



City of Cambridge

Executive Department

LOUIS A. DePASQUALE
City Manager

LISA C. PETERSON
Deputy City Manager

September 23, 2019

To the Honorable, the City Council:

Enclosed is a proposed amendment to the Zoning Ordinance, which is intended to advance the City's Net Zero Action Plan. Specifically, the proposed amendment would amend provisions in Section 22.20, which governs Green Building Requirements, and also applicable definitions contained in Article 2.000.

I am pleased to submit this proposed amendment, and request that you accept it as a petition to amend the Zoning Ordinance and refer the petition to the Ordinance Committee and Planning Board for hearing and report.

Very truly yours,

Louis A. DePasquale
City Manager

LAD/mec
Attachment(s)



Included below are proposed amendments to Section 22.20, Green Building Requirements. Additions and creations are underlined, deletions are in ~~strikeout~~.

1. Create the following Definitions in Article 2.000:

Green Commissioning. The process of verifying and documenting by a Green Commissioning Authority that a building and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet specified levels of environmentally sustainable performance in accordance with the provisions of Section 22.20 of this Zoning Ordinance.

Green Commissioning Authority. An entity which has been approved by a Green Building Rating Program to certify that a building meets or can meet the requirements of the Green Building Rating System and which has been identified by the Owner to lead, plan, schedule, and coordinate the implementation of the Green Commissioning process in accordance with the provisions of Section 22.20 of this Zoning Ordinance. The Green Commissioning Authority must have documented Green Commissioning process experience on at least two building projects with a scope of work similar to the proposed project extending from early design phase through at least ten (10) months of occupancy. The Green Commissioning Authority may be a qualified employee of the Owner, an independent consultant, or a disinterested subcontractor of the design team for the Owner of the property on which the Green Building Project is located.

Green Building Professional. A licensed architect or engineer who holds a credential from a Green Building Rating Program indicating advanced knowledge and experience in environmentally sustainable development in general as well as specific Green Building Rating Systems or otherwise possesses comparable experience in environmentally sustainable development in accordance with the provisions of Section 22.20 of this Zoning Ordinance. In instances where a Green Building Rating Program that does not offer such a credential is being applied to meet the provisions of Section 22.20, the designated Green Building Professional shall have demonstrated experience as a project architect or engineer, or as a consultant providing third-party review, on at least three (3) projects that have been certified using the applicable Green Building Rating Program.

Green Building Project. Any new construction, or any substantial rehabilitation of an existing building for an existing or new use, that totals 25,000 square feet of Gross Floor Area or more and that (1) requires the issuance of a special permit by the Planning Board under any provision of this Zoning Ordinance (including but not limited to special permits required in Article 13.000 – Planned Unit Development Districts, Section 19.20 – Project Review Special Permit, and Section 5.28.2 – Conversion of Non-Residential Structures to Residential Use) or (2) is subject to the provisions of Section 19.50 – Building and Site Plan Requirements, shall be considered a Green Building Project subject to the requirements of Sections 22.20 through 22.25.

Green Building Rating Program. A collection of activities and services directed by a nationally-recognized organization to promote environmentally sustainable urban development and to recognize projects that achieve defined environmentally sustainable development objectives, including the establishment and oversight of one or more Green Building Rating Systems in accordance with the provisions of Section 22.20 of this Zoning Ordinance.

Green Building Rating System. A specific set of design standards for environmentally sustainable performance established under the auspices of a Green Building Rating Program against which a project or building design may be evaluated in accordance with the provisions of Section 22.20 of this Zoning Ordinance.

Energy Simulation Tool. A State Building Code compliant software program or calculation-based methodology that projects the annual energy use of a building, approved for use in the Green

Included below are proposed amendments to Section 22.20, Green Building Requirements. Additions and creations are underlined, deletions are in ~~strikeout~~.

Building Project by a Green Building Professional in connection with Green Building Rating Program in accordance with the provisions of Section 22.20 of this Zoning Ordinance.

2. Under Section 22.20 “Green Building Requirements,” amend “Statement of Purpose” section as follows:

22.20 GREEN BUILDING REQUIREMENTS

22.21 Statement of Purpose. This Section 22.20 is adopted to ensure that major new projects and substantially rehabilitated buildings in the City of Cambridge are planned, designed and constructed in a sustainable way so as to minimize adverse environmental impacts as they are initially constructed and as they are occupied and operated over the course of their useful lives. It is the purpose of this Section 22.20 to encourage the reuse of existing buildings and materials; to encourage the conservation of natural resources and reduction of toxins in new construction and substantial rehabilitation of existing buildings through selection of recycled and otherwise environmentally appropriate building materials and methods; to ensure a reduction in the use of energy in both the initial construction of the project and in its daily operation; and to encourage an arrangement of buildings and mix of uses, on individual lots and within the city as a whole, that will foster renewable energy generation and pedestrian, bicycle, and public transit use in the city. While the provisions of this section apply to projects of 25,000 square feet or larger, developments of all sizes are encouraged to incorporate sustainable design principles. Notwithstanding the provisions of this Article 22.00, the requirements of all local, state and/or federal regulations applicable to a project must be met, particularly the State Building Code, including its energy components.

3. Amend “Applicability” section as follows:

22.22 Applicability.

The provisions of these Sections 22.20 through 22.25 shall apply to a Green Building Project as defined in Article 2.000 of this Zoning Ordinance.

4. Add section entitled “Authorized Green Building Rating Programs and Green Building Rating Systems” as follows:

22.23 Authorized Green Building Rating Programs and Green Building Rating Systems.

22.23.1 Authorized Green Building Rating Programs. Any of the following Green Building Rating Programs may be used for the application of these Sections 22.20 through 22.25:

- (a) the Leadership in Energy and Environmental Design (“LEED”) Green Building Rating Program developed and overseen by the United States Green Building Council;**
(b) the Passive House Green Building Rating Program developed and overseen by either Passive House Institute US, Inc. or the Passive House Institute ; or

Included below are proposed amendments to Section 22.20, Green Building Requirements. Additions and creations are underlined, deletions are in ~~strikeout~~.

(c) the Enterprise Green Communities Green Building Rating Program developed and overseen by Enterprise Community Partners, Inc.

22.23.2 Applicability of Rating Systems.

- (a) If a Green Building Rating Program offers different Green Building Rating Systems, a Green Building Project shall use the rating system that is most directly applicable to that Green Building Project or building type, subject to the following limitations:**
- (1) the applicable Green Building Rating System must address design and construction of buildings rather than building operations or neighborhood development; and**
 - (2) Green Building Rating Systems that only address interior design may be used for rehabilitation projects subject to the requirements of Sections 22.20 through 22.25 only if another rating system cannot be reasonably applied.**
- (b) A Green Building Project shall use the most current version of the applicable Green Building Rating System at the time an application for a special permit is filed or, if a special permit is not required, the time an application for a building permit is filed; however, within twelve (12) months after the time of adoption of a new version of a Green Building Rating System, a Green Building Project shall have the option to apply using either the most current version or the preceding version.**
- (c) The Green Building Rating System, including the applicable version, shall be specified at the initial stage of administrative review set forth in Section 22.25.**

5. Delete and replace "Requirement" section as follows:

22.23-22.24 Requirements. ~~LEED, when used in this Section 22.20, refers to the Leadership in Energy and Environmental Design Green Building Rating System as developed and revised from time to time by the United States Green Building Council (USGBC).~~

~~1. For construction of at least 25,000 square feet of gross floor area but less than 50,000 square feet.~~

~~Such projects shall be required to meet the requirements of the most current applicable LEED building rating system at the level 'Certified' or better.~~

~~2. For construction of 50,000 square feet or more of gross floor area.~~

~~Such projects, shall be required to meet the requirements of the most current applicable LEED building rating system at the level 'Silver' or better.~~

~~There shall be a period of twelve months from the time of adoption of a new version of LEED, during which projects shall have the option to file under either the old or newly adopted version.~~

22.24.1 Rating. A Green Building Project shall be designed to meet the standards of one of the authorized Green Building Rating Systems listed in Section 22.23 above. Compliance shall be demonstrated to the Community Development Department ("CDD") pursuant to the administrative review procedures in Section 22.25.

- (a) If the LEED Green Building Rating Program is being used, the Green Building Project shall be designed such that it would achieve a minimum "Gold" level standard, except if the Green Building Project contains less than 50,000 square feet of GFA in which**

Included below are proposed amendments to Section 22.20, Green Building Requirements.
 Additions and creations are underlined, deletions are in ~~strikeout~~.

- case the Green Building Project shall be designed such that it would achieve a minimum “Silver” level standard.
- (b) If the Passive House Green Building Rating Program is being used, the Green Building Project shall be designed such that it would achieve the minimum criteria for certification from the applicable Passive House Green Building Program, whether it be the Green Building Rating Program developed and overseen by either Passive House Institute US, Inc. or the Passive House Institute.**
- (c) If the Enterprise Green Communities Green Building Rating Program is being used, the Green Building Project shall be designed such that it would achieve the minimum criteria for certification from the Enterprise Green Communities Green Building Program.**
- Certification by the Green Building Rating Program shall not be required.

22.24.2 Green Commissioning. The Owner of property on which a Green Building Project is proposed shall engage a Green Commissioning Authority as defined in Article 2.000 of this Zoning Ordinance to verify and document that all building systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the applicable Green Building Project requirements. Compliance shall be demonstrated to CDD pursuant to the administrative review procedures in Section 22.25.

- (a) The Green Commissioning Authority shall complete the following activities for mechanical, electrical, plumbing, and renewable energy systems:**
- (1) review contractor submittals;**
 - (2) verify inclusion of systems manual requirements in construction documents;**
 - (3) verify inclusion of operator and occupant training requirements in construction documents;**
 - (4) verify systems manual updates and delivery;**
 - (5) verify operator and occupant training delivery and effectiveness;**
 - (6) verify seasonal testing;**
 - (7) review building operations ten (10) months after substantial completion; and**
 - (8) develop an ongoing commissioning plan that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process prior to the start of commissioning activities.**
- (b) The Green Commissioning Authority shall report results, findings, and recommendations directly to the Owner of the property on which the Green Building Project is located.**
- (c) If the Green Building Project is using a Green Building Rating System that includes an optional standard for enhanced commissioning, that standard must be met.**

22.24.3 Verification.

- (a) The Owner of the property on which the Green Building Project is located or developer of a Green Building Project shall designate a Green Building Professional to be**

Included below are proposed amendments to Section 22.20, Green Building Requirements.
Additions and creations are underlined, deletions are in ~~strikeout~~.

- engaged throughout the design and development of the Green Building Project to ensure and verify that the Green Building Project is designed to meet the applicable requirements. The designated Green Building Professional, in addition to meeting the requirements set forth in the definition of Green Building Professional in Article 2.000 of this Zoning Ordinance, shall hold a credential from a Green Building Rating Program indicating advanced knowledge in the specific Green Building Rating System being applied to the Green Building Project. Examples include a LEED accredited professional or Certified Passive House Consultant. The credentials of the designated Green Building Professional shall be provided to CDD at the initial stage of administrative review pursuant to the procedures set forth in Section 22.25.
- (b) An Energy Simulation Tool shall be used by the Green Building Professional to demonstrate compliance with the requirements of the applicable Green Building Rating System. The Energy Simulation Tool that is being used by the Green Building Professional shall be provided to CDD at the initial stage of administrative review pursuant to the procedures set forth in Section 22.25.**
- (c) Green Building Projects using the Passive House Green Building Rating Program shall employ on-site quality assurance testing performed by a Passive House rater/verifier who is trained and certified by Passive House Institute US, Inc. or the Passive House Institute to perform such testing for the type of Green Building Project being designed.**

6. Delete and replace "Procedures" section as follows:

22.24-22.25 Administrative Review Procedures. ~~Any project subject to this Section 22.20 shall compl with the following procedural requirements.~~

~~1. *Special Permit Application or Section 19.50 Compliance Documentation.*~~

~~As an element of the application or documentation, the applicant shall submit a completed LEED Project Checklist for the appropriate LEED building standard to demonstrate how the project is anticipated to meet the requirement of Section 22.23 above. The Checklist shall be accompanied by a brief narrative indicating the mechanisms proposed to achieve each of the credits and prerequisites and demonstrating the anticipated methods by which compliance with the requirements of this Section will be achieved at the time of construction of the authorized project. The checklist and narrative shall be accompanied by an affidavit by a LEED-Accredited Professional (LEED-AP) Project Manager or by appropriate consultants stating that to the best of their knowledge, the project has been designed to achieve the requirements of Section 22.23 above.~~

~~2. *The following requirements shall apply to all development subject to this Section 22.20:*~~

~~a. Prior to the issuance of the first Building Permit for each authorized building.~~

~~(1) Submittal of an updated LEED checklist and narrative description outlining compliance with the certification level required by Section 22.23 above to the Inspectional Services Department (ISD) and the Community Development Department (CDD). The narrative shall highlight any design changes made subsequent to the Development Consultation or granting of the Special Permit.~~

Included below are proposed amendments to Section 22.20, Green Building Requirements. Additions and creations are underlined, deletions are in ~~strikeout~~.

~~(2) The checklist and narrative shall be accompanied by an affidavit by a LEED-AP Project Manager or appropriate consultants stating that to the best of their knowledge, the project has been designed to achieve the stated credit requirements.~~

~~_____ b. Prior to issuance of the first Certificate of Occupancy for each authorized building-~~

~~(1) Submittal of a final LEED checklist and narrative description indicating in detail how the requirements of this Section 22.20 have been met to the Inspectional Services Department (ISD) and the Community Development Department (CDD)-~~

~~(2) The checklist and narrative shall be accompanied by an affidavit by a LEED-AP Project Manager or appropriate consultants stating that to the best of their knowledge, the project has been designed and constructed to achieve the requirements of Section 22.23 above.~~

22.25.1 Before applying for any special permit from the Planning Board or any development review procedure under Article 19.000 of the Zoning Ordinance, the documentation listed below shall be submitted to CDD for review. Within thirty (30) days after receiving a complete set of documentation, CDD shall provide written notice that the documentation sufficiently demonstrates compliance with the requirements of Section 22.24, or shall provide a written explanation of deficiencies to be corrected in a revised submission.

(a) Rating System Checklist: The document that enumerates the criteria set forth in the applicable Green Building Rating System, indicates which technical and design requirements will be met in the Green Building Project design, and indicates the intended rating level of the Green Building Project.

(b) Rating System Narrative: A written description of the technical and design requirements utilized to meet each of the criteria that the Green Building Project intends to achieve under the applicable Green Building Rating System.

(c) Net Zero Narrative: A written description of how the Green Building Project is being designed in response to the City's Net Zero Action Plan, which seeks to neutralize greenhouse gas emissions resulting from buildings by reducing their energy use intensity and promoting renewable sources of energy. This information is provided for advisory review by CDD staff, and CDD may provide a questionnaire template to the developer for completing this narrative. At a minimum, this narrative shall include the following information:

(1) anticipated building envelope performance, including roof, foundation, walls and window assemblies, and window-to-wall ratio;

(2) anticipated energy loads, baseline energy simulation tool assumptions, and proposed energy targets, expressed in terms of site energy use intensity ("EUI"), source EUI, and total greenhouse gas emissions;

(3) a description of ways in which building energy performance has been integrated into aspects of the Green Building Project's planning, design, and engineering, including building use(s), orientation, massing, envelope systems, building mechanical systems, on-site and off-site renewable energy systems, and district-wide energy systems;

Included below are proposed amendments to Section 22.20, Green Building Requirements.
 Additions and creations are underlined, deletions are in ~~strikeout~~.

- (4) a description of the technical framework by which the Green Building Project can be transitioned to net zero emissions in the future (acknowledging that such a transition might not be economically feasible at first), including future net zero emissions options for building envelope, HVAC systems, domestic hot water, interior lighting, and on- and off-site renewable energy sources; and
- (5) a description of programs provided by local utility companies, government agencies, and other organizations that provide technical assistance, rebates, grants, and incentives that can assist in achieving higher levels of building performance, summarizing which entities have been contacted and which programs could be utilized in the Green Building Project.
- (d) Credentials of the Green Building Project’s designated Green Building Professional and affidavit signed by that professional stating that he/she has reviewed all relevant documents and that to the best of his/her knowledge, the documents provided indicate that the Green Building Project is being designed to achieve the requirements of Section 22.24.

22.25.2 Before applying for a building permit for a Green Building Project, the documentation listed in Subsection 22.25.1 above, updated from any previous version (if applicable) to reflect the current Green Building Project design, and the additional documentation listed below shall be submitted to CDD for review. Within thirty (30) days after receiving a complete set of documentation, CDD shall provide written notice to the developer of the Green Building Project that the documentation sufficiently demonstrates compliance with the requirements in Section 22.24 and that said developer may apply for a building permit from the Superintendent of Buildings, or CDD shall provide a written explanation of deficiencies to be corrected in a revised submission.

- (a) Energy Simulation Tool results demonstrating compliance with the selected Green Building Rating System.
- (b) For a Green Building Project using the Passive House Green Building Rating Program, the following set of documents is required:
 - (1) credentials of the Passive House rater/verifier who will perform testing and verification and letter of intent stating he/she has been hired to complete the on-site verification process;
 - (2) credentials of the Certified Passive House Consultant who has provided design, planning, or consulting services;
 - (3) construction drawings and specifications, including building envelope assemblies, all mechanical systems, and appliance specifications; and
 - (4) Energy Simulation Tool results using “WUFI Passive” software, developed by Fraunhofer IBP in partnership with Passive House Institute US, Inc. and Owens Corning, or Passive House Planning Package software developed by the Passive House Institute, or a comparable software tool that is authorized for use by the Passive House Green Building Rating Program.
- (c) Credentials of the Green Building Project’s designated Green Building Professional and an affidavit signed by that professional stating that he/she has reviewed all relevant documents and that to the best of his/her knowledge, the documents provided

Included below are proposed amendments to Section 22.20, Green Building Requirements. Additions and creations are underlined, deletions are in ~~strikeout~~.

indicate that the Green Building Project is being designed to achieve the requirements of Section 22.24.

(d) Credentials of the Green Building Project's Green Commissioning Authority or a copy of an executed contract with the developer of the Green Building Project if the Green Commissioning Authority is an independent consultant or subcontractor.

22.25.3 Before applying for a certificate of occupancy for a Green Building Project, the documentation listed in Subsections 22.25.1 and 22.25.2 above, updated from any previous version to reflect the current Green Building Project design, and the additional documentation listed below shall be submitted to CDD for review. Within thirty (30) days after receiving a complete set of documentation, CDD shall provide written notice to the developer of the Green Building Project that the documentation sufficiently demonstrates compliance with the requirements in Section 22.24 and that said developer may submit an application for a certificate of occupancy from the Superintendent of Buildings, or CDD shall provide a written explanation of deficiencies to be corrected in a revised submission.

(a) For Green Building Projects using the Passive House Green Building Rating Program, the final testing and verification report completed by the Passive House rater/verifier.

(b) Credentials of the Green Building Project's accredited Green Building Professional and an affidavit signed by that professional stating that he/she has reviewed all relevant documents and that to the best of his/her knowledge, the documents provided indicate that the Green Building Project was built to achieve the requirements of Section 22.24.

(c) An affidavit in a form created and approved by CDD, signed by the Green Commissioning Authority, certifying that the pre-construction commissioning process requirements of this Section were included in the scope of work for the Green Building Project and have been met and that the post-construction commissioning process requirements of this Section were included in the scope of work and will be met, including a schedule of when each commissioning requirement was or will be met.

22.26 This Ordinance shall take effect ninety (90) days from the date of its enactment.