

ITHACA ENERGY CODE SUPPLEMENT

05/05/2021 – City of Ithaca

Three Documents work together:

- IECS
 - A local energy code supplement with requirements above and beyond the Energy Conservation Construction Code of New York State
 - Town of Ithaca and City of Ithaca versions to be as similar as possible

- IECS Reference Manual
 - Contains non-essential information to help understand and use the IECS, such as background information and commentary

- IECS Ordinance
 - IECS-enabling legislation as adopted by Common Council
 - To be codified in Chapter 146 of City Code
 - Enacts the IECS as the regulatory document containing requirements for compliance
 - Town will incorporate similar language as needed into IECS



Chapter 1 PURPOSE

SECTION 101 PURPOSE

101.1

This Ithaca Energy Code Supplement establishes a local energy code supplement with requirements above and beyond the state energy code. A separate Ithaca Energy Code Supplement Reference Manual provides commentary, examples, and other resources to support the requirements set forth in this document.

101.2

The requirements set forth give priority to electrification, renewable energy, and affordability. Objectives include:

- To deliver measurable and immediate reductions in greenhouse gas (GHG) emissions from new buildings, major renovations, and new additions.
- To promote best practices in the design of affordable buildings to deliver reduced GHG emissions.
- To provide a rapid but orderly transition to buildings that do not use fossil fuels for major building energy needs such as space heating and hot water heating, by 2026. For construction subject to the Ithaca Energy Code Supplement, requirements for reductions in GHGs go into effect in three steps: 2021, 2023, and 2026.

Chapter 2 SCOPE AND APPLICATION

SECTION 201

201.1

This energy code supplement provides requirements that are in addition to the requirements of the Energy Conservation Construction Code of New York State (ECCCNYS). This chapter shall be enforced in addition to the ECCCNYS.

SECTION 202 APPLICABILITY

202.1 Applicability

The requirements of this Ithaca Energy Code Supplement shall apply to the following construction:

- 1) All new construction, excluding additions and renovations that are not specified in this list
- 2) All additions 500 square feet or larger to single family dwellings or two-family dwellings
- 3) All additions 1,000 square feet or larger to buildings other than single family dwellings or two-family dwellings
- 4) All MAJOR RENOVATIONS, as defined in Chapter 3.

Exception to 202.1 Applicability

The requirements of the IECS shall not apply to construction that does not include directly heated space.

202.2 Compliance

Code compliance as applied to types of buildings:

- Commercial Buildings shall meet the provisions of Chapter 4, Commercial Building Provisions.
- Residential Buildings shall meet the provisions of Chapter 5, Residential Building Provisions.
- Mixed-use buildings where more than 50% of the heated floor area is residential shall meet the requirements for residential buildings set forth in Chapter 5. Mixed-use buildings where 50% or more of the heated floor area is commercial shall meet the requirements for commercial buildings set forth in Chapter 4. In mixed-use buildings, the whole building shall comply with all applicable requirements; no portion is exempt from requirements.
- Additions – The applicant shall demonstrate compliance for additions in either of the following two ways:
 1. Independent of the existing building: All applicable requirements shall be met for the addition alone, without considering the existing building. If the addition is complying independent of the existing building, then all references to “building” in Chapters 4, 5 and 6 shall refer to the addition.

2. Together with the existing building: All applicable requirements shall be met for the addition and the existing building together, as a whole. If the addition is complying together with the existing building, then all references to “building” in Chapters 4, 5, and 6 shall refer to the addition and the existing building together.
- In MAJOR RENOVATIONS, the whole building, including space outside of the work area, shall comply with all applicable requirements.

Chapter 3 DEFINITIONS

SECTION 301 GENERAL

301.1 Terms Defined in Other Codes

Where terms are not defined in this code and are defined in the Energy Conservation Construction Code of New York State, such terms shall have the meanings ascribed to them as in that code. Where terms are not defined in this code and are defined in a New York State code other than the Energy Conservation Construction Code, and the applicable code is specifically referenced in relation to the terms, such term shall have the meanings ascribed to them in relation to the referenced code.

SECTION 302 GENERAL DEFINITIONS

ACCREDITED PASSIVE HOUSE CERTIFIER - An organization accredited by Passive House Institute or Passive House Institute US as a Passive House Certifier. A list of Accredited Passive House Certifiers can be found at www.passivehouse.com and www.phius.org.

ADAPTIVE REUSE – The repurposing of a building for a new permitted use or change in occupancy type.

ASHRAE 90.1. The publication entitled "ANSI/ASHRAE/IES Standard 90.1, Energy Standard for Buildings Except Low-rise Residential Buildings" published by ASHRAE, the American Society of Heating, Refrigerating and Air-Conditioning Engineers. In several provisions, a specific printing of the standard is specified, for example, ASHRAE 90.1-2013.

BIOMASS – Organic material that is processed and burned to provide energy, particularly for space heating, through direct thermal energy. Biomass for space heating purposes includes cord wood, pellets, and chips.

BUILDING THERMAL ENVELOPE – The insulated exterior walls (above and below grade), floors, ceilings, roofs, and any other building element assemblies that enclose heated space or provide a boundary between heated space and unheated space.

COMMERCIAL BUILDING – See also **MIXED-USE BUILDING**. Any building that is not included in the definition of **RESIDENTIAL** building.

COMMUNITY RENEWABLE ENERGY FACILITY: An off-site renewable energy system or facility that is qualified as a community energy facility under applicable New York state and local utility statutes and rules.

DESIGN PROFESSIONAL – A Professional Engineer (PE) or a Registered Architect (RA) licensed to practice in the State of New York.

DIRECTLY HEATED FLOOR AREA – The horizontal projection of the floors associated with the directly heated space.

DIRECTLY HEATED SPACE - An area or room that is enclosed within the building thermal envelope and is directly heated using fossil fuel, electricity, or biomass as the energy source. Spaces are indirectly heated (and not directly heated) where they connect through openings with heated spaces, where they are separated from heated spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating using fossil fuel, electricity, or biomass.

DORMITORY - A multiple dwelling which provides sleeping accommodations and domestic facilities and services for a group of college, university or secondary school students.

EASY PATH – Also known as **PRESCRIPTIVE COMPLIANCE PATH**. One possible compliance path for this Code, under which a certain number of points must be earned.

ELECTRIC VEHICLE CHARGING STATION (ELECTRIC VEHICLE SUPPLY EQUIPMENT [EVSE], EV CHARGING STATION, CHARGING POINT) - The element in an infrastructure that supplies electric energy for the recharging of plug-in electric vehicles.

ELECTRIC VEHICLE PARKING SPACE (EV PARKING SPACE) – A parking space that includes access to a dedicated electric vehicle charging port and supporting electrical infrastructure, collectively referred to as Electric Vehicle Supply Equipment (EVSE).

ENERGY USE – All references to energy use in this document refer to site energy use, which is the heat and electricity consumed by a building as reflected at the meter and/or in the utility bills.

ENERGY PROFESSIONAL - A professional holding a current accreditation in the energy field from BPI, AEE, ASHRAE, RESNET, or other body approved by the Director of Planning and Development or their designee.

FLOOR AREA – The total square footage of all levels as measured from the inside finished surface of the walls, but excluding outside courts, unconditioned garages, and uninhabitable crawl spaces and attics.

FOSSIL FUELS – An energy source formed in the Earth's crust from decayed organic material. The common fossil fuels are petroleum, coal, and natural gas. For purposes of this IECS, fossil fuels shall also include common extracts, derivatives, and products of fossil fuels, including but not limited to propane, kerosene, and gasoline.

GREENHOUSE GAS (GHG) – Any of several gases, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases, that trap heat in the atmosphere.

HEATED FLOOR AREA – The horizontal projection of the floors associated with the heated space.

HEATED SPACE - An area or room that is enclosed within the building thermal envelope and is directly or indirectly heated using fossil fuel, electricity, or biomass as the energy source. Spaces are indirectly heated where they connect through openings with heated spaces, where they are separated from heated spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating using fossil fuel, electricity, or biomass.

HEAT PUMP, AIR SOURCE – Air source heat pumps extract heat from the ambient air. Water loop boiler/tower heat pumps are not considered air source heat pumps.

HEAT PUMP, GROUND SOURCE – Ground source heat pumps, also known as geothermal heat pumps, are heat pumps that extract heat from the earth, groundwater, a body of water, or similar sources. Water loop boiler/tower heat pumps are not considered ground source heat pumps.

HOTEL – As defined in City Code Section 325, and shall include hotel, motel, bed-and-breakfast inn, as those terms are defined in Section 325.

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) – A green building rating/certification system, developed by the U.S. Green Building Council (USGBC) and administered by Green Business Certification, Inc. (GBCI).

LIGHTING POWER ALLOWANCE (LPA) - Maximum allowed lighting power density. Lighting Power Allowances for use in Prescriptive Compliance Path/Easy Path point A14 Right Lighting are given in Table AA1 (Appendix A).

LIGHTING POWER DENSITY (LPD) - Lighting power consumption per square foot of floor area, measured in watts per square foot.

LIVABLE SPACE - A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered livable spaces.

MAJOR RENOVATION – Any construction or renovation to an existing structure other than a repair or addition, where (1) the WORK AREA exceeds 75 percent of the FLOOR AREA and (2) two or more of the following occur:

A) Replacement or new installation of a heating plant or system (e.g. boiler, furnace, or other major system). Changes to ventilation and air conditioning systems are not considered renovations of the heating system.

B) Construction that involves disassembly of greater than 50% of the area of the above-grade portion(s) of the BUILDING THERMAL ENVELOPE in the building.

C) Changes to lighting, including but not limited to new installation, replacement, relocation, or removal, of lamps, lighting, or other illumination fixtures in greater than 50% of the building FLOOR AREA. Space

within a building interior that is not currently lit, and is not proposed to be lit, shall not count toward the 50% calculation.

MIXED-USE BUILDING – See also **RESIDENTIAL BUILDING** and **COMMERCIAL BUILDING**. Any building in which a portion of the use is residential, and a portion of the use is commercial. For purposes of this Supplement, any mixed-use building in which more than 50% of the **HEATED FLOOR AREA** is for residential use shall be classified as a **RESIDENTIAL BUILDING**. Any other mixed-use building shall be classified as a **COMMERCIAL BUILDING**. When determining the size of residential spaces, include all dwelling units, as well as all shared amenity spaces (common areas) that serve only the dwelling units, including but not limited to shared lobbies, hallways, stairways, gyms and laundry areas.

NATIONAL GREEN BUILDING STANDARD (NGBS, OR ICC/ASHRAE 700) – A green building rating/certification system approved by the American National Standards Institute (ANSI), under which points can be earned for energy efficiency; water efficiency; resource efficiency; lot development; operation and maintenance; and indoor environmental quality.

OCCUPIABLE SPACE - A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes or in which occupants are engaged at labor, and which is equipped with means of egress and light and ventilation facilities meeting the requirements of the Building Code of New York State.

ON-SITE RENEWABLE ENERGY SYSTEM: a renewable energy system located on any of the following:

- a. The building
- b. The property upon which the building is located
- c. A property that shares a boundary with and is under the same ownership or control as the property on which the building is located
- d. A property that is under the same ownership or control as the property on which the building is located and is separated only by a public right-of-way from the property on which the building is located

PASSIVE HOUSE CERTIFICATION – A certification program for buildings, including commercial buildings, constructed to high-performance “passive building standards.”

PERFORMANCE-BASED COMPLIANCE PATH – Also known as **WHOLE BUILDING PATH**. A compliance path for the Ithaca Energy Code Supplement, under which a building must comply with specified standards of one of several certification programs and/or use modeling to show compliance.

PLUG LOAD - A device that is powered by means of an electrical plug and matching socket or receptacle. This excludes devices that are accounted for as part of major building end uses such as HVAC, lighting systems, and water heating.

PRESCRIPTIVE COMPLIANCE PATH – Also known as Easy Path. A compliance path for the Ithaca Energy Code Supplement, under which a certain number of points must be earned for the building to show compliance.

PROCESS ENERGY - Energy consumed in support of a manufacturing, industrial, commercial, research, or educational process other than space heating, ventilating, air conditioning, service water heating, plug loads, lighting, and appliances. Examples of process loads include commercial cooking, commercial refrigeration, energy used by machinery in manufacturing, energy used by medical equipment, emergency generators, and energy used for agricultural needs. Examples of loads that are *not* considered process loads include electricity required for exhaust fans, heating and cooling for ventilation makeup air for any purpose including kitchen and lab hoods, and energy used for clothes drying.

REC: See Renewable Energy Credit (REC)

RENEWABLE ENERGY CREDIT (REC): a tradable instrument that represents the environmental attributes of one megawatt-hour of renewable electricity generation and is transacted separately from the electricity generated by the renewable energy source. Also known as REC, renewable energy certificate, energy attribute and energy attribute certificate.

RESIDENTIAL BUILDING – See also MIXED-USE BUILDING. Any building covered by the Residential Code of New York State, as well as any building that is classified in accordance with Chapter 3 of the Building Code of New York State in Group R-2, R-3, or R-4, including any residential building that has more than three stories above grade plane.

RESTAURANT – Any restaurant, fast food establishment, food production facility or tavern as those terms are used and defined in Section 325 of the City of Ithaca Code.

SERVICE WATER HEATING - Also known as domestic hot water heating. Supply of hot water for purposes other than comfort heating.

SPANDREL PANEL - The area of a curtain wall or screen located between vision areas of windows, which conceals structural building components such as columns, floors, HVAC equipment, and plumbing.

SPLIT SYSTEM - A heat pump or air conditioner in which one component is located outdoors and the other component(s) indoors, and which components are connected by refrigerant piping.

WHOLE BUILDING PATH – Also known as PERFORMANCE-BASED COMPLIANCE PATH. One possible compliance path for the Ithaca Energy Code Supplement, under which a building must comply with specified standards of one of several certification programs and/or use modeling to show compliance.

WINDOW-TO-WALL RATIO – The total area of exterior glazing (windows) in a building divided by the total area of the above-grade walls, expressed as a percentage.

WORK AREA – That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed, and portions of the building where work not initially intended by the owner is specifically required by the provisions of the New York State Existing Building Code.

Chapter 4 COMMERCIAL BUILDING PROVISIONS

SECTION C401 GENERAL

C401.1 Scope

The provisions in this chapter are applicable to COMMERCIAL BUILDINGS and MIXED-USE BUILDINGS where 50% or more of the heated floor area is commercial, their building sites, and associated systems and equipment.

C401.2 Application

COMMERCIAL BUILDINGS shall comply with one of the following:

1. Prescriptive Compliance Path/Easy Path: The requirements of Section C402
 - a. As part of the application packet, the applicant shall submit a checklist and worksheet which the City shall use as the basis for verifying and showing compliance with the IECS.
2. Performance-based Compliance Path/Whole Building Path: The requirements of Section C403
 - a. As part of the application packet, the applicant shall submit the relevant documentation, which is detailed in C403, which the City shall use as the basis for verifying and showing compliance with the IECS.

Section C402 PRESCRIPTIVE COMPLIANCE PATH/EASY PATH

C402.1 General

To meet the requirements of this section C402, a building must achieve a minimum of six (6) of the points described in this section. A summary table is provided in 402.6.

C402.2 Efficient Electrification (EE)

C402.2.1 EE1 Heat Pumps for Space Heating

Two points shall be earned for using air source heat pumps or three points shall be earned for using ground source heat pumps, as described in C402.2.1.

C402.2.1.1

Only air source heat pumps or ground source heat pumps shall be used for all space-heating needs, with exceptions for electric resistance heating as described in section 402.2.1.4. A heating system that uses only ground source heat pumps (and electric resistance heating as allowed) shall earn three points. A

heating system that uses only air source heat pumps or uses a combination of air source and ground source heat pumps (and electric resistance heating as allowed) shall earn two points.

C402.2.1.2

Fossil fuels shall not be used for any space heating, space cooling or ventilation systems in the building, including backup heating systems. Water loop boiler/tower heat pumps that use fossil fuels shall not earn credit under this point.

C402.2.1.3

Except as stated in the second sentence of this provision C402.2.1.3, air source heat pumps shall be listed in the Northeast Energy Efficiency Partnerships (NEEP) Cold Climate Air Source Heat Pump Product List, for the product types and sizes covered. For any air source heat pump not covered by NEEP, the heat pump shall use a variable speed compressor(s) and the heat pump compressor(s) shall operate in temperatures below zero (0) degrees Fahrenheit (the compressor may be supplemented by electric resistance heat in accordance with the exceptions described in section 402.2.1.4).

C402.2.1.4

To allow flexibility, electric resistance heat is allowed for a portion of space heating needs. Applicants shall submit documentation showing that at least one of the following conditions is met.

- 1) Stand-alone electric resistance heating (not associated with heat pumps) is used to heat 10% or less of the building's heated floor area.
- 2) Stand-alone electric resistance heating (not associated with heat pumps) is used to meet 10% or less of the building's projected annual space heating load.

C402.2.2 EE2 Heat Pumps for Service Water Heating

One point shall be earned for meeting the requirements of C402.2.2.

Restrictions: This point may only be earned when all commercial portions of the building meet one of the following criteria.

- a) Are classified as hotel, restaurant, or inpatient healthcare
- b) Collectively use more than 40 gallons of water per square foot on an annual basis, as cited in the latest Commercial Buildings Energy Consumption Survey (CBECS) or comparable source

C402.2.2.1

All service water heating systems shall use heat pumps and shall not use fossil fuels. All heat pump water heaters shall be set on heat pump-only mode.

Exception: In commercial kitchens, booster heat units for dishwashing must be electric, but shall be exempt from the heat pump requirement. Units used to pre-heat water for dishwashing shall use heat pumps.

C402.2.3 EE3 Commercial Cooking Electrification

Three points shall be earned for meeting the requirements of C402.2.3.

Restrictions:

- 1) Points may only be earned for buildings or portions thereof that are restaurants or other food service establishments that use a commercial kitchen hood, and
- 2) Points may only be earned if the building does not use fossil fuels, except for PROCESS ENERGY. For this point, PROCESS ENERGY shall exclude commercial cooking.

C402.2.3.1

All cooking equipment, including but not limited to ranges, griddles, and fryers, shall be electric.

C402.3 Affordability Improvements (AI):

C402.3.1 AI1 Smaller Building/Room Size

One or two points may be earned according to the requirements below.

Restrictions:

- a. This point may only be earned for Hotels.
- b. For additions, this point may only be earned if the applicant demonstrates IECS compliance for the addition together with the existing building. This point may not be earned when considering the addition independent of the existing building.

C402.3.1.1

For hotels, the average DIRECTLY HEATED FLOOR AREA of all guest rooms in the building shall not be greater than the maximum average guest room size listed in Table C402.3.1.1. Individual guest rooms may exceed the maximum size.

Table C402.3.1.1

Area Requirements for Hotels and Motels

Maximum average guest room size allowed to receive one point (SF)	280
Maximum average guest room size allowed to receive two points (SF)	230

C402.3.2 AI2 Heating System in Heated Space

One point may be earned according to the requirements below.

C402.3.2.1

All components of heating systems shall be installed inside space that meets all the following criteria:

- 1) Inside the BUILDING THERMAL ENVELOPE
- 2) DIRECTLY HEATED SPACE
- 3) LIVABLE SPACE, OCCUPIABLE SPACE or contiguous to LIVABLE SPACE or OCCUPIABLE SPACE
- 4) On a building level where at least 50% of the FLOOR AREA is DIRECTLY HEATED FLOOR AREA

For purposes of this section, heating system includes all parts of the system **except for exhaust components and dedicated air intake components**, including but not limited to mechanical equipment and the distribution network. Examples of spaces that are not allowed for heating system installation include but are not limited to: unheated or unfinished basements and attics, crawl spaces, outdoors, roofs, and exterior wall cavities. Rooftop systems, window-mounted systems, and “through-the wall” equipment such as packaged terminal equipment shall not be used.

Exceptions:

- 1) Outdoor units of split system heat pumps may be located outdoors.
- 2) There are no limitations on the location of refrigerant piping.

C402.3.3 AI3 Efficient Building Shape

One point may be earned according to the requirements below.

C402.3.3.1

The exterior surface area divided by the DIRECTLY HEATED FLOOR AREA shall be less than the maximum value provided in Table C402.3.3.1.

C402.3.3.2

The exterior surface area shall be measured along the above-grade portion(s) of the BUILDING THERMAL ENVELOPE, including but not limited to walls, roofs/ceilings (depending on the location of insulation), and exposed floors (such as those below a cantilever). The area of windows, doors, and skylights shall be included as part of the exterior surface area. The areas of the BUILDING THERMAL ENVELOPE between directly heated spaces and indirectly heated spaces or unheated spaces, such as the wall between a heated building and an attached unheated garage, shall be included as part of the exterior surface area.

C402.3.3.3

For additions, the area of the thermal envelope between directly heated space in the addition and directly heated space in the original building (including shared walls and, if the addition is above the original building, floors/ceilings) shall not be counted as part of the exterior surface area.

Table C402.3.3.1

Directly Heated Floor Area (SF)	Maximum Value of: Exterior Surface Area (SF) divided by Directly Heated Floor Area (SF)	Directly Heated Floor Area (SF)	Maximum Value of: Exterior Surface Area (SF) divided by Directly Heated Floor Area (SF)
199 or less	4.69	3,000 - 3,999	1.60
200 - 299	3.88	4,000 - 4,999	1.48
300 - 399	3.45	5,000 - 5,999	1.39
400 - 499	3.17	6,000 - 6,999	1.31
500 - 599	2.98	7,000 - 7,999	1.25
600 - 699	2.83	8,000 - 8,999	1.19
700 - 799	2.71	9,000 - 9,999	1.15
800 - 899	2.68	10,000 - 14,999	1.05
900 - 999	2.57	15,000 - 19,999	0.94
1,000 - 1,099	2.47	20,000 - 29,999	0.84
1,100 - 1,199	2.38	30,000 - 39,999	0.75
1,200 - 1,299	2.31	40,000 - 49,999	0.68
1,300 - 1,399	2.24	50,000 - 59,999	0.64
1,400 - 1,499	2.18	60,000 - 69,999	0.61
1,500 - 1,599	2.13	70,000 - 79,999	0.58
1,600 - 1,699	2.08	80,000 - 89,999	0.55
1,700 - 1,799	2.04	90,000 - 99,999	0.53
1,800 - 1,899	2.00	100,000 - 199,999	0.46
1,900 - 1,999	1.96	200,000 - 299,999	0.39
2,000 - 2,499	1.86	300,000 - 399,999	0.35
2,500 - 2,999	1.74	400,000 or more	0.33

C402.3.4 AI4 Right Lighting

One point may be earned according to the requirements below.

C402.3.4.1. Mixed-Use Buildings

For mixed-use buildings classified as Commercial, the entire commercial portion and all common areas serving the residential portion (all areas outside of dwelling units, e.g. hallways, lobbies) shall comply with the requirements in this section. Lighting inside the dwelling units does not need to comply with the requirements in this section.

C402.3.4.2 Lighting Power Allowance

The total connected interior lighting power shall not be greater than the interior lighting power allowance. The total connected interior lighting power shall be calculated using the method described in the Energy Conservation Construction Code of NYS. (**Informative note:** *the method can be found in the 2020 ECCCNY in section C405.3.1 Total Connected Interior Lighting Power.*) The total interior lighting power allowance, in watts, shall be determined according to Table AA1 (Appendix A), for all areas of the building covered in this permit. The lighting power allowance shall be determined by multiplying the floor area of each space times the lighting power density (LPD) value for the space type in Table AA1 that most closely represents

the proposed use of the space, and then summing the lighting power allowances for all spaces to calculate the total interior lighting power allowance. Trade-offs among spaces are permitted. Construction documents shall include a table of space-by-space as-designed lighting power densities along with the lighting power allowances from Table AA1.

C402.3.4.3 Additional interior lighting power.

An increase in the interior lighting power allowance is permitted for specific lighting functions. Additional power shall be permitted only where the specified lighting is installed and automatically controlled separately from the general lighting, to be turned off during non-business hours. This additional power shall be used only for the specified luminaires and shall not be used for any other purpose. An increase in the interior lighting power allowance is permitted in the following cases:

1. For lighting equipment to be installed in sales areas specifically to highlight merchandise, the additional lighting power shall be determined in accordance with Equation 4-1.

$$\text{Equation 4-1: Additional interior lighting power allowance} = 250 \text{ watts} + (\text{Retail Area 1} * 0.3 \text{ W/ft}^2) + (\text{Retail Area 2} * 0.3 \text{ W/ft}^2) + (\text{Retail Area 3} * 0.7 \text{ W/ft}^2) + (\text{Retail Area 4} * 1.3 \text{ W/ft}^2)$$

Where:

Retail Area 1 = The floor area for all products not listed in Retail Area 2, 3 or 4

Retail Area 2 = The floor area used for the sale of vehicles, sporting goods, and small electronics.

Retail Area 3 = The floor area used for the sale of furniture, clothing, cosmetics, and artwork.

Retail Area 4 = The floor area used for the sale of jewelry, crystal, and china.

Exception: Other merchandise categories are permitted to be included in Retail Areas 2 through 4, provided that justification documenting the need for additional lighting power based on visual inspection, contrast, or other critical display is approved by the code official.

2. For spaces in which lighting is specified to be installed in addition to the general lighting for the purpose of decorative appearance or for highlighting art or exhibits, provided that the additional lighting power shall be not more than 0.5 w/ft² of such spaces.

C402.3.4.4 Lighting Controls

Except where lighting is required to stay on by New York State or local code, motion sensors are required for interior lighting in the following space types: office, conference room, kitchenette, corridor, stairwell, restroom, lobby. Short off-delay (1 minute or less) is required for motion sensors. Manual control that allows lights to be kept off shall be provided. Except where lighting is required to stay on by New York State or local code, all exterior lighting shall be controlled by motion sensors, as well as photocells that ensure lighting stays off during daylight hours.

Exception:

Lighting for signs is exempt from the requirements of C402.3.4.4

C402.3.4.5 Other Lighting Standards

Exterior lighting shall comply with Dark Sky standards.

C402.3.4.6 Commissioning

Commissioning of lighting and lighting controls is required. A commissioning plan shall be developed by a DESIGN PROFESSIONAL or an ENERGY PROFESSIONAL or approved agency (as defined in the state energy code) and shall include the following items:

1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.
2. A listing of specific lighting and controls to be tested and a description of the tests to be performed.
3. Functions to be tested, including but not limited to, lighting power density (to show compliance with lighting power allowance requirements) and control settings.
4. Conditions under which the tests will be performed.
5. Measurable criteria for performance.

The DESIGN PROFESSIONAL or ENERGY PROFESSIONAL shall execute the commissioning plan. A commissioning report, consistent with the commissioning plan, shall be submitted prior to the Certificate of Occupancy being issued.

C402.3.5 AI5 Modest Window-to-Wall Ratio

One point may be earned according to the requirements below.

C402.3.5.1

The vertical fenestration area, not including opaque doors and opaque spandrel panels, shall be not greater than 20 percent of the gross above-grade wall area.

C402.3.5.2

For additions, the area of above-grade walls that were part of the building thermal envelope of the original building but are not part of the building thermal envelope of the new building shall be counted towards the above-grade wall area of the addition.

C402.4 Renewable Energy (RE):

C402.4.1 RE1 Renewable Energy Systems

Up to three points may be earned according to the requirements below.

C402.4.1.1 Points available

On-site and off-site renewable energy systems that meet the requirements of this section shall earn up to three points based on their annual electrical or thermal energy production. Multiple renewable energy systems may be used to earn points, but no more than three total points may be earned for any combination of renewable energy systems.

C402.4.1.2 Determining the number of points earned

The number of points earned shall be determined according to the steps below. The applicant shall submit documentation of all related assumptions and calculations.

Step 1: Calculate Renewable Energy Production

The Renewable Energy Production (REP) is the projected annual energy production of the renewable energy system, expressed in kilowatt-hours per year (kWh/yr). For thermal systems, the conversion 1 kWh = 3.412 kBtu shall be used.

Step 2: Calculate the Number of Points Earned

The number of points earned for a renewable energy system is based on the directly heated floor area of the building it serves. Points shall be earned based on a weighted average related to residential and commercial floor area, as described in Equation 4-2. For purposes of this section C402.4.1, residential space shall include dwelling units and common areas that only serve dwelling units.

Equation 4-2: Minimum Renewable Energy Production needed to earn each point =

$$(1.2 \text{ kWh/ft}^2 \times \text{RA}) + (2.4 \text{ kWh/ft}^2 \times \text{CA})$$

CA = Directly heated floor area of Commercial space (ft²)

RA = Directly heated floor area of Residential space (ft²)

Note: For buildings that have no residential space, set RA equal to zero. For buildings that have no commercial space, set CA equal to zero.

Example Calculation - for informational purposes only

Assumptions: Mixed-use building with 2,000 ft² of residential directly heated floor area and 5,000 ft² of commercial directly heated floor area. A 25 kW solar array is being used.

Step 1: Using the PVWatts Calculator, it is projected that the 25 kW solar array will produce 30,000 kWh/year.

Renewable Energy Production is 30,000 kWh/year

Step 2: Using Equation 4-2:

Minimum REP needed for each point = $(1.2 \text{ kWh/ft}^2 \times \text{RA}) + (2.4 \text{ kWh/ft}^2 \times \text{CA})$

Minimum REP needed for each point = $(1.2 \text{ kWh/ft}^2 \times 2,000 \text{ ft}^2) + (2.4 \text{ kWh/ft}^2 \times 5,000 \text{ ft}^2)$

Minimum REP needed for each point = 2,400 kWh + 12,000 kWh

Minimum REP needed for each point = 14,400 kWh

Using the assumptions for this building and renewable energy system, two (2) points may be earned.

C402.4.1.3 Energy Sources

Renewable energy systems shall produce electricity from solar, wind, or hydropower resources, or produce thermal energy from solar, geothermal, or hydrothermal resources. Thermal energy absorbed from or rejected to outdoor air/ground/water and used in conjunction with heat pumps does not count as renewable energy for the purposes of this section. Hydropower shall be from new generation capacity

on a nonimpoundment or new generation capacity on an existing impoundment. Hydropower shall meet one of the following conditions:

- a. The hydropower facility complies with the *Low Impact Hydropower Certification Handbook* and is certified by a nationally recognized accreditation organization.
- b. The hydropower facility complies with UL 2854 and is certified by an organization that has the standard in its ISO 17065 scope of accreditation.
- c. The hydropower facility consists of a turbine in a pipeline or a turbine in an irrigation canal.

For facilities falling under condition (a) or (b), only output generated during the period of certification is eligible for *RECs* sale in accordance with the provisions of this section. Renewables from new impoundments of water are not eligible.

C402.4.1.4 Qualifying Renewable Energy Systems

Renewable energy systems producing electricity or thermal energy that is delivered to or credited to the building to comply with Section C402.4.1 shall meet the following requirements:

- a. Renewable energy systems shall satisfy one of the following criteria:
 1. ON-SITE RENEWABLE ENERGY SYSTEM
 - i. Self-generation
 - ii. Purchase Contract such as a Power Purchase Agreement
 2. Off-site renewable energy system
 - i. Self-generation (an off-site renewable energy system owned by the building owner)
 - ii. COMMUNITY RENEWABLE ENERGY FACILITY
 - iii. Purchase Contract such as a Power Purchase Agreement
- a. The renewable energy system shall be located in New York Independent System Operator (NYISO) territory and shall be located where the energy can be delivered to the building site by any of the following:
 1. Direct connection to the renewable energy system
 2. The local utility or distribution entity
 3. An interconnected electrical network where energy delivery capacity between the generator and the building site is available (**Informative Note:** Examples of interconnected electrical networks include regional power pools and regions served by Independent System Operators or Regional Transmission Organizations.)
- b. The renewable energy system must have commenced operation on or after January 1, 2015 and before the date the certificate of occupancy for the building is issued.

Exception to C402.4.1.4 (c)

If the building owner can provide evidence that, for the duration of the planning process, it has made a good faith effort to have the renewable energy system constructed and operational by the time of certificate of occupancy, and due to

circumstances out of the control of or not otherwise due to any negligence or willful misconduct on behalf of the building owner, the renewable energy system is not constructed or is not operational, then the building owner shall be allowed up to one year after the certificate of occupancy is issued to meet C402.4.1.4 (c).

- d. Where the renewable energy system ceases operation, or the owner cannot legally claim the associated energy or RECs for any reason, the building owner shall produce or procure alternative qualifying renewable energy in an amount equal to or greater than the amount needed to earn the same number of points under the requirements of C402.4.1.2.

C402.4.1.5 Reporting and Documentation

- a. The building owner shall submit documentation of renewable energy system ownership, participation in a community renewable energy facility, or renewable energy procurement. Records on power and thermal energy produced or purchased by the building owner from the renewable energy producer shall be retained by the building owner on behalf of the entity demonstrating financial or operational control over the building seeking compliance to this standard and submitted to the Code Enforcement Officer on an annual basis for no less than 15 years.
- b. For systems generating electricity, documentation shall be provided to the CODE ENFORCEMENT OFFICER that indicates an exclusive chain of custody and ownership of the RECs from the renewable energy system to the building owner, on an annual basis for no less than 15 years. RECs supplied from the renewable energy system shall be conveyed to and retired on behalf of the entity who has financial or operational control over the building's electricity consumption. The annual generation vintage date of delivered RECs shall be allocated to the same 12-month reporting year, up to six months prior, or up to three months after the calendar year in which the electricity is used in the building.

Exceptions to C402.4.1.5 (b)

- 1) If the total capacity of all renewable energy systems being used to earn points under C402.4.1 is less than 25 kW, the requirements of C402.4.1.5(b) shall be waived.
- 2) Where the building owner cannot provide documentation on the chain of custody or ownership of the RECs from the renewable energy system, the building owner shall provide documentation to the CODE ENFORCEMENT OFFICER of an alternate supply contract for replacement RECs from an alternate renewable energy source. The quantity of RECs contracted for shall be equal to or greater than the amount needed to earn the desired number of points under the requirements of C402.4.1.2. These RECs shall comply with the *Green-e® Renewable Energy Standard for Canada and the United States* (latest edition) and shall be conveyed to and retired on behalf of the entity who has financial or operational control over the building's electricity consumption.

- c. Electricity, thermal energy and RECs from renewable energy systems may not be counted more than once for purposes of demonstrating compliance with this section C402.4.1. The reporting and documentation required in C402.4.1.4 shall clearly state how the energy and RECs are allocated to specific buildings. The City may request additional documentation to provide reasonable proof of ownership/procurement, and fulfillment of RECS and allocation requirements.
- d. In the case of full or partial transfer of ownership of the building, the following must be provided: proof of transfer of ownership; a signed statement from the new owner stating they understand the requirements of this section C402.4.1 and the duty to fulfill them; and contact information for the person(s) responsible for submitting annual reporting.

C402.4.1.6 Penalties for non-compliance

If a building uses this section C402.4.1 for compliance with the IECS and, for any reason, the requirements of this section are not met in full, as determined by a Code Enforcement Officer, the City may impose a fine in accordance with Code Section 146-59 for each day the building remains out of compliance. In no instance shall the applicable 15-year energy production and allocation requirements, the 15-year RECs requirements, or other requirements detailed in this section C402.4.1 be shortened or waived.

C402.4.2 RE2 Biomass Space Heating

Three points may be earned according to the requirements below.

C402.4.2.1

Only biomass systems shall be used for all space-heating needs, with exceptions for electric resistance heating as described in C402.4.2.4.

C402.4.2.2

Fossil fuels shall not be used for any space heating, space cooling or ventilation systems in the building, including backup heating systems.

C402.4.2.3

All biomass equipment must comply with the NYSERDA Renewable Heat NY program guidelines, available at www.nyserda.ny.gov/All-Programs/Programs/Renewable-Heat-NY.

C402.4.2.4

To allow flexibility, electric resistance heat is allowed for a portion of space heating needs. Applicants shall submit documentation showing that at least one of the following conditions is met.

- 1) Stand-alone electric resistance heating is used to heat 10% or less of the building's heated floor area.

- 2) Stand-alone electric resistance heating is used to meet 10% or less of the building's projected annual space heating load.

C402.5 Other Points (OP):

C402.5.1 OP1 Development Density

One point may be earned according to the requirements below.

Restrictions: A maximum of two points total may be earned for points OP1 Development Density, OP2 Walkability, and OP3 Electric Vehicle Parking Spaces combined.

C402.5.1.1

One point shall be earned if $(DU + CA) > (7 \times \text{Acreage})$, where:

DU = the number of all Residential dwelling units on the entire parcel occupied by the building

CA = the floor area of all Commercial space, measured in units of 1,000 square feet, on the entire parcel occupied by the building

Acreage = the land area, measured in acres, of the entire parcel occupied by the building.

C402.5.1.2

DU shall include all dwelling units on the parcel occupied by the building, including those in existing buildings. CA shall include all Commercial space on the parcel occupied by the building, including that in existing buildings. CA shall not include common areas serving only dwelling units or other Residential space. Acreage shall include all land area on the parcel occupied by the building.

Example Calculation - for informational purposes only

Mixed Use Development

Residential units: 12 apartments → DU = 12

Commercial space: 10,000 sq ft → CA = 10

Parcel acreage: 1.5 acres → Acreage = 1.5

$$DU + CA = 12 + 10 = 22$$

$$7 \times \text{Acreage} = 7 \times 1.5 = 10.5$$

$$22 > 10.5$$

1 point may be earned.

C402.5.2 OP2 Walkability

One point may be earned according to the requirements below.

Restrictions: A maximum of two points total may be earned for points OP1 Development Density, OP2 Walkability, and OP3 Electric Vehicle Parking Spaces combined.

C402.5.2.1

This point shall be earned when the following condition is met, in addition to the other requirements in this section C402.5.2.

- 1) The building is within one quarter (0.25) mile of at least five of the Neighborhood Amenity Types listed in Table C402.5.2.1.
 - a. No single Amenity Type shall be counted more than twice, even when more than two examples of the Amenity Type exist. For example, a building on Aurora Street's "Restaurant Row" could count two restaurants maximum.
 - b. At least two Amenity Categories shall be represented.
 - c. The one quarter mile measurement(s) may be taken from any part(s) of the building.

C402.5.2.2

For all buildings, at the time of project completion, sidewalks, walkways and/or trails must be present on the property and connect to an existing network of pedestrian infrastructure.

Table C402.5.2.1

Neighborhood Amenity Types and Categories

Amenity Category	Amenity Type
Food retail	Supermarket
	Grocery with produce section
Community-serving retail	Convenience store
	Farmers market
	Hardware store
	Pharmacy
	Other retail
Services	Bank
	Family entertainment venue (e.g., theater, sports)
	Gym, health club, exercise studio
	Hair care
	Laundry, dry cleaner
	Restaurant, café, diner (excluding those with only drive-thru service)
Civic and community facilities	Adult or senior care (licensed)
	Child care (licensed)
	Community or recreation center
	Cultural arts facility (museum, performing arts)
	Education facility (e.g., K–12 school, university, adult education center, vocational school, community college)
	Government office that serves public on-site
	Medical facility that treats patients
	Place of worship
	Post office
	Public library
	Public park
	Social services center

C402.5.3 OP3 Electric Vehicle Parking Spaces

One point may be earned for installing electric vehicle parking space(s) and related infrastructure that meet the requirements of this section.

Restrictions: A maximum of two points total may be earned for points OP1 Development Density, OP2 Walkability, and OP3 Electric Vehicle Parking Spaces combined.

C402.5.3.1 Required Number of EV Parking Spaces

The number of required EV parking spaces shall be determined using Table C402.5.3.1(1), based on the number of Residential Dwelling Units (DU) and the area of Commercial space (CA).

DU = the number of Residential dwelling units in the building.

CA = the area of all Commercial space, measured in units of 1,000 square feet, in the building. CA shall not include common areas serving only dwelling units or other portions of Residential space.

When determining the total number of required spaces in mixed-use buildings, EV space requirements for Residential Dwelling Units and for Commercial space shall be calculated separately and summed.

Table C402.5.3.1 (1)

Required Number of Electric Vehicle Parking Spaces

Residential Buildings		Commercial Buildings	
Number of Dwelling Units (DU)	Number of EV Spaces Required for Residential Portion (SR)	Area in units of 1,000 Sq. Ft (CA)	Number of EV Spaces Required for Commercial portion (SC)
1 to 6	1	5	2
7 to 13	2	10	3
14 to 20	3	15	5
21 to 24	4	20	6
25 to 30	5	25	7
31 to 38	6	30	9
39 to 46	7	35	10
47 to 53	8	40	12
<p>For up to 25 Dwelling Units, use table. For 26 or more Dwelling Units: $SR = (0.13 \times DU) + 1$</p> <p>Complete Residential and Commercial calculations separately, add results, and round up to nearest whole number: $SR + SC = ST$ (Total EV Parking Spaces)</p>		<p>The numbers listed above are examples. For <u>all</u> building sizes use the equation: $SC = 0.28 \times CA$</p> <p>Complete Residential and Commercial calculations separately, add results, and round up to nearest whole number. $SR + SC = ST$ (Total EV Parking Spaces)</p>	

Table C402.5.3.1 (2)

Sample Calculation for required number of EV Parking Spaces

Sample Calculation

44,300 sq ft mixed-use building. 26 Dwelling Units (DU) and 6,000 sq ft Commercial Area (CA)

$$SR = (0.13 \times 26) + 1$$

$$SR = 3.4 + 1 = 4.4$$

4.4 EV spaces are required for Residential portion

$$SC = 0.28 \times 6$$

$$SC = 1.7$$

1.7 EV spaces are required for Commercial portion

$$ST = SR + SC \text{ rounded up}$$

$$ST = 4.4 + 1.7 = 6.1, \text{ round up}$$

7 EV spaces are required for the building to earn a point.

C402.5.3.2

The requirements for this point as set forth here and in Table C402.6 are NOT intended to override or supplant existing zoning code provisions regarding parking requirements. To the extent that zoning permissible parking spaces cannot be accommodated on the building site, the building must seek off-site spaces in accordance with the provisions of this point and applicable zoning laws.

C402.5.3.3

All Electric Vehicle Parking Spaces shall be located on the same parcel as the building, in the same parking facilities as those used by one or more of the following target user groups: customers/clients; employees; and fleet vehicles. If no parking facilities exist on the same parcel, and off-site parking facilities do exist for one or more of the user groups, then EV parking spaces may be installed in those off-site parking facilities. Off-site parking must be within 0.25 miles of the building.

C402.5.3.4

All Electric Vehicle Parking Spaces shall be served by a dedicated Electric Vehicle Charging port. Electric Vehicle Charging Stations may have any number of ports.

C402.5.3.5

At least one Accessible Electric Vehicle parking space is required in any parking facility that includes more than 10 Electric Vehicle parking spaces. Any parking facility with more than 50 Electric Vehicle parking spaces must provide at least two Accessible Electric Vehicle parking spaces. The associated space(s) are not required to be designated only for accessible parking, as defined by the Building Code of NYS, but must meet all other accessibility requirements contained in New York State law.

C402.5.3.6

All buildings must install Level 2 EV charging stations that operate on a 240-volt AC circuit and/or Direct Current Fast Chargers.

C402.5.3.7

Electric vehicle charging spaces shall be provided with a dedicated branch circuit, raceways, and all other electric vehicle charging equipment. The branch circuit shall be identified for electric vehicle service in the service panel or subpanel directory. Electrical room(s) serving areas with EV parking spaces shall be designed to accommodate the electrical equipment and distribution required to serve all of the electric vehicle charging stations.

C402.5.3.8

Electric vehicle charging station equipment shall be maintained in all respects, including the functioning of the charging equipment. A phone number or other contact information shall be provided on the charging station equipment for reporting when the equipment is not functioning, or other problems are encountered.

C402.5.3.9

The Electric Vehicle Charging Station, including the charging cord, shall be installed so as to not interfere with pedestrian walkways at any time.

C402.5.3.10

Except for Accessible EV parking spaces, each EV parking space shall be posted with signage indicating that the space is only to be used for electric vehicle charging purposes. Days and hours of operations and any other restrictions on use of the parking space shall be included if time limits or tow-away provisions are to be enforced.

C402.5.4 OP4 Adaptive Reuse

One point may be earned according to the requirements below.

C402.5.4.1

The building must maintain 50% or more of the existing building structure and building thermal envelope, based on measurement of the surface area. The existing building structure must be retained in place and re-purposed for a different permitted use (for example, when an old school is adapted for use as apartments). A major renovation of a building and re-use for the same purpose shall not be eligible for this point.

C402.5.5 OP5 NY Stretch Code

One point may be earned according to the requirements below.

C402.5.5.1

The building shall comply with all requirements of the NYStretch Energy Code - 2020 Version 1.0, which is available at:

www.nyserda.ny.gov/All-Programs/Programs/Energy-Code-Training/NYStretch-Energy-Code-2020

C402.5.6 OP6 Custom Energy Improvement

Up to two points may be earned according to the requirements below.

C402.5.6.1

To earn one point, both of the following conditions must be met:

1. Reduce energy use by 1.2 kWh/SF/year or 4.1 kbtu/SF/year for all residential HEATED FLOOR AREA in the building.
2. Reduce energy use by 2.4 kWh/SF/year or 8.2 kbtu/SF/year for all commercial HEATED FLOOR AREA in the building.

C402.5.6.2

To earn two points, both of the following conditions must be met:

1. Reduce energy use by 2.4 kWh/SF/year or 8.2 kbtu/SF/year for all residential HEATED FLOOR AREA in the building.
2. Reduce energy use by 4.8 kWh/SF/year or 16.4 kbtu/SF/year for all commercial HEATED FLOOR AREA in the building.

C402.5.6.3

Multiple improvements may be combined to achieve each point under this improvement. Improvements may be made anywhere in the building as long as they meet the thresholds of energy use reduction. The proposed energy improvement(s) shall be submitted to the Code Enforcement Officer in writing, signed by the DESIGN PROFESSIONAL OR ENERGY PROFESSIONAL. Energy reduction must be shown through energy analysis performed by a DESIGN PROFESSIONAL OR ENERGY PROFESSIONAL. Simplified calculations (e.g., spreadsheet) are acceptable.

C402.5.6.4

For a baseline, use the 2016 Energy Conservation Construction Code of New York State. If the baseline condition is not addressed by the ECCCNY, use baseline conditions as defined in Appendix G of ASHRAE Standard 90.1-2013.

C402.5.6.5

Production of renewable energy shall not count toward energy reduction. Energy reduction must be calculated after applying all other proposed energy improvements to the proposed design. In other words, interactive energy savings must be performed. Savings cannot be taken for improvements made with other points, such as right-lighting or the NY Stretch Energy Code.

C402.6 Summary Table for Prescriptive Compliance Path / Easy Path

The following Table C402.6 is a summary of the Prescriptive Compliance Path / Easy Path for commercial buildings. This is a summary for informational purposes only. To earn points, all applicable requirements in sections C402.1, C402.2, C402.3, C402.4 and C402.5 must be met. In case of discrepancies between

Table C402.6 and the requirements in sections C402.1, C402.2, C402.3, C402.4 and C402.5, the latter shall hold precedence.

Table C402.6

**Commercial Compliance Summary for Easy Path/Prescriptive Path
Projects must earn at least six points**

Cate- gory	Improvement	Points	Details
EFFICIENT ELECTRIFICATION			
EE1	Heat pumps for space heating	2 - 3	2 points for air source heat pumps. 3 points for ground source heat pumps.
EE2	Heat pumps for domestic hot water heating	1	1 point for water heating systems that use heat pumps. Available to hotels and restaurants only.
EE3	Commercial cooking electrification	3	3 points for electric cooking equipment in restaurants and other food service buildings. Prerequisite: no fossil fuel use in the building.
AFFORDABILITY IMPROVEMENTS			
AI1	Smaller building/room size	1 - 2	Up to 2 points for smaller room sizes. Available for Hotel and Residential portions only.
AI2	Heating systems in heated space	1	1 point for installing heating systems in directly heated spaces.
AI3	Efficient building shape	1	1 point if exterior surface area divided by directly heated floor area is less than the maximum allowed value.
AI4	Right-lighting	1	1 point for reducing overlighting and implementing other lighting improvements.
AI5	Modest window-to-wall ratio	1	1 point for overall window-to-wall ratio less than 20% (individual spaces may exceed 20%).
RENEWABLE ENERGY			
RE1	Renewable energy systems	1 - 3	Up to 3 points for on-site or off-site renewable electric systems or on-site renewable thermal systems.
RE2	Biomass systems	3	3 points for biomass space heating systems.
OTHER POINTS			
OP1	Development density	1	1 point for achieving sufficient development density on the building parcel. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP2	Walkability	1	1 point if the building meets the walkability criteria. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP3	Electric Vehicle Parking Spaces	1	1 point for installing electric vehicle parking spaces and related infrastructure. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP4	Adaptive reuse	1	1 point for substantial re-purpose of existing building.
OP5	Meet NY Stretch Code	1	1 point for complying with NYStretch Energy Code
OP6	Custom energy improvement	1 - 2	Up to 2 points for reduction in energy use.

SECTION C403 PERFORMANCE-BASED COMPLIANCE PATH/WHOLE BUILDING PATH

C403.1 General

To meet the requirements of this section C403, a BUILDING must comply with any one of the high-performance building approaches described in C403.2, C403.3, C403.4, and C403.5.

C403.2 LEED-based and Energy Calculation-based Compliance

C403.2.1

Buildings shall comply with one of the following:

1. Using LEED v4 for Building Design + Construction, the building shall earn no less than 17 LEED points total in the Optimize Energy Performance credit and the Renewable Energy Production credit of the Energy and Atmosphere section.
 - a. LEED certification is not necessary.
 - b. Renewable energy generation that meets all applicable requirements for renewable energy systems described in C402.4.1 may be used to meet the requirements of the Renewable Energy Production credit.
2. Demonstrate 40% savings relative to ASHRAE Standard 90.1-2013, using the energy cost budget method OR Demonstrate 46% savings relative to ASHRAE Standard 90.1-2010, using the energy cost budget method.
 - a. Renewable energy generation may be used. All applicable requirements for renewable energy systems described in C402.4.1 must be met. Renewable energy generation used to achieve the 40%/46% savings is capped at 25% of the baseline energy use.
 - b. The energy cost reduction assessment and requirement shall exclude energy use by PROCESS LOADS. However, the energy model shall include the energy used for PROCESS LOADS because energy used by heating, cooling, and ventilation (including exhaust fans/hoods, makeup air fans, and heating/cooling for makeup air) is subject to the energy cost reduction requirement. After the baseline and proposed energy models are run, for the energy cost reduction calculation, subtract out the process energy use from both the baseline and the proposed building energy model results, and use the resulting without-process-energy results for the energy cost calculations.

C403.2.2

Documentation shall include either:

1. Design approval by Green Business Certification Inc.TM (GBCI), through the Split Review process, that shows the building is eligible to receive no less than 17 LEED points as described in C403.2.1 (1).

OR both of the following:

2. Complete input and output reports of the energy model showing that the energy model meets the requirements of this section C403
3. Approval of the energy model by NYSERDA, U.S. DOE, Energize NY, or another agency approved by the Code Enforcement Officer.

C403.3 Passive House-based Compliance

C403.3.1

Buildings shall meet the design requirements of one of the following.

1. PHIUS+ Passive Building Standard from Passive House Institute US
2. Passive House Classic Standard from Passive House Institute

Actual certification is not required. The most recent version of the chosen standard in effect at the time of building permit application shall be used.

C403.3.2

Documentation shall include at least one of the following:

1. Pre-certification letter (or other formal communication) from an Accredited Passive House Certifier, stating that Design Review has been completed and the building is designed to meet all requirements of the chosen Standard. All documentation used to show achievement of the requirements must be submitted to the Code Enforcement Officer.
2. Documentation of Passive House certification. All documentation used to achieve certification must be submitted to the Code Enforcement Officer.

C403.4 Greenhouse Gas Emissions Calculation-based Compliance

The building shall demonstrate a reduction in greenhouse gas (GHG) emissions of not less than 40% as compared to the baseline building.

C403.4.1 Energy Modeling Standards

GHG emissions reductions shall be shown through energy modeling that complies with Appendix G of ASHRAE Standard 90.1-2013.

C403.4.2 Process Loads

The GHG emissions reduction assessment and requirement shall exclude energy use by PROCESS LOADS. However, the energy model shall include the energy used for PROCESS LOADS because energy used by heating, cooling, and ventilation (including exhaust fans/hoods, makeup air fans, and heating/cooling for makeup air) is subject to the GHG emissions reduction requirement. After the baseline and proposed energy models are run, for the GHG emissions reduction calculation, subtract out the process energy use from both the baseline and the proposed building energy model results, and use the resulting without-process-energy results for the GHG emissions calculations.

C403.4.3 Renewable Energy

Renewable energy generation may be used. All applicable requirements for renewable energy systems described in C402.4.1 must be met. Renewable energy generation used to achieve the 40% reduction in GHG emissions is capped at 25% of the baseline energy use. The GHG emissions factor for electricity produced by renewable energy systems shall be 0 (zero) lb CO₂e/MWh.

C403.4.4 GHG Emissions Factor for Electricity

For buildings not served by combined heat and power plants, the GHG emissions factor for electricity used for all calculations shall be 548.37 lb CO₂e/MWh.

C403.4.5 GHG Emissions Factor for Electricity for Buildings Served by Combined Heat and Power Plants

For buildings using electricity generated by combined heat and power (CHP) plants, the GHG emissions factor for electricity shall be determined in one of the following ways:

- a. The most recent heat rate data available at the time of building permit application shall be used from www.eia.gov/electricity/annual/html/epa_08_02.html, for the specific type of generation plant used, for electricity to be used in the proposed building, and the heat rate shall be multiplied by the EPA emissions factor for the fuel used at the CHP plant. The result shall be used as the GHG emissions factor for electricity from CHP plants.
- b. Data gathered from actual operation of the CHP plant and its distribution network shall be used to determine the site-specific GHG emissions factor for electricity to be used in the building. All data used shall be made publicly available before the time of building permit application.

For buildings served by CHP plants, the baseline (reference building) electricity use GHG emissions factor shall be the same as for buildings not served by a CHP plant.

C403.4.6

If a facility uses electricity from a combination of sources (e.g., utility, off-site renewable energy system, and CHP plant), a weighted average of GHG emissions factors shall be used.

C403.4.7 Documentation

The following documentation shall be submitted to show compliance with C403.4 in sufficient clarity and detail:

1. A report, signed and stamped by an accredited third-party ENERGY PROFESSIONAL, showing the results of all calculations, assumptions, inputs, and outputs for the energy model
2. A letter, signed and stamped by an accredited third-party ENERGY PROFESSIONAL, stating that proposed total GHG emissions for the building are at least 40% less than the GHG emissions of the baseline building.
3. The City reserves the right to require additional documentation and/or additional third-party review and analysis by a consultant selected by the City, at the expense of the applicant. All such documentation shall be submitted and fee shall be paid prior to issuance of a building permit.

C403.5 Greenhouse Gas Emissions Calculation-based Compliance for Additions

Compliance using the requirements of this provision C403.5 may only be used for additions that are showing compliance together with the existing building. See also 202.2.

C403.5.1

The addition and the existing building, together as a whole, shall be shown to have lower total GHG emissions than the original existing building.

C403.5.2

Current and proposed GHG emissions shall be calculated following the requirements of the GHG emissions Calculation Method (C403.4).

C403.5.3 Documentation

The following documentation shall be submitted to show compliance with C403.5 in sufficient clarity and detail:

1. An energy study of the existing building that includes energy use from at least 12 consecutive months of the most recent 24 months at the time of building permit application.
2. An energy study that shows anticipated energy use for the new addition and modified existing building.
3. A report, signed and stamped by an accredited ENERGY PROFESSIONAL, showing the results of all calculations, assumptions, inputs, and outputs for the energy model, and
4. A letter, signed and stamped by an accredited third-party ENERGY PROFESSIONAL, stating that proposed total GHG emissions for the building and addition together are less than the GHG emissions for the existing building.
5. The City reserves the right to require additional documentation and/or additional third-party review and analysis by a consultant selected by the City, at the expense of the applicant. All such documentation shall be submitted and fee shall be paid prior to issuance of a building permit.

SECTION C404 FUTURE REQUIREMENTS

C404.1 General

On January 1, 2023, the requirements of Sections C402 and C403 shall change as described in C404.2, C404.3, C404.4, and C404.6. Where no changes are listed, the requirements shall remain as described in Sections C402 and C403.

On January 1, 2026, the requirements of Sections C401, C402 and C403 shall change as described in C404.7. Where no changes are listed, the requirements shall remain as described in Sections C401, C402 and C403.

C404.2 Changes in 2023 to General Requirements of Prescriptive Compliance Path/Easy Path

Effective January 1, 2023, to meet the requirements of section C402, a building must achieve a minimum of twelve (12) of the points described in section C402. A summary table is provided in C404.5

C404.3 Changes in 2023 to Efficient Electrification Points

Effective January 1, 2023, all points awarded from C402.2 Efficient Electrification shall be doubled.

C404.3.1

Four points shall be earned for using air source heat pumps and meeting the requirements of C402.2.1 - Heat Pumps for Space Heating. Six points shall be earned for using ground source heat pumps and meeting the requirements of C402.2.1 - Heat Pumps for Space Heating.

C404.3.2

Two points shall be earned for meeting the requirements of C402.2.2 EE2 - Heat Pumps for Service Water Heating.

C404.3.3

Six points shall be earned for meeting the requirements of C402.2.3 EE3 - Commercial Cooking Electrification.

C404.4 Changes in 2023 to RE1 Renewable Energy Systems

Effective January 1, 2023, the maximum number of points allowed under 402.4.1 RE1 Renewable Energy Systems shall increase to six (6) points. The criteria for earning points shall remain as described in C402.4.1.

C404.5 Changes in 2023 to Summary Table for Prescriptive Compliance Path/Easy Path

Commercial Compliance Summary for Easy Path/Prescriptive Path

Projects must earn at least 12 points

Cate- gory	Improvement	Points	Details
EFFICIENT ELECTRIFICATION			
EE1	Heat pumps for space heating	4 - 6	4 points for air source heat pumps. 6 points for ground source heat pumps.
EE2	Heat pumps for domestic hot water heating	2	2 point for water heating systems that use heat pumps. Available to hotels and restaurants only.
EE3	Commercial cooking electrification	6	6 points for electric cooking equipment in restaurants and other food service buildings. Prerequisite: no fossil fuel use in the building.
AFFORDABILITY IMPROVEMENTS			
AI1	Smaller building/room size	1 - 2	Up to 2 points for smaller room sizes. Available for Hotel and Residential portions only.
AI2	Heating systems in heated space	1	1 point for installing heating systems in directly heated spaces.
AI3	Efficient building shape	1	1 point if exterior surface area divided by directly heated floor area is less than the maximum allowed value.
AI4	Right-lighting	1	1 point for reducing overlighting and implementing other lighting improvements.
AI5	Modest window-to-wall ratio	1	1 point for overall window-to-wall ratio less than 20% (individual spaces may exceed 20%).
RENEWABLE ENERGY			
RE1	Renewable energy systems	1 - 6	Up to 6 points for on-site or off-site renewable electric systems or on-site renewable thermal systems.
RE2	Biomass systems	3	3 points for biomass space heating systems.
OTHER POINTS			
OP1	Development density	1	1 point for achieving sufficient development density on the building parcel. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP2	Walkability	1	1 point if the building meets the walkability criteria. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP3	Electric Vehicle Parking Spaces	1	1 point for installing electric vehicle parking spaces and related infrastructure. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP4	Adaptive reuse	1	1 point for substantial re-purpose of existing building.
OP5	Meet NY Stretch Code	1	1 point for complying with NYStretch Energy Code
OP6	Custom energy improvement	1 - 2	Up to 2 points for reduction in energy use.

C404.6 Changes in 2023 to Performance-Based Compliance Path/Whole Building Path

Effective January 1, 2023, the requirements of Section C403 Performance-Based Compliance Path/Whole Building Path shall change as described in C404.6.1, and C404.6.2. Where no changes are listed, the requirements shall remain as described in Section C403.

C404.6.1 Changes to LEED-based and Energy Calculation-based compliance

Effective January 1, 2023:

1. Compliance method 1 (LEED points): In addition to all existing requirements, seven IECS points from Section C402 Prescriptive Compliance Path/Easy Path must be earned. Points from AI4 Right-Lighting and OP5 Meet NY Stretch Code may not be counted toward the seven IECS points.
2. Compliance method 2 (savings relative to ASHRAE 90.1-2013): An 80% savings relative to ASHRAE Standard 90.1-2013 shall be required.
 - a. Renewable energy generation used to achieve the savings shall be capped at 50% of the baseline energy use.
3. Compliance method 3 (savings relative to ASHRAE 90.1-2010): A 92% savings relative to ASHRAE Standard 90.1-2010 shall be required.
 - a. Renewable energy generation used to achieve the savings shall be capped at 50% of the baseline energy use.

C404.6.2 Changes to Greenhouse Gas Emissions Calculation-based Compliance

Effective January 1, 2023, the building shall demonstrate a reduction in greenhouse gas (GHG) emissions of not less than 80% as compared to the baseline building.

C404.6.2.1

Renewable energy generation used to achieve the 80% reduction in GHG emissions is capped at 50% of the baseline energy use.

C404.6.2.2

For buildings not served by combined heat and power plants or renewable energy systems, the GHG emissions factor for electricity used for all calculations shall be 295.9 lb CO₂e/MWh.

C404.7 Changes in 2026

Effective January 1, 2026, all buildings shall be built to have net-zero GHG emissions and shall not use fossil fuels for space heating, water heating, or clothes drying.

C404.7.1

The language in C401.2 Application shall be replaced with:

COMMERCIAL BUILDINGS shall comply with the requirements of the ZERO Code, using the most recent version of the ZERO Code available at the time of permit application. The ZERO Code, an Architecture 2026 initiative, is available at <https://zero-code.org>.

An IECS Compliance Plan shall be the basis for evaluating compliance.

C404.7.2

Fossil fuels shall not be used for space heating, water heating or clothes drying. Fossil fuels may be used for PROCESS ENERGY and for cooking.

Chapter 5 RESIDENTIAL BUILDING PROVISIONS

Section R501 GENERAL

R501.1 Scope

The provisions in this chapter are applicable to RESIDENTIAL BUILDINGS and MIXED-USE BUILDINGS where more than 50% of the heated floor area is residential, their building sites, and associated systems and equipment.

R501.2 Application

RESIDENTIAL BUILDINGS shall comply with one of the following:

1. Prescriptive Compliance Path/Easy Path: The requirements of Section R502
 - a. As part of the application packet, the applicant shall submit a checklist and worksheet which the City shall use as the basis for verifying and showing compliance with the IECS.
2. Performance-based Compliance Path/Whole Building Path: The requirements of Section R503
 - a. As part of the application packet, the applicant shall submit the relevant documentation, which is detailed in R503, which the City shall use as the basis for verifying and showing compliance with the IECS.

SECTION R502 PRESCRIPTIVE COMPLIANCE PATH/EASY PATH

R502.1 General

To meet the requirements of this Section R502, A building must achieve a minimum of six (6) of the points described in this section. A summary table is provided in R502.6.

R502.2 Efficient Electrification (EE):

R502.2.1 EE1 Heat Pumps for Space Heating

Three points shall be earned for using air source heat pumps or five points shall be earned for using ground source heat pumps, as described in R502.2.1.

R502.2.1.1

Only air source heat pumps or ground source heat pumps shall be used for all space-heating needs, with exceptions for electric resistance heating as described in R502.2.1.4. A heating system that uses only ground source heat pumps (and electric resistance heating as allowed) shall earn five points. A heating

system that uses only air source heat pumps or uses a combination of air source and ground source heat pumps (and electric resistance heating as allowed) shall earn three points.

R502.2.1.2

Fossil fuels shall not be used for any space heating, space cooling or ventilation systems in the building, including backup heating systems. Water loop boiler/tower heat pumps that use fossil fuels shall not earn credit under this point.

R502.2.1.3

Except as stated in the second sentence of this provision R502.2.1.3, air source heat pumps shall be listed in the Northeast Energy Efficiency Partnerships (NEEP) Cold Climate Air Source Heat Pump Product List, for the product types and sizes covered. For any air source heat pump not covered by NEEP, the heat pump shall use a variable speed compressor(s) and the heat pump compressor(s) shall operate in temperatures below zero (0) degrees Fahrenheit (the compressor may be supplemented by electric resistance heat in accordance with the exceptions described in R502.2.1.4).

R502.2.1.4

To allow flexibility, electric resistance heat is allowed for a portion of space heating needs. Applicants shall submit documentation showing that at least one of the following conditions is met.

- 1) Stand-alone electric resistance heating (not associated with heat pumps) is used to heat 10% or less of the building heated floor area.
- 2) Stand-alone electric resistance heating (not associated with heat pumps) is used to meet 10% or less of the building's projected annual space heating load.

R502.2.2 EE2 Heat Pumps for Service Water Heating

One point shall be earned for meeting the requirements of R502.2.2.

R502.2.2.1

All service water heating systems shall use heat pumps and shall not use fossil fuels. All heat pump water heaters shall be set on heat pump-only mode.

Exception: In commercial kitchens, booster heat units for dishwashing must be electric, but shall be exempt from the heat pump requirement. Units used to pre-heat water for dishwashing shall use heat pumps.

R502.2.3 EE3 Commercial Cooking Electrification

Three points shall be earned for meeting the requirements of R502.2.3.

Restrictions:

- 1) Points may only be earned for portions of buildings that are restaurants or other food service establishments that use a commercial kitchen hood, and

- 2) Points may only be earned if the building does not use fossil fuels, except for PROCESS ENERGY. For this point, PROCESS ENERGY shall exclude commercial cooking.

R502.2.3.1

All commercial cooking equipment in the building, including but not limited to ranges, ovens, griddles, and fryers, shall be electric.

R502.2.4 EE4 Residential Cooking and Clothes Drying Electrification

One point shall be earned for meeting the requirements of R502.2.4

Restrictions: Point may only be earned if the building does not use fossil fuels except for PROCESS ENERGY.

R502.2.4.1

All residential cooking equipment in the building, including but not limited to ranges, cooktops and ovens, shall be electric.

R502.2.4.2

All clothes drying equipment in the building shall be ventless heat pump clothes dryers.

R502.3 Affordability Improvements (AI)

R502.3.1 AI1 Smaller building/room size

One or two points may be earned according to the requirements below.

Restrictions:

- a. For mixed-use buildings, this point may only be earned when all portions of the building are classified as Residential or Hotel.
- b. Dormitories are not eligible for this point.
- c. For additions, this point may only be earned if the applicant demonstrates IECS compliance for the addition together with the existing building. This point may not be earned when considering the addition independent of the existing building.

R502.3.1.1

For single family dwellings, the DIRECTLY HEATED FLOOR AREA of the building shall not be greater than the maximum home size listed in Table R502.3.1.1 relating to the number of bedrooms in the dwelling. For two-family dwellings and townhouses, the total DIRECTLY HEATED FLOOR AREA of the building shall not be greater than the Total Building Size Allowance. The Total Building Size Allowance, in square feet, shall be determined by multiplying the quantity of each type of dwelling unit (1-BR, 2-BR etc.) times the 'maximum home size' value for that dwelling unit type in Table R502.3.1.1, and then summing the home size allowances for all unit types to calculate the Total Building Size Allowance. This method is summarized in Equation 5-1.

Equation 5-1:

Total Building Size Allowance =

$$[(\text{Number of 1-BR units in the building}) \times (\text{Maximum home size for 1-BR units listed in Table R502.3.1.1})] + [(\text{\# of 2-BR units in the building}) \times (\text{Maximum home size for 2-BR units})] + \dots + [(\text{\# of 6-BR units in the building}) \times (\text{Maximum home size for 6-BR units})]$$

Individual dwelling units may exceed the maximum home size allowance for that unit type given in Table R502.3.1.1.

Table R502.3.1.1

Size Allowances for Single Family Dwellings, Two-family Dwellings, and Townhouses

Number of Bedrooms	1	2	3	4	5	6	7 or more
Maximum home size allowed to receive one point (SF)	850	1,360	1,870	2,380	2,890	3,400	+510 for each additional bedroom
Maximum home size allowed to receive two points (SF)	700	1,120	1,540	1,960	2,380	2,800	+420 for each additional bedroom

Example Calculation - for informational purposes only

Duplex, building contains 3,100 sq ft of directly heated floor area, two dwelling units (3 bedrooms each)

From Table R502.3.1.1

Maximum home size allowed to receive one point for 3-BR units: 1,870 sq ft

Total Building Size Allowance = (2 x 1,870 sq ft) = 3,740 sq ft

Building size of 3,100 sq ft does not exceed size allowance, so one point can be earned.

From Table R502.3.1.1

Maximum home size allowed to receive two points for 3-BR units: 1,540 sq ft

Total Building Size Allowance = (2 x 1,540 sq ft) = 3,080 sq ft

Building size of 3,100 sq ft exceeds size allowance, so two points cannot be earned.

R502.3.1.2

For Residential buildings other than single family dwellings, two-family dwellings, and townhouses, the total DIRECTLY HEATED FLOOR AREA of all dwelling units in the building shall not be greater than the Total Unit Size Allowance. The area of dwelling units refers to in-unit areas only and shall not include common areas. The Total Unit Size Allowance, in square feet, shall be determined by multiplying the quantity of each type of dwelling unit (studio, 1-BR, etc.) times the 'Dwelling unit size allowance' value for that dwelling unit type in Table R502.3.1.2, and then summing the unit size allowances for all unit types to calculate the Total Unit Size Allowance. This method is summarized in Equation 5-2.

Equation 5-2:

Total Unit Size Allowance =

$$[(\text{Number of studio units in the building}) \times (\text{Dwelling unit size allowance for studio units listed in Table R502.3.1.2})] +$$

$$[(\# \text{ of 1-BR units in the building}) \times (\text{Dwelling unit size allowance for 1-BR units})] +$$

$$[(\# \text{ of 2-BR units in the building}) \times (\text{Dwelling unit size allowance for 2-BR units})] + \dots +$$

$$[(\# \text{ of 7-BR units in the building}) \times (\text{Dwelling unit size allowance for 7-BR units})]$$

Individual dwelling units may exceed the allowance for that unit type given in Table R502.3.1.2.

Table R502.3.1.2

Dwelling Unit Size Allowances for Residential Buildings other than Single Family Dwellings, Two-family Dwellings, and Townhouses

Number of Bedrooms	Studio	1	2	3	4	5	6	7
Dwelling unit size allowance to receive one point (sq ft)	408	600	842	986	1,156	1,326	1,496	1,666
Dwelling unit size allowance to receive two points (sq ft)	336	490	693	812	952	1,092	1,232	1,372

R502.3.1.3

For HOTELS, the average DIRECTLY HEATED FLOOR AREA of all guest rooms in the building shall not be greater than the maximum average guest room size listed in Table R502.3.1.3. Individual guest rooms may exceed the maximum size.

Table R502.3.1.3

Area Requirements for Hotels and Motels

Maximum average guest room size allowed to receive one point (SF)	280
Maximum average guest room size allowed to receive two points (SF)	230

R502.3.2 AI2 Heating System in Heated Space

One point may be earned according to the requirements below.

R502.3.2.1

All components of heating systems shall be installed inside space that meets all the following criteria:

- 1) Inside the BUILDING THERMAL ENVELOPE
- 2) DIRECTLY HEATED SPACE
- 3) LIVABLE SPACE, OCCUPIABLE SPACE or contiguous to LIVABLE SPACE or OCCUPIABLE SPACE
- 4) On a building level where at least 50% of the FLOOR AREA is DIRECTLY HEATED FLOOR AREA

For purposes of this section, heating system includes all parts of the system except for exhaust components and dedicated air intake components, including but not limited to mechanical equipment and the distribution network. Examples of spaces that are not allowed for heating system installation include but are not limited to: unheated or unfinished basements and attics, crawl spaces, outdoors, roofs, and exterior wall cavities. Rooftop systems, window-mounted systems, and “through-the wall” equipment such as packaged terminal equipment shall not be used.

Exceptions:

- 1) Outdoor units of split system heat pumps may be located outdoors.
- 2) There are no limitations on the location of refrigerant piping.

R502.3.3 AI3 Efficient Building Shape

One point may be earned according to the requirements below.

R502.3.3.1

The exterior surface area divided by the DIRECTLY HEATED FLOOR AREA shall be less than the maximum value provided in Table R502.3.3.1.

R502.3.3.2

The exterior surface area shall be measured along the above-grade portions of the BUILDING THERMAL ENVELOPE, including but not limited to walls, roofs/ceilings (depending on the location of insulation), and exposed floors (such as those below a cantilever). The area of windows, doors, and skylights shall be included as part of the exterior surface area. The areas of the BUILDING THERMAL ENVELOPE between directly heated spaces and indirectly heated spaces or unheated spaces, such as the wall between a heated building and an attached unheated garage, shall be included as part of the exterior surface area.

R502.3.3.3

For additions, the area of the thermal envelope between directly heated space in the addition and directly heated space in the original building (including shared walls and, if the addition is above the original building, floors/ceilings) shall not be counted as part of the exterior surface area.

Table R502.3.3.1

Directly Heated Floor Area (SF)	Maximum Value of: Exterior Surface Area (SF) divided by Directly Heated Floor Area (SF)	Directly Heated Floor Area (SF)	Maximum Value of: Exterior Surface Area (SF) divided by Directly Heated Floor Area (SF)
199 or less	4.69	3,000 - 3,999	1.60
200 - 299	3.88	4,000 - 4,999	1.48
300 - 399	3.45	5,000 - 5,999	1.39
400 - 499	3.17	6,000 - 6,999	1.31
500 - 599	2.98	7,000 - 7,999	1.25
600 - 699	2.83	8,000 - 8,999	1.19
700 - 799	2.71	9,000 - 9,999	1.15
800 - 899	2.68	10,000 - 14,999	1.05
900 - 999	2.57	15,000 - 19,999	0.94
1,000 - 1,099	2.47	20,000 - 29,999	0.84
1,100 - 1,199	2.38	30,000 - 39,999	0.75
1,200 - 1,299	2.31	40,000 - 49,999	0.68
1,300 - 1,399	2.24	50,000 - 59,999	0.64
1,400 - 1,499	2.18	60,000 - 69,999	0.61
1,500 - 1,599	2.13	70,000 - 79,999	0.58
1,600 - 1,699	2.08	80,000 - 89,999	0.55
1,700 - 1,799	2.04	90,000 - 99,999	0.53
1,800 - 1,899	2.00	100,000 - 199,999	0.46
1,900 - 1,999	1.96	200,000 - 299,999	0.39
2,000 - 2,499	1.86	300,000 - 399,999	0.35
2,500 - 2,999	1.74	400,000 or more	0.33

R502.3.4 AI5 Modest Window-to-Wall Ratio

One point may be earned according to the requirements below.

R502.3.4.1

The vertical fenestration area, not including opaque doors and opaque spandrel panels, shall be not greater than 20 percent of the gross above-grade wall area.

R502.3.4.2

For additions, the area of above-grade walls that were part of the BUILDING THERMAL ENVELOPE of the original building but are not part of the BUILDING THERMAL ENVELOPE of the new building shall be counted towards the above-grade wall area of the addition.

R502.4 Renewable Energy (RE):

R502.4.1 RE1 Renewable Energy Systems

Up to three points may be earned according to the requirements below.

R502.4.1.1 Points available

On-site and off-site renewable energy systems that meet the requirements of this section shall earn up to three points based on their annual electrical or thermal energy production. Multiple renewable energy systems may be used to earn points, but no more than three total points may be earned for any combination of renewable energy systems.

R502.4.1.2 Determining the number of points earned

The number of points earned shall be determined according to the steps below. The applicant shall submit documentation of all related assumptions and calculations.

Step 1: Calculate Renewable Energy Production

The Renewable Energy Production (REP) is the projected annual energy production of the renewable energy system, expressed in kilowatt-hours per year (kWh/yr). For thermal systems, the conversion 1 kWh = 3.412 kBtu shall be used.

Step 2: Calculate the Number of Points Earned

The number of points earned for a renewable energy system is based on the directly heated floor area of the building it serves. Points shall be earned based on a weighted average related to residential and commercial floor area, as described in Equation 5-2. For purposes of this section R502.4.1, residential space shall include dwelling units and common areas that only serve dwelling units.

Equation 5-2: Minimum Renewable Energy Production needed to earn each point =
 $(1.2 \text{ kWh/ft}^2 \times \text{RA}) + (2.4 \text{ kWh/ft}^2 \times \text{CA})$

CA = Directly heated floor area of Commercial space (ft²)

RA = Directly heated floor area of Residential space (ft²)

Note: For buildings that have no residential space, set RA equal to zero. For buildings that have no commercial space, set CA equal to zero.

Example Calculation - for informational purposes only

Assumptions: Mixed-use building with 2,000 ft² of residential directly heated floor area and 5,000 ft² of commercial directly heated floor area. A 25 kW solar array is being used.

Step 1: Using the PVWatts Calculator, it is projected that the 25 kW solar array will produce 30,000 kWh/year.

Renewable Energy Production is 30,000 kWh/year

Step 2: Using Equation 5-2:

Minimum REP needed for each point = $(1.2 \text{ kWh/ft}^2 \times \text{RA}) + (2.4 \text{ kWh/ft}^2 \times \text{CA})$

Minimum REP needed for each point = $(1.2 \text{ kWh/ft}^2 \times 2,000 \text{ ft}^2) + (2.4 \text{ kWh/ft}^2 \times 5,000 \text{ ft}^2)$

Minimum REP needed for each point = 2,400 kWh + 12,000 kWh

Minimum REP needed for each point = 14,400 kWh

Using the assumptions for this building and renewable energy system, two (2) points may be earned.

R502.4.1.3 Energy Sources

Renewable energy systems shall produce electricity from solar, wind, or hydropower resources, or produce thermal energy from solar, geothermal, or hydrothermal resources. Thermal energy absorbed from or rejected to outdoor air/ground/water and used in conjunction with heat pumps does not count as renewable energy for the purposes of this section. Hydropower shall be from new generation capacity on a nonimpoundment or new generation capacity on an existing impoundment. Hydropower shall meet one of the following conditions:

- a. The hydropower facility complies with the *Low Impact Hydropower Certification Handbook* and is certified by a nationally recognized accreditation organization.
- b. The hydropower facility complies with UL 2854 and is certified by an organization that has the standard in its ISO 17065 scope of accreditation.
- c. The hydropower facility consists of a turbine in a pipeline or a turbine in an irrigation canal.

For facilities falling under condition (a) or (b), only output generated during the period of certification is eligible for *RECs* sale in accordance with the provisions of this section. Renewables from new impoundments of water are not eligible.

R502.4.1.4 Qualifying Renewable Energy Systems

Renewable energy systems producing electricity or thermal energy that is delivered to or credited to the building to comply with Section R502.4.1 shall meet the following requirements:

- a. Renewable energy systems shall satisfy one of the following criteria:
 1. ON-SITE RENEWABLE ENERGY SYSTEM
 - i. Self-generation
 - ii. Purchase Contract such as a Power Purchase Agreement
 2. Off-site renewable energy system
 - i. Self-generation (an off-site renewable energy system owned by the building owner)
 - ii. COMMUNITY RENEWABLE ENERGY FACILITY
 - iii. Purchase Contract such as a Power Purchase Agreement
- b. The renewable energy system shall be located in New York Independent System Operator (NYISO) territory and shall be located where the energy can be delivered to the building site by any of the following:
 1. Direct connection to the renewable energy system
 2. The local utility or distribution entity
 3. An interconnected electrical network where energy delivery capacity between the generator and the building site is available (**Informative Note:** Examples of interconnected electrical networks include regional power pools and regions served by Independent System Operators or Regional Transmission Organizations.)

- c. The renewable energy system must have commenced operation on or after January 1, 2015 and before the date the certificate of occupancy for the building is issued.

Exception to R502.4.1.4 (c)

If the building owner can provide evidence that, for the duration of the planning process, it has made a good faith effort to have the renewable energy system constructed and operational by the time of certificate of occupancy, and due to circumstances out of the control of, or not otherwise due to the negligence or willful misconduct on behalf of the building owner, the renewable energy system is not constructed or is not operational, then the building owner shall be allowed up to one year after the certificate of occupancy is issued to meet R502.4.1.4 (c).

- d. Where the renewable energy system ceases operation, or the owner cannot legally claim the associated energy or RECs for any reason, the building owner shall produce or procure alternative qualifying renewable energy in an amount equal to or greater than the amount needed to earn the same number of points under the requirements of R502.4.1.2.

R502.4.1.5 Reporting and Documentation

- a. The building owner shall submit documentation of renewable energy system ownership, participation in a community renewable energy facility, or renewable energy procurement. Records on power and thermal energy produced or purchased by the building owner from the renewable energy producer shall be retained by the building owner on behalf of the entity demonstrating financial or operational control over the building seeking compliance to this standard and submitted to the Code Enforcement Officer on an annual basis for no less than 15 years.
- b. For systems generating electricity, documentation shall be provided to the CODE ENFORCEMENT OFFICER that indicates an exclusive chain of custody and ownership of the RECs from the renewable energy system to the building owner, on an annual basis for no less than 15 years. RECs supplied from the renewable energy system shall be conveyed to and retired on behalf of the entity who has financial or operational control over the building's electricity consumption. The annual generation vintage date of delivered RECs shall be allocated to the same 12-month reporting year, up to six months prior, or up to three months after the calendar year in which the electricity is used in the building.

Exceptions to R502.4.1.5 (b)

- 1) If the total capacity of all renewable energy systems being used to earn points under R502.4.1 is less than 25 kW, the requirements of R502.4.1.5(b) shall be waived.
- 2) Where the building owner cannot provide documentation on the chain of custody or ownership of the RECs from the renewable energy system, the building owner shall provide documentation to the CODE ENFORCEMENT OFFICER of an alternate supply

contract for replacement RECs from an alternate renewable energy source. The quantity of RECs contracted for shall be equal to or greater than the amount needed to earn the desired number of points under the requirements of R502.4.1.2. These RECs shall comply with the *Green-e® Renewable Energy Standard for Canada and the United States* (latest edition) and shall be conveyed to and retired on behalf of the entity who has financial or operational control over the building's electricity consumption.

- c. Electricity, thermal energy and RECs from renewable energy systems may not be counted more than once for purposes of demonstrating compliance with this section R502.4.1. The reporting and documentation required in R502.4.1.4 shall clearly state how the energy and RECs are allocated to specific buildings. The City may request additional documentation to provide reasonable proof of ownership/procurement, and fulfillment of RECS and allocation requirements.
- d. In the case of full or partial transfer of ownership of the building, the following must be provided: proof of transfer of ownership; a signed statement from the new owner stating they understand the requirements of this section R502.4.1 and the duty to fulfill them; and contact information for the person(s) responsible for submitting annual reporting.

R502.4.1.6 Penalties for non-compliance

If a building uses this section R502.4.1 for compliance with the IECS and, for any reason, the requirements of this section are not met in full, as determined by a Code Enforcement Officer, the City may impose a fine in accordance with Code Section 146-59 for each day the building remains out of compliance. In no instance shall the applicable 15-year energy production and allocation requirements, the 15-year RECs requirements, or other requirements detailed in this section R502.4.1 be shortened or waived.

R502.4.2 RE2 Biomass Space Heating

Five points may be earned according to the requirements below.

R502.4.2.1

Only biomass systems shall be used for all space-heating needs, with exceptions for electric resistance heating as described in R502.4.2.4.

R502.4.2.2

Fossil fuels shall not be used for any space heating, space cooling or ventilation systems in the building, including backup heating systems.

R502.4.2.3

All biomass equipment must comply with the NYSERDA Renewable Heat NY program guidelines, available at www.nyserda.ny.gov/All-Programs/Programs/Renewable-Heat-NY.

R502.4.2.4

To allow flexibility, electric resistance heat is allowed for a portion of space heating needs. Applicants shall submit documentation showing that at least one of the following conditions is met.

- 1) Stand-alone electric resistance heating is used to heat 10% or less of the building heated floor area.
- 2) Stand-alone electric resistance heating is used to meet 10% or less of the building's projected annual space heating load.

R502.5 Other Points (OP):

R502.5.1 OP1 Development Density

One point may be earned according to the requirements below.

Restrictions: A maximum of two points total may be earned for points OP1 Development Density, OP2 Walkability, and OP3 Electric Vehicle Parking Spaces combined.

R502.5.1.1

One point shall be earned if $(DU + CA) > (7 \times \text{Acreage})$, where:

DU = the number of all Residential dwelling units on the entire parcel occupied by the building

CA = the floor area of all Commercial space, measured in units of 1,000 square feet, on the entire parcel occupied by the building

Acreage = the land area, measured in acres, of the entire parcel occupied by the building.

R502.5.1.2

DU shall include all dwelling units on the parcel occupied by the building, including those in existing buildings. CA shall include all Commercial space on the parcel occupied by the building, including that in existing buildings. CA shall not include common areas serving only dwelling units or other Residential space. Acreage shall include all land area on the parcel occupied by the building.

Example Calculation - for informational purposes only

Mixed Use Development

Residential units: 12 apartments → DU = 12

Commercial space: 10,000 sq ft → CA = 10

Parcel acreage: 1.5 acres → Acreage = 1.5

$$DU + CA = 12 + 10 = 22$$

$$7 \times \text{Acreage} = 7 \times 1.5 = 10.5$$

$$22 > 10.5$$

1 point may be earned.

R502.5.2 OP2 Walkability

One point may be earned according to the requirements below.

Restrictions: A maximum of two points total may be earned for points OP1 Development Density, OP2 Walkability, and OP3 Electric Vehicle Parking Spaces combined.

R502.5.2.1

This point shall be earned when the following condition is met, in addition to the other requirements in this section R502.5.2.

- 1) The building is within one quarter (0.25) mile of at least five of the Neighborhood Amenity Types listed in Table R502.5.2.1.
 - a. No single Amenity Type shall be counted more than twice, even when more than two examples of the Amenity Type exist. For example, a building on Aurora Street's "Restaurant Row" could count two restaurants maximum.
 - b. At least two Amenity Categories shall be represented.
 - c. The one quarter mile measurement(s) may be taken from any part(s) of the building.

R502.5.2.2

For all buildings, at the time of project completion, sidewalks, walkways and/or trails must be present on the property and connect to an existing network of pedestrian infrastructure.

Table R502.5.2.1

Neighborhood Amenity Types and Categories

Amenity Category	Amenity Type
Food retail	Supermarket
	Grocery with produce section
Community-serving retail	Convenience store
	Farmers market
	Hardware store
	Pharmacy
	Other retail
Services	Bank
	Family entertainment venue (e.g., theater, sports)
	Gym, health club, exercise studio
	Hair care
	Laundry, dry cleaner
	Restaurant, café, diner (excluding those with only drive-thru service)
Civic and community facilities	Adult or senior care (licensed)
	Child care (licensed)
	Community or recreation center
	Cultural arts facility (museum, performing arts)
	Education facility (e.g., K–12 school, university, adult education center, vocational school, community college)
	Government office that serves public on-site
	Medical facility that treats patients
	Place of worship
	Post office
	Public library
	Public park
	Social services center

R502.5.3 OP3 Electric Vehicle Parking Spaces

One point may be earned for installing electric vehicle parking space(s) and related infrastructure that meet the requirements of this section.

Restrictions: A maximum of two points total may be earned for points OP1 Development Density, OP2 Walkability, and OP3 Electric Vehicle Parking Spaces combined.

R502.5.3.1 Required Number of EV Parking Spaces

The number of required EV parking spaces shall be determined using Table R502.5.3.1(1), based on the number of Residential Dwelling Units (DU) and the area of Commercial space (CA).

DU = the number of Residential dwelling units in the building.

CA = the area of all Commercial space, measured in units of 1,000 square feet, in the building. CA shall not include common areas serving only dwelling units or other portions of Residential space.

When determining the total number of required spaces in mixed-use buildings, EV space requirements for Residential Dwelling Units and for Commercial space shall be calculated separately and summed.

Table R502.5.3.1 (1)

Required Number of Electric Vehicle Parking Spaces

Residential Buildings		Commercial Buildings	
Number of Dwelling Units (DU)	Number of EV Spaces Required for Residential Portion (SR)	Area in units of 1,000 Sq. Ft (CA)	Number of EV Spaces Required for Commercial portion (SC)
1 to 6	1	5	2
7 to 13	2	10	3
14 to 20	3	15	5
21 to 24	4	20	6
25 to 30	5	25	7
31 to 38	6	30	9
39 to 46	7	35	10
47 to 53	8	40	12
<p>For up to 25 Dwelling Units, use table. For 26 or more Dwelling Units: $SR = (0.13 \times DU) + 1$</p> <p>Complete Residential and Commercial calculations separately, add results, and round up to nearest whole number: $SR + SC = ST$ (Total EV Parking Spaces)</p>		<p>The numbers listed above are examples. For <u>all</u> building sizes use the equation: $SC = 0.28 \times CA$</p> <p>Complete Residential and Commercial calculations separately, add results, and round up to nearest whole number. $SR + SC = ST$ (Total EV Parking Spaces)</p>	

Table R502.5.3.1 (2)

Sample Calculation for required number of EV Parking Spaces

Sample Calculation

44,300 sq ft mixed-use building. 26 Dwelling Units (DU) and 6,000 sq ft Commercial Area (CA)

$$SR = (0.13 \times 26) + 1$$

$$SR = 3.4 + 1 = 4.4$$

4.4 EV spaces are required for Residential portion

$$SC = 0.28 \times 6$$

$$SC = 1.7$$

1.7 EV spaces are required for Commercial portion

$$ST = SR + SC \text{ rounded up}$$

$$ST = 4.4 + 1.7 = 6.1, \text{ round up}$$

7 EV spaces are required for the building to earn a point.

R502.5.3.2

The requirements for this point as set forth here and in Table R502.6 are NOT intended to override or supplant existing zoning code provisions regarding parking requirements. To the extent that zoning permissible parking spaces cannot be accommodated on the building site, the building must seek off-site spaces in accordance with the provisions of this point and applicable zoning laws, where zoning allows off-site parking spaces.

R502.5.3.3

All Electric Vehicle Parking Spaces shall be located on the same parcel as the building, in the same parking facilities as those used by one or more of the following target user groups: customers/clients; employees; and fleet vehicles. If no parking facilities exist on the same parcel, and off-site parking facilities do exist for one or more of the user groups, then EV parking spaces may be installed in those off-site parking facilities. Off-site parking must be within 0.25 miles of the building.

R502.5.3.4

All Electric Vehicle Parking Spaces shall be served by a dedicated Electric Vehicle Charging port. Electric Vehicle Charging Stations may have any number of ports.

R502.5.3.5

At least one Accessible Electric Vehicle parking space is required in any parking facility that includes more than 10 Electric Vehicle parking spaces. Any parking facility with more than 50 Electric Vehicle parking spaces must provide at least two Accessible Electric Vehicle parking spaces. The associated space(s) are not required to be designated only for accessible parking, as defined by the Building Code of NYS, but must meet all other accessibility requirements contained in New York State law.

R502.5.3.6

All buildings must install Level 2 EV charging stations that operate on a 240-volt AC circuit and/or Direct Current Fast Chargers.

R502.5.3.7

Electric vehicle charging spaces shall be provided with a dedicated branch circuit, raceways, and all other electric vehicle charging equipment. The branch circuit shall be identified for electric vehicle service in the service panel or subpanel directory. Electrical room(s) serving areas with EV parking spaces shall be designed to accommodate the electrical equipment and distribution required to serve all of the electric vehicle charging stations.

R502.5.3.8

Electric vehicle charging station equipment shall be maintained in all respects, including the functioning of the charging equipment. A phone number or other contact information shall be provided on the charging station equipment for reporting when the equipment is not functioning, or other problems are encountered.

R502.5.3.9

The Electric Vehicle Charging Station, including the charging cord, shall be installed so as to not interfere with pedestrian walkways at any time.

R502.5.3.10

Except for Accessible EV parking spaces, each EV parking space shall be posted with signage indicating that the space is only to be used for electric vehicle charging purposes. Days and hours of operations and any other restrictions on use of the parking space shall be included if time limits or tow-away provisions are to be enforced.

R502.5.4 OP4 Adaptive Reuse

One point may be earned according to the requirements below.

R502.5.4.1

The building must maintain 50% or more of the existing building structure and building thermal envelope, based on measurement of the surface area. The existing building structure must be retained in place and re-purposed for a different permitted use (for example, when an old school is adapted for use as apartments). A major renovation of a building and re-use for the same purpose shall not be eligible for this point.

R502.5.5 OP5 NY Stretch Code

Two points may be earned according to the requirements below.

R502.5.5.1

The building shall comply with all requirements of the NYStretch Energy Code - 2020 Version 1.0, which is available at:

R502.5.6 OP6 Custom Energy Improvement

Up to two points may be earned according to the requirements below.

R502.5.6.1

To earn one point, both of the following conditions must be met:

1. Reduce energy use by 1.2 kWh/SF/year or 4.1 kbtu/SF/year for all residential HEATED FLOOR AREA in the building.
2. Reduce energy use by 2.4 kWh/SF/year or 8.2 kbtu/SF/year for all commercial HEATED FLOOR AREA in the building.

R502.5.6.2

To earn two points, both of the following conditions must be met:

1. Reduce energy use by 2.4 kWh/SF/year or 8.2 kbtu/SF/year for all residential HEATED FLOOR AREA in the building.
2. Reduce energy use by 4.8 kWh/SF/year or 16.4 kbtu/SF/year for all commercial HEATED FLOOR AREA in the building.

R502.5.6.3

Multiple improvements may be combined to achieve each point under this improvement. Improvements may be made anywhere in the building as long as they meet the thresholds of energy use reduction. The proposed energy improvement(s) shall be submitted to the Code Enforcement Officer in writing, signed by the DESIGN PROFESSIONAL OR ENERGY PROFESSIONAL. Energy reduction must be shown through energy analysis performed by a DESIGN PROFESSIONAL OR ENERGY PROFESSIONAL. Simplified calculations (e.g. spreadsheet) are acceptable.

R502.5.6.4

For a baseline, use the 2016 Energy Conservation Construction Code of New York State. If the baseline condition is not addressed by the ECCCNYS, use baseline conditions as defined in Appendix G of ASHRAE Standard 90.1-2013, or RESNET HERS (latest edition).

R502.5.6.5

Production of renewable energy shall not count toward energy reduction. Energy reduction must be calculated after applying all other proposed energy improvements to the proposed design. In other words, interactive energy savings must be performed. Savings cannot be taken for improvements made with other points, such as right-lighting or the NY Stretch Energy Code.

R502.6 Summary Table for Prescriptive Compliance Path / Easy Path

The following Table R502.6 is a summary of the Prescriptive Compliance Path / Easy Path for RESIDENTIAL BUILDINGS. This is a summary for informational purposes only. To earn points, all applicable requirements

in sections R502.1, R502.2, R502.3, R502.4 and R502.5 must be met. In case of discrepancies between Table R502.6 and the requirements in sections R502.1, R502.2, R502.3, R502.4 and R502.5, the latter shall hold precedence.

Table R502.6

Residential Compliance Summary for Easy Path/Prescriptive Path

Projects must earn at least six points

Category	Improvement	Points	Details
EFFICIENT ELECTRIFICATION			
EE1	Heat pumps for space heating	3 - 5	3 points for air source heat pumps. 5 points for ground source heat pumps.
EE2	Heat pumps for domestic hot water heating	1	1 point for water heating systems that use heat pumps.
EE3	Commercial cooking electrification	3	3 points for electric cooking equipment in restaurants and other food service buildings. Prerequisite: no fossil fuel use in the building.
EE4	Residential cooking and clothes drying electrification	1	1 point for electric stoves and ventless heat pump clothes dryers. Prerequisite: no fossil fuel use in the building.
AFFORDABILITY IMPROVEMENTS			
AI1	Smaller building/room size	1 - 2	Up to 2 points for smaller room sizes. Available for Hotel and Residential portions only.
AI2	Heating systems in heated space	1	1 point for installing heating systems in directly heated spaces.
AI3	Efficient building shape	1	1 point if exterior surface area divided by directly heated floor area is less than the maximum allowed value.
AI5	Modest window-to-wall ratio	1	1 point for overall window-to-wall ratio less than 20% (individual spaces may exceed 20%).
RENEWABLE ENERGY			
RE1	Renewable energy systems	1 - 3	Up to 3 points for on-site or off-site renewable electric systems or on-site renewable thermal systems.
RE2	Biomass systems	5	5 points for biomass space heating systems.
OTHER POINTS			
OP1	Development density	1	1 point for achieving sufficient development density on the building parcel. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP2	Walkability	1	1 point if the building meets the walkability criteria. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP3	Electric Vehicle Parking Spaces	1	1 point for installing electric vehicle parking spaces and related infrastructure. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP4	Adaptive reuse	1	1 point for substantial re-purpose of existing building.
OP5	Meet NY Stretch Code	2	2 points for complying with NYStretch Energy Code
OP6	Custom energy improvement	1 - 2	Up to 2 points for reduction in energy use.

SECTION R503 PERFORMANCE-BASED COMPLIANCE PATH/WHOLE BUILDING PATH

R503.1 General

To meet the requirements of this section R503, A BUILDING must comply with any one of the high-performance building approaches described in R503.2, R503.3, R503.4, R503.5 and R503.6.

R503.2 Energy Rating Index-based Compliance

Restrictions: This compliance method may only be used for Residential Buildings of not more than three stories.

R503.2.1

The building shall comply with all requirements of Section R406 Energy Rating Index Compliance Alternative of the 2020 Energy Conservation Construction Code of NYS (ECCCNYS R406). Where the requirements of this Ithaca Energy Code Supplement are more stringent than the requirements of ECCCNYS R406, IECS requirements shall prevail.

R503.2.2

The rated design shall be shown to have an Energy Rating Index (ERI) less than or equal to 40 when compared to the ERI reference design.

R503.2.3

Renewable energy generation that meets all applicable requirements for renewable energy systems described in R502.4.1 may be used to meet the requirements.

R503.2.4 Documentation

Compliance documentation shall be submitted as detailed in ECCCNYS R406.

R503.3 National Green Building Standard-based compliance

R503.3.1

Using the National Green Building Standard (“NGBS”, also known as ICC/ASHRAE 700-2015), the building shall earn no less than 80 NGBS Energy Efficiency points. NGBS certification is not necessary.

R503.3.2

Renewable energy generation that meets all applicable requirements for renewable energy systems described in R502.4.1 may be used to meet the requirements.

R503.3.3 Documentation

The DESIGN PROFESSIONAL OR ENERGY PROFESSIONAL documenting compliance will provide a signed statement that the design meets the requirements of this section, and documentation showing compliance.

R503.4 Passive House-based Compliance

R503.4.1

Buildings shall meet the design requirements of one of the following.

1. PHIUS+ Passive Building Standard from Passive House Institute US
2. Passive House Classic Standard from Passive House Institute

Actual certification is not required. The most recent version of the chosen standard in effect at the time of building permit application shall be used.

Documentation shall include at least one of the following:

1. Pre-certification letter (or other formal communication) from an Accredited Passive House Certifier, stating that Design Review has been completed and the building is designed to meet all requirements of the chosen Standard. All documentation used to show achievement of the requirements must be submitted to the Code Enforcement Officer.

Documentation of Passive House certification. All documentation used to achieve certification must be submitted to the Code Enforcement Officer.

R503.5 Greenhouse Gas Emissions Calculation-based Compliance

The building shall demonstrate a reduction in greenhouse gas (GHG) emissions of not less than 40% as compared to the baseline building.

R503.5.1 Energy Modeling Standards

GHG emissions reductions shall be shown through energy modeling.

1. For Residential Buildings four stories and greater and for mixed-use buildings classified as residential, energy modeling shall comply with Appendix G of ASHRAE Standard 90.1-2013.
2. For Residential buildings of not more than three stories, energy modeling shall comply with RESNET-HERS.

R503.5.2 Process Loads

The GHG emissions reduction assessment and requirement shall exclude energy use by PROCESS LOADS. However, the energy model shall include the energy used for PROCESS LOADS because energy used by heating, cooling, and ventilation (including exhaust fans/hoods, makeup air fans, and heating/cooling for makeup air) is subject to the GHG emissions reduction requirement. After the baseline and proposed energy models are run, for the GHG emissions reduction calculation, subtract out the process energy use from both the baseline and the proposed building energy model results, and use the resulting without-process-energy results for the GHG emissions calculations.

R503.5.3 Renewable Energy

Renewable energy generation may be used. All applicable requirements for renewable energy systems described in R502.4.1 must be met. Renewable energy generation used to achieve the 40% reduction in

GHG emissions is capped at 25% of the baseline energy use. The GHG emissions factor for electricity produced by renewable energy systems shall be 0 (zero) lb CO₂e/MWh.

R503.5.4 GHG Emissions Factor for Electricity

For buildings not served by combined heat and power plants, the GHG emissions factor for electricity used for all calculations shall be 548.37 lb CO₂e/MWh

R503.5.5 GHG Emissions Factor for Electricity for Buildings Served by Combined Heat and Power Plants

For buildings using electricity generated by combined heat and power (CHP) plants, the GHG emissions factor for electricity shall be determined in one of the following ways:

- a. The most recent heat rate data available at the time of building application shall be used from www.eia.gov/electricity/annual/html/epa_08_02.html, for the specific type of generation plant used, for electricity to be used in the proposed building, and the heat rate shall be multiplied by the EPA emissions factor for the fuel used at the CHP plant. The result shall be used as the GHG emissions factor for electricity from CHP plants.
- b. Data gathered from actual operation of the CHP plant and its distribution network shall be used to determine the site-specific GHG emissions factor for electricity to be used in the building. All data used shall be made publicly available before the time of building permit application.

For buildings served by CHP plants, the baseline (reference building) electricity use GHG emissions shall be the same as for buildings not served by a CHP plant.

R503.5.6

If a facility uses electricity from a combination of sources (e.g., utility, off-site renewable energy system, and CHP plants), a weighted average of GHG emissions factors shall be used.

R503.5.7 Documentation

The following documentation shall be submitted to show compliance with R503.5 in sufficient clarity and detail:

1. A report, signed and stamped by an accredited third-party ENERGY PROFESSIONAL, showing the results of all calculations, assumptions, inputs, and outputs for the energy model
2. A letter, signed and stamped by an accredited third-party ENERGY PROFESSIONAL, stating that proposed total GHG emissions for the building are at least 40% less than the GHG emissions of the baseline building.
3. The City reserves the right to require additional documentation and/or additional third-party review and analysis by a consultant selected by the City, at the expense of the applicant. All such documentation shall be submitted and fee shall be paid prior to issuance of a building permit.

R503.6 Greenhouse Gas Emissions Calculation-based Compliance for Additions

Compliance using the requirements of this provision R503.6 may only be used for additions that are showing compliance together with the existing building. See also 202.2.

R503.6.1

The addition and the existing building, together as a whole, shall be shown to have lower total GHG emissions than the original existing building.

R503.6.2

Current and proposed GHG emissions shall be calculated following the requirements of the GHG emissions Calculation Method (R503.5).

R503.6.3 Documentation

The following documentation shall be submitted:

1. An energy study of the existing building that includes energy use from at least 12 consecutive months of the most recent 24 months at the time of building permit application.
2. An energy study that shows anticipated energy use for the new addition and modified existing building.
3. A report, signed and stamped by an accredited ENERGY PROFESSIONAL, showing the results of all calculations, assumptions, inputs, and outputs for the energy model.
4. A letter, signed and stamped by an accredited third-party ENERGY PROFESSIONAL, stating that proposed total GHG emissions for the building and addition together are less than the GHG emissions for the existing building.
5. The City/Town reserves the right to require additional documentation and/or additional third-party review and analysis by a consultant selected by the City/Town, at the expense of the applicant. All such documentation shall be submitted and fee shall be paid prior to issuance of a building permit.

SECTION R504 FUTURE REQUIREMENTS

R504.1 General

On January 1, 2023, the requirements of Sections R502 and R503 shall change as described in R504.2, R504.3, R504.4, and R504.6. Where no changes are listed, the requirements shall remain as described in Sections R502 and R503.

On January 1, 2026, the requirements of Sections R501, R502 and R503 shall change as described in R504.7. Where no changes are listed, the requirements shall remain as described in Sections R501, R502 and R503.

R504.2 Changes in 2023 to General Requirements of Prescriptive Compliance Path/Easy Path

Effective January 1, 2023, to meet the requirements of section R502, a building must achieve a minimum of twelve (12) of the points described in section R502. A summary table is provided in R504.5

R504.3 Changes in 2023 to Efficient Electrification Points

Effective January 1, 2023, all points awarded from R502.2 Efficient Electrification shall be doubled.

R504.3.1

Six points shall be earned for using air source heat pumps and meeting the requirements of R502.2.1 - Heat Pumps for Space Heating. Ten (10) points shall be earned for using ground source heat pumps and meeting the requirements of R502.2.1 - Heat Pumps for Space Heating.

R504.3.2

Two points shall be earned for meeting the requirements of R502.2.2 EE2 Heat Pumps for Service Water Heating.

R504.3.3

Six points shall be earned for meeting the requirements of R502.2.3 EE3 Commercial Cooking Electrification.

R504.3.4

Two points shall be earned for meeting the requirements of R502.2.4 EE4 Residential Cooking and Clothes Drying Electrification.

R504.4 Changes in 2023 to RE1 Renewable Energy Systems

Effective January 1, 2023, the maximum number of points allowed under R502.4.1 RE1 Renewable Energy Systems shall increase to six (6) points. The criteria for earning points shall remain as described in R502.4.1.

R504.5 Changes in 2023 to Summary Table for Prescriptive Compliance Path/Easy Path

2023

Residential Compliance Summary for Easy Path/Prescriptive Path

Projects must earn at least 12 points

Cate-gory	Improvement	Points	Details
EFFICIENT ELECTRIFICATION			
EE1	Heat pumps for space heating	6 - 10	6 points for air source heat pumps. 10 points for ground source heat pumps.
EE2	Heat pumps for domestic hot water heating	2	2 points for water heating systems that use heat pumps.
EE3	Commercial cooking electrification	6	6 points for electric cooking equipment in restaurants and other food service buildings. Prerequisite: no fossil fuel use in the building.
EE4	Residential cooking and clothes drying electrification	2	2 points for electric stoves and ventless heat pump clothes dryers. Prerequisite: no fossil fuel use in the building.
AFFORDABILITY IMPROVEMENTS			
AI1	Smaller building/room size	1 - 2	Up to 2 points for smaller room sizes. Available for Hotel and Residential portions only.
AI2	Heating systems in heated space	1	1 point for installing heating systems in directly heated spaces.
AI3	Efficient building shape	1	1 point if exterior surface area divided by directly heated floor area is less than the maximum allowed value.
AI5	Modest window-to-wall ratio	1	1 point for overall window-to-wall ratio less than 20% (individual spaces may exceed 20%).
RENEWABLE ENERGY			
RE1	Renewable energy systems	1 - 6	Up to 6 points for on-site or off-site renewable electric systems or on-site renewable thermal systems.
RE2	Biomass systems	5	5 points for biomass space heating systems.
OTHER POINTS			
OP1	Development density	1	1 point for achieving sufficient development density on the building parcel. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP2	Walkability	1	1 point if the building meets the walkability criteria. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP3	Electric Vehicle Parking Spaces	1	1 point for installing electric vehicle parking spaces and related infrastructure. A maximum of two points total may be earned for points OP1, OP2, and OP3 combined.
OP4	Adaptive reuse	1	1 point for substantial re-purpose of existing building.
OP5	Meet NY Stretch Code	2	2 points for complying with NYStretch Energy Code
OP6	Custom energy improvement	1 - 2	Up to 2 points for reduction in energy use.

R504.6 Changes in 2023 to Performance-Based Compliance Path/Whole Building Path

Effective January 1, 2023, the requirements of Section R503 Performance-Based Compliance Path/Whole Building Path shall change as described in R504.6.1, R504.6.2, and R504.6.3. Where no changes are listed, the requirements shall remain as described in Section R503.

R504.6.1 Changes to Energy Rating Index-based Compliance

Effective January 1, 2023, the language of R503.2.2 shall be replaced with the following language:

The building must satisfy one of the following criteria:

1. The rated design shall be shown to have an Energy Rating Index (ERI) less than or equal to 20 when compared to the ERI reference design.
2. The rated design shall be shown to have an Energy Rating Index (ERI) less than or equal to 40 when compared to the ERI reference design AND seven IECS points from Section R502 Prescriptive Compliance Path/Easy Path shall be earned. Points from AI4 Right-Lighting and OP5 Meet NY Stretch Code may not be counted toward the seven IECS points.

R504.6.2 Changes to National Green Building Standard-based compliance

In addition to all existing requirements, seven IECS points from Section R502 Prescriptive Compliance Path/Easy Path must be earned. Points from AI4 Right-Lighting and OP5 Meet NY Stretch Code may not be counted toward the seven IECS points.

R504.6.3 Changes to Greenhouse Gas Emissions Calculation-based Compliance

Effective January 1, 2023, the building shall demonstrate a reduction in greenhouse gas (GHG) emissions of not less than 80% as compared to the baseline building.

R504.6.3.1

Renewable energy generation used to achieve the 80% reduction in GHG emissions is capped at 50% of the baseline energy use.

R504.6.3.2

For buildings not served by combined heat and power plants or renewable energy systems, the GHG emissions factor for electricity used for all calculations shall be 295.9 lb CO₂e/MWh.

R504.7 Changes in 2026

Effective January 1, 2026, all buildings shall be built to have net-zero GHG emissions and shall not use fossil fuels for space heating, water heating, or clothes drying.

R504.7.1

The language in R501.2 Application shall be replaced with:

RESIDENTIAL BUILDINGS of not more than three stories shall comply with all requirements of R503.2 Energy Rating Index-based Compliance except R503.2.2. The rated design shall be shown to have an Energy Rating Index (ERI) less than or equal to 5 when compared to the ERI reference design.

Residential Buildings four stories and greater shall comply with the requirements of the ZERO Code, using the most recent version of the ZERO Code available at the time of permit application. The ZERO Code, an Architecture 2026 initiative, is available at <https://zero-code.org>.

An IECS Compliance Plan shall be the basis for evaluating compliance.

R504.7.2

Fossil fuels shall not be used for space heating, water heating or clothes drying. Fossil fuels may be used for PROCESS ENERGY and for cooking.

Chapter 6 COMPLIANCE, ENFORCEMENT AND APPEALS

NOTE: THIS SECTION TO BE UPDATED AS COMPLIANCE DOCUMENTATION REQUIREMENTS ARE FINALIZED.

The following compliance documentation shall be submitted:

1. For the proposed point system, a checklist that shows which points are sought, and support for each point. For example, if a developer is seeking the size credit for a house design, the checklist would show the house area (square feet), number of bedrooms, required house size, and proposed house size, to show that the house meets the size requirement.
2. For the proposed whole-building compliance, a report by a DESIGN PROFESSIONAL OR ENERGY PROFESSIONAL, at the time of planning review and again when applying for a building permit.

At the planning review phase, a preliminary green building checklist shall be submitted, indicating which green compliance items are proposed/planned. A checklist shall be submitted with the construction documents, prior to the building department issuing the building permit.

Non-compliance with the Ithaca Energy Code Supplement is grounds for the Code Enforcement Officer to withhold a Certificate of Occupancy and impose any other enforcement measures or penalties as specified in Code Section 146-59.

Appeals: The appeals process is set forth in the Ordinance, attached as Appendix B.

If any section, paragraph, or provision of this IECS or the enabling legislation, as codified by the ordinance attached as Appendix B, shall be determined to be invalid, such invalidity shall apply only to the section, paragraph or provision adjudged invalid, and the rest of the IECS and ordinance shall remain valid and effective.

Appendix A - Lighting Power Allowances

Table AA1 below provides the Lighting Power Allowances (LPA), by space type, that are used to determine compliance with Easy Path point A14, Right Lighting.

Table AA1. Interior Lighting Power Allowances

COMMON SPACE TYPES ^a	LPA (watts/sq. ft)
Atrium	
Less than 40 feet in height	0.015 per foot in total height
Greater than 40 feet in height	0.2 + 0.01 per ft in total height
Audience seating area	
In an auditorium	0.32
In a convention center	0.41
In a gymnasium	0.33
In a motion picture theater	0.57
In a penitentiary	0.14
In a performing arts theater	1.22
In a religious building	0.77
In a sports arena	0.22
Otherwise	0.22
Banking activity area	0.51
Breakroom (See Lounge/Breakroom)	
Classroom/lecture hall/training room	
In a penitentiary	0.67
Otherwise	0.62
Conference/meeting/multipurpose room	0.62
Copy/print room	0.36
Corridor	
In a facility for the visually impaired (and not used primarily by the staff) ^b	0.46
In a hospital	0.40
In a manufacturing facility	0.21
Otherwise	0.33
Courtroom	0.86
Computer room	0.86
Dining area	
In a penitentiary	0.48
In a facility for the visually impaired (and not used primarily by the staff) ^b	0.95
In bar/lounge or leisure dining	0.54

In a cafeteria or fast food dining	0.33
In family dining	0.45
Otherwise	0.33
Electrical/mechanical room	0.48
Emergency vehicle garage	0.28
Food preparation area	0.61
Guest room	0.24
Laboratory	
In or as a classroom	0.72
Otherwise	0.91
Laundry/washing area	0.30
Loading dock; interior	0.24
Lobby	
In a facility for the visually impaired (and not used primarily by the staff) ^b	0.90
For an elevator	0.32
In a hotel	0.53
In a motion picture theater	0.30
In a performing arts theater	1.00
Otherwise	0.45
Locker room	0.38
Lounge/Breakroom	
In a healthcare facility	0.46
Otherwise	0.37
Office	
Enclosed	0.56
Open plan	0.49
Parking area	0.10
Pharmacy area	0.84
Restroom	
In a facility for the visually impaired (and not used primarily by the staff) ^b	0.61
Otherwise	0.49
Sales area	0.80
Seating area, general	0.27
Stairway (See space containing stairway)	
Stairwell	0.35
Storage room	0.32
Vehicular maintenance area	0.34
Workshop	0.80

BUILDING TYPE SPECIFIC SPACE TYPES^a	LPA (watts/sq.ft)
Facility for the visually impaired ^b	
In a chapel (and not used primarily by the staff)	1.11
In a recreation room (and not used primarily by the staff)	1.21
Automotive (See Vehicular Maintenance Area above)	
Convention Center-exhibit space	0.73
Dormitory-living quarters	0.19
Fire Station-sleeping quarters	0.11
Gymnasium/fitness center	
In an exercise area	0.36
In a playing area	0.60
Healthcare facility	
In an exam/treatment room	0.83
In an imaging room	0.76
In a medical supply room	0.37
In a nursery	0.44
In a nurse's station	0.36
In an operating room	1.24
In a patient room	0.31
In a physical therapy room	0.46
In a recovery room	0.58
Library	
In a reading area	0.53
In the stacks	0.86
Manufacturing facility	
In a detailed manufacturing area	0.65
In an equipment room	0.37
In an extra high bay area (greater than 50' floor-to-ceiling height)	0.53
In a high bay area (25-50' floor-to-ceiling height)	0.62
In a low bay area (less than 25' floor-to-ceiling height)	0.60
Museum	
In a general exhibition area	0.53
In a restoration room	0.51
Performing arts theater-dressing room	0.31
Post Office-Sorting Area	0.47
Religious buildings	
In a fellowship hall	0.32
In a worship/pulpit/choir area	0.77
Retail facilities	
In dressing/fitting room	0.36

In a mall concourse	0.55
Sports arena-playing area	
For a Class I facility ^c	1.84
For a Class II facility ^d	1.20
For a Class III facility ^e	0.90
For a Class IV facility ^f	0.60
Transportation facility	
In a baggage/carousel area	0.27
In an airport concourse	0.18
At a terminal ticket counter	0.40
Warehouse-storage area	
For medium to bulky, palletized items	0.29
For smaller, hand-carried items	0.48

- a) In cases where both a common space type and a building area specific space type are listed, the building area specific space type shall apply.
- b) A 'Facility for the Visually Impaired' is a facility that is licensed or will be licensed by local or state authorities for senior long-term care, adult daycare, senior support or people with special visual needs.
- c) Class I facilities consist of professional facilities; and semiprofessional, collegiate, or club facilities with seating for 5,000 or more spectators.
- d) Class II facilities consist of collegiate and semiprofessional facilities with seating for fewer than 5,000 spectators; club facilities with seating for between 2,000 and 5,000 spectators; and amateur league and high-school facilities with seating for more than 2,000 spectators.
- e) Class III facilities consist of club, amateur league and high-school facilities with seating for 2,000 or fewer spectators.
- f) Class IV facilities consist of elementary school and recreational facilities; and amateur league and high-school facilities without provision for spectators.

Informative Note: Table AA1 is based on one from the Energy Conservation Code of NYS; the Lighting Power Allowances were reduced from the NYS Code to meet the needs of the IECS.

Appendix B IECS Ordinance

Attach IECS Ordinance as Appendix for reference.

Appendix C IECS Compliance Documents

Attach checklist, worksheet, and other compliance documents for reference.