

Part 508 Green Residential Building Program

Section 508.1 Scope and Purpose

(a) The New York State Legislature has found that the design, construction, and maintenance of residential buildings have significant impacts on the environment and natural resources. The provisions of this Part shall apply to the construction and substantial renovation of residential buildings with less than twelve dwelling units incorporating design and building techniques intended to: (i) promote smart growth and smart site planning; (ii) reduce greenhouse gas emissions; (iii) achieve energy efficiency and reduce energy consumption; (iv) facilitate the incorporation of environmentally responsible products; (v) promote the efficient use of natural resources; (vi) promote the conservation of materials and resources; (vii) reduce waste; and (viii) create a healthy indoor living environment.

(b) The purpose of this Part is to promote the construction and renovation of “green” or “sustainable” residential buildings through the creation of a green residential building program to provide incentives for the use of design and construction techniques that facilitate, promote, or achieve energy efficiency and reduced emissions, smart planning, and a healthy indoor living environment, and incorporate products that are environmentally responsible, conserve natural resources, and reduce waste.

Section 508.2 Definitions

For purposes of this Part, the following terms shall mean:

(a) “ACCA Standard 5 QI-2007” means the Air Conditioning Contractors of America Quality Installation Specifications for Residential and Commercial Heating, Ventilating, and Air Conditioning (HVAC) Applications.

(b) “Air barrier” means the system of materials designed and constructed to control unintended airflow into and out of a building enclosure. In a residential building with multiple dwelling units, “air barrier” includes common walls that separate conditioned air between adjacent dwelling units.

(c) “Air changes per hour (ACH)” means the number of times per hour that the complete air volume in a residential building is exchanged with outside air.

(d) “Air sealing measures” means physical barriers including, but not limited to, caulks, foams, gaskets, weather stripping, door sweeps, or residential building wraps that seal holes and seal penetrations from, including, but not limited to, piping, wiring, lighting fixtures, or ducts, or between seams, into or within the residential building.

(e) “Air Source Heat Pump” means a space conditioning system that uses air as both a heat source and sink, and uses a reversible refrigeration cycle to provide either heating or cooling.

(f) “Application” means a request by an Owner for a Program incentive containing the information required by this Part.

(g) “Authority” means the New York State Energy Research and Development Authority.

(h) “Blower door” means a device consisting of a fan, a removable panel, and gauges that are placed in a doorway and used to depressurize a residential building so that air changes per hour (ACH) can be measured and air leaks in the building envelope can be located.

(i) “Boiler” means a self-contained device that supplies low-pressure steam or hot water for space heating, and that may provide hot water for domestic or other uses.

(j) “Btu” means British thermal unit.

(k) “Building envelope” means a residential building’s shell, including the exterior walls, floor, and roof assembly.

(l) “Ceiling fan” means a non-portable device that circulates air through the rotation of fan blades and that is attached to and suspended from the ceiling.

(m) “Central air conditioner” means a device, other than a packaged terminal air conditioner, that: (1) is powered by single phase electric current, (2) is air cooled, (3) is rated below 65,000 Btus per hour, (4) is not

contained within the same cabinet as a furnace, the rated capacity of which is above 225,000 Btus per hour, and (5) consists of a cooling unit only.

(n) “CFL” means compact fluorescent lamp.

(o) “Closed Loop Ground Source Heat Pump” means a ground heat exchanger in which the heat transfer fluid is permanently contained in a closed system.

(p) “Combination ventilation fan” means a device that includes a ventilating fan and either a light source for general lighting or a night light.

(q) “Combined Annual Efficiency (CAE)” means the overall efficiency of a heating system in providing both space heating and water heating.

(r) “Compact dishwasher” means a dishwasher with a capacity of less than eight place settings (consisting of 1 cup and saucer, 1 dinner plate, 1 bread and butter plate, 1 dessert bowl, 1 iced tea glass, 1 knife, 1 spoon, and 2 forks) and six serving pieces (consisting of 1 serving platter, 2 serving bowls, 1 serving cold meat fork, and 2 serving spoons).

(s) “Conditioned space” means space within the residential building’s air barrier and thermal envelope that is served by a heating system and may include a cooling system.

(t) “Direct expansion ground source heat pump system” means a geothermal heat pump system in which the refrigerant is circulated in pipes buried in the ground and includes all associated indoor and outdoor equipment.

(u) “Dwelling unit” means a single, independent unit for providing permanent living, sleeping, eating, cooking, and sanitation facilities, for one or more persons to perform life activities.

(v) “Electronically commutated motor (ECM)” means a brushless, direct current motor which uses an electronic controller to vary fan rotor speed and direction by sequentially supplying direct current to the motor windings.

(w) “Energy Factor (EF)” means the ratio of useful energy output from a domestic water heater to the total amount of energy delivered to the domestic water heater.

(x) “Expanded Home Energy Rating System (HERS) Score” means a numeric comparison of the relative energy efficiency between a newly constructed or renovated residential building and a referenced residential building meeting only the minimum requirements of the Energy Conservation Construction Code of New York (19 NYCRR Part 1240); an “Expanded HERS score” is expressed on an ascending scale, from 70 to 100.

(y) “First-hour rating” means the amount of hot water in gallons per hour that a storage domestic water heater can supply when starting with a tank full of hot water.

(z) “Flame retention burner” means an oil burner with steady-state efficiency over 80 percent.

(aa) “Furnace” means a device with a heat input rate of less than 225,000 Btus per hour to produce forced hot air; a “furnace” includes a burner(s), heat exchanger(s), blower(s), and connections to heating ducts.

(bb) “Green residential building standards” means the standards, guidelines, rating and certification systems, and criteria relating to design and building techniques for residential buildings established and prescribed by this Part.

(cc) “Ground source heat pump” means a space conditioning system that employs a geothermal resource - the ground, groundwater, or surface water - as both a heat source and sink, and uses a reversible refrigeration cycle to provide either heating or cooling. A ground source heat pump may be part of an open loop system, where the heat transfer fluid is extracted, used, and returned to the environment, a closed loop system, where the heat transfer fluid is permanently contained within the system, or a direct expansion system, where only a refrigerant is circulated through the pipes and there is no separate heat transfer fluid component.

(dd) “Home Energy Rating System (HERS) Index” means a numeric comparison of relative energy resource use between a newly constructed or renovated residential building and a referenced residential building meeting only the minimum requirements of the Energy Conservation Construction Code of New York (19

NYCRR Part 1240); a “HERS Index” is expressed on a descending scale, with a score of 0 indicating that the residential building uses no net purchased energy resources.

(ee) “In-line ventilating fan” means a fan installed within the residential building containing ductwork on both intake and exhaust.

(ff) “LEED” means the Leadership in Energy and Environmental Design (LEED) Rating Systems, developed by the U. S. Green Building Council.

(gg) “Light kit” means a complete lighting unit consisting of lamp(s) and ballasting, when applicable, or LED light engine(s), together with the parts designed to distribute the light, to position and protect the lamp(s), and to connect the lamp(s) to the main(s).

(hh) “NGBS” means the National Green Buildings Standard, International Code Council (ICC) 700-2008, developed by the National Association of Home Builders, as approved by the American National Standards Institute.

(ii) “Open Loop Ground Source Heat Pump” means a ground heat exchanger in which the heat transfer fluid is part of a larger environment, and which may use groundwater or surface water as the heat transfer medium.

(jj) “Owner” means a person who holds title to a residential building with qualified occupied square footage on the date that: (1) a Certificate of Occupancy is issued to such building in the case of a new residential building; or (2) substantial renovations to an existing residential building are completed and a Certificate of Occupancy or Certificate of Completion is issued to such building in connection with such renovation.

(kk) “Peak hour demand” means the maximum potential use of hot water in one hour by occupants for purposes of bathing and performing other personal hygiene activities, washing dishes, preparing foods, and washing clothes.

(ll) “Program” means the Green Residential Building Program prescribed by this Part.

(mm) “Qualified occupied square footage” means the habitable spaces of a residential building meeting the green residential building standards; “qualified occupied square footage” shall not include any common areas, storage areas, mechanical rooms, utility rooms, attic and crawl spaces, attached and detached garages, and other unoccupied spaces or the portion of a mixed-use building that does not constitute a dwelling unit.

(nn) “Radiant heating system” means a heating system that supplies heat directly to the floor, panels on the wall, or ceiling.

(oo) “Residential building” means a structure including fewer than 12 attached dwelling units and which is:

(1) a detached, single-family structure;

(2) a townhouse, which is a single-family dwelling unit and which has unbroken, insulated party walls with no penetrations, and such party walls extend from ground to roof where the dwelling unit is attached to one or more adjacent single-family dwelling units;

(3) a manufactured home, which is a factory-manufactured dwelling unit built on or after June 15, 1976, and which conforms to the requirements of the United States Department of Housing and Urban Development (HUD), *Manufactured Home Construction and Safety Standards*, 24 Code of Federal Regulations (CFR) Part 3208, is transportable in one or more sections, which in the traveling mode, is 8 feet (2438 mm) or more in width or 40 feet (12192 mm) or more in length, or, when erected on site, is 320 square feet (29.7 square meters) minimum, constructed on a permanent chassis and designed to be used with or without a permanent foundation, when connected to the required utilities and includes the plumbing, heating, air conditioning and electrical systems contained therein. The term "manufactured home" shall also include any structure that meets all the requirements of this definition except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the

Federal Department of Housing and Urban Development and complies with the standards established under the national Manufactured Housing Construction and Safety Act of 1974, as amended, but excludes any self-propelled recreational vehicle. For purposes of this Part, the term “manufactured home” shall include only those structures that are sited on a permanent foundation;

(4) a modular home, which is a structure consisting of a factory-manufactured dwelling unit, conforming to the requirements of the Residential Code of New York (19 NYCRR Part 1220), including bearing an insignia of approval issued by the New York State Fire Prevention and Code Council, and which is constructed by a method or system of construction whereby the structure or its components are wholly or in substantial part manufactured in a manufacturing facility, intended or designed for permanent installation, or assembly and permanent installation, and for purposes of this Part, shall be sited on a permanent foundation; or

(5) a multi-family structure means a structure containing two or more dwelling units, excluding townhouses.

(pp) “Single package central air conditioner” means a central air conditioner that combines both condenser and air handling capabilities in a single casing.

(qq) “Single package heat pump” means an air-source heat pump that combines both condenser and air handling capabilities in a single casing.

(rr) “Split system central air conditioner” means a central air conditioner with separate indoor (evaporator) and outdoor (condenser) units.

(ss) “Split system heat pump” means an air-source heat pump with separate indoor (evaporator) and outdoor (condenser) units.

(tt) “Standard dishwasher” means a dishwasher that has a capacity equal to or greater than eight place settings (consisting of 1 cup and saucer, 1 dinner plate, 1 bread and butter plate, 1 dessert bowl, 1 liced tea glass,

1 knife, 1 spoon, and 2 forks) and six serving pieces (consisting of 1 serving platter, 2 serving bowls, 1 serving cold meat fork, and 2 serving spoons).

(uu) “Substantial renovations” means significant improvements or restorations to, or substantial replacement of, materials, systems, or components of, a residential building, which shall include installation or replacement necessary to effect aligned, continuous, and complete air and thermal barriers and must include installation or replacement, of two of the three following building systems: electrical; heating, ventilation, and air conditioning; and plumbing.

(vv) “Tankless water heater” means: (1) a water heater that uses natural gas as an energy source, (2) initiates heating based on sensing water flow, (3) is designed to deliver water at a controlled temperature of less than 180 degrees Fahrenheit, (4) has an input greater than 50,000 Btus per hour but less than 200,000 Btus per hour, and (5) has a manufacturer’s specified storage capacity of less than two gallons.

(ww) “Technician” means an individual who meets the training and qualifications prescribed by Section 508.8.

(xx) “Thermal envelope” means the layer of materials in a building envelope that controls the transfer of heat between conditioned and unconditioned spaces.

(yy) “Ventilation fan” means a device used to move air from inside the building to the outdoors and may include a mounted fan installed in a bathroom or utility room and a kitchen range hood.

Section 508.3 Eligibility

An Owner is eligible for a Program incentive, if:

(a) a complete Application for a request for a Program incentive has been received by the Authority with respect to a residential building with qualified occupied square footage, in accordance with the procedure prescribed by Section 508.9 of this Part; and

(b) the residential building:

(1) is a new residential building that:

(i) has completed construction for purposes of receiving, and

(ii) has received a Certificate of Occupancy on or after January first, two thousand ten, but before October thirty-first, two thousand thirteen; or

(2) is an existing residential building that:

(i) has completed substantial renovation; and

(ii) has received a Certificate of Occupancy or Certificate of Completion, or other documentation issued by the State or a municipality indicating that construction is complete, on or after January first, two thousand ten, but before October thirty-first, two thousand thirteen.

Section 508.4 Green Residential Building Standards

For purposes of the Program, green residential building standards shall mean the use of design and building techniques sufficient:

(a) (1) to receive a second level or higher LEED certification using the LEED for Homes Rating System, or using the LEED for New Construction Rating System; or

(2) to receive a second level or higher level certification using the NGBS; and

(b) (1) to achieve at least 500 kilowatt hour (kWh) annual electrical savings per dwelling unit, by installing equipment, lighting and household appliances meeting or exceeding the following minimum efficiency standards and which exceed applicable minimum efficiency standards prescribed in 10 Code of Federal Regulations (CFR) Part 430, based upon inclusion of one or more of the following:

(i) installed CFLs and other lighting fixtures and lamps in high usage areas, including primary living spaces, finished basements, walk-in closets, and outdoor areas, but excluding non-walk-in closets and unfinished basements, and has installed only CFLs and lighting fixtures that meet the minimum efficacy levels set forth in Table 1, Parts A, B, and C determined in accordance with the test procedures set forth

in Table 1; such CFLs and lighting fixtures shall be credited with the following kWh savings: screw-based CFL, 35 kWh each; pin-based or fixture-based CFL, 50kWh each; and

Table 1: Lamps and Lamp/Ballast Fixtures: Efficacy Requirements				
Part A: Bare, Covered, Globe, and Outdoor Reflector CFL Testing Requirements				
Criteria	Requirements		Test Procedure for determining efficacy	
Lamp Power (Watts) and Configuration	Minimum Efficacy: Lumens/watt (Based on initial lumen data)		IESNA ^a – LM66-00 for lumen output and efficacy.	
	Efficacy requirements (Medium screw-base)	Efficacy requirements (Candelabra screw-base)		
Bare Lamp (Fixed Light Output):				IESNA ^a – LM66-00 for lumen output and efficacy.
Lamp Power < 10	50	50		
10 < Lamp Power < 15	55	55		
15 ≤ Lamp Power	65	NA		
Bare Lamp (Dimmable/2-way/3-way):				
Lamp Power < 15	50	50		
Lamp Power ≥ 15	60	NA		
Covered Lamp (no reflector):			IESNA ^a – LM66-00 for lumen output and efficacy.	
Lamp Power < 7	40	35		
7 < Lamp Power < 15	45	45		
15 < Lamp Power < 25	50	NA		
Lamp Power > 25	60	NA		
Outdoor Reflectors:				
Lamp Power < 20	33	NA		
Lamp Power > 20	40	NA		

Part B: Reflector CFLs for Recessed Downlights/Indoor Use Testing Requirements		
Criteria Item and Submission	Requirement	Test Procedure for Determining Efficacy

Lamp Power (Watts) and Configuration Reflectors:	Minimum Efficacy: Lumens/watt (Based on initial lumen data)	IESNA ^a – LM66-00 for lumen output and efficacy.
Lamp Power < 20	33	
Lamp Power > 20	40	

Part C: Combined Lamp and Ballast Efficacy Requirements		
Performance Characteristics	Requirements	Test Procedure for determining efficacy
System Efficacy Per Lamp Ballast Platform in Lumens Per Watt (LPW)	<p>≥ 50 LPW for all lamp types below 30 total listed lamp watts.</p> <p>≥ 60 LPW for all lamp types that are < 24 inches and > 30 total listed lamp watts.</p> <p>≥ 70 LPW for all lamp types that are > 24 inches and > 30 total listed lamp watts.</p>	IESNA ^a LM-9 and LM-66; ANSI ^b C82.2

^a IESNA means the Illuminating Engineering Society (of North America)

^b ANSI means the American National Standards Institute

(ii) *Dishwasher*: if a dishwasher has been installed, has installed only a standard dishwasher(s) and compact dishwasher(s) that meets the minimum energy efficiency requirements set forth in Table 2, determined in accordance with the test procedures set forth in 10 Code of Federal Regulations (CFR) 430, Subpart B, Appendix C; each such dishwasher(s) shall be credited with 50 kWh each; and

Table 2: Minimum Energy Efficiency Requirements for Dishwashers			
Dishwasher Type	Standard as of August 11, 2009	Standard as of July 1, 2011	Test Procedure for Determining Efficiency Level
Standard	<p>≤324 kWh/year</p> <p>≤5.8 gallons/cycle</p>	<p>≤307 kWh/year</p> <p>≤5 gallons/cycle</p>	10 CFR 430, Subpart B, Appendix C.

Compact	≤ 234 kWh/year ≤ 4.0 gallons/cycle	≤ 222 kWh/year ≤ 3.5 gallons/cycle	10 CFR 430, Subpart B, Appendix C.
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(iii) *Refrigerators, refrigerator/freezers, and freezers*: has installed only refrigerators, refrigerator-freezers, and freezers that meet the minimum energy efficiency levels set forth in Table 3 determined in accordance with the following test procedures: a refrigerator and the refrigerator portion of a refrigerator/freezer shall have been self-tested by its manufacturer in accordance with test procedures set forth in 10 Code of Federal Regulations (CFR) 430, Subpart B, Appendix A1; a freezer and the freezer portion of a refrigerator/freezer shall have been self-tested by its manufacturer in accordance with the test procedure set forth in 10 Code of Federal Regulation (CFR) 430, Subpart B, Appendix B1; each such refrigerator and refrigerator/freezer shall be credited with 100 kWh, and each such freezer shall be credited with 50 kWh; and

Table 3: Minimum Efficiency Requirements for Refrigerators, Refrigerator-Freezers, and Freezers	
Product Class	Energy Use (kWh per year)
Refrigerator & refrigerator-freezer with manual Defrost	$\leq 7.056 * AV^a + 198.72$
Refrigerator-freezer with partial automatic defrost	$\leq 7.056 * AV^a + 198.72$
Top mount freezer without through-the-door ice	$\leq 7.84 * AV^a + 220.8$
Side mount freezer without through-the-door ice	$\leq 3.928 * AV^a + 406$
Bottom mount freezer without through-the-door ice	$\leq 3.68 * AV^a + 367.2$
Top mount freezer with through-the-door ice	$\leq 8.16 * AV^a + 284.8$
Side mount freezer with through-the-door ice	$\leq 8.08 * AV^a + 324.8$
Upright freezer with manual defrost	$\leq 6.795 * AV + 232.47$
Upright freezer with automatic defrost	$\leq 11.187 * AV^a + 293.49$
Chest freezers	$\leq 8.892 * AV^a + 129.33$
Compact refrigerator and refrigerator-freezer with manual defrost	$\leq 8.56 * AV^a + 239.2$
Compact refrigerator and refrigerator-freezer with partial automatic defrost	$\leq 5.6 * AV^a + 318.4$
Compact refrigerator-freezer-automatic defrost	$\leq 10.16 * AV^a + 284$

with top freezer	
Compact refrigerator-side mounted freezer with automatic defrost	$\leq 6.08*AV^a + 400.8$
Compact refrigerator-bottom mount freezer with automatic defrost	$\leq 10.48*AV^a + 293.6$
Compact upright freezers with manual defrost	$\leq 7.824*AV^a + 200.64$
Compact upright freezers with automatic defrost	$\leq 9.12*AV^a + 312.8$
Compact chest freezer	$\leq 8.36*AV^a + 121.6$

^a AV (“Adjusted Volume”) means, for a combination refrigerator-freezer, the volume of the fresh food compartment in cubic feet added to the product of 1.63 multiplied by the freezer volume and, and for a stand-alone freezer, the product of 1.73 multiplied by the freezer volume in cubic feet.

(iv) installed furnace(s) and heat pumps, and central air conditioners, as applicable, with a high efficiency variable speed motor(s) or ECM(s), such furnace, heat pump, or air conditioner handling unit equipped with a high efficiency ECM (s) shall be credited with 400 kWh each and, if applicable, a central air conditioner(s) with a 15 SEER (as defined in Table 5) or higher, shall be credited with 175 kWh each; or

(2) install only equipment, lighting and household appliances meeting or exceeding the applicable minimum efficiency standards prescribed in 10 Code of Federal Regulations (CFR) Part 430; and

(c) for a residential building of not more than three stories in height above grade, containing four or fewer dwelling units, shall have met or exceeded the additional requirements set forth in Section 508.5.

Section 508.5 Additional Requirements for Residential Buildings of Not More Than 3 Stories, Containing 4 or

Fewer Dwelling Units: Energy Efficiency Specifications and Performance Specifications

A residential building of not more than 3 stories, containing 4 or fewer dwelling units, shall meet or exceed:

(a) the following energy efficiency specifications:

(1) *HERS information*: achieved either an Expanded HERS Score of 86 or higher or a HERS Index of 70 or lower, using a rating software tool that has been approved by the Authority and that generates a rating report containing the following information:

- (i) the Expanded HERS Score or HERS Index;
- (ii) the estimated quantity of energy to be used annually for purposes of space heating, space cooling, water heating, lighting, operating household appliances, and any other use of energy, and an estimate of the annual energy cost for each purpose and for the residential building as a whole;
- (iii) the street address or recorded real property identifier;
- (iv) the name of the rater;
- (v) the date that the rating report was prepared; and
- (vi) the rating software program and version number used to calculate the rating; and

(2) *Ceiling fan and light kit*: if a ceiling fan(s) has been installed, has installed only a ceiling fan(s) that meets the minimum energy efficiency levels set forth in Table 4, and only a light kit(s) that meets the minimum efficiency requirements set forth in Table 1 tested by the manufacturer in accordance with the test procedures set forth in the ENERGY STAR[®] Testing Facility Guidance Manual: Building a Testing Facility and Performing the Solid State Test Method for ENERGY STAR[®] Qualified Ceiling Fans, Version 1.0, Draft 1, June 20, 2002; and

Table 4: Minimum Efficiency Requirements for Ceiling Fans		
Fan Speed	Minimum Airflow	Efficiency Requirement
Low	1,250 cubic feet per minute	155 cubic feet per minute/watt
Medium	3,000 cubic feet per minute	100 cubic feet per minute/watt
High	5,000 cubic feet per minute	75 cubic feet per minute/watt

(3) *Central air conditioner*: if a central air conditioner has been installed:

(i) has installed in residential buildings, only a central air conditioner(s) that has a 14.5 SEER (as defined in Table 5) and a 12 EER (as defined in Table 5), or higher, for split systems, and that has a 14 SEER (as defined in Table 5) and 11 EER (as defined in Table 5), or higher, for single package systems; a central air conditioner(s) shall meet the energy efficiency requirements set forth in Table 5 determined in accordance with the test procedures set forth in Table 5; and

(ii), has had the total supply air flow rates tested and verified by a Technician to determine that the ducted distribution system delivers +/- 15 percent of room design airflow, in accordance with Section 5.2.2 Acceptable Procedures, of ACCA Standard 5 QI-2007, for each room being conditioned, and

Table 5: Minimum Efficiency Levels for Central Air Conditioners		
Type	Minimum Efficiency	Test Procedure for Determining Efficiency Level
Central Air Conditioner (split system)	14.5 SEER ^a / 12 EER ^b	ARHI ^c 210/240
Central Air Conditioner (single package system)	14 SEER ^a /11 EER ^b	ARHI ^c 210/240

^a SEER (“Seasonal Energy Efficiency Ratio”) means the total cooling output of a central air conditioner in Btus during its normal annual usage period for cooling divided by the total electric energy input in watt-hours during the same period

^b EER (“Energy Efficiency Ratio”) means the ratio of net cooling capacity in Btus per hour to the total rate of electric input in watts, under designated operating conditions

^c ARHI means the Air-Conditioning, Heating, and Refrigeration Institute (formerly ARI)

(4) Domestic water heater:

(i) has installed only a domestic water heater(s) that has a first-hour rating that meets the capacity for the calculated peak hour demand within one-to-two gallons; and

(ii) if an oil-fired domestic water heater has been installed, has installed only an oil-fired domestic water heater(s) that has a flame retention burner; and

(iii) if a domestic water heater using natural gas or propane has been installed, has installed only a domestic waters heater(s) using natural gas or propane that meets the minimum energy efficiency

requirements set forth in Table 6 determined in accordance with the test procedures set forth in 10 Code of Federal Regulations (CFR) 430; and

(iv) if a natural gas tankless water heater has been installed, has installed only a natural gas tankless water heater that meets the minimum energy efficiency requirements set forth in Table 6 determined in accordance with 10 Code of Federal Regulations (CFR) 430; and

Table 6: Minimum Energy Factors for Domestic Water Heaters		
Rated Storage Capacity (in gallons)	Minimum EF^a for Natural Gas or Propane Water Heaters	Minimum EF for Electric Water Heaters
30	0.62	0.94
40	0.62	0.93
50	0.62	0.92
75	0.54	0.90
100	0.49	0.87
Natural Gas Tankless Water Heaters	0.82	

^a EF (“Energy Factor”) means the ratio of useful energy output from a domestic water heater to the total amount of energy delivered to the domestic water heater.

(5) *Heating equipment - heat pumps and furnaces:* (i) has installed a heating system(s) that uses less than 300,000 Btus per hour and meets or exceeds the minimum efficiency requirements set forth in Table 7 determined in accordance with the test procedures set forth in Table 7; and
(ii) if a heat pump is installed, has had the total supply air flow rates tested and verified by a Technician to determine that the ducted distribution system delivers +/- 15 percent of room design airflow, in accordance with ACCA Standard 5 QI-2007, for each room being conditioned; and

Table 7: Minimum Efficiency Levels for Primary Residential Heating Systems		
Type	Minimum Efficiency	Test Procedure for Determining Efficiency Level
Furnace--Natural Gas	AFUE ^a 92%	10 CFR 430, Appendix N
Furnace-- Fuel Oil	AFUE 85%	10 CFR 430, Appendix N

Boiler--Hot Water or Steam	AFUE 85%	10 CFR 430
Air-Source Heat Pump--Split System	14.5 SEER ^b /12 EER ^c /8.2 HSPF ^d	ARHI ^e 210/240
Air-Source Heat Pump--Single Package	14 SEER ^b / 11 EER ^c /8.0 HSPF ^d	ARHI 210/240
Ground Source Heat Pump-- Closed Loop	14.1 EER ^c / 3.3 COP ^f	ISO ^g 13256-1
Ground Source Heat Pump--Open Loop	16.2 EER ^c / 3.6 COP ^f	ISO 13256-1
Ground Source Heat Pump--Direct Expansion	15 EER ^c / 3.5 COP ^f	ARHI 870
Combination Water/Space Heater	0.73 CAE ^h	ANSI ⁱ /ASHRAE ^j 124-1991

^a *AFUE* (“Annual Fuel Utilization Efficiency”) means, the ratio of annual output energy to annual input energy which includes any non-heating season pilot input loss, and for gas or oil-fired furnaces or boilers, does not include electrical energy.

^b *SEER* (“Seasonal Energy Efficiency Ratio”) means the total cooling output of a central air conditioner in Btus during its normal annual usage period for cooling divided by the total electric energy input in watt-hours during the same period

^c *EER* (“Energy Efficiency Ratio”) means the ratio of net cooling capacity in Btus per hour to the total rate of electric input in watts, under designated operating conditions

^d *HSPF* (“Heating Seasonal Performance Factor”) means the total heating output of a heat pump during its normal annual usage period for heating divided by the total electric energy input during the same period

^e *ARHI* means the Air-Conditioning, Heating, and Refrigeration Institute (formerly ARI)

^f *COP* (“Coefficient of Performance”) means a unitless ratio of the rate of heat removal or heat delivery to the rate of energy input, in consistent units, for a complete refrigerating or heat pump system under designated operating conditions

^g *ISO* means the International Standards Organization

^h *CAE*(“ Combined Annual Efficiency”) means the overall efficiency of a heating system in providing both space heating and water heating in KBtu/h

ⁱ *ANSI* means the American National Standards Institute

^j *ASHRAE* means the American Society of Heating, Refrigerating, and Air-Conditioning Engineers

(6) *Ventilation fans*: (i) has installed only ventilation fans that meet the minimum energy efficiency levels set forth in Table 8 determined in accordance with the test procedures set forth in Table 8; and (ii) has installed only combination ventilation fan(s) that meets the efficiency specifications set forth in Table 8 and the light source criteria set forth in Table 9.

Table 8: Minimum Efficiency Requirements for Ventilation Fans Using Home Ventilating Institute Standards 915, 916, and 920 Test Criteria for Ventilation Fans		
Product	Airflow	Efficiency Requirement

Range Hoods	Up to 500 cubic feet per minute (max)	2.8 cubic feet per minute/watt
Bathroom & Utility Room Fans	10 -80 cubic feet per minute	1.4 cubic feet per minute/watt
Bathroom & Utility Room Fans	90 -130 cubic feet per minute	2.8 cubic feet per minute/watt
Bathroom & Utility Room Fans	140 -500 cubic feet per minute (max)	2.8 cubic feet per minute/watt
In-Line Ventilating Fans		2.8 cubic feet per minute/watt

Table 9: Light Source Criteria for Combination Ventilation Fans	
Performance Characteristic	Specification
System Efficiency per lamp ballast combination, Lumens per Watt (LPW)	≥ 46 LPW for all lamp types below 30 total listed lamp watts ≥ 60 LPW for all lamp types that are ≤ 24 inches and ≥ 30 listed lamp Watts ≥ 70 LPW for all lamp types that are ≥ 24 inches and ≥ 30 listed lamp Watts
Maximum Total Lamp Wattage (excluding night lights)	≤ 50 Watts
Maximum Night Light Wattage	≤ 4 Watts

(b) A residential building of not more than 3 stories in height above grade, containing 4 or fewer dwelling units, shall have met or exceeded the following performance specifications:

(1) *Building envelope*: has installed a building envelope that has 5 or fewer air changes per hour (ACH) measured at a pressure difference of 50 Pascals, using a blower door; and

(2) *Duct leakage*: (i) has conducted duct leakage testing using the blower door subtraction method, flow hood test, or duct blower test, and such leakage shall not exceed 6 cubic feet per minute to outdoors at a pressure difference of 25 Pascals per 100 square feet of conditioned floor area; or

(ii) has only installed ducts and a furnace or heat pump in conditioned space and has determined that building envelope leakage using a blower door test is less than or equal to 3 air changes per hour (ACH) at a pressure difference of 50 Pascals; and

(3) *Mechanical ventilation*: (i) has installed only an automatically controlled mechanical ventilation system that meets the minimum ventilation requirements set forth in Table 10 determined in accordance with Table 10, using the calculation methods prescribed by ASHRAE 62.2; and

(ii) has installed only a mechanical ventilation system that operates automatically, without occupant intervention, exhausts to the exterior of the building, and has a readily available and accessible override control.

Table 10: Minimum Ventilation Requirements Using ASHRAE^a 62.2 Minimum Ventilation Requirement (cubic feet per minute)								
Square Footage		← Number of Bedrooms →						
		1	2	3	4	5	6	7
	1000	25	33	40	48	55	63	70
1001	1500	30	38	45	53	60	68	75
1501	2000	35	43	50	58	65	73	80
2001	2500	40	48	55	63	70	78	85
2501	3000	45	53	60	68	75	83	90
3001	3500	50	58	65	73	80	88	95
3501	4000	55	63	70	78	85	93	100
4001	4500	60	68	75	83	90	98	105
4501	5000	65	73	80	88	95	103	110
5001	5500	70	78	85	93	100	108	115
5501	6000	75	83	90	98	105	113	120

^a *ASHRAE* means the American Society of Heating, Refrigerating, and Air-Conditioning Engineers

Section 508.6 Program Incentives

(a) Subject to the availability of funds, Program incentives shall be paid to Owners for qualified occupied square footage, as follows:

Program Incentive by Number of Dwelling Units		
Number of Dwelling Units	Program Incentive/ Qualified Occupied Sq. Ft.	Maximum Program Incentive

1	\$3.75/sq. ft.	\$5,125
2	\$3.75/sq. ft.	\$6,125
3	\$3.75/sq. ft.	\$7,125
4	\$3.75/sq. ft.	\$8,125
5	\$3.75/sq. ft.	\$8,875
6	\$3.75/sq. ft.	\$9,625
7	\$3.75/sq. ft.	\$10,375
8	\$3.75/sq. ft.	\$11,125
9	\$3.75/sq. ft.	\$11,875
10	\$3.75/sq. ft.	\$12,625
11	\$3.75/sq. ft.	\$13,375

(b) No Owner shall receive more than one hundred twenty thousand dollars in Program incentive payments during any calendar year.

Section 508.7 Inspection and Compliance Procedures

An Owner of a residential building being newly constructed or a residential building undergoing substantial renovation shall have such residential building inspected by a Technician, and a written record of such inspections obtained by such Owner from such Technician, during and after such construction or renovation, as follows:

(a) *For each residential building, regardless of height or number of dwelling units:* (1) after installation of combustion boilers and furnaces, a Technician shall test combustion safety in accordance with the test procedures set forth in ANSI Standard Z223.1-2002, Annex H Recommended Procedure for Safety Inspection of an Existing Appliance Installation for boilers and furnaces covered by such standard, and record the results; and

(2) after installation of equipment, lighting, and household appliances specified in Section 508.4 of this Part, determine that at least 500 kilowatt hour (kWh) annual electrical savings per dwelling unit are achieved, as required by Section 508.4 of this Part; or determine that only equipment, lighting, and household appliances meeting or exceeding the minimum efficiency standards required by Section 508.4 are installed.

(b) *For a newly constructed residential building (not including a manufactured or modular home), regardless of height:* a Technician shall:

(1)(i) after framing and installation of the electrical system, rough plumbing, the heating, ventilation, and air conditioning system, and insulation, but prior to installation of drywall or interior wall surfaces or prior to re-enclosure of insulated building cavities:

(a) determine if all minimum LEED or NGBS measures required to be installed prior to installation of drywall or interior wall surfaces or prior to re-enclosure on insulated building cavities have been installed; and

(b) determine if air sealing measures are complete, if insulation is aligned properly within the air barrier, and if the air barrier and thermal envelope are continuous; and

(c) determine if insulation is installed in the building envelope and uniformly fills each cavity without gaps, voids, or compressions, has a continuous air barrier in contact with its surface, and is in substantial contact with either the interior or exterior sheathing material; and

(d) determine the number of LEED or NGBS points attributable to the following systems: foundation and framing materials; insulation; windows; doors; heating, ventilating, and air conditioning system; plumbing system; and site planning and preparation construction techniques used, including clearing, grading, soils management, and erosion and sedimentation control; and

(ii) after installation of all flooring, household appliances, heating, ventilation, and air conditioning equipment, plumbing, and electrical wiring, determine the number of LEED or NGBS points attributable to efficient use of natural resources, conservation of materials and resources, waste reduction, installation of environmentally responsible products, including, but not limited to, interior finish materials and trim, including paints and coatings; cabinets, casework, and carpets; yearly heating,

ventilation, and air conditioning and hot water heating equipment efficiency; household appliances and lighting efficiency; and plumbing fixture efficiency.

(c) *For a newly constructed residential building of 3 or fewer stories containing 4 or fewer dwelling units:* if the residential building is not more than 3 stories in height above grade, and contains 4 or fewer dwelling units (not including a manufactured home or modular home), after construction of the building envelope is complete and after installation of all heating, ventilating and, if applicable, central air conditioners and associated pipes and ducts, a Technician shall inspect such residential building to determine if the energy efficiency specifications and performance specifications prescribed by Section 508.5 have been met.

(d) *For a newly constructed residential building consisting of a newly constructed manufactured home:*

(1) at the manufacturing factory, an on-site Technician shall:

(i) determine if air sealing measures are complete, the insulation is aligned properly with the air barrier; and the air barrier and thermal envelope are continuous; and

(ii) determine if insulation is installed in the building envelope and uniformly fills each cavity without gaps, voids, or compressions, has a continuous air barrier in contact with its surface, and is in substantial contact with either the interior or exterior sheathing material; and

(iii) determine if factory-installed measures qualify for LEED or NGBS points, including measures prescribed by Section 508.5; and

(2) at the site of permanent installation of the manufactured home, a Technician shall:

(i) determine if minimum LEED or NGBS requirements and the minimum site development activities with respect to the foundation and field-completed framing materials; heating, ventilating, and air conditioning system; plumbing system; and site preparation construction techniques used, including clearing, grading, soils management, and erosion and sedimentation control have been met; and

(ii) for components and seams not inspected at the manufacturing factory, determine if air sealing measures are complete, the insulation is aligned properly with the air barrier, and thermal envelope are continuous; and

(iii) excluding measures inspected at the manufacturing factory, determine if any additional energy efficiency and performance specifications prescribed by Section 508.5 have been met..

(e) For a newly constructed residential building consisting of a newly constructed modular home:

(1) at the manufacturing factory, an on-site Technician shall:

(i) determine if air sealing measures are complete, the insulation is aligned properly with the air barrier; and the air barrier and thermal envelope are continuous; and

(ii) determine if insulation is installed in the building envelope and uniformly fills each cavity without gaps, voids, or compressions, has a continuous air barrier in contact with its surface, and is in substantial contact with either the interior or exterior sheathing material; and

(iii) determine if any factory-installed measures qualify for LEED or NGBS points, including measures prescribed by Section 508.5; and

(2) at the site of permanent installation of the modular home, a Technician shall:

(i) determine if all minimum LEED or NGBS requirements and the site development activities with respect to the foundation and field-completed framing materials; heating, ventilating, and air conditioning system; plumbing system; and site preparation construction techniques used, including clearing, grading, soils management, and erosion and sedimentation control have been met; and

(ii) for components and seams not inspected at the manufacturing factory, determine if air sealing measures are complete, the insulation is aligned properly with the air barrier, and thermal envelope are continuous; and

(iii) for components and seams not inspected at the manufacturing facility, determine if insulation is installed in the building envelope and uniformly fills each cavity without gaps, voids, or compressions, has a continuous air barrier in contact with its surfaces, and is in substantial contact with either the interior or exterior sheathing material; and

(iv) excluding measures inspected at the manufacturing factory, determine if any additional energy efficiency and performance specifications prescribed by Section 508.5 have been met.

(f) *For a substantially renovated residential building:* a Technician shall:

(1) after any improvements or restorations to, or substantial replacement of electrical, plumbing, or heating, ventilation, and air-conditioning systems, and after any removal of interior wall surfaces but prior to re-enclosure of insulated building cavities:

(i) determine if all minimum LEED or NGBS measures required to be installed prior to re-enclosure of insulated building cavities have been met; and

(ii) determine if air sealing measures are complete, the insulation is aligned properly with the air barrier; and the air barrier and thermal envelope are continuous; if applicable; and

(iii) determine if insulation, if installed in the building envelope, uniformly fills each cavity without gaps, voids, or compressions, has a continuous air barrier in contact with its surface, and is in substantial contact with either the interior or exterior sheathing material; and

(iv) determine if the energy efficiency specifications and performance specifications prescribed by Section 508.5 have been met, if applicable; and

(v) determine the number of LEED or NGBS points attributable to, including but not limited to, the following: improvements or restorations to, or substantial replacement of foundation and framing materials; windows; doors; and electrical, heating, ventilating, and air conditioning system; or plumbing systems; and

(2) after re-enclosure of insulated building cavities, and any installation or replacement of flooring, household appliances, heating, ventilation, and air conditioning equipment, plumbing, and electrical wiring, determine if all minimum LEED or NGBS requirements have been met, and the number of LEED or NGBS points attributable to efficient use of natural resources, conservation of materials and resources, waste reduction, installation of environmentally responsible products, including, but not limited to, interior finish materials and trim, including paints and coatings; cabinets, casework, and carpets; and yearly heating, ventilation, and air conditioning and hot water heating equipment efficiency; household appliances and lighting efficiency; and plumbing and irrigation fixture efficiency.

Section 508.8 Builder and Technician Training and Qualifications

(a) For purposes of performing inspections pursuant to this Part, a Technician shall be an individual who meets one or more of the following:

(1) has at least 12 hours of design or installation training by an accredited education institution or a professional builders association or affiliate, or other comparable and Authority approved training course, in one or more of the following: site planning and development for building green; heating systems, cooling systems, creating healthful indoor air quality environments; building envelopes, building materials; water use reduction techniques, green construction techniques, multi-family green construction techniques, multi-family energy analysis, building energy analysis, energy modeling and building performance testing; or

(2) has professional experience with respect to the construction or substantial renovation of a residential building meeting these green residential building standards within the last 3 years and has participated, or agrees to participate, in at least 15 hours of training every 2 years since completion of such construction or substantial renovation; or

(3) has one year management and supervisory builder experience in green residential building construction; or

(4) has 5 years of field experience in green or sustainable residential construction, or in a combination of both.

(b) Nothing herein contained shall prohibit a builder of, Owner of, prospective buyer of, or other person holding title to, a residential building, who possesses the training or qualifications prescribed by this section, from qualifying as a Technician with respect to other residential buildings being newly constructed or undergoing substantial renovation, but shall not inspect any residential building owned by such Technician or in which such Technician has a financial interest.

(c) For purposes of this Part, a builder shall meet one or more of the following qualifications or training requirements:

(1) (i) has 15 hours of green building training by an accredited education institution or a professional builders association or affiliate, or other comparable and Authority-approved training course, which shall include a review of the National Green Building Standard or LEED Rating Systems and one or more of the following: site planning and development for building green, principles of energy, water and resource efficiency; indoor air and environmental quality; building performance and building performance testing; or

(ii) is the builder of record for constructing residential buildings that have met the green residential building standards meeting this Part for at least 2 years or is the builder of record for constructing a minimum of two residential buildings meeting the requirements of this Part; and

(2) has agreed to participate, and participates, in at least 8 additional hours of green building or energy efficiency training by an accredited education institution or a professional builders association or

affiliate, or other Authority-approved comparable organization for every 2 years of Program participation.

Section 508.9 Application for Program Incentive

(a) For an Owner to receive a Program incentive for a residential building with qualified occupied square footage, such owner shall submit an Application before October 31, 2013, which shall include the following information:

- (1) name and address of Owner;
- (2) residential building address(es);
- (3) designation of the residential building as single family detached, townhouse, or multi-family and method of construction as built on-site, modular, or manufactured;
- (4) for residential buildings with more than one dwelling unit, number of dwelling units for which a Program incentive is requested and the total number of dwelling units in the structure;
- (5) qualified occupied square footage of the dwelling unit;
- (6) a copy of the Certificate(s) of Occupancy or a Certificate(s) of Completion;
- (7) a copy of the residential building's (i) second or higher level LEED certification based on the LEED for Homes Rating System or LEED for New Construction Rating System; or (ii) second or higher level NGBS certification;
- (8) a written description of the work performed that earned the incentive, which shall include but not be limited to design and construction techniques used to obtain the points necessary to obtain the LEED or NGBS certification and the minimum energy efficient specifications and performance specifications;
- 9) for residential buildings of not more than 3 stories containing 4 or fewer dwellings, with central air conditioners or heat pumps, a copy of the Technician's determination on room airflows;

(10) a copy of the written records of inspections performed in accordance with the requirements of Sections 508.5 and 508.7;

(11) a copy of documentation showing that all Technicians performing inspections meet the qualifications specified in Section 508.8; and

(12) a copy of documentation showing that the builder meets the training requirements specified in Section 508.8.

(b) Upon receipt of an Application, if the Authority determines that the Application is incomplete, the Authority shall notify the Owner within 45 days of receipt of the Application and describe the information that is needed to complete the Application.

Section 508.10 Exceptions

Exceptions to specific requirements contained in this Part may be made by the Authority on a limited and case-by-case basis, if compliance:

(a) would be inconsistent with public health or safety;

(b) would not be in compliance with Federal, State, or local law, rule or regulation, administrative or judicial order, or other such requirement; or

(c) with respect to an historic building eligible for or listed on the State or National Register of Historic Places would be incompatible or significantly inconsistent with the historic, aesthetic, cultural, or archeological character of the building.

Section 508.11 Reporting

No later than September first, two thousand eleven and September first of each year thereafter, the President of the Authority shall prepare and furnish a written report to the Governor, the Temporary President of the Senate, and the Speaker of the Assembly concerning activities under this Part. Such report shall include, but shall not be limited to:

(a) the name and address of each recipient of an incentive pursuant to this Part during the preceding calendar year; and

(b) the amount of any incentive made to each such person; and

(c) a description of the project and the work performed that earned the incentive.

Section 508.12 Referenced Material

The following referenced documents have been filed with the New York State Department of State. The documents are available from the addresses listed or, in the case of federal publications, from the Superintendent of Documents, U.S. Government Printing Office, 732 Capitol Street, NW, Washington, D.C. 20401, and for inspection and copying at the offices of the New York State Energy Research and Development Authority. For each reference, additional sources for hard copy materials and web sites, where appropriate, are provided.

Item	Website	Date
ACCA Standard 5 QI-2007	http://www.acca.org	2006
ANSI C82.2	http://www.ansi.org	2002
ARHI 210/240	http://www.arhinet.org	2003
ARHI 870	http://www.arhinet.org	2005
ANSI/ASHRAE 124-1991	http://www.ansi.org	1991
ANSI Z223.1-2002, Annex H	http://www.ansi.org	2002
ASHRAE 62.2 Minimum Ventilation Requirement	http://www.ashrae.org/publications	2007
ENERGY STAR Testing Facility Guidance Manual: Building a Testing Facility and Performing Solid State Test Method for ENERGY STAR Qualified Ceiling Fans	http://www.energystar.gov/ia/partners/manuf_res/downloads/ceiltestfinal.pdf	Version 1.1 Dec. 9, 2002
Home Ventilating Institute Standard 915	http://www.hvi.org	March 14, 2006
Home Ventilating Institute Standard 916	http://www.hvi.org	March 1, 2009
Home Ventilating Institute Standard 920	http://www.hvi.org	March 1, 2009
IESNA-LM-66-00	http://www.iesna.org	2009
IESNA LM-9	http://www.iesna.org	1999
ISO 13256-1	http://www.iso.org/iso/home.htm	1998
LEED for Homes Rating System	http://www.usgbc.org	2008
LEED for New Construction Rating	http://www.usgbc.org	2009

System		
National Green Building Standard (NGBS) ANSI 700-2008	http://www.nahbgreen.org	2008
10 CFR 430, Subpart B, Appendix C	http://www.gpoaccess.gov/cfr/index.html	Last amended Aug. 24, 2003
10 CFR 430, Subpart B, Appendix B1	http://www.gpoaccess.gov/cfr/index.html	Last amended Sept. 20, 1989
10 CFR 430, Subpart B, Appendix N	http://www.gpoaccess.gov/cfr/index.html	Last amended Feb. 24, 1998
10 CFR 430 Boilers	http://www.gpoaccess.gov/cfr/index.html	Last amended Oct. 22, 2007
10 CFR 430 Water Heaters	http://www.gpoaccess.gov/cfr/index.html	Last amended April 27, 2009
<i>Manufactured Home Construction and Safety Standards</i> , 24 CFR Part 3208	http://www.gpoaccess.gov/cfr/index.html	Last amended April 1, 1993