SOLAR ELECTRIC INSTALLATIONS

Revised Draft 2-22-21 (sac)

Article ___ : To see if the Town will vote to amend the Zoning Bylaw by adding a new Section 8.11, Solar Electric Installations, as follows:

SECTION 8.11 SOLAR ELECTRIC INSTALLATIONS

A. Purpose

The purpose of this bylaw is to facilitate and appropriately regulate the creation of Ground-Mounted Solar Electric Installations: (a) by providing standards for the approval, placement, design, construction, operation, monitoring, modification and removal of such installations to protect the public health, safety and welfare, including protection and preservation of Town infrastructure (including roads); providing for public safety; and mitigating any impacts upon environmental, scenic, and historic resources; (b) by providing adequate financial assurance for the eventual decommissioning of such installations; and (c) by protecting large, contiguous blocks of forest land, based on the understanding that large, contiguous tracts provide many ecological benefits, including improved water and air quality, sequestration of carbon, reduced movement of invasive species, provision of wildlife habitat and the support for greater biodiversity; and providing many recreational opportunities for town residents.

B. Definitions

Where the following terms appear in this section 8.11, they shall have the following meanings.

Forestland: a dense growth of trees and shrubs covering an area of one acre or more.

Ground-Mounted Solar Electric Installation: a Solar Electric System that is affixed to the ground (not roof-mounted) and all appurtenant fencing, access driveways, drainage infrastructure, electronics, and any surrounding shade management areas.

Large-Scale Ground-Mounted Solar Electric Installation: a Ground-Mounted Solar Electric Installation which occupies more than one acre of land and no greater than fifteen acres of land.

Small-Scale Ground-Mounted Solar Electric Installation: a Ground-Mounted Solar Electric Installation which occupies one acre or less of land.

Solar Electric System: a group of Solar Photovoltaic Arrays for the generation of electricity.

Solar Energy: radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.

Solar Parking Canopy: An elevated structure that hosts solar panels installed over parking lots or other hardscape areas.

Solar Photovoltaic Array: an active Solar Energy collection device that converts solar energy directly into electricity whose primary purpose is to harvest energy by transforming solar energy into another form of energy or transferring heat from a collector to another medium using mechanical, electrical, or chemical means.

C. Applicability

1. Roof-mounted Solar Energy Facilities. Solar energy panels mounted on the roof of a building as an accessory portion of the structure, and related equipment which is necessary for and incidental ~~equipment for~~to those solar energy panels, are allowed by right in all zoning districts, and do not need to comply with the other provisions of this Section 8.11.

2. Small-Scale Ground-Mounted Solar Electric Installations which are accessory to an existing residential or non-residential use, and which generate electricity principally used by such residential or non-residential use, may be allowed by special permit, do not need to comply with ~~this~~the other provisions of this Section 8.11, but require Site Plan Review under Section 3.5 from the Planning and Economic Development Board, as well as a building permit, and must comply with all other applicable provisions of this Zoning Bylaw.

3. Solar Parking Canopies which are accessory to an existing residential or non-residential use may be allowed by special permit in all zones except AR-1, AR-11, and VR, and are subject to the requirements of this Section 8.11.

4. All other Small-Scale and Large-Scale Ground-Mounted Solar Electric Installations are subject to the requirements of this Section 8.11, and are allowed in ~~those~~ zoning districts only as specified in Table 1: Schedule of Uses.

5. The Planning and Economic Development Board (the Board) shall be the special permit granting authority for all special permit applications under Section 8.11.

D. General Requirements

1. Compliance with Laws, Bylaws, and Regulations
   The construction and operation of all Ground-Mounted Solar Electric 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.

2. Mitigation for Loss of Carbon Sequestration and Forest Habitat
   If land that is Forestland or has been Forestland within the past year is proposed to be converted to a Ground-Mounted Solar Electric Installation, the plans shall designate thereon an area of unprotected (meaning, not subject to G.L. c. 184, sections 31-33 at time of application) land on the same lot and of a size equal to four times the total area of such installation. Such designated land shall remain in substantially its natural condition without alteration, including prohibition of commercial forestry or tree cutting not related to the maintenance of the installation,

until such time as the installation is decommissioned; except in response to a natural occurrence, invasive species or disease that impacts the trees and requires cutting to preserve the health of the forest.

3. Mitigation for Loss of Forest Habitat within the Installation
   If Forestland is proposed to be converted to a Ground-Mounted Solar Electric Installation, the plans shall show mitigation measures that create a wildflower meadow habitat within and immediately around the Solar Electric System, and a successional forest habitat in the surrounding areas managed to prevent shading until such time as the installation is decommissioned. The wildflower meadow shall contain a wide variety of plants that bloom from early spring into late fall, that are planted in clumps rather than single plants to help pollinators find them, and that are native plants adapted to local climate, soil and native pollinators. At least 50% of the array footprint and perimeter shall be planned to have these flowering plants. Mowing shall be limited to no more than once annually. Plans for pollinator-friendly vegetation establishment and maintenance shall be compiled and written by a professional biologist or ecologist with relevant experience and expertise in pollinator habitat creation, grassland habitat restoration, and/or knowledge of native New England plant communities.

4. Mitigation for Disruption of Trail Networks
   If existing trail networks, old Town roads, or woods or cart roads are disrupted by the location of the Ground-Mounted Solar Electric Installation, the plans shall show alternative trail alignments to be constructed by the applicant, although no rights of public access may be established hereunder.

5. Mitigation for Disruption of Historic Resources and Properties
   Historic resources and properties, such as cellar holes, farmsteads, stone corrals, marked graves, water wells, or pre-Columbian features, including those listed on the Massachusetts Register of Historic Places or as defined by the National Historic Preservation Act, shall be excluded from the areas proposed to be developed, including clearing for shade management. A written assessment of the project's effects on each identified historic resource or property and ways to avoid, minimize or mitigate any adverse effects shall be submitted as part of the application. A suitable buffer area shall be established on all sides of each historic resource.

6. All plans and maps shall be prepared, stamped and signed by a Professional Civil Engineer licensed to practice in the Commonwealth of Massachusetts.

7. Vehicular access for the purpose of construction shall be from paved streets.

8. Lots for Ground-Mounted Solar Electric Installations shall have the required frontage on a street.

~~J. In order to preserve the ecological integrity of the Town's large blocks of~~

~~undeveloped Forestland, no more than one Large Ground-Mounted Solar Electric Installation shall be permitted within the bounds of any set of public ways and/or Town borders as depicted on the map entitled Large Ground Mounted Solar Electric Installation Districts, and incorporated into this zoning bylaw.~~

9. The special permit may be conditioned to effectuate and make enforceable these requirements.

E. Required Documents

The project applicant shall provide the following documents.

1. Site Plan. A Site Plan additionally showing:
   a. Locations of wetlands and Priority Habitat Areas as defined by the Natural Heritage & Endangered Species Program (NHESP).
   b. Locations of local or National Historic Districts.
   c. Locations of all known, mapped or suspected Native American archaeological sites or sites of Native American ceremonial activity. Identification of such sites shall be based on responses, if any, to written inquiries with a requirement to respond within 35 days, to the following parties: all federally or state recognized Tribal Historic Preservation Officers with any cultural or land affiliation to the Medway area; the Massachusetts State Historical Preservation Officer; tribes or associations of tribes not recognized by the federal or state government with any cultural or land affiliation to the Medway area; and the Medway Historical Commission. Such inquiries shall serve as a notice to the aforesaid parties and shall contain a plan of the project, specific identification of the location of the project, and a statement that permitting for the project is forthcoming. Accompanying the site plan shall be a report documenting such inquiries, the responses from the parties, a description of the location and characteristics, including photographs, of any Native American sites and the outcomes of any additional inquires made based on information obtained from or recommendations made by the aforesaid parties. A failure of parties to respond within 35 days shall allow the applicant to submit the site plans.
   d. The project proponent must submit a full report of all materials to be used, including but not limited to the use of cleaning products, paints or coatings, hydro-seeding, fertilizers, and soil additives. When available, Material Safety Data Sheets will be provided.

2. Blueprints. Blueprints or drawings of the installation signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts, showing:
   a. The proposed layout of the system and any potential shading from nearby structures.
   b. One- or three-line electrical diagram detailing the Ground-Mounted Solar Electric Installation, associated components, and electrical interconnection methods, with all Massachusetts and National Electrical Code compliant disconnects and overcurrent devices.

3. General Documentation. The following information shall also be provided:
   a. A list of any listed hazardous or known carcinogenic materials proposed to be located on the site in excess of household quantities and a plan to prevent their release to the environment as appropriate.
   b. Name, address, and contact information for proposed system installer.
   c. The name, contact information and signature of any agents representing the project applicant.

4. Site Control
   The project applicant shall submit documentation of actual or prospective access and control of the project site sufficient to allow for construction and operation of the proposed Ground-Mounted Solar Electric Installation.

5. Operation and Maintenance Plan
   The project applicant shall submit a plan for the operation and maintenance of the Ground-Mounted Solar Electric Installation, which shall include measures for maintaining safe access to the installation, stormwater management (consistent with DEP's and, where appropriate, Medway's stormwater regulations), as well as general procedures for operational maintenance of the installation.

6. Financial Surety
   Applicants for Ground-Mounted Solar Electric Installations shall provide a form of surety, either through a deposit of money, bond, triparty agreement, or other means acceptable to the Board, to cover the cost of removal in the event the Town must remove the installation and remediate the site to its natural preexisting condition, in an amount and form determined to be reasonable by the Board, but in no event to exceed more than 125% of the cost of removal and compliance with the additional requirements set forth herein. The project applicant 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.

7. Utility Notification
   No Ground-Mounted Solar Electric Installation shall be constructed, nor building permit issued until evidence has been provided to the Building Commissioner that the utility company that operates the electrical grid where the installation is to be located has approved the solar electric installation owner or operator's intent to install an interconnected customer-owned generator and that the utility has approved connection of the proposed generator into their power grid. Off-grid systems shall be exempt from this requirement.

8. Proof of Liability Insurance

F. Dimensional Requirements

1. Minimum setbacks for all Large-Scale Ground-Mounted Solar Electric Installations shall be:
   - Front setback: 500 feet
   - Side and rear setback: 100 feet

2. Minimum setbacks for all Small-Scale Ground-Mounted Solar Electric Installations shall be:
   - Front setback: 100 feet
   - Side and rear setback: 50 feet

3. Minimum setbacks for all Ground-Mounted Solar Electric Installations that are installed on or above existing paved parking areas (Solar Parking Canopies):
   - Front setback: 50 feet
   - Side and rear setback: 50 feet

4. Required setback areas shall not be counted toward a facility's total acreage.

G. Design and Performance Standards

1. Lighting
   Large- and Small-Scale Solar Electric Installations shall have no permanently-affixed exterior lighting.

2. Signage
   a. Sufficient signage shall be provided to identify the owner of the facility and provide a 24-hour emergency contact phone number.
   b. Signage at the perimeter warning pedestrians is allowable.
   c. Ground-Mounted Solar Electric Installations shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of such installation.

3. Control of Vegetation
   Herbicides or pesticides may not be used to control vegetation or animals at a Ground-Mounted Solar Electric Installation.

4. Visual Impacts
   a. Ground-Mounted Solar Electric 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 provide an effective visual barrier from adjacent roads and driveways, and to screen abutting residential dwellings.
   b. When possible, a diversity of plant species shall be used, with a preference for species native to New England.
   c. Use of invasive or exotic plants, as identified by the most recent copy of the "Massachusetts Prohibited Plant List" maintained by the Massachusetts Department of Agricultural Resources, is prohibited.

d. If deemed necessary by the Board, the depth of the vegetative screen shall be 30 feet and will be composed of native trees and shrubs staggered for height and density that shall be properly maintained.
e. The owner and operator shall not remove any naturally occurring vegetation such as trees and shrubs unless it adversely affects the performance and operation of the solar installation.
e. Landscaping shall be maintained and replaced as necessary by the owner and operator of the Ground-Mounted Solar Electric Installation.

5. Utility Connections.
Electrical transformers, wires, or other utility interconnections shall be constructed as required by the utility provider and may be above ground if necessary; provided, however, that every reasonable effort shall be made to place all utility connections underground, depending on appropriate soil conditions and topography of the site and any requirements of the utility provider.

6. All electric power generated at a Ground-Mounted Solar Electric Installation shall be from Solar Energy.

7. Access Driveways shall be constructed to minimize finished width, grading, removal of stone walls or roadside trees, incompatible appearance from the roadway, and impacts to environmental or historic resources.

H. Safety and Environmental Standards

1. Emergency Services
a. Ground-Mounted Solar Electric Installations owner or operator shall provide a copy of the project summary, electrical schematic, and site plan to the Fire Chief.
b. The owner or operator shall cooperate with local emergency services to develop a written emergency response plan that is provided to police and fire departments
c. All means of shutting down the solar electric installation shall be clearly marked.
d. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation. Contact information shall be provided annually to the Town Manager including name, email and telephone number for the designated person and a back-up person.

2. Land Clearing, Soil Erosion and Land Impacts
a. The facility shall be designed to minimize impacts to open agricultural land and fields, even if not in production. Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the Ground-Mounted Solar Electric Installation. Grading that substantially disturbs the existing soil profile and structure is prohibited; sites shall be selected where construction may be accomplished without such earth work.
b. Prior to any site disturbance and construction, the limits of the work shown on

the approved site plan shall be surveyed and clearly marked by a Professional Land Surveyor. Upon completion of the survey, the Professional Land Surveyor shall verify to the Building Commissioner, in writing, that the limit of work, as shown on the approved site plans, has been established on site.

c. The design shall minimize the use of concrete and other impervious materials to the maximum extent possible. Ground-Mounted Solar Electric Installation shall be installed on water permeable surfaces.
d. Locating Ground-Mounted Solar Electric Installations, including access driveways and any associated drainage infrastructure on original, pre development grades in excess of 15% is prohibited.

3. Habitat Impacts
Large-Scale Ground-Mounted Solar Electric Installations shall not be located on permanently protected land subject to G.L. c. 184, sections 31-33, Priority Habitat and Bio Map 2 Critical Natural Landscape Core Habitat mapped by the Natural Heritage and Endangered Species Program (NHESP) and "Important Wildlife Habitat" mapped by the DEP.

4. Wetlands
a. In order to provide an adequate intervening land area for the infiltration of stormwater runoff from a Solar Electric Installation, ground alterations, such as stump removal, excavation, filling, and grading, or the installation of drainage facilities or solar panels, are prohibited within 100 feet of any wetlands or hydrologic features subject to the jurisdiction of the Conservation Commission.
b. The ~~Planning and Economic Development~~ Board may impose conditions to contain and control stormwater runoff that might negatively impact identified wetlands or other hydrologic features even if the proposed work area is outside the jurisdiction of the Conservation Commission.

I. Monitoring, Maintenance and Reporting

1. Solar Electric Installation Conditions
a. The Ground-Mounted Solar Electric Installation owner or operator shall maintain the facility in good condition.
b. Maintenance shall include, but not be limited to, painting, structural repairs, and integrity of security measures.
c. Site access shall be maintained to a level acceptable to the Fire Chief.
d. The owner or operator shall be responsible for the cost of maintaining the Solar Electric Installation and any access driveways.

2. Annual Reporting
a. The owner or operator of a Ground-Mounted Solar Electric Installation shall submit an annual report demonstrating and certifying compliance with the Operation and Maintenance Plan, the requirements of this Section 8.11 and the approved special permit, including but not limited to continued management

and maintenance of vegetation, compliance with the approved plans and any special permit conditions, continuation of liability insurance, and adequacy of road access.

b. The annual report shall also provide information on the maintenance completed during the course of the year and the amount of electricity generated by the facility.

c. The report shall be submitted to the ~~Town Manager~~ Department of Community and Economic Development and Building Commissioner, no later than 45 days after the end of the calendar year.

K. Abandonment or Decommissioning

1. Removal Requirements
   a. Any Ground-Mounted Solar Electric Installation which has reached the end of its useful life, has been abandoned, or taken off line shall be removed.
   b. The owner or operator shall physically remove the installation no later than 150 days after the date of discontinued operations.
   c. The owner or operator shall notify the Building Commissioner in writing of the proposed date of discontinued operations and plans for removal.

2. Decommissioning shall consist of:
   a. Physical removal of all components of the Ground-Mounted Solar Electric Installation, including but not limited to structures, foundations, equipment, security barriers, and on-site above-ground transmission lines. Associated off-site utility interconnections shall also be removed if no longer needed.
   b. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.
   c. Restoration of the site to its natural preexisting condition, including stabilization or re-vegetation of the site as necessary to minimize erosion. The Board may allow the owner or operator to leave landscaping or designated below-grade foundations and electric lines in order to minimize erosion and disruption to vegetation.

3. Decommissioning by the Town
   If the owner or operator of a Ground-Mounted Solar Electric Installation fails to remove such installation in accordance with the requirements of this Section 8.11 within 150 days of discontinued operations or abandonment, the Town may enter the property and physically remove the installation at the owner's expense, drawing upon the financial surety provided by the applicant.

or act in any manner relating thereto.

PLANNING AND ECONOMIC DEVELOPMENT BOARD