

**Chapter160**

**GREEN BUILDING CODE**

**ARTICLE I**

**General Provisions**

**§ 160-1. Intent.**

The Village of Hastings-on-Hudson is committed to enhancing the public welfare and ensuring that further development in the Village is consistent with the Village’s desire to create a more sustainable community. The intent of this Green Building Code is to minimize short-term and long-term negative impacts on the environment; reduce greenhouse gas emissions to mitigate human impact on the climate; and provide owners and occupants with economic benefits from energy and water savings, use of renewable energy sources and sustainable building products and practices.

This Green Building Code applies to both residential and commercial buildings. It is also intended to provide guidance and ideas for consideration in all other projects, including those undertaken by the School Districts with property in the Village.

**§ 160-2. Applicability.**

- A. This Green Building Code applies to all projects undertaken by the Village, and all projects requiring a building permit from the Village in accordance with § 295-100 of the Code of the Village of Hastings-on-Hudson.
- B. Part 2 Requirements (Article II) - Non-residential buildings, multifamily dwellings, and Residential Developments.
  - (1) The Part 2 Requirements of this Chapter (Article II) shall apply to all construction of, Alterations to, Additions to, movement, replacement, removal and demolition of every non-residential building, multifamily dwelling, and Residential Development, except the following:
    - (a) Residential Developments consisting of three or fewer dwelling units.
    - (b) Construction trailers used as a temporary office for the purpose of monitoring construction at a construction site.

- (2) An Addition or Alteration to a building or structure shall comply with the Part 2 Requirements of this Chapter (Article II), but the existing building or structure shall not be required to comply with the requirements of this Chapter, unless otherwise specified herein. Where an Addition or Alteration impacts the existing building or structure, the Impacted Area of the existing building or structure shall comply with this Green Building Code.

C. Part 3 Requirements (Article III) - Single-family and two-family residential buildings and Residential Developments consisting of three or fewer dwelling units.

- (1) The Part 3 Requirements of this Chapter (Article III) shall apply to all construction of, Alterations to, Additions to, movement, enlargement, replacement, removal and demolition of every detached single-family and two-family dwelling, Residential Developments consisting of three or fewer units, single-family dwellings converted to bed and breakfast dwellings, and their accessory structures.
- (2) An Addition or Alteration to a building or structure shall comply with the Part 3 Requirements of this Chapter (Article III) but the existing building or structure shall not be required to comply with the requirements of this Chapter, unless otherwise specified herein. Where an Addition or Alteration impacts the existing building or structure, the Impacted Area of the existing building or structure shall comply with this Green Building Code.

**§ 160-3. Definitions.**

As used in this Article, the following terms shall have the meanings indicated. Other terms not included on this list shall be defined as in the Zoning Chapter of the Hastings-on-Hudson Code.

APPLICABLE PROJECTS – All projects identified in § 160-2 above.

ADDITION – An extension or increase in floor area or height of a building or structure, including the construction of a deck, patio, porch, driveway, pool or other accessory structure such as a garage or shed.

ALTERATION – Any construction or renovation to an existing structure other than Addition, including the reconfiguration of space, the addition or elimination of any exterior door or window, the reconfiguration or extension of any deck, patio, porch, driveway, pool, accessory structure such as garages or sheds, the reconfiguration or extension of any system, or the installation of any additional equipment.

BASELINE BUILDING – A computer representation of a hypothetical design based on the proposed building project. This representation is used as the basis for calculating the baseline building performance for rating above-standard design.

**BUILDING DEPARTMENT** – The Building Department of the Village of Hastings-on-Hudson.

**BUILDING INSPECTOR** – The Building Inspector of the Village of Hastings-on-Hudson.

**CSI DIVISIONS 2 THROUGH 10** – The Construction Specifications Institute’s Master Format 2012, including any future amendments and revisions as they become effective.

**EFFICIENT FRAMING** – Optimizing use of framing materials by limiting waste factor to 10% or less, and /or using framing efficient measures such as using pre-cut framing packages, open-web floor trusses, or structurally insulated panels (SIPs); spacing wall studs, ceiling joists, floor joists, and roof rafters greater than 16” o.c.; using 2-stud corners, ladder blocking or drywell clips, and designing header-sizing for actual loads.

**ENERGY STAR** – Guidelines for energy efficiency developed by the United States Environmental Protection Agency (“EPA”) and the United States Department of Energy, including any future amendments and revisions as they become effective.

**GREYWATER** – Wastewater discharged from lavatories, bathtubs, showers, clothes washers, and laundry sinks, as defined by the International Plumbing Code (“IPC”).

**GREEN BUILDING CODE (GREEN CODE or CODE)** – This Chapter 160 of the Hastings-on-Hudson Code.

**GREENFIELD SITES** – Those lots that have not been previously developed or graded and remain in a natural state.

**GREEN/VEGETATIVE ROOFS** – Roofs that are partially or fully covered by vegetation, in order to manage water runoff and provide additional insulation in the winter and cooling in the summer.

**IMPACTED AREAS** – Portions of the building where incidental work entailed by the intended work must be performed.

**INVASIVE PLANTS** – Species the introduction of which does, or is likely to, cause economic or ecological harm or harm to human health. A list of Invasive Plants is maintained and distributed by the Building Department.

**LATENT HEAT** – The change in enthalpy associated with change in humidity ratio, caused by the addition or removal of moisture.

**LOW SLOPE ROOF** – Roofing with slopes at or less than 3 in 12, composed of a continuous waterproof membrane.

**NATIVE PLANTS** – Plants that are indigenous to the northeast region or cultivars of Native Plants that are adapted to the local climate and are not considered Invasive Species or noxious

weed. A reference list of Native Plants is maintained and distributed by the Building Department.

NYS ECCC – The 2010 New York State Building and Energy Conservation Construction Code including any future amendments and revisions as they become effective.

OPEN GRID PAVING SYSTEM – A paving material that has an open grid structure to allow water to pass through the material and into the earth below.

PASSIVE SOLAR HEATING STRATEGIES – The collection and distribution of solar energy for heat without the use of mechanical and electrical devices. Elements to be considered in passive solar design include southern orientation of windows, glazing type, thermal mass, thermal insulation and shading device.

PREVIOUSLY DEVELOPED AREAS – Those areas that previously contained buildings, roadways, parking lots or were graded or altered by direct human activities.

RECYCLED CONTENT MATERIALS – Materials with recycled content such that the sum of post-consumer recycled content plus one half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials.

REPAIR– The restoration to good or sound condition of any part of an existing building for the purpose of its maintenance, including, but not limited to, the patching, restoration or replacement of damaged materials, elements, equipment or fixtures.

RESIDENTIAL DEVELOPMENT – Multiple single-family dwellings (commonly called townhouses) consisting of more than three units, with separate means of egress and their accessory structures. Residential Developments shall also mean two or more detached single-family and two-family dwellings constructed after the effective date of this Code on the same lot, on adjacent lots owned or developed by the same person or related entity, or as part of the same development.

SENSIBLE HEAT – The energy exchanged by a thermodynamic system that has as its sole effect a change of temperature.

STEEP SLOPE ROOF – A roof with slopes greater than 3 in 12.

SOLAR REFLECTIVE INDEX (“SRI”) – The measure of the constructed surface’s ability to reflect solar heat as demonstrated by temperature rise. SRI is defined so that a standard black surface (reflectance of 0.05, emittance of 0.90) is 0 and a standard white surface (reflectance 0.80, emittance 0.90) is 100. To calculate the SRI for a given material, obtain the reflectance value and emittance value for the material according to ASTM E 1980. Reflectance is measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance is measured according to ASTM E 408 or ASTM C 1371.

VILLAGE – The Village of Hastings-on-Hudson, Westchester County, New York.

**§ 160-4. Proposal checklist.**

Along with the submission of a building permit application, applicants for all Applicable Projects shall submit a notarized proposal checklist to the Building Department on the form provided by the Village. The proposal checklist includes, but is not limited to, a description of the Applicable Project, a plan for compliance with the Part 2 or Part 3 Requirements of this Chapter, whichever is applicable, and a description of the project's Work Area.

**§ 160-5. Conflicts with other laws.**

Should any conflicts or ambiguities exist between this Green Building Code and other applicable Village requirements, the more stringent, as determined by the Building Inspector, shall apply.

**§ 160-6. Exemptions and appeals.**

- A. Exemptions. If an applicant believes that circumstances exist that make it a hardship or infeasible to meet one or more of the requirements of this Chapter, the applicant may apply for an exemption or partial exemption as set forth below. The burden is on the applicant to show hardship or infeasibility. The Building Inspector will either grant or deny the request for an exemption or partial exemption.
- (1) Factors to consider in determining whether hardship or infeasibility exist include, but are not limited to: availability of green building materials and technologies, compatibility of green building requirements with other government requirements and building standards, availability of markets for materials to be recycled, and preserving the historical integrity of the building.
  - (2) "Hardship" means some verifiable level of difficulty or adversity arising from the factors identified in § 160-6.A(1) or other circumstances beyond the control of the applicant, by which the applicant cannot reasonably comply with the requirements of this Chapter.
  - (3) "Infeasibility" means the existence of verifiable obstacles arising from the factors identified in § 160-6.A(1) or other circumstances beyond the control of the applicant that render the applicant incapable of complying with the requirements of this Chapter.
  - (4) Application. The applicant may apply for an exemption at the time of submission of the Proposal Checklist required in § 160-4 of this Chapter. The applicant shall indicate the provisions for which it is applying for an exemption and explain the

circumstances that make it a hardship or infeasible to fully comply with this Chapter.

- (5) Granting of exemption. If an exemption is granted on a portion of this Chapter, the applicant shall be required to comply with this Chapter in all other respects.
  - (6) Denial of exemption. If the Building Inspector determines that it is not a hardship or infeasible for the applicant to meet the requirements of this Chapter, he or she shall so notify the applicant in writing with a statement of reasons for the denial.
- B. Appeal. Upon denial of an exemption, an applicant may appeal to the Board of Trustees by filing a written notice of such appeal with the Village Clerk within 30 days from the date of notice of denial by the Building Inspector.

## ARTICLE II

### Part 2 Requirements

#### **§ 160-7. Part 2 Requirements for non-residential buildings, multifamily dwellings, and Residential Developments.**

All projects identified in § 160-2.B shall be subject to the Part 2 Requirements detailed in this Article unless otherwise specified.

#### **§ 160-8. Site improvements.**

- A. Natural Resources Survey. Unless specifically waived by the Building Inspector, a Natural Resources Survey, on the form provided by the Village, must be submitted for all Applicable Projects that include any new landscaping, paving, or impact on stormwater quantity, or where there is an increase in the footprint of the structure. The Natural Resources Survey shall be prepared prior to, and coordinated with, any other Village approval processes such as site plan approval, general construction approval, steep slopes and view preservation approvals. The Natural Resources Survey shall identify all existing features, including: solar orientation, potential solar access for active or passive collection, designated trees as defined in Chapter 273-2 of the Hastings-on-Hudson Code, contours or spot elevations, native and other planting areas, wetlands, water bodies, rock outcroppings, and other distinguishing features on the lot.
- B. Stormwater control. For all land disturbances greater than 500 square feet but less than 10,000 square feet, all additional runoff caused by construction or demolition must be contained on-site through the installation of one or more of the following: (1) vegetated swale, (2) on-site rain garden, (3) dry well, (4) rainwater cistern, (5) landscaping, (6) pervious pavement, or (7) other mechanism determined to be acceptable by the Building Inspector. (Chapter 250 of the Hastings-on-Hudson Code applies to all land disturbances

greater than 10,000 square feet.)

- C. Heat island – non-roof. For any new or replacement site hardscape (including roads, driveways, sidewalks, courtyards, and parking areas) any combination of the following strategies must be used for at least 50% of the site hardscape:
- (1) Shade from existing tree canopy or from planted tree landscape within 5 years of installation. Tree landscaping must be in place at the time of occupancy;
  - (2) Shade from structures covered by solar panels that produce energy;
  - (3) Hardscape materials with an SRI of at least 0.29; or
  - (4) An Open Grid Paving System that is at least 50% pervious.

This requirement does not apply to replacement hardscape if replacement materials are to be matched to existing hardscape and less than 50% of the original hardscape is being replaced.

- D. Irrigation. Any new irrigation systems must consist of high-efficiency equipment (i.e. trickle or drip irrigation) and/or climate-based controllers or other control techniques determined to be acceptable by the Building Inspector.
- E. Invasive Plants. All existing Invasive Plants shall be removed from areas that are to be planted. Any new plants installed shall be non-invasive.
- F. Bicycle racks. For any new construction or any Addition or Alteration to an existing building that increases the parking requirements for such building, secure bicycle racks for 5% or more of the estimated number of building users at peak periods must be provided. In no event shall there be less than one rack that can accommodate at least two bicycles.
- G. Electric vehicles and plug-in hybrid-electric vehicles. For any new construction or any Addition or Alteration of an existing building that increases the parking requirements for such building, electrical infrastructure to support installation of charging stations for 20% of required parking spaces must be provided. In no event shall there be less than the infrastructure to support one charging station.
- H. Light trespass. For all new exterior lighting to be installed, light spillage upward or beyond site boundaries must be prevented by using one of the following lighting zones as it applies to the Applicable Project. Justification shall be provided to the Building Inspector for the selected lighting zone. Exceptions for safety or security lighting will be considered by the Building Inspector:
- (1) Light Zone 2 - Low (primarily residential zones, neighborhood business districts,

light industrial areas with limited nighttime use and residential mixed-use areas). Exterior lighting must be designed so that all site and building-mounted luminaires produce a maximum initial illuminance value no greater than 0.10 horizontal and vertical footcandles (1.0 horizontal and vertical lux) at the project boundary and no greater than 0.01 horizontal footcandles (0.1 horizontal lux) 10 feet (3 meters) beyond the project boundary. Documentation must be submitted to show that no more than 2% of the total initial designed fixture lumens (sum total of all fixtures on site) will be emitted at an angle of 90 degrees or higher from nadir (straight down).

- (2) Light Zone 3 - Medium (commercial/ industrial, and high-density residential). Exterior lighting must be designed so that all site and building-mounted luminaires produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical footcandles (2.0 horizontal and vertical lux) at the project boundary and no greater than 0.01 horizontal footcandles (0.1 horizontal lux) 15 feet (4.5 meters) beyond the site. Documentation must be submitted to show that no more than 5% of the total initial designed fixture lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

#### **§ 160-9. Energy.**

##### **A. Energy utilization equipment.**

- (1) Exterior lighting. Lighting controls for all exterior lighting shall comply with Section 9.4.1.3 of ANSI/ASHRAE/IESNA Standard 90.1-2007, without amendments.
- (2) High efficiency heating equipment. For new construction only, all hot water boilers shall be condensing boilers with a minimum annual fuel utilization efficiency ("AFUE") of at least 85% for oil burning and 92% for natural gas burning boilers.
- (3) High efficiency cooling equipment. All new or replacement cooling equipment shall have a seasonal energy efficiency ratio ("SEER") of at least 16.
- (4) Fixtures and appliances. All new or replacement appliances governed by Energy Star, such as but not limited to, dishwashers, refrigerators, freezers, washing machines, water heaters and room air conditioners, shall be compliant with Energy Star.

##### **B. Energy use controls.**

- (1) Electronic thermostat. All heating and cooling systems must be controlled with a programmable thermostat that allows for a variety of time-of-day and seasonal

settings.

- (2) Whole-building switch. A master whole-building switch must be installed to control applicable circuits and outlets (such as lights and major appliances), which can shift circuits to economy mode when the structure is not occupied. For residential projects subject to Part 2 Requirements, a whole building switch shall be installed in each residential unit. With respect to projects identified in § 160-2.B(2) (Additions and Alterations), this section applies only when a new main electric panel is being installed.
- (3) Zoned heating and cooling. New construction and Additions in excess of 1000 square feet shall have zoned controls for heating and cooling.

C. Energy Use Monitoring.

- (1) Energy monitor dashboard. An Energy Monitor Dashboard must be installed to provide a reading of the energy use for the entire structure either via a central monitoring system or via submonitors if submeters are provided. This section does not apply to residential structures subject to Part 2 Requirements. This section also does not apply to Additions and Alterations unless a new heating, ventilation, and air conditioning (“HVAC”) system is installed that serves the entire structure.
- (2) Fundamental commissioning of building energy systems. For projects over 25,000 square feet, an independent expert must be hired to certify that the project’s energy-related systems are installed, calibrated and perform according to the approved plans.

**§ 160-10. Interior water use.**

- A. Toilets and urinals. Any newly installed or replaced toilet or urinal must be either low flush toilets equal to or less than 1.28 gallons per flush (“gpf”) or dual-flush toilets where the low flush feature is no more than 1.28 gpf.
- B. Showers. Any newly installed or replaced shower head must provide an average flow rate of no more than 2 gallons per minute (“gpm”).
- C. Lavatory faucets. Any newly installed or replaced lavatory faucet must provide an average flow rate of no more than 2 gallons per minute (“gpm”).

**§ 160-11. Materials and indoor environmental quality.**

- A. Paints, wood finish, and other finishing materials.

- (1) Paints, coatings, and primers applied to interior surfaces shall not exceed the following VOC content limits (as established by Green Seal Standard GC-11, Paints, Edition 3.1, July 2013, as amended):

Flat Paint:	50g/L flat
Non-Flat Paint:	150g/L non-flat

- (2) Clear wood finishes, floor coatings, stains, sealers, and shellacs, applied to interior surfaces, shall not exceed the following VOC content limits (as established by South Coast Air Quality Management District Rule 1113, Architectural Coatings, June 3, 2011, as amended):

Varnish:	275g/L
Laquer:	275g/L
Shellac:	730 g/L clear, 550 g/L pigmented
Sealers:	100 g/L waterproofing, 275 g/L sanding, 100 g/L all others

- (3) Carpet adhesive shall not exceed a VOC content limit of 50g/L.
- (4) No materials shall contain added urea formaldehyde.
- (5) A list of permissible low-VOC finishes applicable to this section shall be maintained by the Building Department. Documentation of compliance with this section shall be submitted to the Building Inspector.
- B. Roofing materials. All new roofing materials used shall have an SRI of at least 0.78 for Low Slope Roofs and an SRI of at least 0.29 for Steep Slope Roofs. Green/Vegetated Roof areas that cover at least 50% of the roof will satisfy this provision. This section does not apply to Additions and Alterations if new roofing materials are to be matched in roof type or color to existing roof areas.
- C. Construction waste management. A minimum of 25% of construction waste by weight shall be recycled, repurposed and/or reused and not sent to a landfill or incinerator. Documentation of compliance with this section shall be submitted to the Building Inspector.

### **§ 160-12. Part 2 Additional Requirement Options.**

In addition to the requirements set forth in §§ 160-8 through 160-11 above, for all New Construction, Additions and Alterations in excess of the lesser of 1000 square feet or 50% of the aggregate area of the individual unit, at least five points must be obtained from the options set forth in this section. The options and the points for each option are listed.

- A. Rainwater harvesting. Design and install a rainwater harvesting and storage system for landscape irrigation or indoor water use. The storage system must be sized to hold all of the water from a one-inch rainfall event (0.62 gallons per square foot of roof area used for capture) for 50% or more of the total roof area. (2 points)
- B. Construction waste management. Increase the diversion from landfills and/or incinerators above the mandatory requirement set forth in § 160-11.C to a minimum of 50% of construction waste. A report shall be submitted to the Building Inspector to substantiate the diversion. (1 point)
- C. Economy of wood construction framing. For residential structures subject to Part 2 Requirements that are larger than 1000 square feet, reduce use of wood materials by Efficient Framing. Proof shall be submitted to the Building Inspector to substantiate compliance. (1 point)
- D. Whole-building energy simulation. For new buildings and renovations with less than 50% fenestration, demonstrate, through computer analysis software determined to be acceptable by the Building Inspector, a percentage improvement in total energy performance compared to the Baseline Building:
  - New buildings: 15% (2 points), 25% (3 points), 35% (4 points)
  - Existing building renovations: 12% (2 points), 20% (3 points), 25% (4 points)
- E. Primary geothermal heating and cooling system. Install a geothermal heating and cooling system that provides a minimum of 80% of the required space heating and space cooling energy. A calculation shall be submitted to Building Inspector to support performance claim. (3 points)
- F. Heat recovery ventilation. Install a system that recovers a minimum of 40% of the Sensible Heat in the air such as a heat-recovery ventilator (HRV) or energy-recovery ventilator (ERV). Ventilation equipment does not have to recover latent heat (moisture). (1 point)
- G. Solar electricity (photovoltaics). Install a photovoltaic array to provide a minimum of 50% of year-round electricity. A calculation shall be submitted to Building Inspector to support performance claim. (3 points)
- H. Passive solar heating strategies. For projects larger than 1000 square feet, utilize Passive Solar Heating Strategies that save a minimum of 50% of the yearly heating energy requirements compared to a conventional, code-compliant building. A calculation shall be submitted to the Building Inspector to support passive performance claim, including effects of winter shading, impact of trees and surrounding structures. (2 points if impacts only Addition or Alteration, 3 points if impacts entire structure)
- I. Solar hot water. Install a solar hot water system to provide a minimum of 40% of year-

round hot water. A calculation shall be submitted to Building Inspector to support performance claim. (2 points)

- J. High efficiency cooling system. Install cooling equipment with a SEER of greater than 16. (1 point)
- K. High efficiency heating equipment. For replacement heating equipment, Additions and Alterations, install heating equipment with a minimum AFUE of 5 percentage points or greater than the AFUE required by Table 503.2.3 of the NYSECCC and all amendments thereto (1 point), or 10 percentage points or greater than the AFUE required by Table 503.2.3 of the NYSECCC, and all amendments thereto. (2 points)
- L. Green/Vegetated Roofs. Install Green/Vegetated Roofs for a minimum of 50% of the roof area. (2 points)
- M. Perimeter daylighting. Install automatic daylight sensing and dimming controls capable of reducing light output and corresponding electrical power in the building perimeter by a minimum of 60% when useful daylight is available. To qualify for perimeter daylighting a minimum of 75% of all perimeter zone floor area within 15 feet of the exterior window walls of the building must be controlled to achieve this point. (1 point)
- N. Interior daylighting. Install automatic daylight sensing and dimming controls to reduce light output in interior areas/zones of buildings more than 15 feet away from an exterior window wall. To qualify for interior zone daylighting, a minimum of 30% of interior areas/zones must be equipped with dimming controls capable of reducing light output and corresponding electrical power by a minimum of 60% when useful daylight is available. (1 point)
- O. Light Emitting Diodes (“LEDs”). Utilize LEDs for at least 75% of all light fixtures. (1 point)
- P. Recycled content.
  - (1) Utilize Recycled Content Materials for between 10% and 19.99% (by cost) of all building materials and finishes. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point).
  - (2) Utilize Recycled Content Materials for 20% or greater (by cost) of all building materials and finishes. A report shall be submitted to the Building Inspector to substantiate compliance. (2 points)
- Q. Salvaged or reused materials.

- (1) Utilize salvaged, refurbished, or reused materials such that the sum of these materials constitutes at least 5%, based on cost, of the total value of materials on the project. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point).
  - (2) Utilize salvaged, refurbished, or reused materials such that the sum of these materials constitutes at least 10%, based on cost, of the total value of materials on the project. A report shall be submitted to the Building Inspector to substantiate compliance. (2 points)
  - (3) Reused materials can be materials found on-site that can be kept or refurbished, or previously used materials obtained off-site from another facility or purchased as salvaged materials.
- R. Local materials. Utilize building materials or products that have been extracted, harvested or recovered, and manufactured, within 500 miles of the site for a minimum of 10% (based on cost) of the total materials value. Documentation shall be submitted to the Building Inspector to substantiate compliance. (1 point)
- S. Certified wood. Use a minimum of 50% of wood-based materials and products that are certified by Forest Steward Council's (FSC) for wood building components. These components include, but are not limited to, structural framing, general dimensional framing, flooring, sub-flooring, wood doors, and finishes. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point)
- T. Rapidly renewable materials. Use rapidly renewable materials made from plants that are typically harvested within a ten-year cycle or shorter, for at least 2.5%, based on cost, of the total value of materials and products used in the project. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point)
- U. Greenfield Sites. Greenfield Site disturbances that do not exceed the following parameters:
- (1) 30 feet beyond the building perimeter and parking garages; and
  - (2) 10 feet beyond surface Alterations. (2 points)
- V. Restoring Previously Developed Areas with Native Plants. Restore or protect a minimum of 50% of the Previously Developed Area (excluding the building footprint and required parking area) or 20% of the Previously Developed Area (including building footprint and required parking area), whichever is greater, with Native Plants. Green/Vegetated Roof surface may be included in this calculation. Documentation of plant species shall be submitted to the Building Inspector. (1 point for less than 1000 square feet, 2 points for 1000 square feet or greater)

- W. Native Plants. New plants that are a minimum of 75% Native Plants by area. Documentation of plant species shall be submitted to the Building Inspector. (1 point for less than 1000 square feet, 2 points for 1000 square feet or greater)
- Y. Other green measures. Sustainability measures not listed may receive up to a maximum of 3 points, subject to approval of the Building Inspector.

### ARTICLE III

#### Part 3 Requirements

#### **§ 160-13. Part 3 Requirements for single-family and two-family residential buildings and Residential Developments consisting of three or fewer dwelling units.**

All projects identified in § 160-2.C shall be subject to the Part 3 Requirements detailed in this Article unless otherwise specified.

#### **§ 160-14. Site improvements.**

- A. Natural Resources Survey. Unless specifically waived by the Building Inspector, a Natural Resources Survey, on the form provided by the Village, must be submitted for all Applicable Projects that include any new landscaping, paving, or impact on stormwater quantity, or where there is an increase in the footprint of the structure. The Natural Resources Survey shall be prepared prior to, and coordinated with, any other Village approval processes such as site plan approval, general construction approval, steep slopes and view preservation approvals. The Natural Resources Survey shall identify all existing features, including: solar orientation, potential solar access for active or passive collection, designated trees as defined in Chapter 273-2 of the Hastings-on-Hudson Code, contours or spot elevations, native and other planting areas, wetlands, water bodies, rock outcroppings, and other distinguishing features on the lot.
- B. Stormwater control. For all land disturbances greater than 500 square feet but less than 10,000 square feet, all additional runoff caused by construction or demolition must be contained on-site through the installation of one or more of the following: (1) vegetated swale, (2) on-site rain garden, (3) dry well, (4) rainwater cistern. (5) landscaping, (6) pervious pavement, or (7) other mechanism determined to be acceptable by the Building Inspector. (Chapter 250 of the Hastings-on-Hudson Code applies to all land disturbances greater than 10,000 square feet.)
- C. Heat island – non-roof. For any new or replacement site hardscape (including roads, driveways, sidewalks, courtyards, and parking areas) any combination of the following strategies must be used for at least 50% of the site hardscape:

- (1) Shade from existing tree canopy or from planted tree landscape within 5 years of installation. Tree landscaping must be in place at the time of occupancy;
- (2) Shade from structures covered by solar panels that produce energy;
- (3) Hardscape materials with an SRI of at least 0.29; or
- (4) An Open Grid Paving System that is at least 50% pervious.

This requirement does not apply to replacement hardscape if replacement materials are to be matched to existing hardscape and less than 50% of the original hardscape is being replaced.

- D. Irrigation. Any new irrigation systems must consist of high-efficiency equipment (i.e. trickle or drip irrigation) and/or climate-based controllers or other control techniques determined to be acceptable by the Building Inspector.
- E. Invasive Plants. All existing Invasive Plants shall be removed from areas that are to be planted. Any new plants installed shall be non-invasive.
- F. Light trespass. For all new exterior lighting to be installed, light spillage upward or beyond the site boundaries must be prevented.

#### **§ 160-15. Energy.**

- A. Energy Utilization Equipment.
  - (1) Exterior lighting. Lighting controls for all exterior lighting shall comply with Section 9.4.1.3 of ANSI/ASHRAE/IESNA Standard 90.1-2007, without amendments.
  - (2) High efficiency heating equipment. For new construction only, all hot water boilers shall be condensing boilers with a minimum annual fuel utilization efficiency (“AFUE”) of at least 85% for oil burning and 92% for natural gas burning boilers.
  - (3) High efficiency cooling equipment. All new or replacement cooling equipment shall have a seasonal energy efficiency ratio (“SEER”) of at least 16.
  - (4) Fixtures and appliances. All new or replacement appliances governed by Energy Star, such as but not limited to, dishwashers, refrigerators, freezers, washing machines, water heaters and room air conditioners, shall be compliant with Energy Star.

B. Energy use controls.

- (1) Electronic thermostat. All heating and cooling systems must be controlled with a programmable thermostat that allows for a variety of time-of-day and seasonal settings.
- (2) Whole-building switch. In single-family dwellings, a master whole-building switch must be installed to control applicable circuits and outlets (such as lights and major appliances), which can shift circuits to economy mode when the structure is not occupied. In two-family dwellings and Residential Developments consisting of three or fewer units, a switch shall be installed in each residential unit. For Additions and Alterations, this section applies only when a new main electric panel is being installed.
- (3) Zoned heating and cooling. New construction and Additions in excess of 1000 square feet shall have zoned controls for heating and cooling.

**§ 160-16. Interior water use.**

- A. Toilets and urinals. Any newly installed or replaced toilet or urinal must be either low flush toilets equal to or less than 1.28 gallons per flush (“gpf”) or dual-flush toilets where the low flush feature is no more than 1.28 gpf.
- B. Showers. Any newly installed or replaced shower head must provide an average flow rate of no more than 2 gallons per minute (“gpm”).
- C. Lavatory faucets. Any newly installed or replaced lavatory faucet must provide an average flow rate of no more than 2 gallons per minute (“gpm”).

**§ 160-17. Materials and indoor environmental quality.**

A. Paints, wood finish, and other finishing materials.

- (1) Paints, coatings, and primers applied to interior surfaces shall not exceed the following VOC content limits (as established by Green Seal Standard GC-11, Paints, Edition 3.1, July 2013, as amended):

Flat Paint:	50g/L flat
Non-Flat Paint:	150g/L non-flat

- (2) Clear wood finishes, floor coatings, stains, sealers, and shellacs, applied to interior surfaces, shall not exceed the following VOC content limits (as established by South Coast Air Quality Management District Rule 1113, Architectural Coatings, June 3, 2011, as amended):

Varnish:	275g/L
Laquer:	275g/L
Shellac:	730 g/L clear, 550 g/L pigmented
Sealers:	100 g/L waterproofing, 275 g/L sanding, 100 g/L all others

- (3) Carpet adhesive shall not exceed a VOC content limit of 50g/L.
  - (4) No materials shall contain added urea formaldehyde.
  - (5) A list of permissible low-VOC finishes applicable to this section shall be maintained by the Building Department. Documentation of compliance with this section shall be submitted to the Building Inspector.
- B. Roofing materials. All new roofing materials used shall have an SRI of at least 0.78 for Low Slope Roofs and an SRI of at least 0.29 for Steep Slope Roofs. Green/Vegetated Roof areas that cover at least 50% of the roof will satisfy this provision. This section does not apply to Additions and Alterations if new roofing materials are to be matched in roof type or color to existing roof areas.
- C. Construction waste management. A minimum of 25% of construction waste by weight shall be recycled, repurposed and/or reused and not sent to a landfill or incinerator. Documentation of compliance with this section shall be submitted to the Building Inspector.

**§ 160-18. Part 3 Additional Requirement Options.**

In addition to the requirements set forth in §§ 160-14 through 160-17 above, for all New Construction, Additions and Alterations in excess of the lesser of 1000 square feet or 50% of the aggregate area of the individual unit, at least five points must be obtained from the options set forth in this section. The options and the points for each option are listed.

- A. Rainwater harvesting. Design and install a rainwater harvesting and storage system for landscape irrigation or indoor water use. The storage system must be sized to hold all of the water from a one-inch rainfall event (0.62 gallons per square foot of roof area used for capture) for 50% or more of the total roof area. (2 points)
- B. Construction waste management. Increase the diversion from landfills and/or incinerators above the mandatory requirement set forth in § 160-17.C to a minimum of 50% of construction waste. A report shall be submitted to the Building Inspector to substantiate the diversion. (1 point)
- C. Economy of wood construction framing. For projects larger than 1000 square feet, reduce use of wood materials by Efficient Framing. Proof shall be submitted to the

Building Inspector to substantiate compliance. (1 point)

- D. Whole-building energy simulation. For buildings with less than 50% fenestration, demonstrate, through computer analysis software determined to be acceptable by the Building Inspector, a percentage improvement in total energy performance compared to the Baseline Building:
- New buildings: 15% (2 points), 25% (3 points), 35% (4 points)  
Existing building renovations: 12% (2 points), 20% (3 points), 25% (4 points)
- E. Primary geothermal heating and cooling system. Install a geothermal heating and cooling system that provides a minimum of 80% of the required space heating and space cooling energy. A calculation shall be submitted to Building Inspector to support performance claim. (3 points)
- F. Heat recovery ventilation. Install a system that recovers a minimum of 40% of the Sensible Heat in the air such as a heat-recovery ventilator (HRV) or energy-recovery ventilator (ERV). Ventilation equipment does not have to recover latent heat (moisture). (1 point)
- G. Solar electricity (photovoltaics). Install a photovoltaic array to provide a minimum of 50% of year-round electricity. A calculation shall be submitted to Building Inspector to support performance claim. (3 points)
- H. Passive solar heating strategies. For projects larger than 1000 square feet, utilize Passive Solar Heating Strategies that save a minimum of 50% of the yearly heating energy requirements compared to a conventional, code-compliant building. A calculation shall be submitted to the Building Inspector to support passive performance claim, including effects of winter shading, impact of trees and surrounding structures. (2 points if impacts only Addition or Alteration, 3 points if impacts entire structure)
- I. Solar hot water. Install a solar hot water system to provide a minimum of 40% of year-round hot water. A calculation shall be submitted to Building Inspector to support performance claim. (2 points)
- J. High efficiency cooling system. Install cooling equipment with a SEER of greater than 16. (1 point)
- K. High efficiency heating equipment. For replacement heating equipment, Additions and Alterations, install heating equipment with an AFUE above 90% (1point) or above 95% (2 points).
- L. Green/Vegetated Roofs. Install Green/Vegetated Roofs for a minimum of 50% of the roof area. (2 points)

- M. Light Emitting Diodes (“LEDs”). Utilize LEDs for at least 75% of all light fixtures. (1 point)
- N. Recycled content.
- (1) Utilize Recycled Content Materials for between 10% and 19.99% (by cost) of all building materials and finishes. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point).
  - (2) Utilize Recycled Content Materials for 20% or greater (by cost) of all building materials and finishes. A report shall be submitted to the Building Inspector to substantiate compliance. (2 points)
- O. Salvaged or reused materials.
- (1) Utilize salvaged, refurbished, or reused materials such that the sum of these materials constitutes at least 5%, based on cost, of the total value of materials on the project. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point).
  - (2) Utilize salvaged, refurbished, or reused materials such that the sum of these materials constitutes at least 10%, based on cost, of the total value of materials on the project. A report shall be submitted to the Building Inspector to substantiate compliance. (2 points)
  - (3) Reused materials can be materials found on-site that can be kept or refurbished, or previously used materials obtained off-site from another facility or purchased as salvaged materials.
- P. Local materials. Utilize building materials or products that have been extracted, harvested or recovered, and manufactured, within 500 miles of the site for a minimum of 10% (based on cost) of the total materials value. Documentation shall be submitted to the Building Inspector to substantiate compliance. (1 point)
- Q. Certified wood. Use a minimum of 50% of wood-based materials and products that are certified by Forest Steward Council’s (FSC) for wood building components. These components include, but are not limited to, structural framing, general dimensional framing, flooring, sub-flooring, wood doors, and finishes. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point)
- R. Rapidly renewable materials. Use rapidly renewable materials made from plants that are typically harvested within a ten-year cycle or shorter, for at least 2.5%, based on cost, of the total value of materials and products used in the project. A report shall be submitted to the Building Inspector to substantiate compliance. (1 point)

- S. Greenfield Sites. Greenfield Site disturbances that do not exceed the following parameters:
- (1) 30 feet beyond the building perimeter and parking garages; and
  - (2) 10 feet beyond surface Alterations. (2 points)
- T. Restoring Previously Developed Areas with Native Plants. Restore or protect a minimum of 50% of the Previously Developed Area (excluding the building footprint and required parking area) or 20% of the Previously Developed Area (including building footprint and required parking area), whichever is greater, with Native Plants. Green/Vegetated Roof surface may be included in this calculation. Documentation of plant species shall be submitted to the Building Inspector. (1 point for less than 1000 square feet, 2 points for 1000 square feet or greater)
- U. Native plants. New plants that are a minimum of 50% Native Plants by area. Documentation of plant species shall be submitted to the Building Inspector. (1 point for less than 1000 square feet, 2 points for 1000 square feet or greater)
- V. Other green measures. Sustainability measures not listed may receive up to a maximum of 3 points, subject to approval of the Building Inspector.