

Model Zoning Bylaw: Allowing Use of Solar Photovoltaic Installations

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Department of Energy Resources
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This model bylaw was prepared to assist cities and towns in establishing reasonable standards to facilitate the development of Solar Photovoltaic Installations, including large, Primary Use Solar Photovoltaic Installations. This model bylaw was developed as a model and is not intended for adoption without specific review by municipal counsel.

225 CMR 29.00 states that “Local Governments may adopt additional standards, provided such standards are reasonably necessary to protect the public health, safety, or welfare and do not conflict with the standards specified in 225 CMR 29.00 or any associated Department Guideline.” This model bylaw is intended to inform municipalities in their consideration of the additional local zoning criteria within the rubric of 225 CMR 29.00. However, municipalities should independently verify compliance with the applicable DOER regulations and Guidelines.

This model bylaw includes grey highlighted phrases or sections that may need to be revised to make the model consistent with the municipality’s ordinances or bylaws or specific numerical criteria that the municipality may wish to adjust.

1.0 Purpose

The purpose of this bylaw is to promote the development and installation of new 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 scenic, natural and historic resources and to provide adequate financial assurance for the eventual decommissioning of such installations.

The provisions set forth in this section shall apply to the installation, operation, and/or maintenance of Solar Photovoltaic Installations not subject to the jurisdiction of the Energy Facilities Siting Board.

Larger installations (over 25 MW): *A solar photovoltaic array with a rated nameplate capacity at or larger than 25 MW (or 25,000 kW) is solely subject to the jurisdiction of the Energy Facilities Siting Board, not any municipality. As such, this model zoning bylaw does not address projects in this size category.*

2.0 Definitions

Accessory Use: A Solar Photovoltaic Installation is considered an Accessory Use when it is secondary to the use of the premises for other lawful purposes. An Accessory Use cannot exist without a Primary Use on the same lot. Examples of Accessory Use include Building-Mounted Solar Photovoltaic Installations and Solar Canopies. Small installations serving behind-the-meter load, including business cooperatives or residential microgrids, should be treated as an Accessory Use even if it is the sole facility located on the parcel.

***Note:** Battery Energy Storage Systems (BESS) co-located with solar photovoltaic facilities may be treated as an accessory use to the solar facility. Co-located BESS must comply with the applicable portions of the BESS Model Bylaw; see the BESS Model Bylaw for suggested treatment of accessory and primary use BESS.*

The primary use of a co-located facility should be determined by which facility has a greater electrical capacity. In the event that the electrical capacity of the BESS and solar facility are the same, the solar should be treated as the primary use, as the land area per MW of solar is greater than that of BESS.

As-of-Right or By Right Siting: As-of-Right Siting shall mean that development may proceed without the need for a Special Permit, variance, amendment, waiver, or other discretionary approval. As-of-Right development may be subject to Site Plan Review to determine conformance with local zoning ordinances or bylaws. Projects allowed As-of-Right, including those subject to Site Plan Review, cannot be prohibited except as provided by 225 CMR 29.00, but can be reasonably regulated by the person or board designated by local ordinance or bylaw. The designated person or board may be the Planning Board or the inspector of buildings, building commissioner or local inspector, or if there is none in a town, the board of selectmen, or person or board designated by local ordinance or bylaw.

Battery Energy Storage Systems (BESS): A system consisting of one or more battery modules for storing electrical energy, any equipment needed to support the safe and proper function or usage of the battery modules, and one or more physical containers providing secondary containment to any of the above. It may be a primary use or an Accessory Use to a solar generating facility, power generation facility, electrical substation, or other similar uses. See the associated BESS Model Bylaw for further information.

Brownfield: A disposal site that has received a release tracking number from MassDEP pursuant to 310 CMR 40.0000: Massachusetts Contingency Plan, the redevelopment or reuse of which is hindered by the presence of oil or hazardous materials, as determined by the Department, in consultation with MassDEP. The terms "disposal site," "release tracking number," "oil," and "hazardous materials" shall have the meanings given to such terms in 310 CMR 40.0006: Terminology, Definitions and Acronyms. No disposal site that otherwise meets this definition shall be excluded from consideration as a Brownfield because its cleanup is also regulated by the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601-

9675, the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6921 - 6939g, or any other federal program.

Building Inspector: The inspector of buildings, building commissioner, or local inspector, or person or board designated by local ordinance or bylaw charged with the enforcement of the zoning ordinance.

Building-Mounted Installation: A Solar Photovoltaic Installation with 100% of the nameplate capacity of the solar photovoltaic modules used for generating power installed on a building.

Building Permit: A construction permit issued by an authorized building inspector; the Building Permit evidences that the project is consistent with the applicable local, state and federal building codes as well as local zoning bylaws, including those governing Solar Photovoltaic Installations.

Canopy: A solar photovoltaic system for which 100 percent of the nameplate capacity of the system is located on a raised structure allowing for the continued use of the area beneath for another function including, but not limited to, parking, pedestrian walkway, transportation infrastructure, storage of equipment, or canal.

Community Benefits Agreement (CBA): A legally binding, negotiated agreement between a project applicant and a community, often represented by a coalition of community groups or a local government body, which outlines benefits the communities will receive and is prepared in accordance with the standards and guidelines developed by the Office of Environmental Justice and Equity, pursuant to M.G.L. c. 21A, § 29.

***Note:** While Community Benefit Agreements are often considered a best practice—particularly for larger projects with more significant local impacts—communities are generally discouraged from requiring CBAs for all projects or specific types of projects. CBAs work best when they result from voluntary negotiations between the parties involved. The zoning and permitting process should not be used to compel additional benefits from solar developers that would not also be expected of other, similarly situated developments.*

Community Benefits Plan (CBP): A non-legally binding document that outlines how a project will engage with and benefit local communities during development and operation of a Solar Photovoltaic Installation and is developed in accordance with the standards and guidance developed by the Office of Environmental Justice and Equity, pursuant to M.G.L. c. 21A, § 29.

DOER: The Massachusetts Department of Energy Resources.

Eligible Landfill: A landfill that has received an approval from MassDEP for the use of a Solar Photovoltaic Installation at the landfill as a post-closure use pursuant to 310 CMR 19.143: Post-closure Use of Landfills.

MassDEP: The Massachusetts Department of Environmental Protection.

National Fire Protection Association (NFPA): Association of fire safety professionals that provides safety standards for the aid in the development of local and state fire codes.

Primary Use: A Solar Photovoltaic Installation is considered a Primary Use when the primary use of the lot or lots is for the commercial generation of power. Large-scale, ground-mounted solar installations typically fall into this category.

Site Footprint. The acreage of land encompassed by an installation's solar photovoltaic equipment, plus any land significantly impacted by construction of the installation, including, but not limited to, land altered of its natural vegetative composition and structure for clearing, grading, and roadways.

Rated Nameplate Capacity: The maximum rated output of electric power production of the photovoltaic system in Direct Current (DC).

Site Plan Review: Review by the Site Plan Review Authority to determine conformance with local zoning ordinances or bylaws. Site Plan Review for By-Right projects may reasonably condition, but not unconditionally deny, the project applications.

Note: In some communities this is known as Site Plan Approval rather than Site Plan Review. Regardless of which term is used by a community, the following excerpt from [Lowe's Home Centers, Inc. v. Town of Auburn Planning Board, Mass. Land Court PS 07-352453 \(2010\)](#) provides an excellent judicial explanation of the nature of Site Plan Review as applied to As-of-Right uses:

Site plan approval acts as a method for regulating As-of-Right uses rather than prohibiting them as per [Y.D. Dugout, Inc. v. Bd. Of Appeals of Canton, 357 Mass. 25, 31, 255 N.E.2d 732 \(1970\)](#). When evaluating the Site Plan Applications, the Planning Board may not unconditionally deny the Site Plan Applications, but rather, it may impose reasonable conditions upon them. See [Prudential v. Bd. Of Appeals of Westwood, 23 Mass. App. Ct. 278, 281-82, 502 N.E.2d 137 \(1986\)](#); [Quincy v. Planning Bd. Of Tewksbury, 39 Mass. App. Ct. 17, 21-22, 652 N.E.2d 901 \(1995\)](#) (“[W]here the proposed use is one permitted by right the planning board may only apply substantive criteria ... i.e., it may impose reasonable terms and conditions on the proposed use, but it does not have the discretionary power to deny the use.”). Thus, when a site plan application is submitted for an As-of-Right use, a planning board is obligated to grant an approval with reasonable conditions unless, “despite best efforts, no form of reasonable conditions [can] be devised to satisfy the problem with the plan....” [Prudential, 23 Mass. App. Ct. at 283, n. 9, 502 N.E.2d 137](#); [Castle Hill Apartments Ltd. P'ship v. Planning Bd. Of Holyoke, 65 Mass. App. Ct. 840, 845-45, 844 N.E.2d 1098 \(2006\)](#).

Site Plan Review Authority: For purposes of this bylaw, Site Plan Review Authority refers to the body of local government designated as such by the municipality.

Note: *The Site Plan Review Authority can be the Select Board, City Council, Board of Appeals, Planning Board or Zoning Administrator, or building inspector. However, the Planning Board is typically the best group to serve in this capacity as it is usually the most familiar with the municipality's zoning bylaws/ordinances as well as its Master Plan or other plans for future conservation/development.*

Solar Photovoltaic Installation: An arrangement of panels that generates electricity using solar photovoltaic technology. This bylaw also refers to Solar Photovoltaic Installations as solar facilities and projects.

Zoning Enforcement Authority: The person or board charged with enforcing the zoning ordinances or bylaws.

Note: *By statute, the Zoning Enforcement Authority may be the “inspector of buildings, building commissioner or local inspector; or if there are none, in a town, the board of selectmen, or person or board designated by local ordinance or by-law.” [M.G.L. c. 40A, § 7](#). In most communities, the building inspector is the person charged with enforcing both the Commonwealth's building code and local zoning ordinances or bylaws.*

3.0 Applicability

This section applies to Solar Photovoltaic Installations proposed to be constructed after the effective date of this section. This section also pertains to physical modifications that materially alter the type, configuration, or size of these installations or related equipment. For Solar Photovoltaic Installations with Co-located battery energy storage systems (BESS), also see the associated BESS Model Bylaw.

This section is intended to align with the consolidated siting and permitting process for small clean energy infrastructure facilities established under Chapter 239 of the Acts of 2024. In the event of any inconsistency, the provisions of Chapter 239 shall govern.

Qualifying as a Green Community

To satisfy the Green Communities Act As-of-Right zoning requirement, codified at M.G.L. c. 25A, § 10(c), a municipality may adopt by-right zoning for Solar Photovoltaic Installations in at least one Designated Location, which permits a Primary Use Solar Photovoltaic Installation with a name plate capacity of 250 kW (DC) or more. Municipalities should reference guidance from the Department of Energy Resources (DOER) Green Communities Division on meeting zoning criteria for Designated Locations to qualify as a Green Community.

Educational Note: Existing Massachusetts law limits the local zoning restrictions that can be placed on solar and storage facilities. Massachusetts General Laws [Chapter 40A, Section 3](#), ninth paragraph, provides:

No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare.

This exception is often referred to as the “Dover Amendment.”

Section 23 of [Chapter 239 of the Acts of 2024](#) states in part that local governments acting in accordance with the standards set by DOER governing the siting and permitting of small clean energy infrastructure facilities by local governments “shall be considered to have acted consistent with the limitations on solar facility and small clean energy storage facility zoning under section 3 of chapter 40A.” This model bylaw also complies with the Dover Amendment protections for solar facilities. However, the DOER standards set forth in 225 CMR 29.00 and associated Guidelines do not address all aspects of solar siting and permitting, and the municipalities that deviate from the DOER standards or the model bylaw in a way that significantly restricts the feasibility of solar and/or is not necessary to protect public health, safety or welfare may risk violating the Dover Amendment.

The Massachusetts Attorney General’s Office reviews all zoning bylaws for compliance with state law, including with M.G.L. c. 40A, § 3.

There has been significant jurisprudence surrounding the interpretation and implementation of M.G.L. c. 40A, § 3 to solar and battery storage resources. This includes:

- [Tracer Lane II v Waltham](#), 489 Mass. 775 (2022), Supreme Judicial Court ruling that a City’s limiting of primary use solar to the 1-2% of the town-zoned industrial land impermissibly violates the Dover Amendment.
- [Kearsarge Walpole v. ZBA Walpole](#), a 2024 Mass. Appeals Court decision (No. 23-P-128) finding that the town’s zoning bylaw confining large ground-mounted solar to designated overlay districts was impermissible. The overlay districts allowing large ground-mounted solar covered around 2% of the town’s land. The court did not find that overlay districts are impermissible, but rather that the bylaw unduly restricts solar energy systems to those overlay districts and therefore violates G.L. c. 40A, § 3.
- [Summit Farm Solar v. New Braintree](#), a 2022 MA Land Court decision, 18 MISC 000367, ruling that towns cannot condition special permits on zero or negligible visual impact.
- [NextSun Energy LLC v. Fernandes](#), a 2023 MA Land Court decision (decision 19 MISC 000230), [affirmed](#) by the Massachusetts Appeals Court in 2025, finding that co-located battery storage with solar is protected by M.G.L. c. 40A, § 3.
- [Sunpin Energy Services LLC v. ZBA of Petersham](#), 2025 Mass. Appeals Court decision (No. 24-P-18), ruling that a special permit for a solar project cannot be

denied based on policy preferences that are extraneous to those expressed in the zoning bylaw when the applicant would meet all of the special permit conditions.

- [Duxbury Energy Storage v. Town of Duxbury ZBA](#), June 2025 MA Land Court decision 23 MISC 000643, finding that standalone BESS is protected by M.G.L. c. 40A, § 3, ninth paragraph.

We note this is not an exhaustive list of cases, and case law will evolve over time. Municipalities should consult with the local counsel on any bylaw changes.

3.1 Solar Photovoltaic Installation Classes

The following table defines certain classes of Solar Photovoltaic Installations, characterized by a combination of size and use case, with differentiated zoning and permitting requirements as further detailed below.

Table 1: Solar Photovoltaic Installations by Class/Size and Associated Zoning/Permitting Requirements by District

		Residential	Commercial	Industrial	Agricultural
Building-Mounted/Canopy ($< 25,000 \text{ kW}_{\text{DC}}$)		BR	BR	BR	BR
Ground-Mounted	Small ($< 25 \text{ kW}$)	BR	BR	BR	BR
	Medium - Primary Use ($25 - 250 \text{ kW}$)	SPR	SPR	BR	SP
	Medium – Accessory Use ($25 - 250 \text{ kW}$)	BR	BR	BR	SPR
	Large I ($250 - 1,000 \text{ kW}$)	SP	SP	SPR	SP
	Large II ($1,000 - 25,000 \text{ kW}$)	SP	SP	SP	SP
	Large – Accessory Use ($> 250 \text{ kW} - 25,000 \text{ kW}$)	SPR	SPR	SPR	SPR
	Landfill/Brownfield ($< 25,000 \text{ kW}$)	SP	SPR	SPR	SPR
	Large III ($25,000+ \text{ kW}$)	EFSB Jurisdictional			

BR = By Right, Subject to Building Permit Only

SPR = By Right, Subject to Site Plan Review. (As noted above, under SPR the Site Plan Review authority may not unconditionally deny the Site Plan Applications, but rather, it may impose reasonable conditions upon them.)

SP = Special Permit

N = Not Permitted

Notes:

The Table of Uses (above) for Solar Photovoltaic Installations was developed for general classes of zoning districts. It is based partially on input from stakeholders including municipal/regional planners, solar developers, and environmental advocacy groups. Municipalities will need to add Solar Photovoltaic Installations to their table of uses or lists of allowed/permitted uses based on the purpose and standards for each zoning district in the municipality.

Certain Massachusetts communities, more often small and rural communities, consist of a single zone, typically “Residential-Agricultural.” In such cases, DOER encourages the community to develop one or more overlay zones that enable differentiated review of different classes of Solar Photovoltaic Installations, based on the areas most appropriate for Primary Use solar facilities. As noted in the discussion of [Kearsarge Walpole v. ZBA Walpole](#), prohibiting ground-mounted solar outside of an overlay district that covers only a small percentage of the municipality’s land has been found to violate the Dover Amendment. Municipalities may want to consider allowing ground-mounted solar with a Special Permit outside the overlay district and allowing ground-mounted solar with SPR in the overlay district, and/or ensuring that the overlay district encompasses a reasonably large percentage of the municipality’s land.

We also note that the model use table above does not prohibit solar facilities in any of the common zoning districts. Municipalities may wish to prohibit Primary Use solar in certain districts, but should be cautious to not exclude solar from a large portion of the Town’s land, based on the [Tracer Lane II decision](#), 489 Mass. 775 (2022). An example of an area that a municipality may reasonably wish to exclude Primary Use solar from categorically might be a dense commercial district.

For projects categorized as By Right, only Sections 4.0 and 5.0 below apply. For projects categorized as Site Plan Review, Sections 4.0, 5.0, and 6.0 apply. For projects categorized as Special Permit, Sections 4.0, 5.0, 6.0, 7.0 apply.

4.0 General Requirements

The following requirements are common to all Solar Photovoltaic Installations to be sited in designated locations.

4.1 Compliance with Laws, Ordinances and Regulations

The construction and operation of all Solar Photovoltaic 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 Photovoltaic Installation shall be constructed in accordance with the

state building code. Other applicable requirements may include but are not limited to: DOER's Regulations and Guidance for Small Clean Energy Infrastructure Facility Siting And Permitting (225 CMR 29.00), MassDEP noise standards, the State Fire Code, the Massachusetts Environmental Policy Act (MEPA), and other applicable local bylaws.

Additional Resources for other Applicable Regulations:

- ***DOER Clean Energy Siting & Permitting Division:*** [DOER Siting & Permitting and Guidance, including 225 CMR 29.00](#)
- ***Massachusetts Department of Environmental Protection (DEP):*** [Noise Standards, Wetlands Protection Act Regulations, Stormwater Handbook and Standards](#)
- ***State Fire Code (527 CMR 1.00):*** [Massachusetts State Fire Marshal](#)
- ***Massachusetts Environmental Policy Act (MEPA):*** [MEPA Office](#)
- ***Massachusetts State Building Code (780 CMR):*** [Board of Building Regulations and Standards](#)
- ***Local Bylaws and Ordinances:*** Check with the local planning board, zoning board, or building department for town-specific requirements
- ***Federal Requirements:*** [National Environmental Policy Act \(NEPA\)](#)
- ***Regional Planning:*** Check with regional planning agency for your area for additional considerations when adapting this model bylaw.

5.0 Pre-Filing Requirements

As applicable per 225 CMR 29.08: *Pre-Filing Requirements* and the *DOER Guideline on Pre-Filing Stakeholder Engagement*, Applicants must complete several pre-filing steps including, but not limited to, filing a Notice of Intent to File Application, meeting Public Notice Requirements, and submitting a Pre-Filing Engagement Completion Checklist.

5.1 Building Permit and Building Inspection

No Solar Photovoltaic Installation shall be constructed, installed or modified as provided in this section without first obtaining the applicable building and/or electrical permits.

Note: Under the state building code, work must commence within six (6) months from the date a building permit is issued; however, a project owner or operator may request an extension of the permit and more than one extension may be granted. Separately, under Section 280 of [Chapter 238 of the Acts of 2024](#), qualifying permits in effect or expired between January 1, 2023 and January 1, 2025 were automatically extended for two years.

5.2 Fees

The application for a Building Permit for a Solar Photovoltaic Installation must be accompanied by the fee required for a Building Permit. Applications for Solar Photovoltaic Installations requiring Site Plan Review must be accompanied by the fee for Site Plan Review

specified in <<reference fee schedule or bylaw for Site Plan Review fee>>. Likewise, applications for Solar Photovoltaic Installations requiring a Special Permit must be accompanied by fee listed in <<reference fee schedule or bylaw for Special Permit fee>>.

Note: *Municipalities structure fees in a variety of ways. Most use a tiered structure based on the estimated construction cost. A municipality may consider reduced permit fees or other incentives for projects located on preferred sites, e.g., Brownfields, landfills, industrial/commercial parcels, or other previously disturbed lands.*

6.0 Site Plan Review

Solar Photovoltaic Installations that require Site Plan Review, as specified in Table 1 under Section 2.2, shall undergo review by the designated Site Plan Review Authority prior to any construction, installation, or modification in accordance with this section. Any project that requires Site Plan Review shall also comply with the applicable provisions of 225 CMR 29.09: *Consolidated Local Permit Application*, DOER's *Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions*.

Purpose: *The purpose of the Site Plan Review is to determine that the use complies with all requirements set forth in this zoning bylaw and that the site design conforms to established standards regarding landscaping, access, and other zoning provisions. Municipalities are encouraged to adopt clear standards for approval of site plans. When issuing a conditional approval, the Site Plan Review Authority should cite conditions that are tied to specific land use concerns, such as screening and buffering, vegetation clearing, lighting, and noise.*

Additional Considerations: *As part of the implementation of a solar photovoltaic bylaw, municipalities should consider amending their existing Site Plan Review provisions to incorporate Site Plan Review conditions that apply specifically to such installations. These provisions shall comply with the review standards in the local bylaw, 225 CMR 29.00, DOER Guideline on Public Health, Safety, and Environmental Standards, and any other applicable regulations. Municipalities may impose additional conditions but must show they are necessary to protect public health, safety, or the environment.*

6.1 General

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

6.2 Required Documents

Pursuant to the Site Plan Review process, the project owner or operator shall provide the following documents:

- A. A site plan showing:

- i. Property lines and physical features, including topography, roads, characteristics of vegetation (mature trees, old growth, shrubs, open field, etc.), wetlands, streams, etc. for the project site;
 - ii. Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures, snow storage, and stormwater management systems;
 - iii. Contact information and signature of the project owner or operator, as well as all co-proponents, if any, and all property owners;
 - iv. Contact information and signature of any agents representing the owner or operator, if any;
 - v. Contact information for the person(s) responsible for public enquiries throughout the life of the Solar Photovoltaic Installation;
 - vi. Zoning district of project site and adjacent parcels;
 - vii. Blueprints or drawings of the Solar Photovoltaic Installation signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts showing the proposed layout of the system;
 - viii. One- or three-line electrical diagrams detailing the Solar Photovoltaic Installation, associated components, and electrical interconnection methods, with all National Electric Code compliant overcurrent devices;
 - ix. Documentation of major system components including the panels, inverters, any fire detection and suppression systems, and racking or mounting;
 - x. Total limit of disturbance;
 - xi. Total area of vegetation clearing, not including mowed field;
 - xii. Contour lines with an interval of no more 2 feet;
 - xiii. Property lines of parcels within 30 feet;
 - xiv. Location, dimension, and types of existing structures on the property;
 - xv. Location of noise producing equipment;
 - xvi. Trees with a diameter at breast height (DBH) of 20 inches or greater within the project site that will be removed as part of the project;
 - xvii. The right-of-way of any public road that is contiguous with the property;
 - xviii. Overhead and underground utilities;
 - xix. Locations of floodplains or inundation areas for moderate or high hazard dams;
 - xx. Locations of local or National Historic districts and properties;
 - xxi. Stormwater management and erosion and sediment control;
- B. Proof of notification the owners of record for all abutting properties and properties within 300 feet of the subject parcel's boundary;
- C. A Site Suitability Report, if applicable, as prescribed by 225 CMR 29.06(2); and

- D. Other materials necessary for site plan review, if required by the Site Plan Review Authority, including other applicable information required by 225 CMR 29.00 or associated guidance.
- E. A detailed description of the proposed project, including the proposed Site Footprint and the surrounding area with relevant maps, figures, drawings, anticipated permits, any proposed CBP if applicable, a description of any proposed Payment in Lieu of Taxes (PILOT) payment, or other attachments specified by 225 CMR 29.00 or associated guidance;
- F. Documentation of actual or prospective access and control of the project site (see also Section 6.3);
- G. An operation and maintenance plan (see also Section 6.4);
- H. An emergency response plan pursuant to 225 CMR 29.00, if applicable (see also Section 6.9.1);
- I. A preliminary equipment specification sheet that documents the proposed Solar Photovoltaic Installation components and other associated electrical equipment that are to be installed, including the manufacturer and model. A final equipment specification sheet shall be submitted prior to issuance of a Building Permit;
- J. Proof of liability insurance; and
- K. Documentation that the project has complied with all applicable pre-filing requirements in 225 CMR 29.08.

The Site Plan Review Authority may waive document requirements as it deems appropriate.

The proof of notification to abutters and property owners listed in Section 6.2(A)(xxii) complies with M.G.L. ch. 40A sec. 11, which requires mail notification of abutters and abutters to abutters withing 300 feet when a public hearing is required during the review process for the proposed development. Municipalities may wish to extend to a greater distance to encourage more community engagement with the Solar Photovoltaic Installation development.

6.3 Site Control

The project owner or operator 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 Photovoltaic Installation.

Examples of acceptable documentation of site control may include:

- *Deed showing ownership of the project site*
- *Lease agreement with the landowner*
- *Option to lease or option to purchase the property*
- *Easement granting rights to use the land for solar development*
- *Any other documentation sufficient to demonstrate that the project owner or operator has, or will have, the legal right to construct and operate the installation on the site*

6.4 Operations and Maintenance Plan

The project owner or operator shall submit a plan for the operation and maintenance of the Solar Photovoltaic Installation, which shall include measures for maintaining safe access to the installation, stormwater controls, and general procedures for operational maintenance of the installation. Operations and Maintenance plans for Solar Photovoltaic Installations must comply with the standards in the DOER *Guideline on Public Health, Safety, and Environmental Standards*, and *Guideline on Common Conditions*.

6.5 Utility Notification

No Solar Photovoltaic Installation requiring Site Plan Review shall be constructed until evidence has been given to the Site Plan Review Authority that the utility company that operates the electrical grid where the installation is to be located has been informed of the Solar Photovoltaic Installation owner or operator's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

6.6 Dimension and Density Requirements

6.6.1 Setbacks

For Primary Use Solar Photovoltaic Installations, front, side and rear setbacks shall be as follows:

- a) Front yard: The front yard depth shall be at least 20 feet; provided, however, that where the lot is within or abutting a Residential district, the front yard shall not be less than 50 feet.
- b) Side yard. The side yard depth shall be at least 20 feet; provided, however, that where the lot is within or abutting a Residential district, the side yard shall not be less than 50 feet.
- c) Rear yard. The rear yard depth shall be at least 25 feet; provided, however, that where the lot is within or abutting a Residential district, the rear yard shall not be less than 50 feet.

***Note:** These setback distances are suggested values. Varying setback distances may be appropriate. The municipality should evaluate what is appropriate for its land use goals. Municipalities should generally apply the same setbacks to solar developments as they do to other similarly situated project types. For example, if the setback in a commercial area for most buildings is 50 feet, that may be an appropriate setback for a solar facility in that district. In general, municipalities that are less densely developed may want larger setbacks than the ones outlined in this bylaw, while municipalities that are more densely developed may want smaller setbacks. Generally, setbacks should not exceed 75 feet.*

6.6.2 Appurtenant Structures

All appurtenant structures to Solar Photovoltaic Installations that require Site Plan Review shall be subject to reasonable regulations concerning the bulk and height of structures, lot area, setbacks, open space, parking, and building coverage requirements. All such appurtenant structures, including but not limited to equipment shelters, battery energy storage facilities, transformers, and substations, shall be architecturally compatible with each other. Whenever

reasonable, structures should be shaded from view by vegetation and/or joined or clustered to avoid adverse visual impacts.

Note: Regulations governing appurtenant structures are typically contained in a municipality's zoning ordinance or bylaw.

6.7 Design Standards

All Solar Photovoltaic Installations requiring site plan review are subject to the following design standards:

6.7.1 Lighting

Lighting of Solar Photovoltaic Installations shall be consistent with local, state and federal laws, and the DOER *Guideline on Common Conditions* and *Guideline on Public Health, Safety, and Environmental Standards*. 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. Where feasible, lighting of the Solar Photovoltaic Installation shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.

Note: See [Dark Sky Massachusetts Model Bylaw](http://www.darksky.org/fsa/) for a more in-depth model bylaw for outdoor lighting. See the International Dark Sky Association website (<http://www.darksky.org/fsa/>) for further information.

6.7.2 Signage

Signs on Solar Photovoltaic Installations that require Site Plan Review shall comply with a municipality's sign bylaw. Signs shall identify the project owner or operator and provide a 24-hour emergency contact phone number. Signage must be updated to reflect any changes to contact information within 90 days of any change.

Solar Photovoltaic Installations shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the Solar Photovoltaic Installation.

Note: Municipalities may require utility connections from Solar Photovoltaic Installations that require Site Plan Review to be placed underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. It is recommended that municipalities allow electrical transformers for utility interconnections to be above ground. Where there is existing aboveground utility infrastructure, the impacts of incremental aboveground utility interconnections may be minimal. Utility interconnections should generally not be required to be underground unless there are site-specific reasons for undergrounding.

6.7.3 Screening

Visual screening practices for Solar Photovoltaic Installations must comply with the DOER *Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions*. If necessary and reasonable to minimize visual impacts on adjacent properties or public ways, Solar Photovoltaic Installations which require Site Plan Review shall include year-round screening. Screening may consist of vegetation, berms, fencing, or a combination thereof. Screening shall be maintained throughout the life of the installation. Screening requirements for Small and Medium Solar Photovoltaic Installations may be reduced or waived at the discretion of the Site Plan Review Authority.

6.7.4 Fencing

Solar Photovoltaic Installations that require Site Plan Review must be completely enclosed by chain-link or comparable fencing to prevent entry by large animals or unauthorized persons. Where feasible, owners and operations of Solar Photovoltaic Installations shall undertake reasonable efforts to install wildlife-friendly fencing such as raised-bottom fencing to allow for passage of small animals.

6.8 Safety and Environmental Standards

6.8.1 Emergency Services

Where proposals require Site Plan Review, the Solar Photovoltaic Installation 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 Photovoltaic Installation shall be clearly marked. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation.

6.8.2 Land Clearing and Soil Erosion

Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the Solar Photovoltaic Installation or otherwise prescribed by applicable laws, regulations, and bylaws.

Notes on Environmental Protections:

- *Some Massachusetts municipalities require habitat mitigation offsets for large-scale solar built on previously undeveloped land, requiring developers to conserve land in proportion to the land disturbed by the solar installation. The Massachusetts Attorney General's Municipal Law Unit has approved mitigation ratios of 1:1 and has disapproved one instance of a 4:1 habitat mitigation ratio. Mitigation measures involving replacement of impacted resources (e.g., tree replacement, wetlands replacement, or habitat replacement) should adhere to a no net loss goal and at least a one-to-one replacement ratio of impacted land area. Such mitigation may be incorporated into a local bylaw, and/or included in a CBA.*

- *Project owners and operators shall site and design their solar installation to avoid, minimize or, if impacts cannot be avoided or minimized, mitigate siting impacts and environmental and land use concerns to the greatest extent possible.*
- *Municipalities may require Compensatory Environmental Mitigation Fees pursuant to 225 CMR 29.07: Application of Site Suitability Guidance, and DOER's Guideline on Minimization and Mitigation Measures for projects with a Site Suitability Score greater than 5. Mitigation fees are calculated according to the following formula:*

$$\text{Total Fee} = \text{Maximum Fee Per Acre} * (\text{Total Site Suitability Score}/25) * \text{Number of Acres Impacted on Site Footprint}$$

- *Stormwater management, watershed protection, flood zones, and wetland protections are regulated at the state and federal levels.*
- *[MassDEP Wetlands Program Policy](#) recommends, but does not require, land disturbance and grading to be conducted in a phased manner to minimize runoff from solar development.*

6.9 Monitoring and Maintenance

6.9.1 Solar Photovoltaic Installation Conditions

The Solar Photovoltaic Installation shall be maintained 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 Medical Services. The owner or operator shall be responsible for the cost of maintaining the Solar Photovoltaic Installation and any access road(s), unless accepted as a public way.

6.9.2 Modifications

All material modifications to a Solar Photovoltaic Installation made after issuance of the required Building Permit shall require approval by the Site Plan Review Authority. Any increase in Site Footprint or capacity in kW_{DC}, the addition of battery energy storage, or significant alterations to project configuration shall constitute a material modification.

6.9.3 Change of Ownership

The Solar Photovoltaic Installation owner or operator must provide written notification to the municipality within 30 days if there is any change of project ownership. Notifications must include name, business address, phone number, email address, and emergency phone number of the new owner.

6.10 Abandonment or Decommissioning

6.10.1 Removal Requirements

The Solar Photovoltaic Installation owner or operator shall comply with all decommissioning and abandonment standards set forth in the DOER's *Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions*. Any Solar Photovoltaic

Installation requiring Site Plan Review which has reached the end of its useful life or has been abandoned consistent with **Section 6.10.2** of this bylaw shall be removed. The Solar Photovoltaic Installation shall be physically removed no more than 150 days after the date of discontinued operations. The owner or operator shall notify the Site Plan Review Authority by certified mail of the proposed date of discontinued operations and plans for removal.

Decommissioning shall consist of:

1. Physical removal of Solar Photovoltaic Installations, structures, equipment, security barriers and transmission lines from the site. The Site Plan Review Authority may use its discretion to allow certain equipment to remain in place to accommodate the construction of a new Solar Photovoltaic Installation. Such equipment may include mounting hardware, interconnection equipment, and fencing.
2. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.
3. Stabilization or re-vegetation of the site as necessary to minimize erosion. The Site Plan Review Authority may allow the owner or operator to leave landscaping or designated below-grade foundations in order to minimize erosion and disruption to vegetation.

6.10.2 Abandonment

A Solar Photovoltaic Installation will be considered to be abandoned if the facility ceases operation for over twelve (12) months. A Solar Photovoltaic Installation also shall be presumed abandoned if the owner or operator fails to respond affirmatively within thirty (30) days to a written inquiry from the Building Inspector as to the continued validity and operation of the system. If the owner or operator fails to comply with decommissioning upon any abandonment, the municipality shall have the right, to the extent it is otherwise duly authorized by law, to enter the property and physically remove the installation at the expense of the owner of the installation and the owner(s) of the site on which the installation is located. The Town may use the financial surety as described in **Section 6.10.3 Decommissioning Fund** below for this purpose.

Note on Abandonment: *To monitor continued operation of a solar facility, municipalities may require project owners to provide an annual production report disclosing the amount of energy produced by the facility in each month.*

6.10.3 Decommissioning Fund

Prior to construction, the project owner shall provide the municipality, in cash, bond, letter of credit, escrow, or another form reasonably acceptable to the Site Plan Review Authority, a surety to cover the cost of removal of a ground-mounted Solar Photovoltaic Installation in the event the municipality must remove the installation and remediate the landscape. The amount of the surety shall be 125 percent of a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The project owner shall provide an updated estimate after ten (10) years of project operation and subsequent updates in five-year intervals after that date, for the remainder of the project's lifetime. The project owner shall provide additional surety in the amount of 125 percent of the most recent estimated cost of decommissioning.

This surety will not be required for municipally or state-owned facilities.

Note on Surety: *When decommissioning is as long as 25 years away, surety provisions should include a mechanism to ensure that the abandonment surety accounts for inflation and other cost increases during the lifetime of the facility.*

7.0 Special Permit

Prior to construction, installation, or modification, projects that require a Special Permit shall comply with all provisions in *[insert Town Special Permit bylaw reference here]*. Any project that requires a Special Permit shall also acquire a Building Permit and undergo Site Plan Review and comply with the applicable provisions of Sections 4.0 and 5.0 above and shall also comply with 225 CMR 29.00 and any associated Guidance. The Special Permit Granting Authority for the development of solar installations shall be the *[Insert town authority here]*.

See the model Table of Uses in Section 3.1 for the list of Solar Photovoltaic Installations requiring a Special Permit. Municipalities will need to adapt based on the Table of Uses amendment they develop for solar.

7.1 Special Permit Waivers

Upon written request by the applicant, the Planning Board may waive or reduce any Special Permit requirement of this Section by the same majority vote required for the permit itself upon written findings of:

1. Special circumstances of the site, its surroundings, or the proposal design that negate the need for imposition of the requirement, or the objectives served by the Special Permit requirement will be met in an alternative manner; and
2. That such a waiver or reduction will not result in a Solar Photovoltaic Installation that is less protective of public health, safety, and welfare than if the waiver were not granted.

In the case of a Special Permit, such requests must be made by the applicant no later than the close of the public hearing. An affirmative or negative vote under this paragraph shall not be construed as an approval or disapproval of the Special Permit sought.

Note on Special Permits: *Municipalities may wish to require certain solar-specific elements to be submitted with a special permit application, in addition to the elements required for any special permit application. These may include, but are not limited to:*

- *Visual renderings of the project*
- *Prime Farmlands (identify disruption and any Best Management Practices/mitigation for conversion of prime farmland, continued use of land)*
- *Threatened and endangered species*
- *Wildlife Habitat (Pollinator-friendly species, raised fences for small wildlife passage, etc.)*