TOMPKINS COUNTY
ENVIRONMENTAL MANAGEMENT COUNCIL

121 East Court Street Ithaca, New York 14850
Telephone (607) 274-5560 Fax (607) 274-5578

November 2, 2005

Supervisor Steven Trumbull
Town of Dryden
65 E. Main Street
Dryden, NY 13053

Re: Model Wind Tower Ordinance

Dear Mr. Trumbull:

Wind is an abundant, renewable, and nonpolluting energy resource that can help to significantly reduce greenhouse gas emissions. It is becoming increasingly viable, both technologically and economically, as an alternative to the use of fossil fuels. A map produced for Cornell University's Department of Utilities and Energy Management in 2004 shows that there are sites in Tompkins County with enough wind potential to support large-scale turbine development. If a project were proposed locally, the Tompkins County Environmental Management Council (EMC) recommends that municipalities have in place a plan to review and approve these projects. The best way to do this is to adopt a wind tower ordinance.

The EMC, with a consultant, developed a model wind ordinance to assist in siting and environmental impact decisionmaking for utility-scale wind facilities for your consideration. A short background and the *Model Municipal Ordinance for Utility-Scale Wind Energy Conversion Systems* is attached. In addition to the model, we offer the following points you may want to consider in your own local ordinance:

a. A utility-scale wind project is a large undertaking. Consider adding language that requires, or allows as an option, a preliminary review process that could provide an opportunity for the Board to review generally and informally the proposed project and highlight any concerns that may be readily apparent with respect to the project.

b. One of the most important issues of concern for siting wind towers is the visual impact. The model ordinance does not require a visual impact analysis. It is an optional study the Board may request if deemed necessary. Consider making this a requirement rather than an option.

c. The model ordinance is written for utility-scale wind facilities greater than 500 kilowatts. For intermediate-scale proposals (between 100 and 500 kilowatts), you may wish to require a subset of the model ordinance's provisions.

Some municipalities in Tompkins County have already addressed, through existing ordinances, smaller wind towers that provide on-site electric usage. For those of you who have not, a good place to start is to review the model ordinance New York State Energy Research and Development Authority has made

available to municipalities throughout the state. The "AWS Model Zoning Ordinance: Permitted Use Regulation for Small Wind Turbines" can be found on the internet at http://www.powernaturally.org/publications/AWS_Small_Wind_Zoning.pdf.

I hope these materials will be helpful to your municipality to enhance the review and approval process for siting wind towers in your community. If you should have any questions, or need any additional information, please feel free to contact me.

Sincerely,

Stephen C. Nicholson/tcc

Stephen C. Nicholson, Chair
Tompkins County Environmental Management Council

cc: Tompkins County Legislature

Attachments: *Background Information – Model Municipal Ordinance for Utility-Scale Wind Energy Conversion Systems*
Model Municipal Ordinance for Utility-Scale Wind Energy Conversion Systems

Background Information – Model Municipal Ordinance for Utility-Scale Wind Energy Conversion Systems

Prepared by the Tompkins County Environmental Management Council
Adopted September 14, 2005

As part of the Environmental Management Council's goal to encourage the development of clean renewable energy sources in Tompkins County in order to help reduce the County's dependence on fossil fuels, the EMC developed a model ordinance for utility-scale wind energy facilities (also known as "wind energy conversion systems"). The ordinance can be used as a resource by municipalities within Tompkins County in the creation of their own ordinances for large-scale wind-energy projects. The ordinance was developed after a review of existing and proposed ordinances from other municipalities, both from New York and other states, a number of guides and handbooks on wind energy in general, and construction and permitting issues related to wind-energy projects. Many towns and counties throughout the U.S. have enacted zoning ordinances that mention wind energy, but often only in the context of "back-yard turbines" rather than utility-scale projects. Because there are more concerns associated with utility-scale wind projects due to their larger size, the ordinance specifically addresses utility-scale wind energy projects.

The model ordinance establishes utility-scale wind facilities as a special use, meaning that the project must meet the standards laid out in the ordinance before a permit is granted for the project. Specific concerns over large-scale wind energy projects, such as environmental impacts, aesthetics and visual impacts, noise, and safety, are addressed by each standard of the model ordinance. In addition to including general standards that cover the construction of wind-energy facilities, the ordinance includes options for zoning language, a list of required application materials, and definitions.

This model ordinance is very comprehensive, including more items than any individual municipality may need. Some of the major issues that often arise in discussions regarding the construction of energy facilities and that are addressed by the model ordinance are described below:

Aesthetics/Visual Impact

Because modern utility-scale wind turbines are very large, a major issue for neighbors and the general public is the visual impact of the facility when viewed from adjacent properties. The ordinance addresses this concern by establishing appropriate setbacks from neighbors, requiring design strategies to blend the facility with the surrounding landscape and minimize its industrial character, and limiting lighting. The development of access roads to reach facilities can have a greater visual impact than the wind turbines themselves, particularly in hilly locations. Thus, the ordinance requires developers to minimize the development and scale of access roads wherever feasible.

Because wind-energy facilities are tall enough that they may block, obscure, or impinge on important viewsheds, the ordinance includes a provision that locally designated scenic viewsheds may not be blocked by the construction of a wind-energy facility. The municipality reviewing the project may wish to require visual impact studies and simulations to provide a more complete picture of the visual impact of a project.

Model Municipal Ordinance for
Utility-Scale Wind Energy Conversion Systems (U-SWECS)
Prepared by the Tompkins County Environmental Management Council
Adopted September 14, 2005

1. Purpose
The purpose of this Section is to provide the necessary regulations for the establishment of Utility-Scale Wind Energy Conversion Systems (U-SWECS). These regulations are intended to encourage wind energy development in the locations and circumstances under which the use may be established without detriment to the public health, safety, and welfare.

2. Applicability
The provisions of this Section are applicable to those districts that allow Utility-Scale Wind Energy Conversion Systems (U-SWECS).

3. Definitions
FAA shall mean the Federal Aviation Administration.

Total Height shall mean, when referring to a Utility-Scale Wind Energy Conversion System (U-SWECS), the distance measured from grade to the uppermost extension of any blade, or the maximum height reached by any part of the U-SWECS.

Wind Energy Conversion Systems (WECS) shall mean any device that converts wind energy into electricity through the use of a wind turbine generator, and includes the turbine, blade, tower, base, and pad transformer, if any.

Utility-Scale Wind Energy Conversion Systems (U-SWECS) shall mean any WECS having one of the following:

1. a rated capacity of 500 kilowatts or greater;
2. 200 feet or greater in height; or
3. the purpose of such energy generated is intended for commercial sale.

4. Regulatory Framework
Zoning (Option 1) U-SWECS may only be constructed in areas that are zoned [insert permitted zoning] on the official zoning map for the [insert Town/Village/City].

Zoning (Option 2) U-SWECS may only be constructed in areas that are zoned [insert permitted zoning] and within areas designated as a Wind Energy Facility Overlay District, as designated on the official zoning map for the [insert Town/Village/City].

5. Application Requirements
For all proposed U-SWECS the applicant shall provide the following to the Board:

1. The applicant's and property owner's name, address, phone number, and signature.
2. A detailed plot and development plan drawn to scale clearly showing the following:
   a. Physical dimensions of the property, existing structures, and proposed structures,
   b. Location of all existing and proposed structures,

18. Landscape and vegetation plan, including site grading, proposed removal of vegetation, landscape design, and open areas.
19. Completed Environmental Assessment Form.
20. A description of proposed uses, including hours of operation, number of employees, and type and volume of traffic expected to be generated.

Additional information as deemed necessary by the Board if more than three residences are located within a quarter mile of the proposed U-SWECS facility or if there is a potential for significant environmental impacts, which may include, but is not limited to, the following:

1. Information sufficient to determine that the applicant has applied for and received approvals required by the FAA, and other approvals and/or permits required by relevant state and federal agencies.
2. Visual impact demonstrations including before and after photo-simulations and elevation drawings showing the height, design, color, night lighting, and location of the proposed facility as viewed from neighboring areas.
3. Noise impact analysis.
4. Avian impact analysis.
5. Shadow flicker model.
6. Proof of bond or fund equal to the reasonable cost of removing the wind turbine/anemometer and all accessory structures and returning the site to its original condition.
7. Any other information that would enable the Board to review the project.

6. General Standards

The following standards apply to the review and approval of U-SWECS. A special use permit is required for all U-SWECS consisting of wind turbine generators, transmission lines, and accessory buildings and structures. To issue a special use permit, the Board must find that the following general standards are met:

6.1 Visual Appearance and Design

1. U-SWECS shall be either painted a non-reflective, neutral color or appropriate material designed to blend the U-SWECS with surrounding landscape.
2. All U-SWECS on the same site shall blend with the background environment to the maximum extend practicable and should be uniform in style and color.
3. The applicant shall use low profile and unobtrusive building designs for on-site buildings to minimize industrial character of projects in rural or remote areas.

6.2 Lighting

U-SWECS shall not be artificially lighted, except as required by FAA. If lighting is required, it shall be steady, not strobed, and at the lowest intensity allowable by the FAA.

6.3 Signs

No advertising shall be allowed except for reasonable identification of the manufacturer or operator of the wind energy facility. Educational signs and displays on wind energy may also be allowed in appropriate locations.

2. In the event audible noise due to U-SWECS operations contains a steady pure tone, such as a whine, screech, or hum, the standards for audible noise set forth in section 6.10.1 shall be reduced to fifty (50) dBA. A pure tone is defined to exist if the one-third (1/3) octave band sound pressure level in the band, including the tone, exceeds the arithmetic average of the sound pressure levels of the two (2) contiguous one-third (1/3) octave bands by five (5) dBA for center frequencies of five hundred (500) Hz and above, by eight (8) dBA for center frequencies between one hundred and sixty (160) Hz and four hundred (400) Hz, or by fifteen (15) dBA for center frequencies less than or equal to one hundred and twenty-five (125) Hz.

6.11 Safety

1. The applicant shall clearly post emergency number, contact information and emergency procedures in a visible location.
2. All towers shall not be climbable from the ground to fifteen (15) feet above ground and all access doors to towers and equipment shall be lockable.
3. Fencing or other appropriate measures may be required to prevent unauthorized access to the U-SWECS.
4. All guy wires or other supports shall be clearly marked.
5. All blades shall have a minimum blade clearance no lower than thirty (30) feet above ground.

6.12 Signal Interference

The applicant shall minimize or mitigate interference with electromagnetic communications, such as television, microwave, navigational, or radio signals, caused by any U-SWECS. U-SWECS construction or operation may not interfere with existing emergency communications systems.

6.13 Inoperation/Reclamation

The U-SWECS shall be deemed inoperable after 12 months of inoperation. The owner shall restore site to original condition and foundation shall be removed up to 5 feet below final grade and vegetation restored within 120 days. A bond or other appropriate form of security may be required to cover the cost of removal and site restoration.

6.14 Federal and State Requirements

The U-SWECS shall meet or exceed any standards and regulations of the FAA and any other agency of the state or federal government with the authority to regulate U-SWECS or other tall structures in effect at the time the special use permit is approved.