Solar Bylaw Revisions

The Whately Planning Board is recommending several revisions to the Town's Large-Scale Ground-Mounted Solar Facility Bylaw. The changes are designed to

- provide safety standards and siting restrictions for battery storage equipment in these facilities;
- create a cap on the size of large solar facilities with exceptions for facilities located on poor soil and out of sight of residences;
- require remediation for taking productive farmland and forest out of production;
- provide the ability to inspect the facility during and after construction;
- strengthen plant screening and plant maintenance requirements;
- identify any new equipment required to support the power generated that will be located outside the site itself;
- identify prime farmland, large trees, Scenic Roads and Scenic Views; and
- define kW size factors to specifically reference AC power (kW_{AC}).

The text of the revisions is given below. New text is underlined and in italics, and deleted text is shown in strikethrough.

~ 171-8. Table of Use Regulations.

Principal Use	**Agriculture/ Residential 1**	**Agriculture/ Residential 2**	**Commercial**	**Commercial - Industrial**	**Industrial**
Light Industrial					
Ground Mounted Solar Power Generating Facilities greater than 10 kW_{AC} [1] up to 500 kW_{AC} that occupy no more than 2 acres and meet the requirements of Section 171-28.5 [Added 10-27-2011, Art.1]	N	Y*	Y*	Y*	Y*
Ground Mounted Solar Power Generating Facilities greater than 500 kW_{AC} or occupying more than 2 acres that meet the requirements of Section 171-28.5 [Added 10-27-2011, Art.1]	N	SP*	SP*	SP*	SP*

[1] Ground Mounted Solar Power Generating facilities of 10kW_{AC} or less which are an accessory use to a residential or non-residential use are allowed "by right". Roof mounted solar power generating facilities are allowed "by-right". [Added 10-27-2011, Art. 1]

Y = Yes, the use is permitted by right in that zoning district.
N = No, the use is not permitted in that zoning district.

SP = The use is allowed in that zoning district only after a special permit has been granted.
* = Site Plan Review required (See Section 171.17 for other uses requiring Site Plan Review)[added ATM 4-27-2010, Art 11]

~171-28.5 Solar Electric Generating Facilities [Added section 10-27-2011]

A. Purpose

The purpose of this bylaw is to facilitate the creation of new Large-Scale Ground-Mounted Solar Electric Installations (see Section 171-37. Terms defined) 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.

(1) Applicability – The provisions set forth in this section shall apply to the construction, operation, repair and/or removal of Large-Scale Ground-Mounted Solar Electric Installations greater than 10 kW. Smaller scale (10 kW_{AC} or less) ground mounted solar electric installations which are an accessory structure to an existing residential or non-residential use do not need to comply with this section, but 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 provisions of Whately's Zoning Bylaws such as setback requirements.

Large-Scale Ground-Mounted Solar Electric Installations greater than 10 kW_{AC} up to 500 kW_{AC} that occupy no more than 2 acres of land proposed to be constructed in the Agricultural/Residential District 2, Commercial, Commercial-Industrial, or Industrial Zoning Districts are allowed by right but are subject to Site Plan Review (see Section 171-17) and the requirements of this section.

Large-Scale Ground-Mounted Solar Electric Installations which require a Special Permit and Site Plan Review in accordance with the Zoning Bylaws of the Town of Whately in addition to meeting the requirements of this section are as follows:

(a) an installation larger than 500 kW_{AC}; or
(b) an installation occupying more than 2 acres of land on one or more adjacent parcels in common ownership (including those separated by a roadway) in the Agricultural Residential 2, Commercial, Commercial-Industrial or Industrial Zoning Districts.

This section also pertains to physical modifications that materially alter the type, configuration, or size of Large-Scale Ground-Mounted Solar Electric installations or related equipment.

All buildings and fixtures forming part of a solar electric installation shall be constructed in accordance with the Massachusetts State Building Code.

B. General Requirements for all Large Scale Solar Ground-Mounted Solar Electric Installations

The following requirements are common to all Large-Scale Ground-Mounted Solar Electric installations.

(1) Compliance with Laws and Regulations

The construction and operation of all Large-Scale 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. All buildings and fixtures forming part of a solar electric installation shall be constructed in accordance with the Massachusetts State Building Code.

(2) Building Permit and Building Inspection

No Large-Scale Ground-Mounted Solar Electric Installations shall be constructed, installed or modified as provided in this section without first obtaining a building permit and paying any required fees.

C. Site Plan Review

Large-Scale Ground-Mounted Solar Electric Installations shall undergo Site Plan Review (see Section 171-17) by the Planning Board prior to construction, installation or modification as provided in this section.

(1) General

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

(2) Required Documents

The project proponent shall provide the following documents in addition to or in coordination with those required for Site Plan Review (see Section 171-17):

(a) A site plan showing:

i. Property lines, map and lot from the Assessor's records, and physical features, including roads and topography, for the project site;
ii. Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures including their height;
iii. Locations of wetlands and Priority Habitat Areas defined by the Natural Heritage & Endangered Species Program (NHESP)
iv. Locations of Floodplains or inundation areas for moderate or high hazard dams;

v. Locations of local or National Historic Districts, ~~*and*~~ Priority Heritage Landscapes, *and Scenic Roads and Scenic Views identified on the Scenic Resources and Unique Environments Map of the Town's Open Space & Recreation Plan;*

vi. A list of any hazardous 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;

vii. 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;

viii. A detailed impact study for the Utility Interconnection ~~I~~including information on the location and type of any poles, transformers or other electrical components required by the utility to support the proposed solar facility including electrical equipment upgrades outside the facility to allow the site to connect to the grid including any necessary tree trimming. The list of abutters shall include abutters within a 300' ~~to this new or upgraded equipment.~~radius of these changes.

ix. 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;

~~ix.~~x. Documentation of the major system components to be used, including the electric generating components, transmission systems, mounting system, inverter, etc.;

~~x.~~xi. Documentation by an acoustical engineer of the noise levels projected to be generated by the installation;

~~xi.~~xii. Name, address, and contact information for proposed system installer;

~~xii.~~xiii. Name, address, phone number and signature of the project proponent, as well as all co-proponents or property owners, if any;

~~xiii.~~xiv. The name, contact information and signature of any agents representing the project proponent;

~~xiv.~~xv. Documentation of actual or prospective access and control of the project site;

~~xv.~~xvi.Provision of water including that needed for fire protection;

~~*xvi.*~~*xvii.* Existing trees 6" caliper or larger and shrubs; *and*

~~*xvii.*~~*xviii. Location of prime farmland soils or soils of State-wide importance.*

(b) An operation and maintenance plan (see Section 171-28.5 E.);

(c) 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);

(d) Proof of liability insurance; ~~and~~

(e) Description of financial surety that satisfies Section 171-28.5 K; *and*

(f) *A detailed planting plan showing the location and species selected for all proposed plantings and screening (see 171-28.5 H.(10) Screening and H.(5) Control of Vegetation).*

D. Site Control

The project proponent shall submit 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.

E. *Inspections and* Operation & Maintenance Plan

The project may be inspected at various times during the construction and operation of the solar electric facility including during the placement of utility connections underground, installation and maintenance of required landscaping or the construction and maintenance of the stormwater management system. The Zoning Board of Appeals, as special permit granting authority, or the Planning Board, pursuant to the Site Plan Review process, may hire an on-site inspector with background and experience in solar electric generating facilities, stormwater management, pollinator habitat and/or landscaping to provide inspection services at the expense of the project proponent. Such required inspections may be specified in the Special Permit and/or Site Plan Review conditions.

The project proponent shall submit a plan for the operation and maintenance of the Large-Scale Ground-Mounted Solar Electric Installation, which shall include measures for maintaining safe access to the installation, storm water and vegetation controls, as well as general procedures for operational maintenance of the installation.

F. Utility Notification

No Large-Scale Ground-Mounted Solar Electric Installation shall be constructed until evidence has been given to the Planning Board 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. Off-grid systems shall be exempt from this requirement.

G. Dimension*, Size* and Height Requirements

(1) Setbacks For Large-Scale Ground-Mounted Solar Electric Installations, front, side and rear setbacks shall be as follows:

(a) Front yard: The front yard depth shall not be less than *100*~~50~~ feet.

(b) Side yard. Each side yard shall have a depth of at least *100*~~35~~ feet.

(c) Rear yard. The rear yard depth shall not be less than *100*~~35~~ feet.

(2) Setbacks for Large-Scale Battery Storage systems in Solar Electric Installations shall be as follows:

(a) No less than 500 feet from any abutting plot in the AR1 or AR2 Districts.

(b) No less than 200 feet from any well for lots not served by public water.

The required setback areas should not be included in the 2 acre maximum calculation for By-Right solar electric installations (see Section 171-28.5 A.).

(2) Appurtenant Structures

All appurtenant structures to Large-Scale Ground-Mounted Solar Electric Installations shall be subject to regulations concerning the bulk and height of structures, lot area, and setbacks as specified in Section 171-28.5 G., open space, parking and building coverage requirements. All such appurtenant structures, including but not limited to, equipment shelters, storage facilities, transformers, and substations, 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) Height of Structures

The height of any structure associated with a Large-Scale Ground-Mounted Solar Electric Installation shall not exceed 25 feet. [Amended height 5-9-2013 ATM, Art. 21]

(4) The size of the Solar Electric Generating Facility including required setbacks shall not exceed 10 acres~~.~~, except that where the Special Permit Granting Authority determines it appropriate, the maximum size of the facility may be increased by

a. an *additional 2 ½* acres if the Facility is sited on glacial till and sandy soil that is not heavily forested; and

b. an *additional 2 ½* acres if the Facility is sited in a location where it is not visible from any existing residence.

H. Design and Performance Standards

(1) Lighting

Lighting of solar electric installations 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 solar electric installation shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.

(2) Signage

Signs on Large-Scale Ground-Mounted Solar Electric Installations shall comply with Whately's sign bylaw, Section 171-14. A sign consistent with Whately's sign bylaw shall be required to identify the owner and provide a 24-hour emergency contact phone number. Solar electric installations shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the solar electric installation.

(3) Utility Connections

Reasonable efforts, as determined by the Planning Board, shall be made to place all utility connections from the solar electric installation Electrical transformers for utility interconnections may be above ground if required by the utility provider.

(4) Roads

Access roads shall be constructed to minimize grading, removal of stone walls or trees and minimize impacts to environmental or historic resources.

(5) Control of Vegetation

Herbicides may not be used to control vegetation at the solar electric installation. Mowing, grazing or using geotextile materials underneath the solar array are possible alternatives. *Removal of existing trees on the site should be minimized to the maximum extent feasible; the Zoning Board of Appeals, as special permit granting authority, or the Planning Board, pursuant to the Site Plan Review process, may require that replacement trees be planted outside the Facility unless the owner is subject to the fee requirement in paragraph (8) of this section.*

(6) Hazardous Materials

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 MassDEP 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. 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.

Any associated battery storage systems may not be located in Zone 1 of the Aquifer Protection District and must be located above the 100 year floodplain. The storage system must be located within a building with the following features: a temperature and humidity maintained environment; an impervious floor with a containment system for potential leaks of hazardous materials; a smoke/fire detection, fire alarm and fire suppression system; a thermal runaway system; and a local disconnect point or emergency shutdown feature. The containment area must be designed so that in event of a fire, fire extinguishing chemicals will be completely contained.

The building and systems must be approved by the Whately Fire Chief and must be designed and installed in accordance with all applicable State codes and safety requirements as well as safety measures recommended by the National Fire Protection Association. The applicant shall provide for annual training of Whately Fire Department staff in coordination with the Fire Chief. Periodic inspections to ensure the integrity of the batteries, other equipment and the containment system may be required as conditions of the special permit and the site plan review.

Battery storage units shall be limited to only those needed to support the solar installation at the site and their kW hour capacity may not exceed that of the installation. Spent or expired battery units must be immediately removed from the site

(7) Noise

Noise generated by Large-Scale Ground-Mounted Solar Electric 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 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. Noise generated shall further comply with Section 171-15 B (1) of the Town of Whately bylaws.

(8) Impact on Agricultural and Environmentally Sensitive Land

The facility 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. *For every acre of land assessed under the provisions of MGL Chapter 61, or 61A in any of the previous three years to be occupied by the Solar Facility, including its plantings and setbacks, the owner or operator shall pay a Resource Replacement Fee to the Town of Whately Community Preservation Act Open Space Reserve for the preservation of farmland and timberland.*

(9) Drainage

The *solar facility* design shall minimize the use of concrete and other impervious materials to the greatest extent possible.

(10) Screening

Large-Scale Ground-Mounted Solar Electric Installations shall be screened from view by a minimum fifteen (15) foot wide *buffer zone with* staggered and grouped planting of shrubs and small trees. Such plantings shall use native plants and a mix of deciduous and evergreen species and may be located within the setback area. *Such plantings must be a minimum of five (5) feet high at the time of installation and any plant that is damaged or dies shall be replaced on an annual basis each Spring or Fall.*

I. Safety and Environmental Standards

(1) Emergency Services

The Large-Scale Ground-Mounted Solar Electric Installations 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 solar electric installation shall be clearly marked. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation.

(2) 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 Large-Scale Ground-Mounted Solar Electric 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. *All facilities must be located at least 100 feet from any wetland or Priority Habitat Area as delineated in accordance with the Massachusetts Endangered Species Act regulations at 321CMR 10.00 or successor regulation.*

J. Monitoring, Maintenance and Reporting

(1) Solar Electric Installation Conditions

The Large-Scale Ground-Mounted Solar Electric Installation 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 installation and any access road(s).

(2) Modifications

All material modifications to a solar electric installation made after issuance of the required building permit shall require approval by the Planning Board.

(3) Annual Reporting

The owner or operator of the installation shall submit an Annual Report which certifies compliance with the requirements of this bylaw and their approved site plan including control of vegetation, noise standards, and adequacy of road access. 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. The Annual Report shall be submitted to the Select Board, Planning Board, Fire Chief, Emergency Management Director, Building Inspector, Board of Health and Conservation Commission (if Wetlands Permit was issued) no later than 45 days after the end of the calendar year.

K. Abandonment or Decommissioning

(1) Removal Requirements

Any large-scale ground-mounted solar electric installation which has reached the end of its useful life or has been abandoned consistent with Section 171-28.5 K. of this bylaw shall be removed. The owner or operator shall physically remove the installation within 150 days of abandonment or the proposed date of decommissioning and if not the town retains the right, after the receipt of an appropriate court order, to enter and remove an abandoned, hazardous or decommissioned Large-Scale Ground-Mounted Solar Electric Generating Installation. As a condition of Site Plan or Special Permit approval, an applicant shall agree to allow entry to remove an abandoned or decommissioned installation. The cost for the removal will be charged to the property owner in accordance with the provisions of M.G.L. 139, Section 3A as a tax lien on the property.

The owner or operator shall notify the Planning Board by certified mail of the proposed date of discontinued operations and plans for removal. Decommissioning shall consist of:

(a) Physical removal of all Large-Scale Ground-Mounted Solar Electric Installations, structures, equipment, 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.

(2) Abandonment

Absent notice of a proposed date of decommissioning or written notice of extenuating circumstances, the solar electric installation shall be considered abandoned when it fails to operate for more than one year without the written consent of the Planning Board. If the owner or operator of the Large-Scale Ground-Mounted Solar Electric Installation fails to remove the installation in accordance with the requirements of this section within 150 days of abandonment or the proposed date of decommissioning, the Town may enter the property and physically remove the installation.

(3) Financial Surety

Proponents of Large-Scale Ground-Mounted Solar Electric Installations 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.

~ 171-37. Terms defined.

RESOURCE REPLACEMENT FEE - A fee to be paid by the owner or operator of a large-scale ground-mounted solar facility for removing agricultural or forest land from production, the size of which shall be determined by the Selectboard with input from the town Agricultural and Conservation Commissions.

LARGE-SCALE GROUND-MOUNTED SOLAR ELECTRIC INSTALLATION -- A solar electric system that is structurally mounted on the ground and is not roof-mounted, and has a minimum nameplate capacity greater than 10 kW_{AC}. [Added 10- 27-2011 Art. 1]