

ARTICLE 2 DEFINITIONS

2.2 Definitions.

UTILITY, MAJOR: Infrastructure services providing Town-wide service, such as but not limited to public water supply wells, water towers, waste treatment plants, communication towers, electrical substations, and renewable energy sources (such as hydro but excluding wind and solar).

ARTICLE 4.2 USE TABLE

Principal Uses	RR	SR	LR	VR	TC	C	I
Roof Mounted Solar Photovoltaic Generating Installation	P	P	P	P	P	P	P
Small Scale (15kW or less) DC Photovoltaic Generating Installation	SPP/SPR	SPP/SPR	-	-	-	SPR	SPR
Medium Scale (greater than 15kW to 200kW) DC Solar Photovoltaic Generating Installation	SPP/SPR	-	-	-	-	SPP/SPR	SPR
Large Scale (greater than 200KW) Solar Photovoltaic Generating Installation	SPP/SPR	-	-	-	-	-	SPP/SPR

ARTICLE 4.8.9 SOLAR PHOTOVOLTAIC GENERATING INSTALLATIONS

- A. Purpose - The purpose of this bylaw is to facilitate the creation of new Solar Photovoltaic Generating Installations by providing standards for the placement, design, construction, operation, monitoring, modification and removal of such installations that address public safety, minimize impacts on the environment, scenic, natural and historic resources and to provide adequate financial assurance for the eventual decommissioning of such installations consistent with the intent of Chapter 40A Section 3 of the Massachusetts General Laws.
- B. Applicability - The provisions set forth in this section shall apply to the construction, operation, repair and/or removal of Photovoltaic Generating Installations as permitted in Article 4.2. Use Regulations. All such facilities require a building permit and must comply with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, electrical, and communications requirements and other applicable provisions of Spencer's Zoning Bylaws.

C. Definitions

Photovoltaic System (also referred to as Photovoltaic Installation): An active solar energy system that converts solar energy directly into electricity.

Solar Energy System, Grid-Intertie: A photovoltaic system that is connected to an electric circuit served by an electric utility.

Solar Energy System, Ground-Mounted: An Active Solar Energy System that is structurally mounted to the ground and is not roof-mounted; may be of any size (small-, medium- or large-scale).

Solar Energy System, Off-Grid: A photovoltaic solar energy system in which the circuits energized by the solar energy system are not electrically connected in any way to electric circuits that are served by an electric utility.

D. General Requirements

1. The construction and operation of all Photovoltaic Generating Installations shall be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, electrical, and communications requirements. All buildings and fixtures forming part of a Photovoltaic Generating Installation shall be constructed in accordance with the Massachusetts State Building Code.
2. Photovoltaic Generating Installations shall not be constructed, installed or modified as provided in this section without first obtaining a building permit and paying any required fees.
3. Noise generated by Photovoltaic Generating Installations and 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. A source of sound will be considered in violation of said regulations if the source:
 - (a) Increases the broadband sound level by more than 10 db(A) above ambient,
or
 - (b) Produces a "pure tone" condition, when an octave band center frequency sound pressure level exceeds the two (2) adjacent center frequency sound pressure levels by three (3) decibels or more.

Said criteria are measured both at the property line and at the nearest inhabited residence. "Ambient" is defined as the background A-weighted sound level that is exceeded 90% of the time measured during equipment hours, unless established by

other means with the consent of the DEP.

- E. The Photovoltaic Generating Installation's owner or operator shall maintain the facility in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and integrity of security measures. Site access shall be maintained to a level acceptable to the local Fire Chief and Emergency Management Director. The owner or operator shall be responsible for the cost of maintaining the Solar Electric Generating Facilities and any access road(s).

- F. Required Submission Documents – Special Permit And/or Site Plan Review Applications shall include:
 - 1. A properly completed and executed application form and application fee.
 - 2. Any requested Waivers
 - 3. Name, address, phone number and signature of the project proponent, as well as all co-proponents or property owners, if any.
 - 4. Name, contact information and signature of any agents representing the project proponent.
 - 5. Name, address, and contact information for proposed system installer.
 - 6. Documentation of actual or prospective access and control of the project site sufficient to allow for construction and operation of the proposed solar electric installation.
 - 7. Proposed Hours of Operation
 - 8. Route by which construction materials and equipment will be delivered to site.
 - 9. Blueprints or drawings of the solar electric installation signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts showing the proposed layout of the system and any potential shading from nearby structures.
 - 10. Utility Notification - evidence that the utility company that operates the electrical grid where the installation is to be located has been informed of the solar electric installation owner or operator's intent to install an interconnected facility and acknowledges receipt of such notification. A copy of an Interconnection Application filed with the utility including a one or three line electrical diagram detailing the solar electric installation, associated components, and electrical interconnection methods, with all National Electrical Code compliant disconnects and overcurrent devices. Off-grid systems shall be exempt from this requirement.
 - 11. Documentation of the major system components to be used, including the electric

generating components, transmission systems, mounting system, inverter, etc. If the proposed system is located in Aquifer Protection District, documentation must include information on elements of the system that use materials that are in any way either hazardous or toxic.

12. Documentation by an acoustical engineer of the noise levels projected to be generated by the installation.
13. Operation & Maintenance Plan for the operation and maintenance of the Photovoltaic Generating Installation, which shall include measures for maintaining safe access to the installation, storm water and vegetation controls, and general procedures for operational maintenance of the installation.
14. Abandonment & Decommissioning Plan - Any Photovoltaic Generating Installation which has reached the end of its useful life or has been abandoned (i.e. when it fails to operate for more than one year without the written consent of the Planning Board) shall be removed. The owner or operator shall physically remove the installation within 150 days of abandonment or the proposed date of decommissioning. The owner or operator shall notify the Planning Board by certified mail of the proposed date of discontinued operations and plans for removal. The Abandonment & Decommissioning Plan shall include a detailed description of how all of the following will be addressed:
 - (a) Physical removal of all structures; equipment, building, security barriers and transmission lines from the site, including any materials used to limit vegetation.
 - (b) Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.
 - (c) Stabilization or re-vegetation of the site as necessary to minimize erosion. The Planning Board may allow the owner or operator to leave landscaping or designated below-grade foundations in order to minimize erosion and disruption to vegetation.
 - (d) Description of financial surety for decommissioning - Proponents of Solar Electric Generating Facilities shall provide a form of surety, either through escrow account, bond or other form of surety approved by the Planning Board 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 Planning Board, but in no event to exceed more than 125 percent of the cost of removal and compliance with the additional requirements set forth herein, as determined by the project proponent and the Town. Such surety will not be required for municipal or state-owned facilities. The project proponent 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 costs due to inflation.

- (e) All legal documents required to enable the Town to exercise its rights and responsibilities under the plan to decommission the site, enter the property and physically remove the installation.

15. Proof of liability insurance

16. A Site Plan with stamp and signature of Professional Engineer licensed to practice in Massachusetts that prepared the plans including;

- (a) Everything required under Section 7.4 Site Plan Review, plus all of the following;
- (b) Existing Conditions Plan, showing property lines, map and lot from the Assessor's records, and physical features, including roads and topography, for the entire project site signed and sealed by a Registered Massachusetts Land Surveyor;
- (c) Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation, fencing or structures including their height and placement of system signed and including, solar arrays and required appurtenances;
- (d) An estimate of earthwork operations listing the amount of soil material to be imported or exported from the site.
- (e) Locations of wetlands and Priority Habitat Areas defined by the Natural Heritage & Endangered Species Program (NHESP);
- (f) Locations of Floodplain area, as well as Aquifer Protection District (Zone 2)
- (g) Existing isolated trees 10" caliper or larger and shrubs.
- (h) Zoning district designation for the parcel(s) of land comprising the project site (submission of a copy of a zoning map with the parcel(s) identified is suitable for this purpose).
- (i) Materials, delivery, equipment staging area.
- (j) Proposed installation of screening vegetation or structures

G. Design and Performance Standards

1. Minimum Dimensional and Setback Requirements For Solar Electric Generating Facilities Appurtenant Structures (including but not limited to, equipment shelters, storage facilities, transformers, fencing, parking and substations):

- (a) Lot size and frontage: Solar Electric Generating Facilities are considered a principal use and require the minimum lot size, lot width and frontage required for principal structures in the underlying district.
- (b) Front yard: The same as in the underlying district except that no facilities are

permitted between the front of the principal building and the front lot line.

(c) Side and Rear yard

- Small Scale: equal to its height
- Medium/Intermediate/Large Scale: same as required for underlying district

(d) Maximum Height of Structures

- Residential Districts: 10'
- Non-Residential Districts: 15'

2. All appurtenant structures to Solar Electric Generating Facilities shall be architecturally compatible with each other. Whenever reasonable, structures should be screened from view by vegetation and/or joined or clustered to avoid adverse visual impacts.
3. Visual Impact Mitigation - The plan for a ground-mounted solar photovoltaic installation shall be designed to maximize the preservation of on-site and abutting natural and developed features. In natural (undeveloped) areas, existing vegetation shall be retained to the greatest extent possible, especially where such vegetation provides a benefit to the natural environment. In developed areas, the design of the installation shall consider and incorporate human-designed landscape features to the greatest extent, including contextual landscaping and landscape amenities that complement the physical features of the site and abutting properties. Whenever reasonable, structures should be screened from view by vegetation and/or joined or clustered to avoid adverse visual impacts and be architecturally compatible with each other. Vegetation shall be of varieties native to New England and a mix of deciduous and evergreen species. Vegetative screening shall reach a mature form to effectively screen the installation within five years of installation. The mature height of the vegetated screening shall be such that the installation's structures are not apparent to a person upon any public road and viewing the installation from a height of 10 feet. Planting of the vegetative screening shall be completed prior to final approval of the photovoltaic installation by the Building Inspector.
4. Lighting - Lighting of Solar Electric Generating Facilities shall be consistent with local, state and federal law. Lighting of other parts of the installation, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties. Lighting of the Photovoltaic Generating Installation shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.
5. Signage - Solar Electric Generating Facilities shall not be used for displaying any advertising signage except for reasonable identification of the manufacturer or operator of the solar electric installation. Signs on Solar Electric Generating Facilities shall comply with Spencer's sign bylaw. A sign consistent with Spencer's sign bylaw shall be required to identify the owner, operator and interconnected utility and provide a 24-hour emergency contact phone number.

6. Utility Connections - Reasonable efforts, as determined by the Planning Board, shall be made to place all utility connections from the Photovoltaic Generating Installation underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. Electrical transformers for utility interconnections may be above ground if required by the utility provider.
7. Roads - Access roads shall be constructed to minimize grading, removal of stone walls or trees and minimize impacts to environmental or historic resources.
8. Vegetation Management - Herbicides, pesticides, or chemical fertilizers shall not be used to manage vegetation at the Photovoltaic Generating Installation. Mowing, grazing or using geotextile materials underneath the solar array are possible alternatives. In the Aquifer Protection District, low growing grasses are optimal. Other grasses must be regularly mowed or grazed so as to minimize the amount and height of "fuel" available in case of fire.

All land associated with the ground-mounted solar installation shall be covered and grown in natural vegetation. All ground surface areas beneath solar arrays and setback areas shall be pervious to maximize on-site infiltration of stormwater. Impervious paving of areas beneath solar arrays is prohibited. To the greatest extent possible, a diversity of plant species shall be used, with preference given to species that are native to New England. Use of plants identified by the most recent copy of the "Massachusetts Prohibited Plant List" maintained by the Massachusetts Department of Agricultural Resources is prohibited. Herbicides shall be applied only by properly licensed personnel in conformance with all applicable state regulations.

9. Hazardous Materials - 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 ground water are required. Hazardous materials stored, used, or generated on site shall not exceed the amount for a Very Small Quantity Generator of Hazardous Waste as defined by the DEP pursuant to Mass DEP regulations 310 CMR 30.000 and shall meet all requirements of the DEP 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.
10. Impact on Agricultural and Environmentally Sensitive Land - The Photovoltaic Generating Installation shall be designed to minimize impacts to agricultural and environmentally sensitive land and to be compatible with continued agricultural use of the land whenever possible. No more than 50-percent of the total land area proposed for the solar electric field may be occupied by the solar panels, with the remainder of the land remaining as undeveloped open space left in its natural state.
11. Drainage - The design shall minimize the use of concrete and other impervious materials to the greatest extent possible, to minimize erosion and transport of

sediment, and prevent contamination of surface water and groundwater from operations on the premises involving the use, storage, handling, or containment of hazardous substances. A permit in accordance with the Spencer Erosion and Sediment Control for Stormwater Management shall be required and can be run concurrent with the approval process under this section.

12. Projects shall be designed to:

- (a) minimize the volume of cut and fill, the number of removed trees 10” caliper or larger, the length of removed stone walls, the area of wetland vegetation displaced, the extent of stormwater flow increase from the site, soil erosion, and threat of air and water pollution
- (b) maximize pedestrian and vehicular safety both on the site and entering and exiting the site;
- (c) minimize obstruction of scenic views from publicly accessible locations;
- (d) minimize visual intrusion by controlling the visibility of parking, storage, or other outdoor service areas viewed from public ways or premises residentially used or zoned;
- (e) minimize glare from headlights and light trespass;
- (f) Ensure adequate access to each structure for fire and service equipment and adequate provision for utilities and stormwater drainage.

13. Emergency Services - The Photovoltaic Generating Installation’s owner or operator shall provide a copy of the project summary, electrical schematic, and site plan to the local Fire Chief. Upon request the owner or operator shall cooperate with local emergency services in developing an emergency response plan. All means of shutting down the Photovoltaic Generating Installation shall be clearly marked. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation.

14. Land Clearing, Soil Erosion and Habitat Impacts - Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the Photovoltaic Generating Installation or otherwise prescribed by applicable laws, regulations, and bylaws. Such installations shall not occur on any slopes greater than 15% in order to minimize erosion. No more than 50% of the land parcel utilized for Solar Electric Generating Facilities shall contain land requiring clearing of forest.

15. No topsoil shall be removed from the land parcel under consideration for Solar Electric Generating Facilities. If earthworks operations are required, topsoil shall be

stockpiled within the property bounds and protected against erosion until such time earthwork operations are completed and topsoil can be re-spread over parcel. Earthworks shall be planned to limit export of soil material (non-topsoil) to 1000 cubic yards per acre affected by installation. A detailed earthworks estimate is a required submittal component proving this quantity is maintained.

- H. Waivers - The Planning Board may, upon the prior written request of the applicant, waive any of the requirements of this sub-section, but must state their reasons for doing so in writing as part of their decision.