

Wind Energy Facilities Model Ordinance

INTRODUCTORY NOTES ON THIS MODEL

This model ordinance was developed by the Cumberland County Planning Department using a variety of ordinances from municipalities in the county, around the state and from ordinances in surrounding states. The model is intended to provide a thorough review of all aspects of wind energy systems that could be regulated. Municipalities are not recommended to implement this entire ordinance without modification. Rather, municipalities should review this ordinance, examine their local situation, and adopt the regulations that make the most sense for their municipality.

Any text in the following model ordinance in *italics* is an option that a municipality may or may not choose to implement. In these cases, the ordinances that were reviewed and compiled for this model were inconsistent in how and if they regulated certain aspects of wind energy. Municipalities should choose if they want to adopt these regulations in their jurisdiction.

Ordinance language not in italics is recommended to be included in municipal ordinances, although some modification may be necessary. In some cases, there could be multiple ways to regulate a certain aspect of wind energy. In these cases the word “OR” has been placed in the text of the ordinance. Municipalities should choose the option that works best with their existing ordinances and regulatory framework. In some instances, a range of options may be provided. In these cases, the sample range is provided in brackets with the regulations commonly found in other ordinances and an “XX” (15’,20’, XX) to indicate that municipalities may want to adopt a different standard.

SECTION 1 - INTRODUCTION

WHEREAS, the Pennsylvania Municipalities Planning Code, act of July 31, 1968, as amended, 53 P.S. §§ 10101 *et seq.*, enables a municipality through its zoning ordinance to regulate the use of property and to promote the conservation of energy through access to and use of renewable energy resources; and

WHEREAS, _____ Borough/Township seeks to promote the general health, safety and welfare of the community by adopting and implementing an amendment to the Zoning Ordinance providing for access to and use of wind energy facilities; and

WHEREAS, the purpose of this Ordinance is to set forth requirements for wind energy facilities;

IT IS HEREBY ENACTED AND ORDAINED by the Board/Council of _____ Borough/Township, Cumberland County, Pennsylvania, as follows:

SECTION 2 -- DEFINITIONS

FACILITY OWNER – the entity or entities having a legal or equitable interest in the Wind Energy Facility, including the respective successors and assigns.

FLICKER – a repeating cycle of changing light intensity.

GROUND CLEARANCE – the minimum distance between the ground and any part of the wind turbine blade, as measured from the lowest point of the arc of the blades.

HUB HEIGHT – the distance measured from the surface of the tower foundation to the highest point of the wind turbine hub, to which the blade is attached.

METEOROLOGICAL TOWER - a tower used for the measurement of wind speed.

NON-PARTICIPATING LANDOWNERS – any landowner except those on whose property all or a portion of a wind energy facility is located pursuant to an agreement with the facility owner or operator.

OCCUPIED BUILDING – a residence, school, hospital, church, public library, commercial building or other building used for public gathering that is in use when the permit application is submitted.

OPERATOR – the entity responsible for the day-to-day operation and maintenance of the wind energy facility.

PARTICIPATING LANDOWNER – a landowner upon whose property all or a portion of a wind energy facility is located pursuant to an agreement with the facility owner or operator.

ROTOR – that portion of the wind turbine, i.e. blades and associated hub and shaft, which is intended to be moved or activated by the wind.

SHADOW FLICKER – alternating changes in light intensity caused by a moving wind rotor blade casting shadows on the ground and stationary objects.

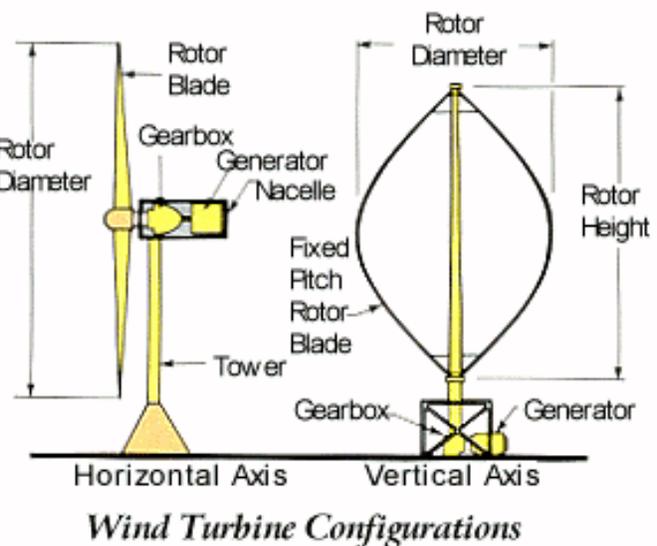
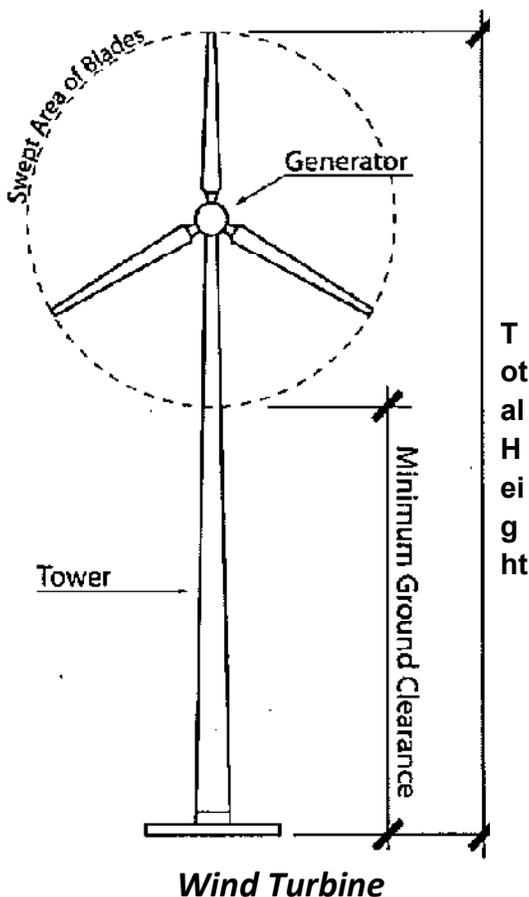
TOTAL HEIGHT – when referring to a wind turbine, the distance measured from the surface of the tower foundation to the highest point of a wind rotor blade when the blade is positioned at 90 degrees to the surface of the ground.

TOWER – the supporting structure of a wind turbine on which a rotor and accessory equipment are mounted. The basic types of towers include self-supporting (free standing) or guyed.

WIND ENERGY FACILITY – an electric generating facility, whose main purpose is to supply electricity, consisting of one or more wind turbines and other accessory structures and buildings, including substations, meteorological towers, electrical infrastructure, transmissions lines and other appurtenant structures and facilities.

1. **ACCESSORY WIND ENERGY FACILITY** - a system designed as a secondary use on a lot, wherein the power generated is used primarily for on-site consumption.
2. **PRINCIPAL WIND ENERGY FACILITY** – a system designed as the primary use on a lot, wherein the power generated is used primarily for off-site consumption.

WIND TURBINE – a wind energy conversion system that converts wind energy into electricity through the use of a wind turbine generator, and includes the nacelle, rotor, tower, and pad transformer, if any.



SECTION 3 – ACCESSORY WIND ENERGY FACILITIES (AWEF)

A) Requirements for All AWEF

1. Accessory Wind Energy Facilities (AWEF) shall be permitted in all Zoning Districts as an accessory use. Applications for such uses shall be subject to the requirements set forth below, as well as all other applicable State or Federal Regulations.
2. Permit Exemptions
 - i) AWEF constructed prior to the effective date of this Section shall not be required to meet the requirements of this Ordinance.
 - ii) With respect to an existing AWEF, any physical modification that materially alters the size, type and number of Wind Turbines or other equipment shall require approval under this Ordinance and meet the requirements of the Uniform Construction Code. Like kind replacements shall not require a building or zoning permit modification.
3. The layout, design, and installation of AWEF should conform to applicable industry standards, including those of the American National Standards Institute (ANSI), Underwriters Laboratories (UL), Det Norske Veritas, Germanischer Lloyd Wind Energies, the American Society of Testing and Materials (ASTM), or other pertinent certifying organizations and comply with the PA Uniform Construction Code and all applicable building and electrical codes of _____ Township or Borough. The manufacturer specifications shall be submitted as part of the application
4. Number of AWEF permitted on lots with both ground and building mounted AWEF
 - i) One ground mounted AWEF and one building mounted AWEF is permitted on a lot.

OR

- ii) A lot may have any number of building mounted and ground mounted AWEF assuming all other requirements of this ordinance are satisfied.

5. Noise

- i) The sound produced by AWEF under normal operating conditions, as measured at the property line, should not exceed that of nuisance noise as identified in Section XXXX of this ordinance.

OR

- ii) The sound produced by the AWEF shall not exceed (45, 50, 55, XX) dBA as measured at the property line at ground level.

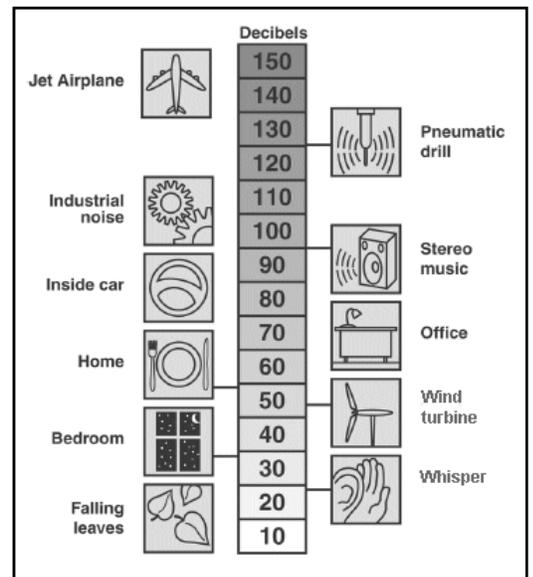


Figure 1 Common noise levels compared to wind turbines.

- iii) Noise limits may be exceeded during short-term events such as utility outages and/or severe wind storms.
 - iv) Methods for measuring and reporting acoustic emissions from PWEF shall be equal to or exceed the minimum standards for precision described in American Wind Energy Association (AWEA) Standard 2.1 - 1989 titled Procedures for the Measurement and Reporting of Acoustic Emissions from Wind Turbine Generation Systems Volume I: First Tier, as amended.
6. When an accessory building is necessary for storage cells or related mechanical equipment, the accessory building shall comply with the accessory building requirements of the underlying zoning district.
 7. The owner of an AWEF shall provide _____ Borough/Township written confirmation that the public utility company to which the AWEF will be connected has been informed of the customer's intent to install a grid connected system and approved of such connection. Off-grid AWEF shall be exempt from this requirement.
 8. All on-site utility, transmission lines, and cables shall be placed underground.
 9. The display of advertising is prohibited except for identification of the manufacturer of the system
 10. AWEF shall not be lighted except for any lighting required to comply with Federal Aviation Administration (FAA) or Pennsylvania Department of Transportation Bureau of Aviation (BOA) regulations.
 11. AWEF shall be painted a non-reflective, flat color such as white, off-white or gray unless required to be colored differently from FAA or BOA regulations.
 12. AWEF 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.
 13. An AWEF shall not cause shadow flicker on any occupied building on a non-participating landowner's property.
 14. No part of any AWEF shall be located within or above the required setbacks of any lot, extend over parking areas, access drives, driveways or sidewalks.
 15. *The owner of the AWEF shall provide evidence that the owner's insurance policy has been endorsed to cover an appropriate level of damage or injury that might result from the installation and operation of the small wind energy system.*
 16. *The potential ice throw or ice shedding for a AWEF shall not cross the property line of the lot on which the AWEF is located nor impinge on any right-of-way or overhead utility line.*
 17. *The owner of the AWEF shall ensure that the design and operation avoids disruption or loss of radio, telephone, television, cell, Internet or similar signals, and shall mitigate any harm caused thereby.*
 18. Decommissioning

- i) Each AWEF and related equipment shall be removed within twelve (12) months of the date when the use has been discontinued or abandoned by system owner and/or operator, or upon termination of the useful life of same.
- ii) The AWEF shall be presumed to be discontinued or abandoned if no electricity is generated by such AWEF for a period of twelve (12) continuous months.

19. Permit requirements

- i) Zoning/building permit applications for accessory wind energy systems shall be accompanied by standard drawings of the wind turbine structure and stamped engineered drawings of the tower, base, footings, and/or foundation as provided by the manufacturer. Permits shall show the location of the AWEF on the lot, lot lines, rights of way, adjoining occupied buildings, and above ground utility lines located on the lot. Permits must be kept on the premises where the AWEF is constructed.
- ii) The zoning/building permit shall be revoked if the AWEF, whether new or pre-existing, is moved or otherwise altered, either intentionally or by natural forces, in a manner which causes the AWEF not to be in conformity with this Ordinance.
- iii) *For standard soil conditions (not including gravel, sand, or muck), foundations developed by the wind turbine manufacturer shall be acceptable for AWEF installations of 20kW or less and will not require project-specific soils studies. Applicants proposing projects involving substandard soil conditions or installations of AWEF greater than 20kW may be required by the Zoning Officer to submit detailed soil studies.*
- iv) *The AWEF must be properly maintained and be kept free from all hazards, including but not limited to, faulty wiring, loose fastenings, being in an unsafe condition or detrimental to public health, safety or general welfare. In the event of a violation of any of the foregoing provisions, the Zoning Officer shall give written notice specifying the violation to the owner of the AWEF to conform or to remove the AWEF.*

B) Requirements for Ground Mounted AWEF

1. Ground mounted AWEF may be placed on lots of any size assuming they meet the height and setback restrictions found in this section.
2. Height for Ground Mounted AWEF
 - i) AWEF height shall not be restricted assuming that the AWEF meets the setback requirements.
 - OR**
 - ii) AWEF shall comply with the height restrictions of the underlying zoning district
 - OR**
 - iii) AWEF shall not exceed (XXXX feet) in height. (Models have varying heights linked to the zoning district where the AWEF is located with higher limits for nonresidential

districts. Models suggest 50', 60', 85', 100'. Note that AWEF need to be high to operate most efficiently.)

OR

- iv) The AWEF height may exceed the maximum permitted height requirements by one (1) additional foot for each one (1) additional foot by which the width of each yard exceeds the required setback regulations for AWEF in the zoning district in which the building or structure is located.

OR

- v) The AWEF shall not exceed one hundred fifty percent (150%) of the maximum height for principal structures for the underlying zoning district.
- vi) The minimum ground clearance for the AWEF shall be (XXX) feet (Models have standards of 15'- 30')
- vii) *Applicants shall file a Notice of Proposed Construction or Alteration with the BOA and the FAA for any AWEF that is more than 200' in height or in a designated Airport Hazard Overlay Zone. Applicant shall provide evidence from either FAA or BOA acknowledging that the ground mounted AWEF does not adversely affect the airspace of any airports.*

3. Setbacks for Ground Mounted AWEF

- i) AWEF shall be set back from property lines, occupied buildings, above ground utility lines, railroads and/or road right-of-ways by a distance equal to no less than (XXX) times the total height. (Models suggest 1.1, 1.5 or 2 times the total height).
- ii) *AWEF shall be allowed closer to a property line than the prescribed setbacks if the abutting property owner(s) grants written permission in the form of a signed easement and the installation poses no interference with public utility lines, public roads and rail right-of-ways.*

4. Number of Ground Mounted AWEF allowed per lot

- i) The number of ground mounted AWEF on a lot is not limited assuming that each AWEF meets the other requirements of this ordinance.

OR

- ii) The number of ground mounted AWEF is limited to the number of accessory structures permitted on a lot as indicated in Section XXXX of this ordinance. (Note: This option could be used if the municipality regulates the number of accessory structures permitted on a lot).

OR

- iii) One ground mounted AWEF is permitted per lot.

OR

- iv) *The number of ground mounted AWEF allowed per lot shall be related to the energy capacity of the systems and the electric consumption of the principal use on the lot. The electrical generation capacity of the AWEF shall not exceed the electrical generation needs of the*

principal use on the lot. The participating landowner, at the request of the zoning officer, shall provide evidence as to the electric generating capacity of the AWEF and the electric consumption of the principal use.

OR

- v) The number of ground mounted AWEF permitted on a lot shall be based upon lot size and follow the schedule below (NOTE: the actual number of AWEF can be modified as applicable):

Lot Size	Maximum Number of Ground Mounted AWEF Per Lot
< 1 acre to 5 acres	1
5+ acres to 10 acres	2
10+ acres	3

5. Location

- i) Ground mounted AWEF are prohibited in front yards, between the principal building and the public street.

OR

- ii) Installation of a ground mounted AWEF may be authorized in front of the principal building, outside the required front yard, if the applicant demonstrates to the (governing body / zoning hearing board) that, due to wind access limitations, no location exists on the property other than the front yard where the AWEF can perform effectively

6. Safety and security

- i) The owner shall post electrical hazard warning signs on or near the AWEF.
- ii) Ground mounted AWEF shall not be climbable up to (XX) feet above ground surface (Models stipulate 10', 12' and 15')
- iii) Access doors to any AWEF electrical equipment shall be locked to prevent entry by unauthorized persons.
- iv) *All AWEF shall be surrounded by a minimum 6' high fence with a locking gate.*

OR

- v) *All AWEF shall be surrounded by a minimum 6' high fence if the AWEF is not otherwise rendered unclimbable up to (XX) feet above the ground.*

C) Requirements for Building Mounted AWEF

1. Building mounted AWEF may be located on any lot regardless of size.
2. Building mounted AWEF shall comply with the height restrictions of the underlying zoning district

OR

3. Height regulations shall not apply to building mounted AWEF, provided the height does not exceed the limitations of the zoning district for which they are located by more than fifteen (15) feet. (This type of regulation is common for steeples, antennas, belfries, silos, etc. Using this option would treat AWEF similarly to these types of structures.).
4. One building mounted AWEF is permitted per lot.

OR

5. There is no limit on the number of building mounted AWEF assuming that the building is capable of supporting the load of the AWEF.
6. For building mounted systems, the applicant shall provide evidence that the plans comply with the Uniform Construction Code and adopted building code of the Borough/Township indicating the building is capable of holding the load imposed on the structure.

SECTION 4 – PRINCIPAL WIND ENERGY FACILITIES (PWEF)

A) Design and Installation

1. Principal Wind Energy Facilities (PWEF) shall be permitted by special exception/conditional use in the XXXX Zoning District(s). (Models suggest allowing in Agricultural, Commercial, Industrial zones. Some allow in Conservation zones with conditions.) Applications for such uses shall be subject to the requirements set forth below, as well as all other applicable State or Federal Regulations.
2. Permit Requirement and Exemptions
 - i) PWEF constructed prior to the effective date of this Section shall not be required to meet the requirements of this Ordinance;
 - ii) With respect to an existing PWEF, any physical modification that materially alters the size, type and number of Wind Turbines or other equipment shall require conditional use/special exception approval under this Ordinance and meet the requirements of the UCC. Like kind replacements shall not require a permit modification.
3. The layout, design, and installation of PWEF shall conform to applicable industry standards, including those of the American National Standards Institute (ANSI), Underwriters Laboratories (UL), Det Norske Veritas, Germanischer Lloyd Wind Energies, the American Society of Testing and Materials (ASTM), or other pertinent certifying organizations and comply with all applicable building and electrical codes of _____ Township or Borough. The manufacturer specifications shall be submitted as part of the application.
4. Applicants shall submit land development and/or subdivision plans which shall be compliant with all land development/subdivision ordinance requirements of the Borough/Township.
5. The applicant shall provide sufficient documentation showing that the PWEF will comply with all applicable requirements of the Federal Aviation Administration (FAA) and the Commonwealth Bureau of Aviation.
6. *The PWEF shall provide _____ Borough/Township written confirmation that the public utility company to which the PWEF will be connected has been informed of the intent to install a grid connected system and approved of such connection.*
7. All PWEF shall be equipped with a redundant braking system. This includes both aerodynamic overspeed controls (including variable pitch, tip and other systems) and mechanical brakes. Mechanical brakes shall be operated in a fail-safe mode. Stall regulation shall not be considered a sufficient braking system for overspeed protection.
8. Visual Appearance
 - i) All on-site utility, transmission lines, and cables shall be placed underground.

- ii) PWEF shall be painted a non-reflective, flat color such as white, off-white, or gray unless required to be colored differently from FAA or BOA regulations.
- iii) PWEF shall not be artificially lighted, except to the extent required by the Federal Aviation Administration or other applicable authority. If lighting is required, the lighting alternatives and design chosen shall seek to minimize the disturbance to the surrounding views.
- iv) The display of advertising is prohibited except for identification of the manufacturer of the system, facility owner and operator.
- v) Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation, and maintenance of the PWEF.
- vi) *PWEF shall not significantly impair a scenic vista or scenic corridor as identified in the Borough/Township's comprehensive plan or other published source.*

OR

- vii) *No PWEF 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 Borough/Township.*

viii) Accessory Buildings, Structures, Mechanical Equipment

- (1) Accessory structures and equipment associated with PWEF shall be screened from any adjacent property that is residentially zoned or used for residential purposes. The screen shall consist of plant materials which provide a visual screen. *In lieu of a planting screen, a decorative fence meeting requirements of the zoning ordinance may be used.*
- (2) The design of accessory buildings and related structures shall, to the extent reasonable, use materials, colors, textures, screening and landscaping that will blend the structures into the natural setting and existing environment.

9. Warnings and Safety Measures

- i) A clearly visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.
- ii) All access doors to PWEF including electrical equipment, outbuildings and all appurtenances thereto, shall be locked or fenced, as appropriate, to prevent entry by non-authorized personnel.
- iii) Wind Turbines shall not be climbable up to (10, 12, 15, XX) feet above ground surface or the climbing apparatus shall be fully contained and locked within the tower structure.
- iv) *A minimum six (6) foot high fence with a locking gate shall be placed around the PWEF. The fence (may/may not) be within the required setback.*
- v) Visible, reflective, colored objects, such as flags, reflectors or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of ten (10') feet from the ground.

- vi) *The potential ice throw or ice shedding for a PWEF shall not cross the property line of the lot on which the PWEF is located nor impinge on any right-of-way or overhead utility line.*
- vii) The applicant will provide a copy of the project summary and site plan to local emergency services.
- viii) Facility owner and/or operator shall abide by all applicable local, state and federal fire code and emergency guidelines. Upon request the applicant, facility owner and/or operator shall cooperate with emergency services to develop and coordinate implementation of an emergency response plan for the PWEF.

B) Zoning Requirements

1. Lot size

- i) Lot size shall comply with the zoning district and be in conformance with the required setbacks set forth below.

OR

- ii) In order for a tract(s) of land to be eligible for a PWEF, it must have a minimum lot size derived as follows: (2 acres x number of Wind Turbines) + 18 acres = minimum lot size.
- iii) *Wind Turbines shall be separated from each other by a minimum of 1.1 times the total height of the highest wind turbine.*

2. Setbacks

- i) Wind Turbines shall be set back from the nearest property line a distance of not less than the normal setback requirements for the zoning district or (1.1, 1.5, 2, XX) times its total height, whichever is greater.
- ii) *Wind Turbines shall be set back from an occupied building, on a non-participating landowner's property, not less than (2, 5, XX) times its total height measured from the center of the wind turbine base to the nearest point on the foundation of the occupied building.*
- iii) *Wind Turbines shall be set back from an occupied building on a participating landowner's property, not less than (1.1, 1.5, XX) times its total height measured from the center of the wind turbine base to the nearest point of foundation of the occupied building. Any operator/occupied building used in connection with the development are exempt from this distance limit.*
- iv) Wind Turbines shall be set back from the nearest public road right-of-way a distance of not less than the normal setback requirements for the zoning district or (1.1, 2, XX) times its total height, whichever is greater as measured from the right-of-way line to the center of the Wind Turbine base.
- v) Each Wind Turbine shall be set back from above-ground electric power lines, public telephone lines and television cable lines a distance of no less than (1.1, 2.0, XX) times its

total height. The setback distance shall be measured from the center of the wind turbine generator base to the nearest point of such lines.

- vi) *All Wind Turbines shall be setback from any ridge a distance of not less than the wind turbine's total height. For this provision, "ridge" shall be defined as the elongated crest or series of crests at the uppermost point of intersection between opposite slopes of a mountain and including all land lying between such point and an elevation 250 feet below the elevation of such point.*
- vii) *Wind Turbines shall be set back at least (2,000, 2,500, XXX) feet from Important Bird Areas as identified by Pennsylvania Audubon and at least (1,500, 2,000, XXX) feet from identified wetlands.*
- viii) *Each Wind Turbine shall be set back from the Appalachian Trail and any historic structure, district, site or resource listed in the state inventory of historic places maintained by the Pennsylvania Historical and Museum Commission a distance no less than two thousand five hundred (2,500') feet. The setback distance shall be measured from the center of the wind turbine generator base to the nearest point on the foundation of an historic building, structure or resource, or the nearest property line of an historic district or site or the Appalachian Trail.*
- ix) Accessory buildings, structures, and related equipment to the PWEF shall comply with the building setback requirements of the underlying zoning district.

OR

- x) Accessory buildings, structures, and related equipment to the PWEF shall comply with the accessory building setback requirements of the underlying zoning district, or be a minimum of (10, 15, XX) feet from the side and rear property line, whichever is greater.

3. *Waiver of Setbacks*

- i) *Property owners may waive the setback requirements for occupied buildings on non-participating landowner's property and property lines by signing a waiver that sets forth the applicable setback provision(s) and the proposed changes.*
- ii) *The written waiver shall notify the property owner(s) of the setback required by this Ordinance, describe how the proposed PWEF is not in compliance, and state that consent is granted for the Facility to not be setback as required by this Ordinance.*
- iii) *Any such waiver shall be recorded in the Recorder of Deeds Office for the County where the property is located. The waiver shall describe the properties benefited and burdened, and advise all subsequent purchasers of the burdened property that the waiver of setback shall run with the land and may forever burden the subject property.*

4. Height

- i) There shall be no specific height limitation, so long as the total height meets sound and setback requirements, except as imposed by FAA regulations.
- ii) The minimum Ground Clearance shall be thirty (30) feet.

5. *No PWEF shall be located on a lot of record containing slopes equal to or exceeding 15% on 50% or more of the lot of record. This standard shall apply to each lot where a PWEF extends across multiple lots of record.*

C) Operational Standards

1. Use of Public Roads

- i) The applicant shall identify all state and local public roads to be used within the Borough/Township to transport equipment and parts for construction, operation or maintenance of the PWEF.
- ii) The Borough's/Township's engineer, or a qualified third party engineer hired by the Borough/Township and paid for by the applicant, shall document public road conditions prior to construction of the PWEF. The engineer shall document road conditions within thirty (30) days after construction of the permitted project is complete, or as soon thereafter as weather may allow.
- iii) The Township (*shall/may*) require applicant to secure a bond for the road(s) to be used within the Township in compliance with applicable regulations at an amount consistent therewith; or, if not provided by regulation, an amount set at the discretion of the governing body in consultation with the Borough/Township engineer.
- iv) Any road damage caused by the applicant, facility owner, operator, or contractors shall be promptly repaired to the Borough's/Township's satisfaction at the expense of the applicant and/or facility owner.
- v) The applicant shall demonstrate that it has appropriate financial assurance to ensure the prompt repair of damaged public roads.
- vi) *Every effort should be made to use existing roads and logging roads. New deforestation and forest fragmentation should be kept to a minimum. Private entrance roads to PWEF must be maintained in a mud-free condition.*

2. Noise

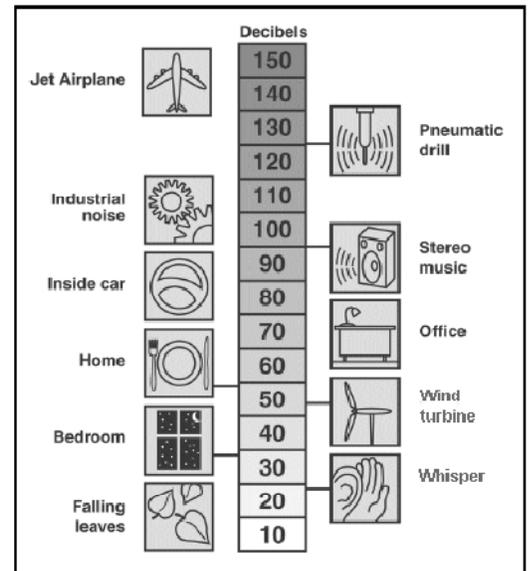
- i) Audible sound from a PWEF shall not exceed (45, 50, 55, XX) dBA, as measured at the exterior of any occupied building on a non-participating adjoining landowner's property.

OR

- ii) Audible sound from a PWEF shall not exceed (45,50, 55) dBA, for more than 10 percent of any hour, as measured at the exterior of any occupied building on a non-participating landowner's property.

OR

- iii) Audible sound from a PWEF shall not exceed (45, 50, 55, XX) dBA, as measured at the property line between participating and non-participating landowners.
- iv) Noise limits may be exceeded during short-term events such as utility outages and/or severe wind storms



- v) Methods for measuring and reporting acoustic emissions from PWEF shall be equal to or exceed the minimum standards for precision described in American Wind Energy Association (AWEA) Standard 2.1 - 1989 titled Procedures for the Measurement and Reporting of Acoustic Emissions from Wind Turbine Generation Systems Volume I: First Tier, as amended.
3. A Wind Turbine shall not cause vibrations through the ground which are perceptible beyond the property line of the parcel on which it is located.
 4. Shadow Flicker.
 - i) A PWEF shall not cause shadow flicker on any occupied building on a non-participating landowner's property.
 - ii) A PWEF shall be designed in such a manner as to minimize shadow flicker on a roadway.
 - iii) *The facility owner and operator shall conduct, at the applicant's expense, a modeling study demonstrating that shadow flicker shall not occur on any occupied building on a non-participating property.*
 5. *Waiver of Noise and Shadow Flicker Provisions*
 - i) *Non-participating landowners may waive the noise and shadow flicker provisions of this Ordinance at the request of the participating landowners or PWEF owner by signing a waiver of their rights.*
 - ii) *The written waiver shall notify the non-participating landowner(s) of the sound or flicker limits in this Ordinance, describe the impact on the non-participating landowner(s), and state that the consent is granted for the PWEF to not comply with the sound or flicker limit in this Ordinance.*
 - iii) *Any such waiver shall be recorded in the Recorder of Deeds Office of the County where the property is located. The waiver shall describe the properties benefited and burdened, and advise all subsequent purchasers of the burdened property that the waiver of sound or flicker limit shall run with the land and may forever burden the subject property.*
 6. Facility owner and/or operator shall ensure that the design and operation of any PWEF avoids disruption or loss of radio, telephone, television, cell, Internet or similar signals, and shall mitigate any harm caused thereby.
 7. *The applicant shall provide a proposed foundation design and analysis of soil conditions by a professional engineer.*
 8. Public Inquiries and Complaints
 - i) The Facility Owner and Operator shall maintain a phone number and identify a responsible person for the public to contact with inquiries and complaints throughout the life of the project.
 - ii) The Facility Owner and Operator shall make efforts to respond to the public's inquiries and complaints.
 - iii) *The Facility Owner and/or Operator shall keep a record of all such inquiries and complaints and shall submit a report thereof to the Borough/ Township in a timely fashion.*
 9. *A PWEF owner shall maintain a current general liability policy covering bodily injury and property damage with limits of at least \$1 million per occurrence and \$1 million in the*

aggregate. A certificate of insurance shall be made available to the Borough/Township upon request.

10. Decommissioning

- i) The facility owner or operator shall, at his expense, complete decommissioning of the PWEF and all related improvements within twelve (12) months of the date when the use of the particular PWEF has been discontinued or abandoned by the facility owner and/or operator, or upon termination of the useful life of same. The PWEF shall be presumed to be discontinued or abandoned if no electricity is generated by such PWEF for a continuous period of twelve (12) months.
- ii) Decommissioning shall include removal of wind turbines, buildings, cabling, electrical components, roads, foundations to a depth of 36 inches, and any other associated facilities.
- iii) Disturbed earth shall be graded and re-seeded, unless the land owner requests in writing that the access roads or other land surface areas not be restored.

OR

- iv) Disturbed earth shall be graded, re-seeded and/or reforested to reclaim the site back to its predevelopment condition, based on the subdivision/land development plan or documented predevelopment condition, unless the landowner requests in writing that the access roads or other land surface areas not be restored.
- v) An independent and certified Professional Engineer shall be retained to estimate the cost of decommissioning without regard to salvage value of the equipment. Said estimates shall be submitted to Borough/Township after the first year of operation and every fifth year thereafter.
- vi) The facility owner or operator shall post and maintain decommissioning funds in an amount (100% or 110%) of the identified decommissioning costs, as adjusted over time. The decommissioning funds shall be posted and maintained with a bonding company or Federal or Commonwealth chartered lending institution chosen by the facility owner or operator and participating land owner posting the financial security, provided that the bonding company or lending institution is authorized to conduct business within the Commonwealth and is approved by Borough/ Township.
- vii) Decommissioning funds may be in form of a performance bond, surety bond, letter of credit, corporate guarantee or other form of financial assurance as may be acceptable to Borough/ Township.
- viii) If the facility owner or operator fails to complete decommissioning within the period prescribed by paragraph 10.(i) above, then the land owner shall have six (6) months to complete the decommissioning.
- ix) If neither the facility owner or operator, nor the landowner complete decommissioning within the periods described by paragraphs 10.(i) and 10.(viii) above, then Borough/Township may take such measures as necessary to complete decommissioning. The entry into and submission of evidence of a participating land owner agreement to the Township shall constitute agreement and consent of the parties to the agreement, their respective heirs, successors and assigns that the Borough/Township may take such action as necessary to implement the decommissioning plan.
- x) The escrow agent shall release the decommissioning funds when the facility owner or operator has demonstrated and the Borough/Township concurs that decommissioning has been satisfactorily completed, or upon written approval of the Borough/Township in order to implement the decommissioning plan.

- D) Application Requirements. A conditional use / special exception application for a PWEF shall include the following:
1. A narrative describing the proposed PWEF, including an overview of the project, the project location, the approximate generating capacity of the PWEF, the approximate number, representative types and height or range of heights of Wind Turbines to be constructed including their generating capacity, dimensions and respective manufacturers, and a description of ancillary facilities.
 2. An affidavit or similar evidence of agreement between the property owner and the Facility Owner or Operator demonstrating that the Facility Owner or Operator has the permission of the property owner to apply for necessary permits for construction and the operation of the PWEF and setting forth the applicant's and property owner's name, address and phone number.
 3. Identification of the properties on which the proposed PWEF will be located, and the properties adjacent to where the PWEF will be located.
 4. A site plan showing the planned location of each Wind Turbine, property lines, setback lines, access road and turnout locations, substation(s), electrical cabling from the PWEF to the substation(s), ancillary equipment, buildings, and structures, including permanent meteorological towers, associated transmission lines and layout of all structures within the geographical boundaries of any applicable setback.
 5. A Decommissioning Plan sufficient to demonstrate compliance with Section C.10 above.
 6. *A wind resource study shall be submitted documenting wind resources at the site. The study shall include but is not limited to data showing average wind speeds capable of generating electricity and the available capacity to transmit the electricity into the power grid.*
 7. *A noise study in accordance with Section C.2 above.*
 8. *A shadow flicker study in accordance with Section C.4 above.*
 9. Other relevant studies, reports, certifications and approvals as required by this Ordinance or as may be requested by the Borough/Township to ensure compliance with this Ordinance.
 10. Throughout the permit process, the applicant shall promptly notify the Township of any changes to the information contained in the conditional use/special exception permit application. Changes to the pending application that do not materially alter the initial site plan may be adopted without a renewed public hearing.