

ARTICLE XVII
Solar Energy Systems
[Added 5-2-2016 ATM by Art. 17¹]

§ 220-73. Purpose.

- A. The purpose of this bylaw is to provide appropriate siting for solar photovoltaic energy systems for power generation, while preserving the right of homeowners to install solar systems for residential use.
- (1) Roof-mounted solar energy installations may be constructed in any zoning district without need for a special permit.
 - (2) Ground-mounted solar energy installations within a Solar Overlay District may be constructed without need for a special permit and according to the site plan criteria as set forth herein.
 - (3) Ground-mounted solar energy installations in the Residential and Neighborhood Business Zoning Districts are allowed by special permit through the Planning Board.
- B. The provisions in this section of the Zoning Bylaw shall apply to the construction, operation, repair, and/or removal of all solar electric systems, and to physical modifications that materially alter the type, configuration or size of these installations or related equipment.

§ 220-74. Definitions.

As used in this article, the following terms shall have the meanings indicated:

ADEQUATE SCREENING — Shall consist of a vegetative barrier, fencing and/or other appropriate materials to provide visual and aural protection to abutting properties.

BUFFER STRIP — A strip of land between the ground-mounted solar photovoltaic installation, including any structures accessory thereto, and the boundary of a parcel, reserved for plant material, berms, walls or fencing to serve as a visual barrier.

FENCING — Chain-link fencing that is "solid slatted" and erected to a height of eight feet to provide site security and additional visual protection to abutting properties.

GROUND-MOUNTED SOLAR ENERGY INSTALLATION — A solar photovoltaic array that is structurally mounted on the ground.

HAZARDOUS MATERIALS — Any materiel identified as such under any applicable law, rule or regulation, including, without limitation, the Massachusetts Oil and Hazardous Materials Release Prevention and Response Act, MGL c. 21E; the Massachusetts Hazardous Waste Management Act, MGL c. 21C; the Massachusetts Contingency Plan; the Comprehensive Environmental Response, Compensation and Liability Act, as amended, 42 U.S.C. §§ 9601 et seq.; and the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §§ 6901 et seq.; whose purpose, without limitation, is to provide for the protection of health, safety, public welfare and the environment by the prevention and control of any activity which may cause,

1. Editor's Note: This bylaw also repealed former Art. XVII, Moratorium on Solar Energy Facilities, added 5-4-2015 ATM by Art. 15.

contribute to or exacerbate a release or threat of release of any hazardous material.

PLANT MATERIAL — Trees or shrubs of a type and height that sufficiently screen the arrays, without blocking the necessary sun that would hinder the panel's performance, including ground cover that would screen the lower portion of the arrays.

ROOF-MOUNTED SOLAR ENERGY INSTALLATION — A solar photovoltaic array that is placed on the roof of residential, commercial, industrial, institutional and government buildings.

SOLAR PHOTOVOLTAIC ARRAY — An arrangement of solar photovoltaic panels.

SOUND BARRIERS — Fencing, vegetation, or other absorptive materials constructed to protect abutting properties in any circumstance that result in sound exceeding 10 decibels above ambient sound at the abutting property lines.

§ 220-75. Roof-mounted solar energy installations.

- A. Purpose. The purpose of this section is to provide guidance for the creation of renewable energy for individual residences, businesses, institutions, and municipal buildings, as-of-right.
- B. Roof-mounted solar energy installation. Roof-mounted solar energy installations shall be located so as not to increase the total height of the structure more than one foot above the applicable zoning regulations related to height in the district in which it is located, or such further height as is determined by the Building Inspector to be essential for proper operation, but in no case more than four feet.
- C. Required documents. The following documents shall be required:
 - (1) Sun and shadow diagrams specific to the proposed installation to determine the solar access.
 - (2) Detailed information, including maps, plans or dimensional sketches showing proposed location of the solar installation.
 - (3) Site drawings showing the building and structure footprints, property lines, location and the dimensions of solar arrays, ridgeline of roof and description of the installation.
 - (4) Elevation drawings showing heights of buildings and solar arrays.
- D. Permitting. Roof-mounted solar energy installations require only a building permit. All data listed above shall be submitted to the Building Inspector. All other necessary permits shall be obtained before a building permit is issued.
- E. As-built plans. As-built plans shall be submitted prior to final inspection to the Building Inspector.

§ 220-76. Ground-Mounted Solar Photovoltaic Installations.

- A. Purpose.
 - (1) The purpose of this section is to facilitate the creation of new ground-mounted solar photovoltaic installations by providing standards for the placement, design,

construction, operation, monitoring, modification and removal of such installations that address public safety, minimize impacts on environmental, scenic, natural and historic resources, and to provide adequate financial assurance for the eventual decommissioning of such installations.

- (2) Subject to the requirements below, ground-mounted solar photovoltaic installations are permitted as-of-right in a Solar Overlay District.

B. Solar Overlay District.

- (1) Ground-mounted solar photovoltaic installations are allowed by right in the following zoning district(s), which together shall constitute the Solar Overlay District:

- (a) Location No. 1: Enterprise Zoning District.
- (b) Location No. 2: General Industry Zoning District.
- (c) Location No. 3: Light Industry Zoning District.
- (d) Location No. 4: Light Industry 2 Zoning District.

- (2) Ground-mounted solar photovoltaic installations may be located on any lot within the overlay district.

C. Residential and Neighborhood Business Zoning Districts. Ground-mounted solar photovoltaic installations are allowed by special permit through the Planning Board in the Residential and Neighborhood Business Zoning Districts.

D. Site plan review.

- (1) All ground-mounted solar photovoltaic installations shall require site plan review under the Zoning Bylaw. The Building Inspector shall not issue a building permit unless, and until, the Planning Board submits a site plan approval document to the Building Inspector.
- (2) A building permit will be issued by the Building Inspector that shows evidence the project is consistent with state and federal building codes, the findings and directives of the site plan approval, and local bylaws and regulations, including those set forth by the Conservation Commission. As-built plans shall be submitted prior to final inspection to the Building Inspector with copies to the Planning Board.

E. Conditions. The Planning Board may impose any conditions upon site plan approval deemed necessary to achieve the purpose of this bylaw, such as, but not limited to, the following:

- (1) Reduced setback and buffer strip requirements that allow such installations to be erected without causing impact to the character of the surrounding neighborhood.
- (2) Modification of exterior appearance;
- (3) Limitation of size or extent of facilities;
- (4) Regulation of traffic and site plan features;

- (5) Screening of premises from view by use of appropriate walls, fencing or buffer strips;
 - (6) Limitation of sound levels;
 - (7) Control of the number, location, size and lighting of signs;
 - (8) Additional design and siting modifications where appropriate.
- F. Utility notification. Evidence shall be provided at the time of the application for the site plan review that the utility company that operates the electrical grid where the installation is to be located has been informed of the applicant's intent to construct a solar photovoltaic installation and that approval to connect to the grid has been granted or appropriate application(s) have or will be made to such utilities for interconnection. Off-grid systems shall be exempt from this requirement. Reasonable efforts should be made to place all utility connections underground, depending on appropriate soil conditions, shape and topography of the site.
- G. Fees. An application for a site plan review shall be accompanied by the required fee. The applicant will also be responsible for payment of any consultants requested by the Planning Board to provide professional review, including legal counsel. The Planning Board may require the applicant to deposit with the Planning Board in advance a reasonable amount to provide for such review, the use of which shall be governed by MGL c. 44, § 53G.
- H. Setbacks and buffer strips.
- (1) Buffer strips.
 - (a) All ground-mounted installations shall be surrounded by a buffer strip which shall be 100 feet from any structures in a Solar Overlay District, unless it abuts a Residential District, in which case the buffer strip shall be 200 feet in depth along such abutting lot lines.
 - (b) All ground-mounted installations in a Residential or Neighborhood Business Zoning District shall have a buffer strip that is 200 feet from any structure.
 - (2) Setbacks.
 - (a) Front yard. The front yard setback shall be at least 50 feet in a Solar Overlay District; provided, however, that when it abuts a Residential District, the front lot setback shall not be less than 200 feet. The front yard setback shall be at least 200 feet in a Residential or Neighborhood Business Zoning District.
 - (b) Side yard. Each side yard setback shall be at least 50 feet in a Solar Overlay District; provided, however, that when it abuts a Residential District, the side yard setback shall not be less than 200 feet. The side yard setback shall be at least 200 feet in a Residential or Neighborhood Business Zoning District.
 - (c) Rear yard. The rear yard setback shall be at least 50 feet in a Solar Overlay District; provided, however, that when it abuts a Residential District, the rear yard setback shall not be less than 200 feet. The rear yard setback shall be at least 200 feet in a Residential or Neighborhood Business Zoning District.

(3) All inverters, regardless of type, transformers or other equipment that have the potential to exceed allowed decibels will be located no less than 250 feet from property lines, regardless of the zoning or overlay district.

I. Required documents. In addition to documents required for site plan review, the following will be required for ground-mounted solar photovoltaic installations. The Planning Board may waive one or more of these requirements in its sole discretion under appropriate circumstances.

(1) All plans and maps shall be prepared, stamped and signed by a professional engineer licensed to practice in Massachusetts;

(2) All plans and maps shall show property lines, physical features, and infrastructure, including roads used to access the property site;

(3) Proposed changes to landscape of site, including grading, vegetation, tree removal, planting of screening vegetation, location of structures;

(4) Locations of wetlands and priority habitat areas defined by the Natural Heritage and Endangered Species Program;

(5) Locations of floodplains or periodically inundated areas subject to moderate- or high-hazard dams;

(6) A list of any hazardous materials proposed to be located on the site plan to prevent their release to the environment as appropriate;

(7) Drawings of the installation showing the proposed layout of the system and any potential shading from nearby structures;

(8) One- or three-phase line electrical diagrams detailing the installation, associated components and electrical interconnection methods with all National Electrical Code-compliant disconnects and overcurrent devices;

(9) Documentation of the major system components to be used, including the electric generating PV panels, mounting system, inverters, etc.;

(10) Name of property owner, address, telephone number, e-mail;

(11) Name of lessor or lessee, address, telephone number, e-mail;

(12) Name of contact person, address, telephone number, e-mail;

(13) Name of design engineer, address, telephone number, e-mail;

(14) Names of contractors, address, telephone number, e-mails;

(15) Name of installer, address, telephone number, e-mail;

(16) Zoning district designation for parcel of land, map and parcel;

(17) Documentation of actual or proposed access to the project site sufficient to allow for construction and operation and maintenance of the proposed solar photovoltaic installation;

- (18) Provision for water that may be needed for fire protection;
 - (19) Description of the financial surety that is required in the following section: Financial security;²
 - (20) Sight line representations depicting in profile the view of the proposed installation, and any appurtenant structures, from the location upon any public road within 300 feet that would have the most unobstructed view of the installations, and from the closest wall of each residential building within 300 feet of the highest point of the installation;
 - (21) A screening plan, in compliance with the following section: Visual impact;³
 - (22) A decommissioning plan that describes the removal of all structures, electrical infrastructure or other equipment, the location or repository for all demolition debris, and plans for site re-use or restoration; and
 - (23) A security plan that depicts the appropriate security fencing, lighting, surveillance system and signage.
- J. Design standards. The Planning Board may waive one or more of these requirements in its sole discretion under appropriate circumstances.
- (1) Lighting and security. Lighting of solar photovoltaic installations shall be consistent with local, state and federal law. Lighting of other parts of the installation, such as any appurtenant structures, shall be limited to that required for safety and operational purposes and shall be reasonably shielded from abutting properties. Where feasible, any required lighting shall be directed downward and shall incorporate full cutoff fixtures to reduce light pollution, in compliance with § 220-36 of the Zoning Bylaw. Surveillance and security cameras shall be shielded from viewing abutting private property or invading the privacy of any abutting residential property owner.
 - (2) Signage. All signs shall comply with the Zoning Bylaw and shall not be used for displaying any advertising except to identify the owner and/or operator of the solar installation and a twenty-four-hour emergency contact telephone number.
 - (3) Land clearing. Clearing of natural vegetation shall be limited to what is necessary for construction, operation and maintenance of the installation. Any land disturbance shall be subject to stormwater management criteria and by applicable laws, regulations and bylaws.⁴
 - (4) Safety, emergency service and environmental standards. The applicant shall provide a copy of the project summary, electrical schematic and site plan. The applicant shall develop an emergency response plan, including showing all means of shutting down the solar installation. The applicant shall submit the name of the person answerable to inquiries throughout the life of the installation. If the designated person changes, the

2. Editor's Note: See § 220-76M.

3. Editor's Note: See § 220-76J(6).

4. Editor's Note: See Ch. 170, Stormwater Control.

name of the new designated person shall be submitted as an addendum.

- (5) Monitoring and maintenance.
 - (a) The applicant shall submit a plan for the operation and maintenance of the installation which shall include measures for maintaining the site, including safe access, stormwater control, structural repairs and the integrity of security measures. These measures must be acceptable to the Fire Chief and emergency medical services personnel. If needed, training of service personnel will be provided by the applicant. The owner/operator shall be responsible for the cost of maintaining the installation.
 - (b) The applicant shall also submit a Monitoring/Inspection Form under the site plan review during construction, and shall further submit a report to the Building Inspector on the condition of the structure and site by January 15 each year.
- (6) Visual impact. Any ground-mounted solar photovoltaic installation shall be designed to minimize visual impacts, including preserving natural vegetation to the maximum extent possible, blending in equipment with the surroundings, and adding vegetative buffers to screen abutting residential properties whether developed or not. Siting shall be such that the view of the solar electric generating installation from other areas of Town shall be as minimal as possible. Buffer strips shall surround the proposed project. A screening plan, that assures the facility is shielded to the greatest extent possible from public view, shall be required to be reviewed under the site plan review.
- (7) Height. The height of any structure associated with a ground-mounted solar photovoltaic installation shall not exceed 20 feet.
- (8) Roads. All access roads and interior roads shall be constructed to minimize grading, removal of stone wall or trees, and to minimize impacts to environmental or historic resources.
- (9) Hazardous materials. Hazardous materials that are stored, used or generated on site shall not exceed the amount for a "Very Small Quantity Generator of Hazardous Waste" as defined by the Department of Environmental Protection (DEP) pursuant to 310 CMR 30.000 and shall meet all requirements of the DEP and Massachusetts Contingency Plan, including storage of hazardous materials in a building with an impervious floor that is not adjacent to any floor drains to prevent discharge to the outdoor environment. If hazardous materials are utilized within the solar electric equipment, then impervious containment areas capable of controlling any release to the environment and to prevent potential contamination of groundwater are required.
- (10) Noise.
 - (a) Noise generated by a solar photovoltaic installation, and by any associated equipment and machinery, shall conform to applicable state and local noise regulations, including the DEP's Division of Air Quality noise regulations, 310 CMR 7.10. The site shall not produce any other vibration, harmonics or

interference which would be perceived or impact the normal function of electronics off site.

- (b) The MassDEP noise regulation is contained in 310 CMR 7.10. According to MassDEP, a source of sound violates the Department's noise regulation, if the source:
 - [1] Increases the broadband sound level by more than 10 dB(A) above ambient; or
 - [2] Produces a "pure tone" condition: when a sound pressure level, at any given octave band center frequency, exceeds the levels of the two adjacent octave bands by three or more decibels.
- (c) The MassDEP criteria are evaluated both at the property line and at the nearest inhabited residence or other sensitive land use. "Ambient" is defined as the background A-weighted sound level that is exceeded 90% of the time, measured during equipment operating hours.
- (d) Prior to the issuance of a certificate of occupancy, the applicant shall conduct a test of ambient conditions during startup and provide a report of decibel levels for the inverters. Facility noise level shall not exceed the existing DEP regulation. If necessary, mitigation measures will be determined by the Board and the costs of such measures will be borne by the applicant.

K. Modifications. All modification requests to a solar photovoltaic installation, including changes in arrays, addition to number of arrays or change in placement made after issuance of the required building permit, shall require review through the site plan review for compliance with this bylaw.

L. Discontinuance and removal. Absent notice of proposed date of decommissioning or written notice of extenuating circumstances, the ground-mounted solar photovoltaic installation shall be considered discontinued when it fails to operate for more than one year without the written consent of the Planning Board. Upon written request from the Building Inspector addressed to the contact address provided and maintained by the owner and operator as required above, the owner or operator shall provide evidence to the Building Inspector demonstrating continued use of the installation. Failure to provide such evidence within 30 days of such written request shall be conclusive evidence that the installation has been discontinued. The owner or operator shall physically remove the installation no more than 150 days after the date of discontinuance or the proposed date of decommissioning operations. The owner or operator shall notify the Planning Board and Building Inspector by certified mail of their proposed date of discontinued operations and plans for removal. The notification shall consist of the methodology of physical removal of all structures, equipment, security barriers and transmission lines, disposal of all solid and hazardous waste, and stabilization or revegetation of the site. If the owner or operator fails to remove the installation in accordance with the above criteria, the Town may, after the receipt of an appropriate court order or consent of the property owner, enter the property and physically remove the installation at the owner's expense. As a condition of the site plan review, a property owner shall agree to allow the Town entry to remove an abandoned or

decommissioned installation. The cost for such removal will be charged to the property owner, and shall constitute a lien upon the land in accordance with the provisions of MGL 139, § 3A, or other applicable law.

- M. Financial security. Proponents of ground-mounted solar photovoltaic projects shall provide a form of surety, either through an escrow account, bond or otherwise, to cover the cost of removal in the event the Town must remove the installation and remediate the landscape, in an amount and form determined to be reasonable by the Site Plan Review Authority, but in no event to exceed more than 125% of the cost of removal and compliance with the additional requirements set forth herein. Such surety will not be required for municipally or state-owned facilities. The project owner/operator shall submit a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The amount shall include a mechanism for calculating increased removal cost due to inflation.

§ 220-77. Inclusionary uses and conflicts.

- A. Small accessory or ornamental solar products which do not generate electricity for use in a dwelling or structure are exempt from the provisions in this bylaw.
- B. In the event that any part of this article conflicts with other requirements of the Zoning Bylaw, the requirements of this article shall apply.