

## **SECTION 34 – LAND-BASED COMMERCIAL WIND TURBINE BYLAW**

### **34.100 PURPOSE AND INTENT**

This Bylaw is intended to encourage the appropriate development of wind resources in the Town of Dartmouth in a manner consistent with preserving the environmental quality of the Town. It is designed to establish the public processes needed to identify preferred locations for wind turbines and other devices that convert wind energy to electricity, and create a clear regulatory path that will address specifically wind turbine deployment.

This Bylaw pertains to land-based commercial-size facilities, i.e., turbines with a rated power greater than 10 kilowatts (10 kW). Section 33 of the Zoning Bylaws pertains to residential-size facilities, i.e., turbines with a rated power less than or equal to 10 kilowatts and wind monitoring or meteorological towers. Although this Bylaw covers all wind energy projects in excess of 10 kW, it is likely that projects in the hundreds or even thousands of kilowatts will be contemplated in the coming years. Large commercial wind turbines are now available with ratings of 3,500 kW (3.5 megawatts or 3.5 MW) or higher.

Although Dartmouth has been the site of wind machines in its past, typically those were used for water-pumping for agriculture and in salt works. The types of machines now being contemplated and proposed differ from those historic devices in purpose, size, technology, cost and potential environmental impact. Given the Town's location on the South Coast in a generally favorable wind environment, there needs to be a set of procedures for review and approval of proposed projects so that the potential of the wind can be realized in an expeditious and responsible manner.

Whereas the existing Town Bylaws and the permitting processes do not specifically prohibit commercial-size wind turbines, the lack of appropriate regulations to govern today's modern, large wind machines creates uncertainty for those wishing to deploy wind turbines. As renewable energy technology develops, particularly wind power, we see a rapidly changing field as interest grows and serious consideration is being given to wind turbines as a means of generating electricity. This growth exacerbates the disconnect between the existing Bylaws in the Town and the current state of the art.

It is therefore the intent of this Bylaw to provide the Town of Dartmouth with a set of rules to understand the land use issues

regarding wind power and to enable the Town and wind proponents to plan for the installation of modern wind electrical generating equipment. It is the express purpose of this Bylaw to accommodate distributed generation, commercial-size wind energy conversion facilities in appropriate locations, while minimizing any adverse visual, safety or environmental impacts of the facilities. Furthermore, this Bylaw is intended to provide for a permitting process to be followed by anyone wishing to install a commercial-size wind turbine.

The Bylaw enables the review and approval of proposals for wind energy conversion facilities by the Town's Special Permit Granting Authority within the framework of the Town's existing Bylaws. This Bylaw is intended to be used in conjunction with Massachusetts state regulations and other regulations adopted or enacted by the Town and its departments, boards, and committees, including but not limited to historic district regulations, site plan review, and other local Bylaws designed to encourage appropriate land use, environmental protection, and provision of adequate infrastructure development in Dartmouth.

### **34.200 DEFINITIONS**

Clear Area: Area surrounding a wind turbine to be kept free of residences or places of business as determined by the Special Permit Granting Authority. See Section 34.303.B.2.

Commercial-size WECF: A wind energy conversion facility (WECF) having a rated electrical power output greater than 10 kilowatts.

Distributed Generation: Energy generation that is located at or near the end-user.

Flicker: The effect of moving, periodic shadows cast on a residence or place of business by the rotating blades of a WECF at those times when the sun is shining and is aligned with the WECF and a residence or place of business.

HAWT: Horizontal-axis wind turbine.

Hub Height: The height of a HAWT measured vertically from the natural grade at the base of the tower to the centerline of the rotor.

Nacelle: The frame and housing at the top of a HAWT tower that encloses the gearbox, generator, and other accessories, and protects them from the weather.

Residential-size WECF: A wind energy conversion facility (WECF) having a rated electrical power output less than or equal to 10 kilowatts. (Not covered by this Bylaw; see Bylaw 33.)

Rotor: The blades and hub of the wind turbine that rotate during turbine operation.

Shadowing: The shadow cast on a residence or place of business by a WECF, whether the WECF is in operation or not.

Special Permit Granting Authority (SPGA): The Special Permit Granting Authority (SPGA) for the Town of Dartmouth shall be the Select Board of the Town and shall have the authority to issue Special Permits for wind energy conversion facilities.

Technical Research Group (TRG): The group designated in Section 34.801 of this Bylaw with the authority to review applications for Special Permits for wind energy conversion facilities and to make recommendations on such applications to the SPGA.

Total Height: The height of a HAWT measured from the natural grade at the base of the tower to the tip of a blade at its highest point, or the maximum height of a vertical-axis wind turbine (VAWT).

Tower: The structure that supports the turbine, rotor, generator, and accessory equipment. The tower may be a monopole or lattice design, with or without guy wires depending on the height and other factors.

VAWT: Vertical-axis wind turbine; sometimes called a Darrieus-type wind turbine.

WECF-Setback: The distance measured at grade from the center of the base of the tower to the nearest property line.

Wind energy conversion facility (WECF): All equipment, machinery and structures used in connection with the conversion of wind energy to electricity. This includes, but is not limited to, all transmission, storage, collection and supply equipment, substations, network of cabling, transformers, site-access and service roads, and machinery associated with its use. A wind energy conversion facility may consist of one or more wind turbines.

Wind monitoring or meteorological (MET) tower: Tower used for supporting anemometers, wind vanes and other equipment to assess the wind resource at set heights above the ground. (Not covered by this Bylaw; see Bylaw Section 33.)

Wind turbine: Any electromechanical device that converts kinetic energy of the wind into rotational energy to turn an electrical generator shaft. Wind turbine facilities usually consist of a horizontal-axis rotor, nacelle and supporting tower (HAWTs). Both HAWTs and VAWTs of commercial size are covered by this Bylaw.

### **34.300 DISTRICT REGULATIONS**

#### 34.301 Use Regulations

All WECF's shall require a Special Permit from the Special Permit Granting Authority, defined as the Select Board. Subsequently, a building permit shall be required for all WECF's in accordance with the Special Permit and the standards of this Bylaw.

The construction of any commercial-size WECF shall be permitted in all districts of the Town, provided the proposed use complies with all Dimensional and Special Permit Regulations set forth under Sections 34.300 and 34.400 of this Bylaw (unless waived by the SPGA), and the application conforms to the letter and the spirit of the provisions of this Bylaw.

#### 34.302 Site Control

The applicant shall submit documentation of the legal right to install and use the proposed facility at the time of application for a Special Permit. Documentation should also include proof of control over the clear areas, if required under Section 34.303.B. "Control" shall mean the legal authority to prevent the use of any structure within the clear area for a residence or place of business. If the property is to be leased or subject to an easement, the applicant shall provide a copy of the lease or easement instrument.

### 34.303 Dimensional Requirements

All WECFs shall comply with the requirements set forth in this section, unless those requirements are explicitly waived by the SPGA as part of the Special Permit review process.

#### A. Height

The height of any commercial-size WECF shall be constrained by (i) the WECF-setback requirement as described in Section 34.303.B.2, which must accommodate the dimensions of the applicant's property, and (ii) the clear area requirement, as stated in Section 34.303.B.3, if applicable. The SPGA may allow this height to be exceeded as part of the Special Permit process if the project applicant can demonstrate that the additional height is needed and that the additional benefits of the higher tower outweigh any increased adverse impacts. However, in no case shall the tower height of the WECF exceed 330 ft (100 m). Monopole towers, as opposed to lattice-type structures, are the preferred type of support for commercial-size HAWT wind machines.

#### B. WECF-Setback and Clear Area

1. Each WECF and its associated equipment shall comply with the building setback provisions of the zoning district in which the facility is located.
2. In order to ensure public safety and to protect the interests of neighboring property owners, a setback shall be required from the nearest property line to the center of the base of the tower equal to two (2) times the hub height of the WECF. This is the WECF-setback requirement.
3. In the case of a WECF intended to supply electricity to a commercial, business or institutional facility, the applicant shall be required to maintain a clear area free of all structures containing residences or places of business as determined by the Special Permit Granting Authority. The clear area shall comprise the area of a circle centered on the center of the tower and having a radius equal to the total height

of the WECF. This is the clear area requirement. The SPGA may reduce the clear area requirement at its discretion, based on site-specific considerations, if the project is otherwise consistent with the Special Permit Granting Regulations.

### **34.400 SPECIAL PERMIT GRANTING REGULATIONS**

The SPGA shall only grant a Special Permit for a commercial WECF if it finds that the proposal complies with the provisions of this bylaw or has explicitly been granted waivers from those provisions. Furthermore, the SPGA may impose additional provisions, as appropriate, to promote the general purposes and intent of this Bylaw and the Zoning Bylaws.

#### 34.401 General

Proposed WECFs shall be consistent with all applicable Town, state and federal requirements, including, but not limited to, all applicable electrical, construction, noise, safety, environmental and communications requirements. The provisions of this bylaw are intended to insure that all proposed WECFs shall not be detrimental to adjacent land uses, and shall not pose a hazard to the general health, safety or welfare of the community.

#### 34.402 Visual Impact

The applicant shall minimize any impact on the visual character of surrounding neighborhoods and the community by painting the WECF a non-reflective color that blends with the surroundings.

#### 34.403 Equipment Shelters

All equipment necessary for monitoring and operation of the WECF should be secured within the wind turbine tower or base. If this is infeasible, ancillary equipment may be located outside the tower or base, provided such equipment is either contained within an underground vault, enclosed within a separate structure, or hidden behind a year-round landscape or vegetated buffer.

#### 34.404 Lighting and Signage

Unless required by the Federal Aviation Administration (FAA), wind turbines shall not be lighted on a continuous basis. Lighting of equipment, structures, and any other facilities on site (except lighting required by the FAA) shall be shielded from abutting properties. The WECF shall be free of all company logos, advertising, and similar promotional markings. Signs on the facility shall be limited to those needed to warn of any danger; and educational signs providing information on the technology. All signs shall comply with the requirements of the Town's sign regulations.

#### 34.405 Noise

The WECF shall conform to Massachusetts noise regulation 310 CMR 7.10. This Bylaw incorporates the Noise Level Policy established by the Massachusetts Department of Environmental Protection for implementing this regulation. The policy specifies that the ambient sound level, measured at the property line of the facility or at the nearest inhabited buildings, shall not be increased by more than 10 decibels weighted for the "A" scale or 10 dB(A) due to the sound from the facility during its operating hours.

#### 34.406 Wetlands

WECFs shall be sited in a manner consistent with all applicable local and state wetlands regulations. Wetland buffer areas may be used for the purposes of providing a clear area, if applicable.

#### 34.407 Land Clearing/Open Space/Rare Species

WECFs shall be designed to minimize land clearing and fragmentation of open space areas and shall avoid permanently protected open space when feasible. Wind turbines should be sited to make use of previously developed areas wherever possible. WECFs shall also be sited in a manner that does not have significant negative impacts on rare species in the vicinity (including but not limited to avian species, bats, etc.).

#### 34.408 Stormwater

Stormwater run-off and erosion control shall be managed in a manner consistent with all applicable state and local regulations.

#### 34.409 Shadowing/Flicker

WECFs shall be sited in a manner that does not result in significant shadowing or flicker impacts. The proponent has the burden of demonstrating that this effect will not have significant adverse impact through the use of computer modeling and simulation of the seasonal variations of the shadows and flicker effects.

#### 34.410 Safety Standards

No hazardous materials or waste shall be discharged on the site of any WECF. If any hazardous materials or wastes are to be used on site, the Special Permit shall incorporate provisions for full containment of such materials or waste. An enclosed containment area, designed to contain at least 110 percent of the volume of the hazardous materials or waste stored or used on the site may be required to meet this requirement. The WECF shall also be designed to prevent unauthorized access (for example, by construction of a fenced enclosure or locked access, anti-climbing provisions, etc.).

#### 34.411 Use by Telecommunications Carriers

WECFs having a rated power of at least 250 kilowatts and a hub height of at least 165 feet (50 meters) may be used as hosts for telecommunications antennas, subject to applicable regulations governing such uses, and subject to the following requirements:

- A. All ground-mounted telecommunications equipment shall be located in either a secured shelter, within the wind turbine tower or otherwise hidden from view year-round either through effective landscaping or existing natural vegetated buffers;
- B. Antennas shall be flush-mounted to be in keeping with the design of the wind turbine tower; and

- C. All cabling associated with the wireless facilities and equipment shall be secured within the tower structure or enclosed within a conduit painted to match the turbine mount.

#### 34.412 Underground Utilities

All electrical connections from the WECF, including any associated substations, to either the point of use for the electricity or to the grid shall be made via underground conduits.

### **34.500 MODIFICATIONS**

All modifications to a WECF made after issuance of the Special Permit shall require prior approval by the SPGA.

### **34.600 MONITORING AND MAINTENANCE**

#### 34.601 Monitoring Requirement

After the WECF is operational, the applicant shall submit to the town at annual intervals from the date of issuance of the Special Permit, a report detailing operating data for the facility, including, but not limited to, days of operation, electrical energy production, etc.

#### 34.602 Maintenance Requirement

The applicant shall maintain the WECF in good condition. Such maintenance shall include, but not be limited to, painting, maintaining the structural integrity of the foundation, support structure and security barrier (if applicable), and maintenance of the buffer areas and landscaping, if present.

#### 34.603 Penalties

Failure to comply with the requirements in Sections 34.601 and 34.602 shall result in the assessment of fines or other sanctions as specified in Dartmouth Zoning Bylaw 27.400.

### **34.700 TERM OF SPECIAL PERMIT**

A Special Permit issued for the construction or operation of any WECF shall be valid for twenty (20) years, unless extended or renewed. Upon request, the SPGA may extend the time period or renew the Special Permit if there has been satisfactory operation of the facility.

Any Special Permit issued under this Bylaw shall lapse within one (1) year from the grant thereof if construction has not sooner commenced except for good cause as determined by the Zoning Enforcement Officer. Upon the lapse of a Special Permit, a new application process must be undertaken before the WECF can proceed.

Upon expiration or termination of the Special Permit, the WECF shall be removed by the owner.

### **34.800 APPLICATION PROCEDURES**

#### 34.801 Technical Research Group (TRG)

The SPGA shall designate a Technical Research Group (TRG) composed of five (5) members: (1) a Town Engineer (DPW), (2) a member of the Town Planning Board, (3) a member of the Town Zoning Board of Appeals, (4) a member of the Town Alternative Energy Committee, and (5) a member-at-large. In the case of members (2), (3) and (4), each individual shall be appointed by his or her respective Board or Committee. The member-at-large shall be appointed by the Town Select Board. The members shall serve staggered three-year terms and may be reappointed.

#### 34.802 Pre-Application Conference

Prior to the submission of an application for a Special Permit under this regulation, the applicant is strongly encouraged to meet with the TRG at a public meeting to discuss the proposed WECF in general terms and to clarify the filing requirements. The TRG shall meet with an applicant under this provision within twenty-one (21) days following a written request for pre-application conference submitted to the SPGA and the Town Clerk. If the TRG fails to hold the pre-application conference within 21 days of the request and said conference has not been postponed due to mutual agreement, the applicant may proceed with a Special Permit application

under this Bylaw without need for a pre-application conference.

#### 34.803 Pre-Application Filing Requirements

The purpose of the pre-application conference is to inform the TRG as to the general nature of the proposed WECF. As such, no formal filings are required to be presented at the pre-application conference. However, the applicant is encouraged to prepare sufficient preliminary drawings or to present manufacturer's drawings and specifications to inform the TRG of the location and overall design of the proposed facility, as well as its scale, noise levels, and proximity to abutting residential structures.

#### 34.804 Professional Fees

The Town may retain a technical expert/consultant, pursuant to Mass. G.L. c. 44, s. 53G, to verify information presented by the applicant during the pre-application conference. The cost for such a technical expert/consultant, if needed, will be at the expense of the applicant.

#### 34.805 Application Filing Requirements

The following shall be included with an application for a Special Permit for each WECF:

Name, address, telephone number, and original signature (photo-reproductions of signatures will not be accepted) of applicant and any co-applicants. Co-applicants may include the landowner of the subject property or the operator of the WECF.

If the applicant or co-applicant will be represented by an agent, the name, address and telephone number of the agent shall be provided as well as an original signature authorizing the agent to represent the applicant and/or co-applicant. Photo-reproductions of signatures will not be accepted.

Documentation of the legal right to install and use the proposed WECF and proof of control over the clear area, as required by Sections 34.302 and 34.303.B of this Bylaw. A copy of the recorded deed to the property shall be sufficient

for this purpose if the applicant is the record owner of the property.

If the property is to be leased or subject to an easement, the applicant shall provide a copy of the lease or easement instrument.

Identification of the subject property by including the name of the nearest road or roads, and street address, if any;

Assessors map and parcel number of subject property;

Zoning district designation for the subject parcel with a separately submitted locus map;

A one-inch-equals-40-feet vicinity plan, signed and sealed by a licensed Professional Land Surveyor showing the following:

Property lines for the subject property (for residential applicants), and all properties adjacent to the subject property within 300 feet (for non-residential applicants).

Proposed location of WECF, including all turbines, fencing, associated ground equipment, transmission infrastructure and access roads.

For non-residential applicants, the outline of all existing buildings, including their purpose(s) (e.g., residential buildings, garages, accessory structures, etc.) on the subject property and all adjacent properties within 300 feet, and the distances, at grade, from the proposed WECF to each building on the vicinity plan shall be shown.

Existing (before) condition photographs. A color photograph of the current view shall be submitted from at least two locations to show the existing conditions.

Proposed (after) condition representations. Each of the existing condition photographs shall have the proposed wind energy conversion facility superimposed on it to accurately simulate the proposed wind energy conversion facility when built and illustrate its total height, width, and breadth.

For WECFs with hub heights of 165 feet (50 m) or greater, sight-line representations must be provided. A sight-line representation shall be drawn from representative locations that show the lowest point of the turbine tower visible from each location. Each sight line shall be depicted in profile, drawn at one-inch-equals-40-feet scale. The profiles shall show all intervening trees and buildings. There shall be at least two sight line representations illustrating the visibility of the facility from surrounding areas such as the closest residence or place of business, or nearby public roads or areas.

Specifications for the proposed WECF shall be provided for all equipment and attendant facilities.

Materials of the proposed WECF shall be specified by type and specific treatment. This information shall be provided for the wind turbine tower and all other proposed equipment/facilities.

Colors of the proposed WECF shall be represented by a color board showing actual colors proposed.

If lighting of the site or turbine is proposed by the applicant or required by the FAA, the applicant shall submit a copy of the FAA's determination to establish the required markings and/or lights for the structure. The applicant shall also submit a printout of a computer-generated, point-to-point simulation indicating the horizontal foot-candle levels at grade, both within the property to be developed and 300 feet beyond the property lines. The printout shall indicate the locations and types of luminaires proposed.

The applicant shall provide a statement listing the existing ambient noise levels at the property boundaries of the proposed WECF and the maximum future projected noise levels from the proposed WECF. Such statement shall be certified and signed by a Professional Engineer licensed in the Commonwealth of Massachusetts, stating that noise projections are accurate and meet the noise standards of this Bylaw and of Massachusetts noise regulation 310 CMR 7.10 and are acceptable under Massachusetts Department of Environmental Protection guidance for noise measurements.

To ensure safe operation of the WECF, the applicant shall provide a statement from the wind turbine manufacturer giving the recommended maintenance procedures and schedule, and a declaration by the applicant to follow said procedures and schedule.

The applicant shall provide a detailed business plan for the project, including but not limited to the goals of the project, the stakeholders, and the time-line of anticipated activities.

The applicant shall submit a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The amount shall include a Cost of Living Adjustment for removals after 10, 15 and 20 years. The SPGA shall require the applicant to provide a form of surety (i.e., post a bond, letter of credit, establish an escrow account, or other) at the SPGA's election at the time of construction to cover the costs of the removal in the event the town must remove the facility. The amount of such surety shall be equal to 150 percent of the anticipated cost of compliance with this section.

The SPGA may require additional information and data from the applicant on issues not explicitly covered in this Bylaw should such issues arise in the course of the application review process.

#### 34.806 Adjudication of Special Permit Applications

The TRG shall make a formal recommendation to the SPGA regarding each application for a Special Permit for a WECF. A positive recommendation from the TRG shall require four (4) affirmative votes of the TRG. All matters before the TRG shall be decided by four (4) votes.

An application for a Special Permit for a WECF to the SPGA shall require four (4) affirmative votes of the SPGA for approval. All matters before the SPGA shall be decided by four (4) votes.

### **34.900 Abandonment or Discontinuation of Use**

#### 34.901 Notification Requirements

At such time that a WECF is scheduled to be abandoned or discontinued, the applicant will notify the Chief Executive Officer of the town by certified U.S. mail of the proposed date of abandonment or discontinuation of operations. In the event that an applicant fails to give such notice, the facility shall be considered abandoned or discontinued if the facility is inoperable for 180 consecutive days. In the case of a multi-turbine facility, the SPGA shall determine in its decision what proportion of the facility would be inoperable for the facility to be considered abandoned.

#### 34.902 Physical Removal

Upon abandonment or discontinuation of use, the owner shall physically remove the WECF within 90 days from the date of abandonment or discontinuation of use. This period may be extended at the request of the owner and at the discretion of the SPGA. "Physically remove" shall include, but not be limited to:

- A. Removal of the wind turbine and tower, all machinery, equipment, equipment shelters, security barriers and all appurtenant structures from the subject property,
- B. Proper disposal of all solid or hazardous materials and wastes from the site in accordance with local and state solid waste disposal regulations, and
- C. Restoration of the location of the WECF to its natural condition, except that any landscaping, grading or below-grade foundation may remain in the after-condition.

#### 34.903 Town Remedy for Violations

If the owner fails to remove a WECF in accordance with this section of this Bylaw, the town shall have the authority to enter the subject property, physically remove the facility, and recover the cost from the owner, either directly or from a surety on behalf of the owner.

### **34.1000 CHANGE OF OWNER**

Once a Special Permit for a commercial WECF has been approved, the applicant shall duly record a copy of the Special Permit with the Bristol County Registry of Deeds. All subsequent deeds to the property shall refer to the Special Permit and incorporate it by reference. All conditions under which the Special Permit was originally granted shall be binding on all successive owners of the property. In the event of a transfer of ownership, the original owner shall notify the Chief Executive Officer of the town by certified U.S. mail of the transfer of ownership within thirty (30) days of the transaction.

### **34.2000 SEVERABILITY OF PROVISIONS**

The provisions of this Bylaw are severable. If any provision of this Bylaw is held invalid, the other provisions shall not be affected thereby. If the application of this Bylaw or any of its provisions to any person or circumstance is held invalid, the application of this Bylaw and its provisions to other persons and circumstances shall not be affected thereby.