up sheet signed by the technician performing the start-up tests.

Large GSHP Projects must be completed within 24 months of the award date on the award letter for projects to be installed at existing buildings and 36 months for projects to be installed at to-be-constructed buildings. In the event of unusual delays, the Participating Contractor may request an extension of time to complete the project by submitting an email to their respective electric utility listed in Section 9 explaining the reason for the delay. Extensions may be granted or denied at the Electric Utilities' discretion. Documents and information required to apply for the large-project incentives can be found in Section 4.

Step 5. Receive Incentive Payment

The Electric Utilities will pay incentives to the Participating Contractor. Each Participating Contractor may retain up-to the Participating Contractor Reward amount shown in Table 2. The balance of the Total Incentive less the Participating Contractor Reward must be passed or otherwise credited to the customer in their entirety, documented in the site owner invoice or contract.

The Joint Efficiency Providers are committed to supporting Participating Contractors and developing the heat pump market in NYS. If a Participating Contractor has a business concern with receiving incentive payments directly, please reach out to your electric utility for alternative payment arrangements through the contact info provided in Section 9. The need for alternative payment arrangements will be reviewed on a case-by-case basis. The Joint Management Committee will monitor the number of alternative payment requests and may consider program revisions as necessary.

Residential and Small Commercial ASHP, Small GSHP, HPWH: Once submitted, if the Incentive Application meets all program requirements and funding remains available, the incentive application will be approved, and full payment will be sent to the Participating Contractor.

Rejection or modification of an incentive application is at each electric utility's sole discretion for either of the following reasons:

- The Participating Contractor's past performance on the Joint Efficiency Providers' supported

projects did not meet program requirements.

- The quality of the Incentive Application or responsiveness of the Participating Contractor is insufficient as determined by the respective electric utility.

Commercial ASHP and Large GSHP Project: Once the project completion form is submitted, if the form and associated documentation meets all program requirements and funding remains available, the incentive application will be approved, and full payment will be sent to the Participating Contractor.

5. Quality Assurance, Quality Control, and Compliance

5.1 Compliance with Laws and Codes

Under the NYS Clean Heat Program, all ASHP, GSHP, HPWH, system components, and installations must comply with any and all manufacturers' installation requirements, applicable laws, regulations, codes, licensing, and permit requirements. These include the New York State Environmental Quality Review (SEQR), the New York State Building Code, or New York State Residential Code, New York State Plumbing Code, New York State Mechanical Code, the National Electric Code, Fire Codes and all applicable State, city, town, or local ordinances or permit requirements. In the City of New York, all relevant New York City Codes and NYC Department of Environmental Protection requirements apply.

5.2 Execution of Work Requirements

All equipment and accessories must be installed in a workmanlike/professional manner.

5.3 Quality Assurance

Quality Assurance/Quality Control (QA/QC) is integral to maintaining the integrity of the Program NYSERDA's statewide QA infrastructure and existing protocols will continue to be utilized to perform this function during the transition period. Any revisions to these protocols and further transition related details will be provided in a revised NYS Clean Heat Statewide Heat Pump Implementation Plan and corresponding Program Manual by May 15, 2020.

The QA/QC program has several components including establishment of program standards and comprehensive field and photo/desk inspections. Field and photo/desk inspections provide NYSERDA with an opportunity to evaluate the accuracy of the design paperwork, to verify that the heat pump system was installed according to all program requirements, and to assess the quality of workmanship of the heat pump installation.

QA field inspections will be conducted by a qualified independent third party using comprehensive field and photo inspection QA checklists and inspection processes approved by NYSERDA. The QA inspector will utilize the applicable inspection checklist(s) to assess the quality of workmanship of the project installation and will consult program requirements and New York State building codes, National Electric Code, IGSPA and Manufacturer's Instructions as references. The QA inspector does not inspect projects for purposes of code compliance or enforcement.

QA inspection checklists will be available at: http://saveenergyny.ny.gov/nyscleanheat. For a short summary of the QA process, please see "What to Expect When You Are Inspected." The requirements for and list of documents the ccASHP Participating Contractor must provide for the design reviews and photo and field inspections can be found in the "Field Inspection and Commissioning Checklist" (in PDF). The requirements for and list of documents the GSHP Participating Contractor must provide for the design

reviews and photo and field inspections can be found in the "Quality Assurance and Technical Requirements Lists" (in Excel).

NYSERDA or its representatives may make a reasonable number of visits to the customer site before, during and/or after installation of a heat pump system. NYSERDA may contact the customer or system or site owner independently on its own initiative.

The written agreement between the Participating Contractor and the site owner should reference the Participating Contractor's participation in NYS Clean Heat Program and should allow access by NYSERDA or its representatives for purposes of completing a QA/QC inspection.

5.4 Design Review and Field Inspection

The purpose of design reviews (GSHP, VRF, and full load ccASHP) and field inspections is to provide NYSERDA with an opportunity to evaluate the accuracy of the design paperwork, to verify that the heat pump system was installed according to all program requirements, and to assess the quality of workmanship of the heat pump installation.

NYSERDA selects both in-progress and completed projects for design reviews and/or field inspections following a rational sampling protocol with sampling rates primarily based on the Participating Contractor's current program status and whether the incentive application relates to an ASHP system, to a small or large GSHP system, to a VRF system or to HPWH.

QA field inspections are scheduled at the site owner's convenience. The site owner is given the option of having the Participating Contractor attend the field inspection. If the site owner declines to have the Participating Contractor present at the time of the field inspection, no notice of scheduled field inspections is sent to the Participating Contractor. If the site owner accepts the attendance of the Participating Contractor, a notice of the scheduled field inspections is sent to both parties approximately one week in advance. NYSERDA makes a reasonable effort to accommodate the schedule of the Participating Contractor, but the schedule of the system/site owner and efficient inspection scheduling take precedence.

Following the field inspection, the qualified third-party inspector produces a detailed report and determines whether the project fully complies with all program requirements and meets acceptable standards of workmanship. The report is made available to the installer after the inspection, following an internal review and scoring by NYSERDA within 15 business days from the date of inspection. If the site owner wishes to receive a copy of the report, they can submit a request to NYSERDA and/or to their respective Electric Utility.

NYSERDA may select any completed project at any point in the future for field inspection based on (1) site or system owner's complaints; (2) warranty related issues or a review of the work done by a Participating Contractor under status review or program disciplinary action; and (3) for any other cause at the sole discretion of NYSERDA.

All Participating Contractors are encouraged to perform in-house quality control of each project.

Residential and Small Commercial ccASHP and HPWH Systems

NYSERDA will select each Participating Contractors' initial three (3) completed ccASHP projects or

combined ccASHP/HPWH projects for field inspection. Full status Participating Contractors are subjected to up to a 7.5% inspection overall. Probationary and suspended status Participating Contractors are subjected to up to 100% inspection on specific projects for cause.

Large Commercial ASHP, VRF, and HPWH Systems

For any larger ASHP equipment that are not rated as a residential heat pump under the ENERGY STAR Key Product Criteria, for VRF systems, and for commercial air-source HPWH (above 120 gallons of tank capacity), all Participating Contractor will have their first three projects design reviewed and field inspected. NYSERDA will generally conduct design reviews and/or field inspections on up to 30% of larger ASHP equipment, VRF, and air-source HPWH units installed by full-status Participating Contractor. Probationary and suspended status Participating Contractor are subjected to 30% inspection overall and up to 100% inspection on specific projects for cause.

Small and Large GSHP Systems with Heating Capacity up to 900,000 Btuh

All Participating Contractors who are new to installing GSHP in the Program have their first three projects design reviewed and field inspected. Small systems (<135,000 Btuh heating capacity) are subject to design reviews at NYSERDA's discretion. Based on the results of the reviews and/or inspections completed, NYSERDA may reclassify the Participating Contractor to full, probationary, suspended, or terminated status.

For large systems (> 135,000 Btuh heating capacity) with cooling capacities of 75 tons or less, NYSERDA generally conducts design reviews and/or field inspections on up to 30% of units installed by full-status Participating Contractors. Probationary and suspended status Participating Contractors are subjected to 30% inspection overall and up to 100% inspection on specific projects for cause.

Large GSHP, Commercial ASHP, and VRF Systems with Heating Capacity Over 900,000 Btuh

All large projects over 900,000 Btuh are design reviewed and field inspected regardless of the status of the Participating Contractor.

5.5 Photo Inspection (Large Commercial ASHP & GSHP)

The Participating Contractor is required to take and retain construction photos of each project. NYSERDA may request construction photos for purposes of conducting a photo inspection at any time. At present, photo inspections are focused on verifying compliance with program requirements and technical standards related to the loop field installation. Photo inspection scores are taken into consideration, along with QA field inspection scores, when evaluating performance.

The minimum number and content of photos required for GSHP projects can be found in the "Minimum Required Photos" tab included in the "Quality Assurance and Technical Requirements Lists" document (in Excel).
If selected for a photo inspection, Participating Contractors receive an email with instructions from NYSERDA or its representative detailing where and how to upload the required project photos through Salesforce. The Participating Contractor provides pictures upon request within 10 business days. Failure to provide a complete set of photos may result in disciplinary action. Photos should be submitted in JPEG format or another format approved by NYSERDA.

5.6 Procedure for Handling Nonconformance and Corrective Action

The inspection report provided to the Participating Contractor will provide details of all evaluated elements of the project and list any nonconformances that were identified. The report will identify the overall score of the project and whether this result passes or fails program requirements.

A project passes if there are no nonconformances or the nonconformances are only incidental or minor. A project fails if there are two or more major nonconformances identified or there is one critical nonconformance identified. Projects that have nonconformances related to health and safety (critical) or system performance (major) attributes automatically fail. All nonconformances are expected to be addressed and corrected in future work conducted in the program.

Acknowledgment and plans for preventing future problems may be requested with the report. While some nonconformances cannot be corrected post installation, others can be remedied through corrective action to the documentation, incentive applied to the project, or remediation of the installation or its components.

When NYSERDA seeks specific corrective action, a corrective action response (CAR) form will be provided within the QA report. The CAR must be either disputed within 15 days by contacting NYSERDA or remedied within 30 days. Sufficient evidence, such as photo documentation of remediation must be provided to NYSERDA documenting the completion of required actions. If major or critical nonconformances are not disputed or remedied within the stated timeframe, NYSERDA in coordination with the Electric Utilities will adjust the Participating Contractor status as described in Section 6.

NYSERDA may, at its discretion, conduct a field verification of the remediated installation. NYSERDA has the right to provide a copy of the QA report; CAR; or specific information from the QA field inspections directly to the site owner based on health, safety, and compliance concerns.

In an emergency, NYSERDA or its representatives will shut down the system. NYSERDA will notify the Participating Contractor of such action as soon as is possible.

NYSERDA may communicate with any site owner on any matter relevant to a project. Such communications may be in reply to an inquiry from a site owner or at NYSERDA's initiation. NYSERDA expects Participating Contractors to avoid repeating nonconformances in future projects that were identified in a prior inspection report. Acknowledgement and plans for preventing future problems may be requested with the report.

5.7 Contractor Feedback and Training

Participating Contractor performance feedback strengthens the effects of learning and has significant, direct positive effects on performance.

During the QA process, NYSERDA and the third-party quality service providers will have identified non-conformance trends for each Participating Contractor individually and for the heat pump program overall.

Based upon the non-conformances collectively identified in the QA inspections, NYSERDA will work with the Electric Utilities to develop training and resources to recommend to Participating Contractors for continuous performance improvement.

6. Participation Status

Participating Contractors will be classified in one of the following status designations: provisional, full, probationary, suspended, or terminated. Each designation will be subject to limitations or requirements associated with that status. The Joint Efficiency Providers reserve the right to modify the definition, limitations, and requirements of these designations. A Participating Contractor's progression into and/or through any status designation is determined at the sole discretion of the Joint Efficiency Providers. The designation or existence of a Participating Contractor in any status category does not relieve or modify the nature or scope of such Participating Contractor's responsibilities to fulfill any of its outstanding obligations under the program including, but not limited to, those obligations owing or relating to GSHP system or site owners.

6.1 Provisional Status

All new Participating Contractors are initially classified as provisional. They will be listed on the NYS Clean Heat landing page. Following the completion of the third project review, the Joint Efficiency Providers will conduct a formal review to evaluate a change in status. Evaluation for a change to full status will be based upon the quality and consistency of work and full compliance with program rules including current qualifications as previously described.

Special requirements for GSHP Participating Contractors:

- Provisional Participating Contractors are limited to having 10 incentive applications in design review at a given time. Additional incentive application(s) may be submitted after the provisional Participating Contractor has been notified that previous projects or application(s) have passed review.
- Provisional installers are strongly encouraged to attend at least the first three QA field inspections as it provides an opportunity to learn the field inspection process.
- Provisional Participating Contractors will be recommended for relevant training.

6.2 Full Status

At the Joint Efficiency Providers' discretion, Participating Contractors may be placed in full status when they have:

(1) met all program requirements for credentialing and experience and installation quality;
(2) successfully completed the terms of the provisional period; and
(3) demonstrated quality services through past performance.

Participating Drillers are automatically deemed to have full status. Full Designers, Full Installers, and Full Drillers (Full Participating Contractors) are listed on the NYS Clean Heat landing page and may be denoted as such.

Full Participating Contractors must realize the following:

- Consistently deliver projects that pass QA field inspections consistently.
- Meet program standards in terms of timely responses to Joint Efficiency Provider communications and corrective-action requests related to QA field inspections.

- Take effective corrective actions to deficiencies in performance as identified by NYSERDA.
- Maintain one of the credentialing standards referenced in Section 4. Failure to satisfy this program requirement and present appropriate documentation results in an automatic downgrade to probationary status.

6.3 Probationary Status

Probationary status is reserved for Participating Contractors who have failed to consistently meet the requirements of the program. Probation is prescriptive in nature with both a specific list of requirements and a time frame for achieving results. Participating Contractors may be placed in probationary status for any of the following reasons:

- Violation of program rules or ethical standards.
- Failure to consistently deliver completed projects which pass the QA field inspection standard.
- Failure to take effective corrective actions on a critical or major deficiency or a repeated incidental or minor deficiency in work quality or performance.
- Three or more corrective action notices that have not been responded to, or remain unresolved, for more than 30 days.
- A lapse in required credentials

The probationary period will not be less than 30 days and will not exceed 90 days. Projects completed by Participating Contractor on probationary status may receive enhanced QA oversight. During the probationary period, the Participating Contractor can expect the following:

- Continues to be listed on the NYS Clean Heat landing page.
- May continue to submit new incentive applications, subject to restrictions based upon the reason for the probationary status.
- Is subject to higher QA inspection levels as outlined in this manual
- Must remediate all issues related to probation, as directed by NYSERDA or the Electric Utility.
- Must submit an agreed-upon action plan in writing designed to ensure future violations are avoided.
- Must demonstrate successful results through a specified number of completed projects.
- Must be mentored on its next installation.

Upon satisfactory completion of the action plan and all remediation and upon review of probationary period QA results, the Joint Efficiency Providers will determine in their sole discretion whether to return the Participating Contractor to full status, continue the probationary period, or suspend and/or terminate the Participating Contractor from the program.

6.4 Suspended Status

Participating Contractor who have failed to respond to prescriptive probation or commit to more serious violations of program rules will be suspended. Participating Contractor may be suspended from the program in the following situations:

- Fail to adequately fulfill the terms of the probationary period.
- Are placed on probation for a second time within 12 months.
- Are under investigation for (or the determination has been made) engaging in practices that put

the public or program at risk.

- Have outstanding and unresolved request(s) for return of incentive to NYSERDA due to failure to meet program requirements.
- Have submitted any program application or incentive application documentation falsifying required items, including, but not limited to, permits, approvals, and site owner signatures.
- Fail to consistently deliver completed projects that pass the QA field inspection standard.
- Have a lapse in required credentials while on probationary status.

During a suspension, at the request of any Joint Efficiency Provider, the Participating Contractor is restricted in the following ways:

- Will be removed from the NYS Clean Heat landing page.
- Will not be allowed to submit new incentive applications to the program.
- Must complete any work, with system and/or site owner's consent, that was in progress at the time of suspension.
- Prohibited from being represented as a Participating Contractor except in the execution of remedial action.
- Depending on the reasons for suspension, be directed by NYSERDA or any Electric Utility to remediate issues related to the suspension, and may be required to submit to the program, in writing, an agreed- upon action plan that is designed to ensure future violations are avoided

At the Joint Efficiency Providers' sole discretion, suspended Participating Contractor either progress to probationary status upon satisfactory completion of the specified remedial activities or resolution of issues related to the suspension or they are terminated from program participation. Regardless of program status, Participating Contractors will remain responsible for fulfilling any outstanding obligations to the program or site owner.

6.5 Terminated Status

Participating Contractor who fail to respond to prescriptive and disciplinary measures or have committed serious violations of program rules may be terminated. Participating Contractor may be terminated from the program in the following situations:

- Have been on suspended status for more than 30 days and unresponsive or failed to adequately fulfill the terms of their suspension.
- Have had their credentials lapse while suspended.
- Submit falsified documents or unauthorized signatures to the program
- Commit illegal actions while participating in the program
- Are convicted or have a principal who is convicted of a criminal charge that casts the program in negative light or calls the integrity or work of the Participating Contractor into question
- Are in gross violation of program standards
- Repeatedly bill for uninstalled measures
- Fail to meet the terms of the provisional period

Terminated Participating Contractors are prohibited from further participation. Site owners with incomplete projects will be notified of the Participating Contractor termination. If appropriate, the Joint Efficiency Providers may notify the New York State Attorney General, the New York State Department of Labor, the Better Business Bureau, or others of their findings and decision to terminate the Participating Contractor.

The officers, directors, and owners of the terminated Participating Contractor are prohibited from holding positions of that nature with any other Participating Contractor. Regardless of program status, Participating Contractor will remain responsible for fulfilling any outstanding obligations to the program or site owner.

6.6 Inactive Status

A Participating Contractor may be declared inactive if they have not had an approved project in the program over a 24-month period of time. They will be removed from the landing page, no longer receive email notifications, nor be eligible for incentives. Should they wish to participate in the future, they may reapply under the rules in place at that time.

6.7 Status Review Process

The status review process for administering probationary, suspended, or terminated status is as follows:

- NYSERDA or an Electric Utility will provide written notice of at least 10 business days of its intention to act. The notice will outline the specifics for disciplinary action along with supporting documentation for the proposed action.
- During this period, the Participating Contractor will have an opportunity to dispute the program violation notification.
- If the Participating Contractor fails to respond to NYSERDA or the Electric Utility prior to the end of the notice period, the stated disciplinary action will go into effect without further notice.
- NYSERDA or the Electric Utility will promptly review any request for an appeal of the decision received before the end of the notice period.
- NYSERDA or the Electric Utility will confirm, reverse, or place its action on hold based upon a review of all information received within 10 business days of receipt.
- Intended and final action letters will be sent via email and U.S. mail. The notice period commences on the date of the email from NYSERDA or the Electric Utility.

The Joint Efficiency Providers reserve the right to shorten these notice periods or take immediate action in the event of an emergency, as determined by NYSERDA or the Electric Utility.

When a Participating Contractor fails to consistently complete projects that pass NYSERDA QA evaluation or fails to respond to or remedy failed inspections, NYSERDA may review their status in the Program and take further action.

A Participating Contractor may be moved to probation or suspended status, in which specific results and a timeline for demonstrating those results will be prescribed and monitored. The Participating Contractor may be terminated from the Program if determined necessary.

7. Recommended Program Guidelines

In addition, the following is a summary of optional, but strongly recommended, program guidelines, installation, and design practices that the Joint Efficiency Providers encourage all Participating Contractor to follow:

- Participating Contractors applying for large GSHP projects wait to start installation until after the respective electric utility has reviewed the application and notified the Participating Contractor whether the incentive application has been approved or rejected
- Participating Contractors should encourage site and system owners to work with their respective electric utility to assess and implement energy efficiency opportunities related to building envelope and HVAC distribution before or in coordination with installing a heat pump system.
- Large GSHP projects with capacities greater than 135,000 Btuh should have test boreholes drilled and analyzed.
- The Electric Utilities strongly recommends that large ASHP and GSHP systems include a performance monitoring system.
- Installers, designers and drillers seeking to become Participating Contractors should submit any additional training and certification documentation, beyond the required documentation that would help bolster their credentials.
- Hybrid projects that include non-heat pump central HVAC systems and heat pump systems should use an integrated multi-stage control, if available. If a multi-stage control is not available, the Participating Contractor should advise the site owner on the use of two thermostats. Temperature settings can be adjusted to reduce backup heat and emphasize heat pump operation as desired.

8. General Information

8.1 Waiver

The purpose of these requirements is to ensure that heat pump systems installed under this Program are high-performing, high-quality installations that are used for space heating or hot water heating, which is critical to enabling market growth. However, the Electric Utilities encourage innovation in design and installation practices that improve performance and lower costs. If a Participating Contractor can substantiate that a deviation from a specific requirement will maintain or improve performance at a similar or lower cost, the Electric Utilities will consider granting a waiver to that specific requirement. The Electric Utilities strongly recommend all projects seek compliance with ANSI/CSA/IGSHPA C448.

8.2 Logo Use Disclaimer

Participating Contractors are not permitted to use, reproduce or otherwise publish any of the Electric Utilities or NYSERDA logo. Contractors are permitted and encouraged to use the "NYS Clean Heat" name.

There are very strict policies regarding use of the Electric Utilities' and NYSERDA's logo. There are very few companies that are eligible to use a version of the Electric Utilities; and NYSERDA's logo on their marketing materials or for any other purpose. For these purposes, please contact the Electric Utilities or NYSERDA directly at the contact information in Section 9.

9. Contact Information

NYS Clean Heat landing page: http://saveenergyny.ny.gov/nyscleanheat

Submit questions by email to:

Central Hudson:
Ray Cotto
Associate Energy Efficiency Program Manager
85 Civic Center Plaza
Poughkeepsie, NY 12601
Telephone: (845) 486-5750
Email: RCotto@cenhud.com

Con Edison:
Steven Pak
Air Source Heat Pumps
Telephone: (212) 460-1131
Email: paks@coned.com

Mark Brescia
Ground Source Heat Pumps
Telephone: (212) 460-4320
Email: bresciam@coned.com

Public Email
Joseph Cascio
Telephone: (917) 765-0723
Email: info@conedisonresidential.com

National Grid:
Jennifer Cross
Senior Program Manager
1125 Broadway
Albany, NY 112204
Telephone: (518) 433-8034
Email: Jennifer.Cross@Nationalgrid.com

NYSEG/RGE:
Elizabeth Rhoda
Program Manager, Conservation and Load Management
89 East Avenue, Rochester, NY, 14649
Telephone: (585) 771-4866
Email: Elizabeth_rhoda@rge.com

NYSERDA
Email: products@nyserda.ny.gov

Orange & Rockland:
Mark Maloney
Telephone: (845) 577-2433
Email: maloneym@oru.com