Model Amendment to a Zoning Ordinance or By-law:
Small Wind Energy Systems

Prepared by:
Massachusetts Division of Energy Resources
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Background on Model By-law Development: The Massachusetts Executive Office of Environmental Affairs [EOEEA] and the Division of Energy Resources [DOER] determined that creating model by-laws for small wind power development was an important step in advancing small wind development across the Commonwealth. These agencies, acting on behalf of the Commonwealth, were particularly motivated to create these by-laws for the following reasons:

- Massachusetts law and policies establish the need for renewable energy such as wind to ensure the long-term health, prosperity, and security of the people and environment of the Commonwealth.

- EOEEA and DOER have repeatedly endorsed the importance of wind energy in helping meet the Commonwealth's renewable energy goals and improve the reliability of electricity supply in the region through diversification of generation resources.

- DOER and EOEEA want to ensure that small wind power projects are sited in an environmentally sensitive manner, and believe that siting criteria can help achieve this objective.

- Numerous towns have contacted DOER and EOEEA seeking information and guidance that will enable them to evaluate small wind development.

- DOER and EOEEA believe that comprehensive, proactive public involvement in the wind power development process will not only help ensure a democratic outcome, but will ultimately result in a more expeditious and environmentally sensitive outcome.

The experience of wind development in Massachusetts indicates that municipal by-laws are one of the most significant barriers to small wind projects. This is due not so much to municipal governments being expressly opposed to small wind development, but because wind power, as a newly-emergent land use, is not typically included in existing zoning by-laws. In turn, numerous towns are attempting to change their by-laws to allow for appropriate wind development. The specific requirements imposed by these by-laws on the project proponent should allow for responsible siting of small wind power projects.

This Model By-Law was prepared to assist cities and towns in establishing reasonable standards for small wind power development. The by-law is developed as a model and is not intended for adoption without specific review by municipal counsel.

EOEEA and DOER would like to acknowledge Paul Gay for much of the content found in this Model Amendment.

1.0 Purpose

The purpose of this by-law is to provide criteria which will help a town evaluate a small wind project. The criteria will be utilized by building inspectors charged with issuing building permits for small wind energy systems. Any proposed non-conforming small wind energy systems will be addressed through a special permit process under the review of the special permit granting authority.

The small wind energy systems bylaw should provide cities and towns with a streamlined and efficient administrative permitting process to allow for responsibly sited small wind systems.

1.1 Applicability

This section applies to small wind systems no greater than 60 kilowatts of rated nameplate capacity proposed to be constructed after the effective date of this section. *This by-law is not intended to cover roof-mounted, building-integrated, building-mounted or architectural wind systems; this by-law only covers stand-alone tower mounted systems.*

2.0 Definitions

Building Inspector: 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 charged with the enforcement of the zoning ordinance.

Building Permit: A building permit is a required approval of a project by a licensed building inspector which is consistent with the local, state and federal building codes. In addition, the permit must meet the criteria set forth under the local zoning by-laws regarding small wind energy systems.

Height: The height of a wind turbine measured from natural grade to the tip of the rotor blade at its highest point, or blade-tip height.

Special Use Permit: A permit provided by the special permitting authority for non-conforming small wind systems (e.g. a small wind system that does not meet the criteria for small wind systems set forth by the Building Inspector).

Special Permit Granting Authority: The special permit granting authority shall be the board of selectmen, city council, board of appeals, planning board, or zoning administrator as designated by zoning ordinance or by-law for the issuance of special permits, or by this section for the issuance of special permits to construct and operate small wind energy systems.

Rated Nameplate Capacity: The maximum rated output of electric power production equipment. This output is typically specified by the manufacturer with a "nameplate" on the equipment.

Small Wind Energy System: All equipment, machinery and structures utilized in connection with the conversion of wind to electricity. This includes, but is not limited to, storage, electrical collection and supply equipment, transformers, service and access roads, and one or more wind turbines, which has a rated nameplate capacity of 60 kW or less.

Wind turbine: A device that converts kinetic wind energy into rotational energy that drives an electrical generator. A wind turbine typically consists of a tower, nacelle body, and a rotor with two or more blades.

3.0 General Requirements

3.1 Building Inspector Issued Permit

No small wind energy system shall be erected, constructed, installed or modified as provided in this section without first obtaining a building permit from a licensed building inspector. All such wind energy systems shall be constructed and operated in a manner that minimizes any adverse visual, safety, and environmental impacts.

Such permits may also impose reasonable conditions, safeguards and limitations on time and use and may require the applicant to implement all reasonable measures to mitigate unforeseen adverse impacts of the small wind energy system, should they occur.

3.2 Permit Granting Authority

If the proposed small wind energy system does not satisfy the criteria of the building permit set forth under the adopted by-laws then the applicant must seek review and petition the Permit Granting Authority for a Special Use Permit. The Special Use Permit will provide for a variance from the prescribed by-law requirements. This variance from the building permit criteria will only be applicable to that specific non-conforming project.

3.3 Compliance with Laws, Ordinances and Regulations

The construction and operation of all such proposed small wind energy systems shall be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, environmental, electrical, communications and FAA aviation requirements.

3.4 Utility Notification

No small wind energy system shall be installed until evidence has been given that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

3.5 Temporary Meteorological Towers (Met Towers)

Met towers shall be permitted under the same standards as a small wind system, except that the requirements apply to a temporary structure. A permit for a temporary met tower shall be valid for a maximum of 3 years after which an extension may be granted.

Wind monitoring shall be permitted in all zoning districts subject to issuance of a building permit for a temporary structure and subject to reasonable regulations concerning the bulk and height of structures and determining yard-size, lot area, setbacks, open space and building coverage requirements.

4 General Siting Standards

4.1 Setbacks

Wind turbines shall be set back a distance equal to the total height of the wind turbine from all inhabited structures, overhead utility lines, public road or right of way and at least 5 feet from property boundaries.

4.1.1 Setback Waiver

The building inspector may reduce the minimum setback distance if written permission is granted by the entity with care and control over the affected asset.

5 Design Standards

5.1 Appearance, Color and Finish

The wind generator and tower shall remain painted or finished the non-reflective color or finish that was originally applied by the manufacturer, unless approved in the building permit.

5.2 Lighting and Signage

5.2.1 Lighting

Wind turbines shall be lighted only if required by the Federal Aviation Administration. Lighting of other parts of the small wind energy system, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties.

5.2.2 Signage and Advertising

Signs and advertising shall be restricted to reasonable identification of the manufacturer or operator of the small wind energy facility and shall defer to the requirements of the town sign regulations.

6 Safety, Aesthetic and Environmental Standards

6.1 Unauthorized Access

Wind turbines or other structures part of a small wind energy system shall be designed to prevent unauthorized access. For instance, the tower shall be designed and installed so as to not provide step bolts or a ladder readily accessible to the public for a minimum height of 8 feet above the ground.

6.2 Noise

The small wind energy system and associated equipment shall conform with the provisions of the Department of Environmental Protection's, Division of Air Quality Noise Regulations (310 CMR 7.10), unless the Department and the Permit Granting Authority agree that those provisions shall not be applicable.

6.3 Land Clearing, Soil Erosion and Habitat Impacts

Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the small wind energy system and is otherwise prescribed by applicable laws, regulations, and ordinances.

7 Monitoring and Maintenance

7.1 System Conditions

The applicant shall maintain the small wind energy system in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and security measures.

8 Abandonment or Decommissioning

8.1 Removal Requirements

Any small wind energy system which has reached the end of its useful life or has been abandoned shall be removed.

A small wind energy system shall be considered abandoned when it fails to operate for one year. Upon a Notice of Abandonment issued by the Building Inspector, the small wind energy system owner will have 30 days to provide sufficient evidence that the system has not been abandoned or the town shall have the authority to enter the owner's property and remove the system at the owner's expense.

9 Permit Process, Requirements & Enforcement

9.1 Permit Requirements

9.1.1 Building Permit

A building permit shall be required for the installation of a small wind energy system. This section is redundant with 3.1.

9.1.2 Documents

The building permit application shall be accompanied by deliverables including the following:

(a) A plot plan showing:

(i) Property lines and physical dimensions of the subject property **within 2 times** the total height from the tower location.

(ii) Location, dimensions, and types of existing major structures on the property
(iii) Location of the proposed wind system tower, foundations, guy anchors and associated equipment.
(iv) The right-of-way of any public road that is contiguous with the property;
(v) Any overhead utility lines;

(b) Wind system specifications, including manufacturer and model, rotor diameter, tower height, tower type (freestanding or guyed)
(c) Tower foundation blueprints or drawings signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts.
(d) Tower blueprint or drawing signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts.

9.1.3 Fees
The application for a building permit for a small wind energy system must be accompanied by the fee required for a building permit for a Permitted Accessory Use.

9.1.4 Expiration
A permit issued pursuant to this ordinance shall expire if:
(a) The small wind energy system is not installed and functioning within 24-months from the date the permit is issued; or,
(b) The small wind energy system is abandoned.

9.2 Violations
It is unlawful for any person to construct, install, or operate a small wind energy system that is not in compliance with this ordinance or with any condition contained in a building permit issued pursuant to this ordinance. Small wind energy systems installed prior to the adoption of this ordinance are exempt.

9.3 Administration and Enforcement
(a) This ordinance shall be administered and enforced by the Building Inspector or other official as designated. (b) The Building Inspector may enter any property for which a building permit has been issued under this ordinance to conduct an inspection to determine whether the conditions stated in the permit have been met.

9.4 Penalties
Any person who fails to comply with any provision of this ordinance or a building permit issued pursuant to this ordinance shall be subject to enforcement and penalties as allowed by applicable law.

10 Severability

The provisions of this ordinance are severable, and the invalidity of any section, subdivision, paragraph, or other part of this ordinance shall not affect the validity or effectiveness of the remainder of the ordinance.