SECTION 8.113 WIND ENERGY CONVERSION SYSTEMS (WECS)

A. **Purpose**. The regulation of Wind Energy Conversion Systems (WECS), including the height, minimum lot area, and required setbacks for such systems, is intended to provide for an alternative source of power generation while protecting the health, safety, and welfare of Township residents. The system, its construction, and its operation shall comply with all applicable local, state, and federal regulations.

B. **Definition**. WECS: A system which converts wind energy into electricity through the use of a wind turbine generator and includes the turbine, blades, and tower as well as related equipment.

1. A "small turbine/on-site" system is intended to primarily serve the needs of the customer on the site which the system is located, with a single tower that that may or may not be connected to the utility grid.

2. A "large turbine/utility grid system" is designed to generate electricity from one or more towers (within an array) and is intended to serve institutions, residential communities, or larger cooperative organizations.

C. **Special exception use**. Due to the concerns related to health, safety, and welfare and the increased potential for impacts on adjacent properties, such systems shall be regulated as special exception uses within all zoning districts, provided the land area is sufficient to support their development and operation (see subsection D.2 below). The following requirements shall be met and the Planning Commission may impose additional conditions where appropriate:

1. In addition to the requirements for Special Exceptions (Article 16) and Site Plan Review (Article 17), the application for the WECS shall include the following additional information:

a. the location of overhead electrical transmission or distribution lines, whether utilized or not

b. the location of the WECS with its specific dimensions, including the entire area through which the rotor(s) may rotate

c. the location of any guy wires, other support devices, or accessory structures or facilities

d. the location of all structures and land uses (including dwelling units) within 500 feet of the WECS

e. proof of the applicant’s public liability insurance for the project

f. the name, address, and telephone number of the owner(s) of the turbine / system

g. manufacturer's name and address

h. survival wind speed in miles per hour and meters per second for the tower and the maximum power output for the generator

i. name, address, and telephone number of the installer

j. name, address, and telephone number of the person responsible for maintenance

k. the height of the wind turbine, as described in paragraph D.1 below

l. the setbacks from the tower and any accessory components of the WECS (structure, guy wires, etc.) to the adjacent property lines

2. **Electromagnetic interference**: The entire WECS (including turbines, alternators, generators, and interconnect systems) shall be located, designed, and filtered and/or shielded to prevent the emission of generated radio frequency energy which would cause any interference with radio, television broadcasting, wireless telephone, and/or personal communication transmission or reception, and shall comply with all applicable state and federal rules and regulations.

3. **Noise**: The maximum level of noise permitted to be generated by any WECS shall be 55 decibels, as measured on the db(A) scale, measured at the property line nearest the WECS. This decibel level may be exceeded during short term events such as utility outages or severe wind storms. If the ambient sound level prior to installation exceeds 55 decibels, the maximum noise standard shall be the ambient decibels plus five. The Planning Commission may request that a baseline study of the decibel levels existing prior to and modeling of noise levels predicted for after the installation be included as required documentation for review.

4. **Visual Impact:** A WECS shall use tubular towers and shall be finished in a single, non-reflective, matte-finished color. Multiple towers involved in a "large turbine/utility grid" WECS shall be constructed of similar design, size, operation, and appearance throughout the project. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades. Accessory structures may have lettering that exhibits the manufacturer's and/or owner's identification.

D. **Site development**.

1. **Height:** The height of the wind turbine shall be measured from the existing grade at the base of the turbine to the top of the blade or rotor at its tallest point.

a. The maximum allowable height for any "small turbine/on-site" WECS, based upon the combined tower and rotor blade length, shall be 40 feet for site parcels of one to less than two acres, 80 feet for site parcels of two to less than three acres and up to 120 feet for site parcels of three acres or more.

b. The maximum allowable height for any "large turbine/utility grid" WECS, based upon the combined tower and rotor blade length, shall be 410 feet. The Planning Commission, in consideration of a request, may approve an increase to this height requirement where the following requirements are met:

i. The increased height will result in the preservation of a substantial stand of trees, existing land forms, or structures that would otherwise be required to be removed to satisfy anticipated and required wind velocity.

ii. The increased height is the minimum necessary to achieve a reasonable rate of return on the operation of the wind turbine generator given the documented wind speeds and other site conditions. A reasonable rate of return is not equivalent to maximizing economic return. The Planning Commission shall not grant the increased height if the lack of economic return is due to the use of inefficient equipment that does not utilize current commercial technologies or would be aesthetically injurious to the area.

iii. The increased height will not result in increased intensity of lighting on the tower due to Federal Aviation Administration (FAA) requirements.

c. A WECS located in proximity to an airport may be subject to additional height limitations as provided in the airport's layout or approach plan.

2. **Lot area/setbacks:**

a. No "small turbine/on-site" WECS shall be erected on any lot or parcel less than one acre in area and shall be situated on the lot or parcel so that no portion of the tower or turbine is closer to property lines (excluding public utilities) than 150 percent of the height of the tower as defined in subparagraph D.1 above.

b. No "large turbine/utility grid" WECS shall be erected on any parcel less than five acres in area and shall be situated on the parcel so that no portion of the tower or turbine is closer to property lines (excluding public

utilities) than 150 percent of the height of any towers as defined in subparagraph D.1 above.

c. Guy wires or other elements of the support structure shall not extend closer than ten feet to the owner's property lines.

d. Accessory structures or other accessory equipment used in the function of the WECS shall satisfy the setback requirements of the subject zoning district.

3. **Ground Clearance:** For both horizontal and vertical axis turbines, the WECS rotor shall be located on the tower or support such that the minimum blade clearance above ground level is 20 feet.

4. **Safety / Accessibility:** All WECS shall be designed to prevent unauthorized access to electrical and mechanical components and shall have access doors that are kept securely locked at all times when service personnel are not present. Towers shall be designed and constructed in such a manner that climbing devices are only accessible with a separate ladder to a height of 12 feet. All spent lubricants and cooling fluids shall be properly and safely removed promptly from the site of the WECS. A sign shall be posted near the WECS containing emergency contact information as well as near the entrance warning visitors about the potential danger of falling ice.

5. **Connection to power grid:** If the WECS is to be interconnected with the power grid of the local electric utility, the applicant shall provide proof of written notice to the utility of the proposed interconnection and the utility's response thereto. The owner shall comply with all requirements of the servicing utility if the WECS is interfaced with the utility grid. The utility will install appropriate electric metering (for sellback or non-sellback) and the owner will be required to install a disconnecting device adjacent to the electric meter(s).

6. **Lighting:** The turbine shall be lighted in compliance with the minimum requirements of the Federal Aviation Administration (FAA).

7. **Vibration:** Under no circumstances shall a WECS produce vibrations humanly perceptible beyond lot boundaries.

8. **Additional studies:** The applicant may offer and submit, or the Planning Commission may require, that the applicant submit studies related to noise, vibration, environmental impacts, or similar issues that may be considered a nuisance. In addition, such studies may include avian and wildlife impact, visual impacts, shadow flicker (changes in light intensity caused by the moving blade) or similar issues based upon compatibility of the proposed use in the requested location.

E. **Decommission plan/site reclamation.** The applicant shall submit a plan that indicates the necessary anticipated life of the project, the estimated cost and method to ensure the availability of maintenance and removal funds, and the manner in which the site will be reclaimed.

F. **Abandonment of unused turbines.** Abandoned or unused turbines and associated facilities shall be removed within 12 months of the cessation of operations at the site unless a time extension is approved by the Planning Commission. A copy of the relevant documents (including the signed lease, deed, license, or land contract) which allows the installation and which requires the applicant to remove the turbine and associated facilities upon cessation of operations shall be submitted at the time of application. In the event that a turbine is not removed within the 12 months of the cessation of operations at a site, the turbine and facilities shall be removed by the Township and the costs of removal assessed against the real property.

G. **Bonding.** Bonding may be required by the Township to insure performance in accordance with these requirements, adequate insurance coverage, decommissioning, and removal of the turbines. The amount of the bond shall be determined based on the value of the project and the estimated cost of removal.