

To: Natick Finance Committee

CC: Natick Planning Board

Martha White, Town Administrator

Andy Meyer, Natick Planning Board

James Errickson, Director, Community and Economic Development

Ted Fields, Senior Planner

From: Jillian Wilson Martin, Sustainability Coordinator

Date: September 11, 2017

Subject: Solar Zoning Bylaws – Briefing for Finance Committee

Dear Natick Finance Committee:

As preparation for your upcoming deliberations regarding Article 30, Amend Zoning By-Law: Solar Energy Systems, the following memo provides:

- Information on the purpose of the proposed zoning language,
- A summary of the process followed to develop the proposed zoning,
- The proposed modifications to Natick's Zoning By-Law, and
- A review of solar's protections under state law and an analysis of the differences between the proposed zoning proposal and the MA Department of Energy Resources' Model Zoning for the Regulation of Solar Energy Systems.

Purpose

Nearly 600 active solar energy systems are currently installed on residential and commercial properties in Natick. At present, "solar" is not defined in Natick's Zoning By-Law, and these systems were all permitted by Natick's Building Department, with several requiring review by the Special Permit Granting Authority. This proposal seeks to reasonably regulate solar installations in our community.

Process

In January 2017, the Town of Natick began working with a federal technical adviser representing the U.S. Department of Energy and its SolSmart initiative. The adviser, which also worked with the cities of Boston, Cambridge, Chelsea, Melrose, Somerville and Winthrop, recommended Natick develop zoning regulations and helped Town staff draft a set of proposed amendments to Natick's Zoning By-Law.

Town staff have since worked with Planning Board Member Julian Munnich, Town Meeting Member Paul Greismer, Town Counsel, and area solar developers, including Ameresco, Solar Flair, Boston Solar and New England Solar Hot Water, to further refine and tailor the proposed zoning language to address Natick's specific needs. As part of this process, the Natick Building Commissioner was also engaged and his feedback was incorporated. A public hearing was initially opened to engage the public and further engage the Planning Board regarding the specifics of the proposed language on June 21, 2017. This public hearing was closed on August 31, 2017 after three open sessions, during which four Natick residents spoke in favor of the proposal. A new public hearing is expected to open on September 13, 2017 in tandem with the other zoning proposals being considered at the 2017 Natick Fall Town Meeting.

Proposed Zoning Language

See Appendix A.

State Guidance for Solar Zoning

In Massachusetts, solar is considered “as-of-right” and is protected under MGL c.40A s.3, which states, “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.”

In 2014, the Massachusetts Department of Energy Resources published model zoning to assist Massachusetts cities and towns in establishing reasonable standards to facilitate the development of solar energy systems (see Appendix B). As noted in the state’s document, the model zoning is “not intended for adoption precisely as it is written” and communities are directed to modify language to suit local conditions and to review proposed language with municipal counsel, which Natick has done.

To this end, a summary of the differences by section between the proposal before the Finance Committee and the state’s model zoning is provided below. In many instances, Natick’s proposed zoning language includes regulations that exceed the state’s recommendations and Town Counsel has cautioned against further restrictions, especially with regard to dimensional regulations, due to solar’s statutory protections.

Definitions

- Natick’s proposed zoning includes the following definitions which are either identical or slightly modified when compared to those proposed by the state:
 - Solar Energy System
 - Solar Energy System, Active
 - Solar Energy System, Roof-mounted
 - Solar Energy System, Ground-mounted
 - Solar Energy System, Medium-Scale
 - Solar Energy System, Small-Scale
 - Solar Energy System, Passive
- As noted in the state’s guidance, the expectation is that the majority of installed solar energy systems will be photovoltaic (solar panels that convert energy into electricity), however Natick and the state propose using the statutory definition of a solar energy system which includes solar thermal (solar panels that convert energy into heat for hot water) are. This means the regulations proposed will apply to both types of panels.
- Natick includes additional definitions for Building-mounted Solar Energy Systems, Solar Canopies, Building-integrated Photovoltaic (BIPV) Solar Energy Systems, and Surface-integrated Solar Energy Systems which were not defined in the state’s model zoning, but are anticipated to become more common as emerging technology becomes market-ready. Natick’s definitions are derived from language used in the electrical code and the new Solar Massachusetts Renewable Target (SMART) Program regulations.

Use Regulations

- The model zoning provides a significant amount of guidance regarding solar as a principal use, but Natick’s proposed zoning is specific to solar as an accessory use and does not seek to amend the Zoning By-Law’s Use Table.
- Natick follows guidance from the state’s model zoning to allow/permit roof-mounted and small-scale ground-mounted solar energy systems as-of-right in side and rear yards in all districts.

- The state recommends allowing medium-scale ground-mounted solar energy systems as-of-right in commercial, industrial and public districts. Natick's proposal would require site plan review for these systems regardless of district.
- Natick also requires site plan review for Solar Canopies in non-residential districts.

Dimensional Regulations

- The state's model zoning reminds communities of solar's strong statutory protections and strongly recommends against regulating aesthetics and attempting to place restrictions on dimensional standards, such as setbacks or height, as they can create roadblocks to actual installation.
- For height, the model zoning recommends solar energy systems be considered similar to chimneys, television antennae, roof-top mechanical equipment and other appurtenances that are usually either allowed a much higher maximum height or exempted altogether from building height requirements. Natick's proposal does not follow this guidance and restricts the maximum height of a solar energy system by system type.
- For setbacks, the state's model zoning recommends small- and medium-scale ground-mounted solar energy systems that are accessory to a primary building or structure on a lot be provided with more flexible setback requirements than those that would typically apply to a primary structure, and suggests treating such systems in the same manner a community treats "accessory structures" like sheds. Natick's proposed zoning does not follow this recommendation and applies existing setbacks as defined by district in the Natick Zoning By-Law Intensity Table.
- The model zoning also recognizes that the placement of solar energy systems in front yards should be avoided if at all possible, but notes that DOER's view of the statutory protections for solar energy systems create a situation where a ground-mounted array could not be prohibited outright in a front yard. Town Counsel believes Natick's proposal, which does not explicitly say solar ground-mounts are prohibited in front yards, but says small-scale ground-mounts are permitted in rear and side yards is reasonable, given the existing Zoning By-Law does not allow for accessory structures of any kind in front yards.
- The state's model zoning recommends solar energy systems with grass or another pervious surface under them be exempt from lot coverage. Natick's proposed zoning is not following this recommendation and is instead including the surface area of a solar array in the calculation of "Maximum Percentage (%) Building Coverage" - which is the Town's closest equivalent definition to "lot coverage".
- Natick's proposed zoning echoes the state's model zoning in that it requires the impervious portion of a solar energy system be subject to impervious lot coverage requirements within the Aquifer Protection District and municipal stormwater management regulations.

Site Plan Review Requirements

- Natick's proposed zoning includes recommendations regarding document requirements and design standards/criteria. It follows the state's guidance as stated in Example 1 (starting on page 11 of the model zoning) and applies these requirements to site plan review for medium-scale ground-mounted solar energy systems in all districts and solar canopies in non-residential districts, in addition to the site plan review process and requirements outlined in the Section VI-DD - Special Permit Procedures and Site Plan Review of the Zoning By-Law. Except in cases where language is repetitive with existing requirements, the language from the state's model zoning is directly incorporated into Natick's proposal.
- In some instances, Natick's proposed site plan review requirements include additional requirements such as those the state suggests for large-scale systems. For example, Natick's proposal references Operation & Maintenance Plan, Lighting and additional requirements for Safety.

Special Permits

- The state's model zoning provides recommendations for special permit requirements as they relate to large-scale ground-mounted solar energy systems. These are not addressed in Natick's proposed zoning and this section therefore does not apply to the Town's proposal.

Pre-Existing Non-Conforming Uses and Structures

- The state recommends roof-mounted and small-scale ground-mounted solar energy systems associated with pre-existing non-conforming uses or structures be exempt from a Section 6 finding. Natick's proposed language only exempts roof-mounted systems from a finding from the Board of Appeals.

Thank you for your review of this warrant article and for your consideration of the proposed zoning language which was developed by the Town's federal technical adviser based on guidance from the Massachusetts Department of Energy Resources, in collaboration with Town Counsel, relevant Town staff, area solar developers and the Planning Board.

We look forward to your feedback.

Sincerely,

Jillian Wilson Martin
Sustainability Coordinator
Town of Natick

APPENDIX A

Proposed Zoning Language for Solar in Natick

2017 FALL ANNUAL TOWN MEETING

Article 30

Amend Zoning By-Law: Solar Energy Systems

To see if the Town will take action to amend the Natick Zoning By-Law, in a manner which shall include, without limitation, the enabling of and permitting for the construction and/or installation of Solar Energy Systems in any and/or all zoning districts; as provided in MGL c. 40A s.3 and c.40A s.9B, by means which shall include, but which shall not be limited to, creating, correcting, amending or modifying definitions, intensity, dimensions, special requirements, and/or other sections related thereto of the Natick Zoning By-Law; or to take any other action relative thereto.

Motion:

Move that the Town vote to amend the Zoning By-Laws as follows:

- In Section 200 – Definitions insert:

“Solar Energy System: A device or structural design feature, a substantial purpose of which is to provide daylight for interior lighting or provide for the collection, storage, and distribution of solar energy for space heating or cooling, electricity generation, or water heating. Solar Energy Systems include the following system types:

- a) Solar Energy System, Active: A solar energy system whose primary purpose is to harvest solar energy into another form of energy or to transfer heat from a collector to another medium using mechanical, electrical, or chemical means. Active Solar Energy Systems include, but are not limited to, the following installation types:
 - i) Solar Energy System, Building-mounted: An Active Solar Energy System that is structurally mounted to a building or structure.
 - 1) Solar Energy System, Roof-mounted: A special application of a Building-mounted Solar Energy System that is structurally mounted to the roof of a building or structure.
 - ii) Solar Energy System, Ground-mounted: An Active Solar Energy System that is structurally mounted to the ground.
 - 1) Solar Energy System, Small-Scale Ground-mounted: A Ground-mounted Solar Energy System that occupies 1,750 square feet of surface area or less.
 - 2) Solar Energy System, Medium-Scale Ground-mounted: A Ground-mounted Solar Energy System that occupies more than 1,750 square feet, but less than 40,000 square feet of surface area.

- 3) Solar Parking Canopy: A special application of a Ground-mounted Solar Energy System that is installed on top of a parking surface or paved surface that maintains the function of the area beneath the canopy.
 - iii) Solar Energy System, Building-integrated Photovoltaic (BIPV): An Active Solar Energy System that consists of integrating solar photovoltaic (PV) modules into the surface of a building or structure, where the solar panels themselves function as, or are integrated into, a building material (i.e., roof shingles, siding, windows, skylights) or structural element (i.e., façade). The generation of solar energy is secondary to the function of the building material or structural element.
 - iv) Solar Energy System, Surface-integrated: An Active Solar Energy System that is not building-mounted and is integrated into a ground-level surface, such as a driveway, walkway, patio surface, path, or parking area, where the solar panels themselves function as, or are integrated into, the surface material. The generation of solar energy is secondary to the function of the surface element.
 - b) Solar Energy System, Passive: A Solar Energy System that captures solar light or heat without transforming it to another form of energy or transferring the energy via a heat exchanger.”
- **In Section V A.2 – Special Requirements, Nonconforming Uses, Extension; insert the following sentence at the end of the paragraph:**
- “Roof-mounted Solar Energy Systems shall not be considered a change, extension or alteration that requires a finding by the Board of Appeals.”
- **In Section V – Special Requirements; insert a new section V-B.3 Accessory Uses – Solar Energy Systems:**

“V-B.3 Accessory Uses – Solar Energy Systems:

- 1) Roof-mounted Solar Energy Systems shall be permitted in all use districts.
- 2) In residential districts: Small-scale Ground-mounted Solar Energy Systems and Solar Parking Canopies shall be permitted in rear and side yards. Medium-scale Ground-mounted Solar Energy Systems shall be permitted subject to site-plan review by the Special Permit Granting Authority.
- 3) In nonresidential districts or with exempted uses as defined by M.G.L. c.40A s.3 or other state and federal statutes regarding exempted uses in residential districts: Small-scale Ground-mounted Solar Energy Systems shall be permitted in rear and side yards. Medium-scale Ground-mounted Solar Energy Systems and Solar Parking Canopies are permitted subject to site plan review by the Special Permit Granting Authority.
- 4) Where Solar Energy Systems would be installed in a Historic District, the system shall require approval by the Historic District Commission.
- 5) Maximum Percentage (%) Building Coverage

- a) Active Solar Energy Systems are not buildings as defined in Natick's zoning bylaws and should not be treated as such. However, for the purpose of regulating lot coverage, the area of Active Solar Energy Systems shall count toward the Maximum Percentage (%) Building Coverage as defined in the Intensity Regulations provided in this By-Law.
 - b) An Active Solar Energy System's contribution toward Maximum Percentage (%) Building Coverage shall be calculated as the total area of the system's panels. For example, if a system includes ten (10) panels that are each three (3) feet by five (5) feet, the system's contribution to Maximum Percentage (%) Building Coverage would equal to 150 square feet.
 - c) Such part of a Building-mounted Solar Energy System or Solar Parking Canopy that extends beyond the impervious area over which it is placed shall count toward Maximum Percentage (%) Building Coverage.
 - d) For Ground-mounted Solar Energy Systems, the total surface area of the Solar Energy System shall count toward Maximum Percentage (%) Building Coverage.
 - e) To avoid double counting, the surface area of any Active Solar Energy System that is above an existing impervious surface shall not be included in the calculation of Maximum Percentage (%) Building Coverage (i.e. the addition of a Roof-mounted Solar Energy System shall not increase the calculated Maximum Percentage Building Coverage on a lot because it will be located within a surface area - the building's footprint - that is already counted).
- 6) Height
- a) Building-mounted Solar Energy Systems:

System Type	Roof Pitch	Siting	Maximum Height
Roof-mounted Solar Energy System	Pitch is greater than or equal to 3.2:12 (a fifteen (15) degree angle)	All districts	Roof-mounted Solar Energy Systems may extend up to one (1) foot above the roof surface on which the system is installed beyond applicable building height limits. Systems shall be surface-mounted and installed parallel to the roof surface.
Roof-mounted Solar Energy System	Pitch is less than 3.2:12 (a fifteen (15) degree angle)	All districts	Roof-mounted Solar Energy Systems may extend upto three (3) feet above the roof surface on which the system is installed beyond applicable building height limits. If the surface on which the system is to be mounted is below maximum building height, the Roof-mounted Solar Energy System may extend up to six (6) feet above the roof surface on which the system is installed, provided it does not exceed building height limits by more than three (3) feet. Any six (6) foot high

			Roof-mounted Solar Energy System must also be installed at least three (3) feet from the roof's edge.
Other Building-mounted Solar Energy System (e.g., awnings)	Not Applicable	All districts	No greater than the highest point of the roof.

b) Ground-mounted Solar Energy Systems:

System Type	Siting	Maximum Height
Small-Scale Ground-mounted Solar Energy System	All districts	Twelve (12) vertical feet from grade.
Medium-Scale Ground-mounted Solar Energy System	All districts	Subject to site plan review by Special Permit Granting Authority.
Solar Parking Canopy	Residential	The maximum height allowed on the lot or the height of the principal structure, whatever is less.
Solar Parking Canopy	Non-residential	Subject to site plan review by Special Permit Granting Authority.

7) Setbacks

- a) Ground-mounted Solar Energy Systems that move along an axis, unfold, or open shall be located so that the furthest reach of the equipment falls within the setback requirements.
- b) Solar Parking Canopies in residential districts shall meet setback requirements for Accessory Structures.
- c) Solar Parking Canopies and Surface-integrated Solar Energy Systems in non-residential zones shall be allowed where parking is permitted in accordance with requirements defined in Section V-D, Off-street Parking and Loading Requirements. The requirements for the planting of trees in landscaped strips as defined in Section V-D, Subsection 16, Landscaping Adjacent to Right-of-Way should be met elsewhere on the lot.
- d) All other Ground-mounted Solar Energy Systems shall meet requirements for District-level setbacks as defined in this By-Law.
- e) Any reach of a Building-Mounted Solar Energy System shall comply with the setback requirements for that building.

- 8) BIPV Solar Energy Systems and Surface-integrated Solar Energy Systems shall be subject to any requirements in this By-Law that relate to the material or structural element into which the system is integrated or functions as. For example, solar roofing would be subject to regulations for roofing; solar pavement would be subject to regulations for pavement.
- 9) The impervious portion of Ground-mounted Solar Energy Systems and Surface-integrated Solar Energy Systems shall be subject to any requirements in this By-Law that relate to paving, including impervious lot coverage requirements within the Aquifer Protection District. The systems shall also comply with regulations identified in the Town of Natick's Stormwater Management and Erosion Control By-Law, Article 79A of the By-Laws.
- 10) Site Plan Review: Medium-scale Ground-mounted Solar Energy Systems in all districts and Solar Parking Canopies in non-residential districts are subject to Site Plan Review prior to construction, installation or modification as provided in this section and in accordance with Section VI-DD - Special Permit Procedures and Site Plan Review.
 - a) Site Plan Document Requirements: The project proponent shall provide a Final Site Plan to the Special Permit Granting Authority in compliance with Section VI-DD 3b - Content of Final Site Plan and Other Submittals. In addition, applicants should submit the following:
 - i) Name, address, and contact information for proposed system installer.
 - ii) Name, address, contact information and signature of the project proponent, as well as all co-proponents or property owners, if any.
 - iii) The name, contact information and signature of any agents representing the project proponent.
 - iv) Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures.
 - v) Blueprints or drawings of the solar energy system showing the proposed layout of the system, any potential shading from nearby structures, the distance between the proposed solar collector and all property lines and existing on-site buildings and structures, and the tallest finished height of the Solar Energy System.
 - vi) Documentation of the major system components to be used, including the panels, mounting system, and inverter.
 - vii) Operation and Maintenance Plan including measures for maintaining safe access to the installation, stormwater controls, as well as general procedures for operational maintenance of the installation.
 - viii) Locations of active farmland, permanently protected open space, Priority Habitat Areas and BioMap 2 Critical Natural Landscape Core Habitat mapped by the Natural Heritage & Endangered Species Program (NHESP) and "Important Wildlife Habitat" mapped by the Massachusetts Department of Environmental Protection (MassDEP) in relation to the site.

- ix) Locations of local or National Historic Districts in relation to the site.
- b) Site Plan Review Design Standards: The Special Permit Granting Authority shall consider the following criteria and standards, in addition to those listed in Section VI-DD 5 and 6 - Criteria for Approval and Standards for Site Plan Review when reviewing site plan submittals made under this section:
- (i) Utility Notification: No solar photovoltaic system shall be installed until evidence has been given to the Special Permit Granting Authority that the owner has submitted notification to the utility company of the customer's intent to install an interconnected customer-owned generator. Off-grid systems are exempt from this requirement.
 - (ii) Utility Connections: Reasonable efforts, as determined by the Special Permit Granting Authority, shall be made to place all utility connections from the solar photovoltaic installation underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. Electrical transformers for utility interconnections may be above ground if required by the utility provider.
 - (iii) Safety: The owner or operator shall provide a copy of the Site Plan Review application to the Natick Fire Department and shall cooperate with local emergency services in developing an emergency response plan. All means of shutting down the solar installation shall be clearly marked. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation.
 - (iv) Height and Layout: The Special Permit Granting Authority shall also review the height and physical layout of the Solar Energy Systems, utility connections, and appurtenant infrastructure as it relates to the convenience and safety of emergency vehicles, private vehicles and pedestrian movement on the site.
 - (v) Visual Impact: Reasonable efforts, as determined by the Special Permit Granting Authority, shall be made to minimize visual impacts by preserving natural vegetation, screening abutting properties, or other appropriate measures.
 - (vi) 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 ground-mounted solar energy systems or as otherwise prescribed by applicable laws, regulations, and bylaws.
 - (vii) Lighting: The Special Permit Granting Authority shall review the physical lighting of the site, including the methods of exterior lighting for convenience, safety and security within the site, and in consideration of impacts of neighboring properties and excessive light pollution to the standards of Section V-I. Where feasible, lighting of the Solar Energy System shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution."

References

MGL c.40A s.3

<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40A/Section3>

“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.”

MGL c.40A s.9B: <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40A/Section9B>

“Zoning ordinances or by-laws may also provide for special permits to protect access to direct sunlight for solar energy systems.”

Massachusetts Department of Energy Resource, “Model Zoning for the Regulation of Solar Energy Systems”, December 2014.

APPENDIX B

State Model Zoning

Massachusetts Department of Energy Resource, “Model Zoning for the Regulation of Solar Energy Systems”, December 2014.

<http://www.mass.gov/eea/docs/doer/green-communities/grant-program/model-solar-zoning.pdf>