



WIND ENERGY

Model Ordinance Options

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17 Columbia Circle

Albany, NY 12203-6399

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Prepared by:

Katherine Daniels, NY Planning Federation

This document is one of a series of reports and guides that are all part of the NYSERDA Wind Energy Tool Kit. Interested parties can find all the components of the kit at: www.powernaturally.org. All sections are free and downloadable, and we encourage their production in hard copy for distribution to interested parties, for use in public meetings on wind, etc.

Any questions about the tool kit, its use and availability should be directed to: Vicki Colello; vac@nyserdera.org; 518-862-1090, ext. 3273.

In addition, other reports and information about Wind Energy can be found at www.powernaturally.org in the on-line library under “Large Wind.”

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Wind Energy Model Ordinance Options

Introduction

Effective wind ordinance standards should address several objectives, including: ensuring public safety, identifying and minimizing on- and off-site impacts, promoting good land use practice, expressing local preferences, informing and involving the public and providing legal defensibility. Predictable and clear standards and a reasonable timeframe for review provide fairness for towns, wind developers and the public, and help to streamline the review process. Some flexibility is also needed in ordinance language to enable municipalities to respond to unique situations.

Local Review Options

A town does not have to employ zoning to develop and adopt a wind energy ordinance, although it is preferable as it better assures that the town will get the type of development it wants. There are a variety of ways in which towns can review and allow for wind energy facilities, as follows:

- As an outright permitted use
- With a special use permit
- Subject to site plan review
- As an accessory use
- Based on a use variance

These options are discussed further in the Toolkit section titled *Local Government's Role in the Approval Process*. In most cases, towns will probably want to use a combination of the special use permit and/or site plan review, especially for large, commercial wind energy facilities.

Zoning for Wind

A town that uses zoning and also has an up-to-date comprehensive plan that addresses the wind energy resource (see *Comprehensive Plan* discussion paper) is in an excellent position to proactively identify key wind energy areas that could be developed. The existing zoning for these areas could then be amended to allow wind energy facilities, subject to the town's chosen review process. However, sometimes these areas suitable for wind energy facilities are located within parts of multiple zones rather than primarily in one or two zones. In this case, it might make sense to create a *wind energy overlay zone* for application to these areas. An overlay would apply special wind energy review standards to proposed wind energy uses *in addition* to the standards that apply to the underlying zone. Careful attention to potential visual and avian impacts in defining the overlay area can greatly mitigate or even eliminate these issues when wind energy facilities are proposed. The overlay zone should be shown on the town's zoning map and could be an incentive to attract wind developers to the town.

Setbacks and Other Zoning Considerations

Many concerns associated with safety, noise and aesthetics can be addressed by placing distance between wind turbines and people, property lines, roads and certain environmental areas or scenic or historic landscapes. Although there is no consensus on appropriate distances or types of setbacks, there are several common themes that appear in a number of wind energy regulations that various communities have adopted.

Most local government requirements include setbacks for the distance between the wind turbine and residences/other buildings, property lines and roads. Property lines should always be part of the setback formula in order to provide consistency and not endanger future uses on adjacent parcels. A few communities have also defined setbacks from railroads, above-ground transmission lines and other specific uses. The most common way to define a setback distance is in terms of a multiple of the turbine height. Other options are to specify a fixed distance or a combination of a fixed distance and a multiple of the turbine height. Setbacks should be at least as great as the height of the turbine. When specifying the structure height, it is important to define whether the height is considered the top of the tower or the highest point reached by the rotor blade.

Some communities provide that setbacks may be reduced when doing so would enhance aesthetic, noise or safety considerations. Turbines should be exempt from property line setbacks if the adjacent property contains a wind turbine from the same plant or the adjacent property is a participant in the project through a land lease and/or wind access agreement. This is an important consideration since turbine layouts and plant infrastructure can result in many parcels of land being utilized for one project.

Communities may adopt noise regulations that apply to wind facilities. These can involve the use of setbacks. Noise impacts may be measured at the property line or at the location of the affected uses – residences and certain other public uses. Use of property lines in determining setbacks assures that future uses of unbuilt adjacent parcels will not be exposed to unreasonable noise impacts.

When establishing setbacks, the intended protective effect must be balanced with economic considerations for wind projects. For instance, very large setbacks that could be viewed as providing maximum mitigation of adverse noise, visual and environmental impacts could render a sizable percent of a proposed site unusable for wind turbines reducing the overall number of turbines that could be accommodated, and thereby making the project not feasible.

Height restrictions are a part of most zoning ordinances and can also have an adverse, though unintended, impact on wind turbine installations. Many local height restrictions do make exceptions for church spires, silos, cell towers and similar uses. In areas where wind energy facilities are to be permitted, height exceptions should similarly include wind turbines.

Some communities specify a minimum height for the blade tips above ground level. Minimum limits are driven by safety concerns and typically range from 15 to 30 feet. Because today’s commercial wind turbines are typically installed on towers of at least 200 feet, minimum levels above ground are unlikely to be an issue. Although small turbines are installed on lower towers, their rotors are also smaller and so these limits should not be an issue.

For a discussion of appropriate review standards for environmental and cultural impacts, see the *Environmental* section of this Toolkit.

Wind Energy Model Ordinance Options

The following is a mix/match menu of options for creating a local wind energy ordinance. Because no two towns are alike, included are a variety of choices for addressing the many issues involved in a review of a proposed wind energy facility. The standards below are drawn primarily from adopted wind energy ordinances in New York State and around the country. They are grouped under general headings that address different aspects of a wind energy ordinance. Typically, a few issues are addressed under each heading. Where there are multiple ways to address the same essential issue, we have provided “or” language to point out the choices. “And” language is used to identify review standards that are linked and should be used together. In some cases, just one sample standard on a particular issue is offered.

While some standards, particularly most of those that address safety concerns and setbacks, are basic and need to be included in any wind energy ordinance, other standards should be considered optional and considered for inclusion based on the particular circumstances, objectives and desires of each town or municipality.

Purpose

Any new wind ordinance standards should be accompanied by a purpose statement that explains the intent of the new provisions. Examples of possible purpose statements are as follows:

- The purpose of this district is to foster the development of the Town’s wind power resources while preserving farmlands and adjoining settlements as compatible adjoining uses.

or

- It is the purpose of these amendments to provide a wind power overlay district and certain regulations regarding setbacks and other requirements relative to wind power facilities.

or

- The purpose of the ordinance is to provide a regulatory scheme for the construction and operation of Wind Energy Facilities in the Town, subject to reasonable restrictions, which will preserve the public health and safety.

Findings

A brief statement of findings provides a rationale for the purpose of the ordinance. The following is a sample findings statement:

- The Town finds that wind energy is an abundant, renewable and nonpolluting energy resource and that its conversion to electricity will reduce our dependence on nonrenewable energy resources and decrease the air and water pollution that results from the use of conventional energy sources. Wind energy systems also enhance the reliability and power quality of the power grid, reduce peak power demands and help diversify the state's energy supply portfolio.

Definitions

Wind energy facilities should be specifically defined in municipal zoning ordinances to ensure that the language of the ordinance legally applies to them. While some existing broad definitions for uses such as 'public or semi-public utilities,' 'industrial uses' or even 'accessory uses' might be argued to include some types of wind energy facilities, they are not likely to apply to the full range of wind energy facilities, including small to large applications. A specific definition of wind energy facilities also provides Towns with a basis for the adoption of approval and siting standards that are specific to this use. The following are examples of definitions for this use.

- Wind Energy Facility: An energy facility that consists of one or more wind turbines or other such devices and their related or supporting facilities that produce electric power from wind and are a) connected to a common switching station or b) constructed, maintained or operated as a contiguous group of devices.

or

- Wind Power Generating Facility: Facilities at which wind is converted to another form of energy and distributed to a customer or customers.

or

- Wind Energy Facility: An electricity-generating facility consisting of one or more wind turbines under common ownership or operating control that includes substations, MET towers, cables/wires and other building accessories to such facility, whose main purpose is to supply electricity to off-site customer(s).

Information to be Submitted

Some of the following information may already be required to be submitted as part of a special use permit or site plan review. However, there may be a need to require the submission of some additional information, depending on the ordinance standards that towns adopt. The following are types of information that towns could request:

- The applicant and landowner's name and contact information.
- The tax map numbers, existing use and acreage of the site parcel.

- A survey map at an appropriate scale showing the proposed location of the wind energy facility (including access roads) as it relates to the boundaries of the parcel, adjacent ownerships and existing residences/schools, churches, hospitals, or libraries to a distance of 2,000 feet (or other measure).
- A survey map at an appropriate scale showing any federal, state, county or local parks, recognized historic or heritage sites, state-identified wetlands or important bird areas as identified in federal, state, county, local or New York Audubon's GIS databases or other generally-available documentation.
- Standard drawings of the wind turbine structure, including the tower, base and footings, drawings of access roads, and including an engineering analysis and certification of the tower, showing compliance with the applicable building code.
- Data pertaining to the tower's safety and stability, including safety results from test facilities.
- Proposal for landscaping and screening.
- A completed Environmental Assessment Form.
- A project visibility map, based on a digital elevation model, showing the impact of topography upon visibility of the project from other locations, to a radius of three miles from the center of the project. The scale used shall depict the three-mile radius as no smaller than 2.7 inches, and the base map used shall be a published topographic map showing man-made features, such as roads and buildings.
- No fewer than four, and no more than the number of proposed individual wind turbines, plus three color photos, no smaller than 3" by 5", taken from locations within a three-mile radius from the site and to be selected by the Planning Board, and computer-enhanced to simulate the appearance of the as-built site facilities as they would appear from these locations.

Approval Standards

The standards chosen must be integrated into whatever local review process is used by the town. The standards that follow may be used in addition to existing special use permit and site plan review standards, if the town feels they are applicable, or the following may be used to create a stand-alone set of review standards that substitute for any existing review standards.

Typical site plan review standards for a wind energy facility would be those that assure proper design and site layout. This would cover most safety, setback and siting and installation issues. Typical special use permit issues for wind energy facilities are those that assure compatibility of the use with and minimal adverse impacts on neighboring properties. This would cover nuisance and most environmental and visual issues. A town that uses both the site plan review process and the special use permit will be in the best position to fully consider all aspects of proposed wind energy facilities.

A town that wishes to allow small wind energy facilities through an outright permitting or accessory use process with minimal review may still use some of the following standards, provided that compliance can be readily determined by the town's code enforcement office.

Safety:

- The minimum distance between the ground and any part of the rotor blade system shall be thirty (30) feet.
 - To limit climbing access, a fence six feet high with a locking portal shall be placed around the facility's tower base or the tower climbing apparatus shall be limited to no lower than 12 feet from the ground, or the facility's tower may be mounted on a roof top.
- or*
- Wind turbine towers shall not be climbable up to 15 feet above ground level.
- and*
- All access doors to wind turbine towers and electrical equipment shall be lockable.
- and*
- Appropriate warning signage shall be placed on wind turbine towers, electrical equipment and wind energy facility entrances.
 - Towers shall be equipped with air traffic warning lights and shall have prominent markings on the rotor blade tips of an international orange color where the total height of the tower exceeds 175 feet.
- or*
- Use the minimum lighting necessary for safety and security purposes and use techniques to prevent casting glare from the site, except as otherwise required by the FAA or other applicable authority.
- or*
- Wind energy facilities shall not be artificially lighted, except to the extent required by the FAA or other applicable authority.
 - All wind turbines shall have an automatic braking, governing or feathering system to prevent uncontrolled rotation, overspeeding and excessive pressure on the tower structure, rotor blades and turbine components.
 - Prior to issuance of a building permit, the applicant shall provide the town proof of a level of insurance to be determined by the Town Board in consultation with the Town's insurer, to cover damage or injury that might result from the failure of a tower or towers or any other part or parts of the generation and transmission facility.
 - Any wind energy system found to be unsafe by the local enforcement officer shall be repaired by the owner to meet federal, state and local safety standards or removed within six months. If any wind energy system is not operated for a

continuous period of 12 months, the Town will notify the landowner by registered mail and provide 45 days for a response. In such a response, the landowner shall set forth reasons for the operational difficulty and provide a reasonable timetable for corrective action. If the Town deems the timetable for corrective action as unreasonable, they must notify the landowner and such landowner shall remove the turbine within 120 days of receipt of notice from the Town.

Siting and Installation:

- Use existing roads to provide access to the facility site, or if new roads are needed, minimize the amount of land used for new roads and locate them so as to minimize adverse environmental impacts.
- Combine transmission lines and points of connection to local distribution lines.
- Connect the facility to existing substations, or if new substations are needed, minimize the number of new substations.
- All wiring between wind turbines and the wind energy facility substation shall be underground.

or

- Electrical controls and control wiring and power lines shall be wireless or underground except where wind farm collector wiring is brought together for connection to the transmission or distribution network, adjacent to that network.
- The wind power generation facility, if interconnected to a utility system, shall meet the requirements for interconnection and operation as set forth in the electric utility's then current service regulations applicable to wind power generation facilities.
- Any construction involving agricultural land should be done according to the NYS Department of Agriculture and Market "Guidelines for Agricultural Mitigation for Wind Power Projects" (which can be found at: www.agmkt.state.ny.us, "construction projects affecting farmland.")

Setbacks:

- The minimum setback distance between each wind turbine tower and all surrounding property lines, overhead utility or transmission lines, other wind turbine towers, electrical substations, meteorological towers, public roads and dwellings shall be equal to no less than 1.5 times the sum of proposed structure height plus the rotor radius.

or

- Each wind turbine shall be set back from the nearest residence, school, hospital, church or public library a distance no less than the greater of (a) two (2) times its total height or (b) one thousand (1,000) feet.

or

- All wind power generating facilities shall be located at least 50 feet plus the height of the structure from roads and side and rear lot lines.

or

- Setbacks for wind power generating facilities shall be 100 feet plus the height of the structure from lot lines and 1,500 feet from existing residential structures.

or

- The wind energy system shall be set back a distance equal to one hundred ten (110) percent of the height of the tower plus the blade length from all adjacent property lines and a distance equal to one hundred and fifty (150) percent of the tower height plus blade length from any dwelling inhabited by humans on neighboring property.

or

- Each wind turbine shall be set back from the nearest property line a distance no less than 1.1 times its total height, unless appropriate easements are secured from adjacent property owners.

and

- Each wind turbine shall be set back from the nearest public road a distance no less than 1.1 times its total height, determined at the nearest boundary of the underlying right-of-way for such public road.

and

- Each wind turbine shall be set back from the nearest above-ground public electric power line or telephone line a distance no less than 1.1 times its total height, determined from the existing power line or telephone line.

Nuisance:

- Individual wind turbine towers shall be located so that the level of noise produced by wind turbine operation shall not exceed 55 dBA, measured at the site property line.

or

- Audible noise due to wind energy facility operations shall not exceed fifty (50) dBA for any period of time, when measured at any residence, school, hospital, church or public library existing on the date of approval of the wind energy facility.

- The applicant shall minimize or mitigate any interference with electromagnetic communications, such as radio, telephone or television signals caused by any wind energy facility.

or

- No individual tower facility shall be installed in any location along the major axis of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the link's operation.

and

- No individual tower facility shall be installed in any location where its proximity with fixed broadcast, retransmission or reception antenna for radio, television or

wireless phone or other personal communications systems would produce electromagnetic interference with signal transmission or reception.

Environmental and Visual:

- Brand names or advertising associated with any installation shall not be visible from any public access.
- or*
- Wind turbines shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the wind energy facility.
- Colors and surface treatment of the installation shall minimize visual disruption.
- or*
- Wind turbines shall be painted a non-reflective, non-obtrusive color.
- or*
- The design of the buildings and related structures shall, to the extent reasonably possible, use materials, colors, textures, screening and landscaping that will blend the facility into the natural setting and existing environment.
- Appropriate landscaping shall be provided to screen accessory structures from roads and adjacent residences.
- Where wind characteristics permit, wind towers shall be set back from the tops of visually prominent ridgelines to minimize the visual contrast from any public access.
- and/or*
- Towers shall be designed and located to minimize adverse visual impacts from neighboring residential areas, to the greatest extent feasible.
- and/or*
- The tower shall not significantly impair a scenic vista or scenic corridor as identified in the Town's comprehensive plan or other published source.
- or*
- No individual tower facility shall be installed at any location that would substantially detract from or block the view of the major portion of a recognized scenic vista, as viewed from any public road right-of-way or publicly-accessible parkland or open space within the Town.
- Avoid, to the extent practicable, the creation of artificial habitat for raptors or raptor prey, such as a) electrical equipment boxes on or near the ground that can provide shelter and warmth, b) horizontal perching opportunities on the towers or related structures or c) soil where weeds can accumulate.
- Wind turbines shall be set back at least 2,500 feet from Important Bird Areas as identified by New York Audubon and at least 1,500 feet from State-identified wetlands. These distances may be adjusted to be greater or lesser at the discretion

of the reviewing body, based on topography, land cover, land uses and other factors that influence the flight patterns of resident birds.