

ARTICLE 88

WIND ENERGY FACILITIES

(Article inserted on _____, 2008)

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SECTION 88-1. **Statement of Purpose.** The purpose of this Article is to establish zoning regulations for the erection and operation of wind energy facilities and to provide standards for the placement, design, monitoring, modification and removal of wind energy facilities that address public safety, minimize impacts on scenic, natural and historic resources of the City of Boston and provide adequate financial assurance for decommissioning.

SECTION 88-2. **Definitions.** The words and phrases used in this Article, whether or not capitalized, shall have the meanings set forth in Article 2A, except as set forth in this Section 88-2 or as otherwise specified in this Article. For the purposes of this Article, the following words and phrases shall have the meanings indicated:

1. "Building Integrated Wind Energy Facility," means a wind energy facility designed to be permanently mounted on a building or other inhabitable structure, including wind turbines of any rated nameplate capacity designed to be operated in direct contact with a building. Other wind energy facilities primarily used for land-based applications which may be permanently mounted and operated on a building are also included in this definition.
2. "Height," means the height of a wind turbine measured from grade to the tip of the rotor blade at its highest point, or blade-tip height.
3. "Large Wind Energy Facility," means a wind energy facility with a rated nameplate capacity of electrical power production equipment of greater than 100kW/0.1MW. Building integrated wind facilities are not included in the definition of Large Wind Energy Facility.
4. "Proposed Installation," means the erection, installation, or extension of any wind energy facility that is subject to the provisions of this Article.
5. "Rated Nameplate Capacity," means the maximum rated output of electric power production equipment. This output is typically specified by the manufacturer with a "nameplate" on the equipment.
6. "Small Wind Energy Facility," means a wind energy facility with one or more wind turbines, with a rated nameplate capacity of not more than 100kW/0.1MW and which is used primarily to reduce on-site consumption of utility power. Building integrated wind facilities are not included in the definition of Small Wind Energy Facility.
7. "Utility-Scale Wind Facility," means a commercial wind facility, where the primary use of the facility is electrical generation to be sold to the wholesale electricity markets.

8. “Wind Energy Facility,” means all equipment, machinery and structures utilized in connection with the conversion of wind to electricity. This includes, but is not limited to, transmission, storage, collection and supply equipment, substations, transformers, service and access roads, and one or more wind turbines.
9. “Wind Monitoring or Meteorological Tower (Met Towers),” means a temporary tower equipped with devices to measure wind speeds and direction, used to determine how much wind power a site can be expected to generate.
10. “Wind Turbine,” means 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.

SECTION 88-3. **Applicability.** No wind energy facility shall be erected or installed except in compliance with the provisions of this Article. The provisions of this Article apply to all wind energy facilities, whether such facility is used as a main use or as an accessory use or subuse; provided, however, that the provisions of this Article shall not apply to any of the following:

1. Any wind energy facility for which appeal to the Board of Appeal for any zoning relief has been made prior to the first notice of hearing before the Zoning Commission for adoption of this Article, and provided that such zoning relief has been or is thereafter granted by the Board of Appeal pursuant to such appeal;
2. Any wind energy facility installed pursuant to a building permit issued prior to the first notice of hearing before the Zoning Commission for adoption of this Article.

Notwithstanding the above, any replacement of either such wind energy facility described in Sections 88-3.1 and 88-3.2 with another wind energy facility must comply with all the dimensional requirements of this Article for such structure in such location and with the design requirements of Section 88-4.

Exceptions to the provisions of this Article, pursuant to Article 6A, shall not be available except to the extent expressly provided in this Article or Article 6A. Where conflicts exist between this Article and the remainder of this Code, the provisions of this Article shall govern.

SECTION 88-4. Design Review, Design Requirements and Design Guidelines for All Wind Energy Facilities. Design review, where required by this Section 88-4, shall be conducted under the Design Component of Small Project Review; provided, however, that if a Proposed Installation is part of a Proposed Project that is subject to, or elects to comply with, Large Project Review, the design review required by this section may be conducted as part of such review.

1. Purpose of Design Review. The purpose of the design review requirement of this Section 88-4 is to ensure that wind energy facilities are sited and designed in a manner that is sensitive to the surrounding neighborhood. In addition, building integrated wind energy facilities that are designed as part of a new building should be integrated into the overall design and architecture of the new building.
2. Applicability of Design Review. The design review requirements of this Section 88-4 apply to all Proposed Installations.
3. Information Required for Design Review. The information required for design review shall include such plans, drawings, photographs and specifications as are necessary for the Boston Redevelopment Authority to determine that the Proposed Installation is consistent with the standards set forth in subsection X (Design Guidelines) of this Section XX-4. Such materials shall describe or illustrate, for such Proposed Installation, the dimensions, location and appearance of all:
 - (a) proposed wind energy facility components;
 - (b) existing buildings or structures to which the proposed wind energy facility will be attached, if applicable, and those buildings and structures within the visible context of such Proposed Installation; and
 - (c) proposed methods for siting and designing the Proposed Installation, including all structures, screening, landscaping, and the like, in a manner that is sensitive to the surrounding area.

4. Design Requirements. This subsection establishes the following design requirements for Proposed Installations:
- (a) **Unauthorized Access.** Wind turbines or other structures part of a wind energy facility shall be designed to prevent unauthorized access. For instance, the tower shall be designed and installed so as to not provide step bolts or other climbing means readily accessible to the public for a minimum height of eight (8) feet above the ground. Electrical equipment shall be locked where possible.
 - (b) **Shadow/Flicker.** Wind energy facilities shall be sited in a manner that minimizes shadowing or flicker impacts. The applicant has the burden of proving that this effect does not have significant adverse impact on neighboring or adjacent uses.
 - (c) **Sound.** Wind energy facilities shall comply with the Boston Air Pollution Control Commission's Regulations for the Control of Noise in the City of Boston or the Massachusetts Department of Environmental Protection's noise regulations, whichever is more stringent. An analysis prepared by a qualified engineer shall be presented to demonstrate compliance with these noise standards, if required by the Boston Redevelopment Authority.
 - (d) **Vibration.** A building integrated wind energy facility shall not produce significant vibration impacts on the building or structure upon which it is mounted or upon adjacent structures.
 - (e) **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 wind energy facility and is otherwise prescribed by applicable laws, regulations, and ordinances.
 - (f) **Appearance, Color and Finish.** Federal Aviation Administration safety consideration on color and appearance shall be respected. Where applicant is seeking a non-standard color in an area not regulated by the Federal Aviation Administration, the Authority has authority to regulate color of turbine.

- (g) Lighting. Wind turbines shall be lighted only if required by the Federal Aviation Administration. Lighting of other parts of the wind energy facility, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties.
 - (h) Signage. Notwithstanding any provision of Article 11 (Signs) to the contrary, the following regulations shall apply to all wind energy facilities:
 - i. those necessary to identify the owner, provide a twenty-four (24) hour emergency contact phone number, and warn of any danger;
 - ii. educational signs providing information about the facility and the benefits of renewable energy; and
 - iii. manufacturer's "nameplate" on the wind energy facility specifying the maximum rated output of electric power production equipment known as rated nameplate capacity.
 - (i) Advertising. Wind turbines shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the wind energy facility.
5. Design Guidelines. This subsection establishes the following design guidelines for Proposed Installations:
- (a) All wind energy facilities should be sited and designed to minimize impacts on surrounding public streets and neighborhoods.
 - (b) If a Proposed Project includes the installation of building integrated wind energy facilities, then such facilities should be integrated into the overall design and architecture of the Proposed Project.
 - (c) Where a wind energy facility is visible from surrounding streets and neighborhoods, the color of such facility should be selected to minimize the visibility of the facility.

SECTION 88-5. Use Regulations and Dimensional Regulations for Wind Energy Facilities.

1. Small Wind Energy Facility Requirements

(a) Use Regulations.

i. Small wind energy facilities are Allowed in the following districts and subdistricts:

- I - General Industrial
- MER - Maritime Economy Reserve
- W - Waterfront Industrial
- WM - Waterfront Manufacturing

ii. Small wind energy facilities are Conditional in the following districts and subdistricts:

- M - Restricted Manufacturing
- IDA - Industrial Development Area
- LI - Local Industrial
- EDA - Economic Development Area
- IS - Institutional
- WS - Waterfront Service
- OS - Open Space
- Boston Harbor Islands

iii. Small wind energy facilities are Forbidden in all other districts and subdistricts.

(b) Maximum Height. Small wind turbines shall be no higher than two hundred and fifty (250) feet.

(c) Setbacks. Small wind turbines shall be set back a distance equal to the height of the wind turbine from all buildings, lot lines, and overhead utility lines. Buildings and structures included on the same Lot as the Proposed Installation and owned by the Applicant are exempt from this requirement.

2. Large Wind Energy Facility Requirements

(a) Use Regulations.

- i. Large wind energy facilities are Allowed in the following districts and subdistricts:

I - General Industrial
MER - Maritime Economy Reserve
W - Waterfront Industrial
WM - Waterfront Manufacturing

- ii. Large wind energy facilities are Conditional in the following districts and subdistricts:

IDA - Industrial Development Area
IS - Institutional
OS - Open Space
- Allston Landing North EDA
- Allston Landing South EDA
- Boston Harbor Islands

- iii. Large wind energy facilities are Forbidden in all other districts and subdistricts.

- (b) Maximum Height. Large wind energy facilities shall be no higher than five hundred (500) feet.

- (c) Setbacks. Large wind turbines shall be set back a distance equal to 1.2 times the height of the wind turbine from all buildings, lot lines, and overhead utility lines. Buildings and structures included on the same Lot as the Proposed Installation and owned by the Applicant are exempt from this requirement.

3. Building Integrated Wind Energy Facility Requirements.

(a) Use Regulations.

- i. Building integrated wind energy facilities are Allowed in the following districts and subdistricts:

I - General Industrial
MER - Maritime Economy Reserve
W - Waterfront Industrial
WM - Waterfront Manufacturing

- ii. Building integrated wind energy facilities are Conditional in the following districts and subdistricts:

H - Apartment
MFR - Multifamily
MFR/
LS - Multifamily/ Local Services
B - General Business
CC - Community Commercial
M - Restricted Manufacturing
I - General Industrial
MER - Maritime Economy Reserve
W - Waterfront Industrial
IDA - Industrial Development Area
LI - Local Industrial
EDA - Economic Development Area
IS - Institutional
LIA - Logan International Airport
WM - Waterfront Manufacturing (WM)
WS - Waterfront Service
EPS - Enterprise Protection Subdistrict
OS - Open Space
- Boston Harbor Islands
Midtown Cultural District
North Station EDA
South Station EDA
Huntington Avenue/Prudential Center
District
Chinatown District
Leather District

Government Center/ Markets District
Bulfinch Triangle District
Cambridge Street North District

Notwithstanding the above, building integrated wind energy facilities are Allowed on buildings over three hundred (300) feet in height or where such facility has a rated nameplate capacity of not more than 5kW.

- (b) Maximum Height. Building integrated wind energy facilities, if installed on a structure roof, shall not have a height (as measured from the highest flat portion of the roof), including all mounting and supporting structures, greater than thirty-five (35) feet or twenty-five (25%) percent of the height of the building on which the facility is to be installed, whichever is higher.

SECTION 88-6. General Requirements for all Wind Energy Facilities. The provisions of this Section 88-6 apply to all wind energy facilities, except as provided in this Section 88-6.

1. Site Control. At the time of its application for a building permit, the applicant shall submit documentation of actual or prospective control of the project site sufficient to allow for the Proposed Installation. Documentation shall also include proof of control over setback areas and access roads, if required. Control shall mean the legal authority to prevent the use or construction of any structure within the setback area contrary to the provisions of this Article.
2. Utility Notification. No wind energy facility 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. Utility Connections. Reasonable efforts shall be made to locate utility connections from the wind energy facility 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.

4. Appurtenant Structures. All appurtenant structures to wind energy facilities shall be subject to the dimensional and parking requirements of the underlying zoning. All such appurtenant structures, including but not limited to, equipment shelters, storage facilities, transformers, and substations, shall be architecturally compatible with each other and shall be contained within the turbine tower whenever technically and economically feasible. Whenever reasonable, structures should be screened from view by fencing and/or vegetation and/or located in an underground vault and joined or clustered to avoid adverse visual impacts.
5. Proof of Liability Insurance. The applicant shall be required to provide evidence of liability insurance in an amount, and for a duration, sufficient to cover loss or damage to persons and property occasioned by the failure or malfunctioning of the facility.
6. Emergency Services. The applicant shall provide a copy of the project summary, electrical schematic, and site plan to the Boston Fire Department. Upon request, the applicant shall cooperate with local emergency services in developing an emergency response plan. All means of disconnecting the wind energy facility shall be clearly marked. This Section 88-6.6 applies only to large wind energy facilities and small wind energy facilities.
7. Financial Surety. The Inspectional Services Department may require the applicant for utility-scale wind facilities to provide a form of surety, either through escrow account, bond or otherwise, to cover the cost of removal in the event the City must remove the facility, of an amount and form determined to be reasonable by the Inspectional Services Department, but in no event to exceed more than one hundred and twenty-five (125%) percent of the cost of removal and compliance with the additional requirements set forth herein, as determined by the applicant. Such surety will not be required for municipality or state-owned facilities. The applicant shall submit a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The amount shall include a mechanism for Cost of Living Adjustment.

SECTION 88-7. **Performance Standards for All Wind Energy Facilities.** The provisions of this Section 88-7 apply to all wind energy facilities.

1. Monitoring and Maintenance.

- (a) Facility Conditions. The applicant shall maintain the wind energy facility in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and integrity of security measures. Site access shall be maintained to a level acceptable to the Boston Fire Department. The project owner shall be responsible for the cost of maintaining the wind energy facility and any access road(s), unless accepted as a public way, and the cost of repairing any damage occurring as a result of operation and construction.
- (b) Modifications. All material modifications to a wind energy facility made after issuance of the permit shall require approval by the Boston Redevelopment Authority as provided in this Article.

2. Abandonment or Decommissioning.

- (a) Removal Requirements. Any wind energy facility which has reached the end of its useful life or has been abandoned shall be removed. When the wind energy facility is scheduled to be decommissioned, the applicant shall notify the Inspectional Services Department by certified mail of the proposed date of discontinued operations and plans for removal. The owner/operator shall physically remove the wind facility no more than one hundred and fifty (150) days after the date of discontinued operations. At the time of removal, the wind facility site shall be restored to the state it was in before the facility was constructed or any other legally authorized use. More specifically, decommissioning shall consist of:
 - (i) physical removal of all wind turbines, structures, equipment, security barriers and transmission lines from the site;
 - (ii) disposal of all solid and hazardous waste in accordance with local and state waste disposal regulations; and

- (iii) stabilization of re-vegetation of the site as necessary to minimize erosion. The Inspectional Services Department may allow the owner to leave landscaping or designated below-grade foundations in order to minimize erosion and disruption to vegetation.
 - (c) Abandonment. Absent notice of a proposed date of decommissioning, the facility shall be considered abandoned when the facility fails to operate for more than one year without the written consent of the Inspectional Services Department. The Inspectional Services Department shall determine what proportion of the facility is inoperable for the facility to be considered abandoned. If the applicant fails to remove the wind energy facility in accordance with the requirements of this section within one hundred and fifty (150) days of abandonment or the proposed date of decommissioning, the Inspectional Services Department shall have the authority to enter the property and physically remove the facility.
3. Compliance with Federal and State Regulations. All wind energy facilities shall be in compliance with all applicable federal and state regulations, including Federal Aviation Administration regulations.

SECTION 88-8. Special Requirements for Zoning Relief.

- 1. The Board of Appeal shall grant a conditional use permit for a wind energy facility, subject to the provisions of Article 6, only if the wind energy facility:
 - (a) has been subject to design review approval by the Boston Redevelopment Authority;
 - (b) is limited to a twenty-five (25) year time period at which time, unless extended or renewed upon timely and proper appeal. The time period may be extended or the permit renewed by the Board of Appeal upon demonstration of satisfactory operation of the facility in compliance with the provisions of the conditional use in all material respects. Request for extension or renewal must be submitted at least one hundred and eighty (180) days prior to expiration of the conditional use permit. Submitting an extension or renewal

request shall allow for continued operation of the facility until the Board of Appeal acts. At the end of that period (including extensions and renewals), the wind energy facility shall be removed as required by Section 88-7.2(a).

2. Expiration. A conditional use permit issued pursuant to this Article shall expire if the wind energy facility is not installed and functioning within the twenty-four (24) months from the date the permit is issued.
3. Temporary Wind Monitoring or Meteorological Towers. Met towers shall be permitted under the same standards as either a small wind energy facility or a large wind energy facility, except that the requirements apply to a temporary structure. A permit for a temporary met tower shall be valid for a maximum of three (3) years after which an extension may be granted. Small anemometers installed directly on buildings shall not require a building or conditional use permit.
4. Zoning Relief in Institutional Master Plan Areas, Planned Development Areas, and Urban Renewal Areas. Notwithstanding any contrary provision of this Article, the following procedures apply to the grant of zoning relief from the provisions of this Article for any Proposed Installation in an Institutional Master Plan Area, Planned Development Area, or Urban Renewal Area:
 - (a) Institutional Master Plan Area. Within any area designated by the Zoning Commission as an Institutional Master Plan Area, zoning relief for a Proposed Installation may be granted through any of the following: (i) a certification from the Director of the Boston Redevelopment Authority to the Commissioner of Inspectional Services that the Proposed Installation is consistent with an approved Institutional Master Plan applicable to such Institutional Master Plan Area; (ii) the approval of a Proposed Institutional Project in an Institutional Master Plan, according to the procedures applicable to such Institutional Master Plan, where the description of such Proposed Institutional Project includes a description of the location and dimensions of the Proposed Installation; or (iii) the amendment of an Institutional Master Plan, according to procedures

applicable to such Institutional Master Plan, where such amendment describes the location and dimensions of the Proposed Installation; such amendment may not be approved pursuant to regulations for expedited review of an Institutional Master Plan amendment.

- (b) Planned Development Areas and Urban Renewal Areas. Within any area designated by the Zoning Commission as a Planned Development Area or Urban Renewal Area special purpose overlay district, zoning relief for a Proposed Installation may be granted by the Board of Appeal, pursuant to the provisions of Article 6A, or by the Zoning Commission.

SECTION 88-9. **Regulations.** The Boston Redevelopment Authority may promulgate regulations to administer this Article.

SECTION 88-10. **Severability.** The provisions of this Article are severable, and if any provision of this Article shall be held invalid by any decision of any court of competent jurisdiction, such decision shall not impair or otherwise affect any other provision of this Article.