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SPRINGFIELD-SANGAMON COUNTY REGIONAL PLANNING COMMISSION

TrendLines

SSCRPC — Advising, Planning, Evaluating, Leading

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SSC RPC Springfield-Sangamon County Regional Planning Commission

THE TOPIC: Wind Farm Review and Approval

The possibility of large-scale wind farming in Sangamon County has generated a great deal of interest in how such a development would be reviewed and approved. Even though Sangamon County does not at the present time host a large-scale wind farm, the possibility of such a development was considered several years ago and resulted in the County Board passing a Wind Energy Conversion Systems (or WECS) ordinance in 2006. Upon passage, the WECS ordinance became law as Chapter 17.49 of the County's zoning code.

The County's WECS ordinance is somewhat different from other wind energy codes in that it did not presume that all WECS were the same, making a distinction between systems that might only include one small turbine and be located on a single lot (which the ordinance terms "mini wind energy conversion systems"), mid-sized systems with only one turbine that generate enough electricity to support more than an individual user (termed "small wind energy conversion systems" under the ordinance), and the large, multi-turbine systems that we normally think of when discussing wind farms.

Because of the interest in the future of wind energy production in Sangamon County, the SSCRPC developed this issue of *TrendLines* to provide some general background information on wind turbines and wind farming, and to provided interested parties with a copy of the WECS ordinance.

Since the County Board may amend ordinances, readers should be aware that the material included on the following pages provides the ordinance as it exists at the time of this writing. Those interested in any changes in the ordinance may contact the County zoning office or the SSCRPC, or review the ordinance on-line at Municode.com.

The development of large-scale wind farms can be a controversial subject, and both proponents and opponents have produced numerous publications supporting their positions. The SSCRPC continues to review issues associated with WECS development and our reports are available on the "Land Use" section of the Commission's website: www.sscrpc.com.

Those interested in the subject might also be interested in information provided by several other sources.

These include:

- **The US Department of Energy's Office of Energy Efficiency and Renewable Energy: www.eere.energy.gov.**
- **The National Renewable Energy Laboratory and its National Wind Technology Center: www.nrel.gov.**
- **Illinois State University's Center for Renewable Energy: www.renewableenergy.ilstu.edu.**
- **Western Illinois University's Illinois Wind Project which is part of the Illinois Institute for Rural Affairs: www.illinoiswind.org.**

These sources were used in the development of this *TrendLines*.

History and Uses of Wind Energy

Harnessing the wind to meet human needs is not a new idea. The US Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) points out that people have been using the wind for productive purposes for about 7,000 years. All of us are familiar with sailing ships that use the wind as a form of propulsion, but according to the EERE simple windmills were being used by the Chinese to pump water and by the ancient Persians to grind grain as long ago as 200 B.C.

Prior to industrialization the wind was primarily used for food production; particularly the grinding of grain. But in a short time the technology associated with wind powered mills was being put to other purposes: such as the use of windmills by the Dutch to drain lakes and marshes. By the late 19th century this technology had crossed the Atlantic and Americans were using the wind to pump water and, a relatively short time later, to generate electricity for homes and industry.

The use of the wind to produce electricity might have continued but for industrialization. The steam engine was first put to use to pump water, replacing what was considered to be the less efficient windmill, and then coal-fired steam engines came into use for the production of electricity. Little consideration was given to the environmental impact of coal-fired engines, coal was in abundant supply, these engines could be used most anywhere, and coal could be burnt even when the wind wasn't blowing!

Industrialization did have a positive effect on the use of the wind, as it created interest in the development of larger windmills to generate electricity and began the development of new technologies, materials and sciences that made more efficient windmills possible. The new, larger windmills commonly became known as *wind turbines*; the name most often used today. These machines first appeared in Denmark in the late 1800's, but their use was not limited to Europe, as by 1940 the largest wind turbine in operation was located on "Grandpa's Knob" in Vermont.

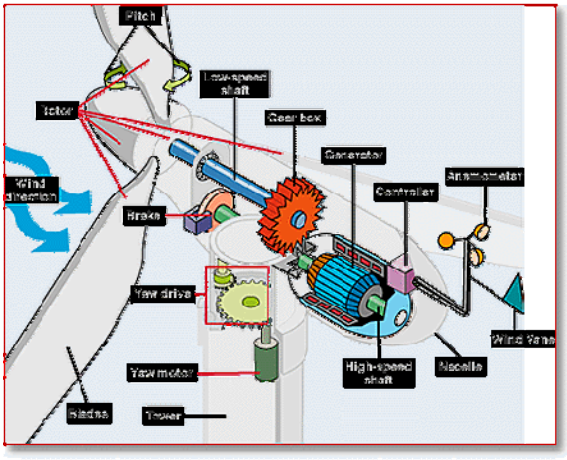
As EERE reports in its history of wind energy, the popularity of wind as an energy source has always fluctuated with the price of fossil fuels. When fuel prices fell after the Second World War, interest in wind energy as a power source fell with it. Conversely, when oil prices shot up during the oil embargoes of the 1970s, interest in wind energy increased as well. Some of this interest was encouraged by "back to the earth" movements with an interest in the environment, with the *Whole Earth Catalog* and similar publications providing how-to-do-it lessons on home wind turbines, but it was also encouraged by technological innovations that created efficiencies allowing for the development of industrial grade turbines that could be brought together in *wind farms* to harness the wind for commercial electricity production. By the late 1970s wind farms were being developed, first in Europe (where energy costs were relatively high) and then in the United States.

Because of advances in technology, concerns about the long-term impact of continued use of fossil fuels on the environment, and the on-going interest in moving the United States toward energy self-sufficiency, which has even created incentives necessary for the development of a wind industry, wind power is again back among the mix of energy sources being used to meet human needs.

How Wind Turbines Work

It's fair to say that without the sun there wouldn't be the wind for harvesting. When the sun heats the atmosphere the heating is uneven. Along with surface irregularities and the rotation of the earth, this uneven heating produces winds that are affected by terrain, bodies of water, man-made structures, and even vegetation. Wind turbines , and the windmills and sails that proceeded them, convert the motion and force of the wind — its kinetic energy — into mechanical power derived from the turning of the turbine's blades. This mechanical power is what drives the rotation of the mills that are used to grind grain, the pumps that are used to move water, or the generators that produce electricity.

When the wind hits the wind turbine's blades, the blades are designed to rotate. As the blades rotate they turn a shaft connected to a generator causing it to spin. It is the spinning of this shaft that allows the generator to convert the wind's kinetic energy into electrical energy. The inner workings of a wind turbine is shown in the EERE diagram on the left.



This is similar to how other power sources work. For example, coal fired power plants use the energy released by the burning of coal to heat water, converting it into steam. The steam circulates through a series of turbine blades, which also turns a shaft connected to a generator. The wind turbine simply uses the force of the wind to generate electricity instead of the heat that comes from the burning fossil fuels in conventional power plants or the heat generated by controlled nuclear reactions in a nuclear power plant.

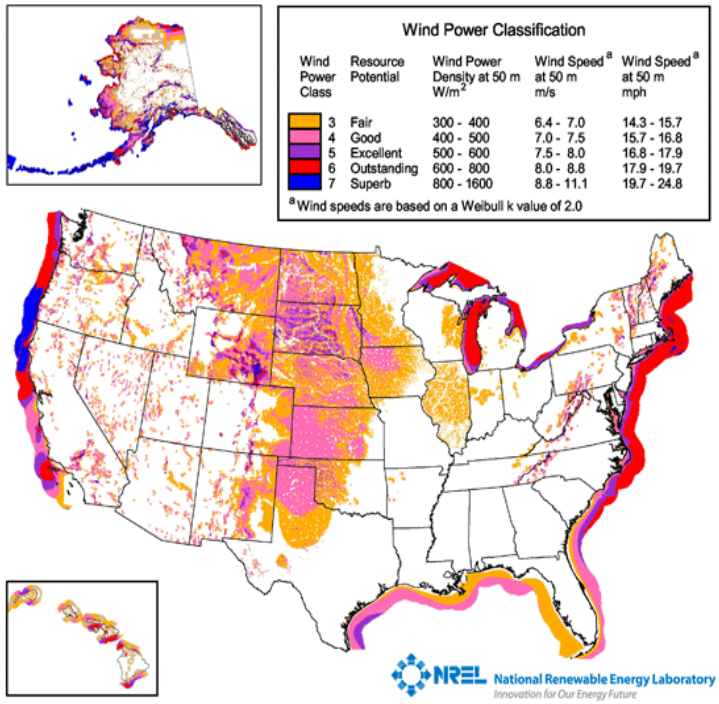
While a single turbine might meet the needs of a particular use, as windmills did for pumping water on farms and ranches, it will not generate enough electrical power to make it efficient for commercial sale: that is, to put it on the grid. To meet utility grade electrical needs, multiple turbines are most often brought together in what are termed *wind farms*. Wind farms consist of a number of turbines, each generating electricity, which are brought together to combine the produced energy for sale. Just like in a conventional power plant, the individual turbines making up the wind farm are controlled from a central location.

Currently there are two different types of wind turbines used in commercial wind farming: one that has a vertical-axis, and looks much like an eggbeater, and one with a horizontal-axis, looking like the traditional windmill. The horizontal-axis turbines are the most common in Illinois, typically having three blades and operating "upwind", with the blades facing into the wind. While small turbines, which typically produce less than 100 kilowatts, are used for homes and to meet such limited needs as water pumping and powering telecommunication dishes, utility-scale turbines may produce several megawatts.

Why Wind Energy in Illinois?

Unlike other forms of energy, wind energy production facilities cannot be placed just anywhere. They need to be where there are winds sufficient for efficient production of electricity, particularly at a utility scale. To help sort out the areas of the United States with sufficient wind capacity, the US Dept. of Energy works with the National Renewable Energy Laboratory (NREL) and others to, as EERE remarks, "measure, characterize, and map wind resources 50 meters (m) to 100 m above the ground."

Taking into account the consistency, speed and pressure of winds above the ground is important as structures and geophysical features, such as hills and ridge crests, can have a significant effect on an area's suitability for wind power generation. The map below, produced by NREL, shows the average wind power estimates at 50 m above ground for locations in the United States. While coastal areas are among the best locations for wind farming (particularly coastal areas that face higher elevations), the mid-western plains and Illinois have potential for wind power generation. This is not inconsequential because these areas serve the eastern part of the American electrical grid; the section of the country with some of the greatest demand for electricity.



The map to the right indicates suitability of various areas of the United States for wind energy production.

As the NREL map shows, large portions of Illinois are considered to have the potential to support wind generation. In fact, more of the Illinois land surface is considered as having that potential than any other state east of the Mississippi River.

As ISU's Center for Renewable Energy (CRE) points out, Illinois' utility for wind farming is also positively affected by the fact that the state's transmission system is less constrained. When existing transmission lines are congested, no additional power can move through them. New transmission lines and facilities are very expensive to build, and their construction can take many years. When transmission capacity exists, as it does in Illinois, this helps to reduce the cost of transmitting electricity from wind farm to user, making areas with additional capacity more attractive to wind energy companies.

The presence of sufficient wind to support utility-scale wind farming coupled with transmission system capacity has made Illinois a very attractive site for wind energy production. According to CRE, approximately a year ago Illinois ranked 10th in the US in existing wind-powered generating capacity and 16th in potential capacity. As of the end of March 2009, CRE reported that there were 17 wind projects online in Illinois, generating 1,118.76 MW of power.

Advantages and Disadvantages of Wind Energy

As the saying goes, "beauty is in the eye of the beholder." Often so are advantages and disadvantages. The US Dept. of Energy's Wind and Water Power Program, a part of the EERE, lists the following advantages and disadvantages associated with wind power.

Advantages

Wind energy is fueled by the wind, so it's a clean fuel source. Wind energy doesn't pollute the air like power plants that rely on combustion of fossil fuels, such as coal or natural gas. Wind turbines don't produce atmospheric emissions that cause acid rain or greenhouse gasses.

Wind energy is a domestic source of energy, produced in the United States. The nation's wind supply is abundant.

Wind energy relies on the renewable power of the wind, which can't be used up. Wind is actually a form of solar energy; winds are caused by the heating of the atmosphere by the sun, the rotation of the earth, and the earth's surface irregularities.

Wind energy is one of the lowest-priced renewable energy technologies available today, costing between 4 and 6 cents per kilowatt-hour, depending upon the wind resource and project financing of the particular project.

Wind turbines can be built on farms or ranches, thus benefiting the economy of rural areas, where most of the best wind sites are found. Farmers and ranchers can continue to work the land because the wind turbines use only a fraction of the land. Wind power plant owners make rent payments to the farmer or rancher for the use of the land.

Disadvantages

Wind power must compete with conventional generation sources on a cost basis. Depending on how energetic a wind site is, the wind farm may or may not be cost competitive. Even though the cost of wind power has decreased dramatically in the past 10 years, the technology requires a higher initial investment than fossil-fueled generators.

The major challenge to using wind as a source of power is that the wind is intermittent and it does not always blow when electricity is needed. Wind energy cannot be stored (unless batteries are used); and not all winds can be harnessed to meet the timing of electricity demands.

Good wind sites are often located in remote locations, far from cities where the electricity is needed. Transmission lines must be built to bring the electricity from the wind farm to the city.

Wind resource development may compete with other uses for the land and those alternative uses may be more highly valued than electricity generation.

Although wind power plants have relatively little impact on the environment compared to other conventional power plants, there is some concern over the noise produced by the rotor blades, aesthetic (visual) impacts, and sometimes birds have been killed by flying into the rotors. Most of these problems have been resolved or greatly reduced through technological development or by properly siting wind plants.

Material quoted above taken from EERE website: http://www1.eere.energy.gov/windand hydro/printable_versions/wind_ad.html.

At the request of members of the Sangamon County Board, the SSCRPC has researched several issues related to WECS, including setbacks, sound issues and effect on property values. These reports are available to the public on the Land Use section of the Commission's website: www.sscrpc.com.

The Sangamon County WECS Ordinance: Definitions.

As with many other statutes and ordinances, the Sangamon County WECS ordinance begins by defining terms relevant to sections of it, and which may be used throughout.

17.49.010 Definitions

Setback The distance from a feature to a tower.

System Height The height above grade of the fixed portion of the tower, excluding the wind turbine itself.

Mini Wind Energy Conversion System (Mini WECS) The system by which wind energy is converted to electricity including a wind turbine, one tower, support system, blades and associated control and conversion electronics which has a rated capacity less than ten (10) kW and a system height less than thirty-five feet (35') or more.

Small Wind Energy Conversion System (SWECS) The system by which wind energy is converted to electricity including a wind turbine, one tower, support system, blades and associated control and conversion electronics which has a rated capacity of ten-one hundred (10-100) kW or a system height of thirty-five feet (35') or more.

Wind Energy Conversion System (WECS) The system by which wind energy is converted to electricity including wind turbines, towers, support systems, blades and associated control and conversion electronics which has a rated capacity over one hundred (100) kW.

WECS Site All parcels of land making up the WECS project.

WECS Perimeter The outer boundaries of the WECS site.

WECS Project All WECS, substations and ancillary facilities.

Mini Wind Energy Conversion Systems (Mini WECS)

As indicated by the definitions to the right above, the Sangamon County ordinance addresses wind energy conversion at different scales of production. Ordinances in other jurisdictions may not.

The smallest use contemplated under the County's ordinance are "Mini-WECS".

17.49.020 Mini Wind Energy Conversion System (Mini WECS)

A. Purpose and Intent

The purpose of these regulations is to provide a uniform and comprehensive set of standards for the installation and use of Mini Wind Energy Conversion Systems designed for on-site home, farm, and small commercial use that are used primarily to reduce on-site consumption of utility power. The intent of these regulations is to protect the public health, safety and community welfare without unduly restricting the development of Mini Wind Energy Conversion Systems.

B. Permitted Use

Mini Wind Energy Conversion Systems shall be considered an accessory use.

C. Special Requirements

Mini WECS are subject to the following requirements:

1) **Tower Height** Tower height shall be less than thirty-five feet (35').

2) **Setbacks** All parts of the Mini WECS structure shall be set back a distance equal to 1.1 times the system height from the side and rear property lines; the principal structure; and any electric or other utility lines. Mini WECS shall not be permitted in the front yard.

Mini WECS 17.49.020, Special Requirements (Continued)

3) Noise Noise levels shall not exceed standards set by the Illinois Pollution Control Board for noise emissions from Class C land to Class A land regardless of the land use of the receiving land. Noise levels shall be enforced by both the State of Illinois and Sanga mon County.

4) Certification All Mini WECS shall conform to applicable industry standards of the American National Standards Institute (ANSI) and be approved by a small wind certifica tion program recognized by the American Wind Energy Association.

5) Appearance The Mini WECS Surface shall be a non-reflective, unobtrusive color (usually white or gray). No advertising signs or graphic designs shall be permitted on the Mini WECS. The manufacturer's identification with ratings is allowed.

6) Safety All Mini WECS shall be unclimbable for fifteen feet (15') above ground level. A visible "High Voltage" warning sign shall be placed on the Mini WECS.

7) Lighting The Mini WECS shall not be lighted except as required by the Federal Aviation Administration or other state or federal laws.

8) Building Codes All county, state and national construction codes shall be followed.

9) Use The Mini WECS shall provide electricity for on-site use only. However, the Mini WECS may be connected to the commercial grid.

D. Certificate of Compliance

Before a certificate of compliance and building permit are issued, the following shall be submitted to the Sangamon County Department of Zoning and Building Safety for review.

1) Site Plan showing

a) name, address and phone number of the property owner

b) property lines

c) all structures

d) septic fields

e) setback lines

f) location of the tower, guy lines or anchor bases

g) location of any above ground utility lines

2) Additional information to be supplied with the site plan

a) Mini WECS manufacturer

b) Name-plate generating capacity

c) Height according to manufacturer

3) Evidence that the local electric utility has been informed of the customer's intent to install an interconnected customer-owned generator, if applicable.

IMPORTANT NOTICE TO READERS:

Readers are strongly advised that while the SSCRPC has endeavored to reproduce the Sangamon County WECS ordinance with accuracy, errors can be made in the publication process. Readers should depend upon the officially published version of the ordinance, rather than this reformatted version, when considering the implications of the ordinance or reviewing County WECS requirements.

The second largest size of WECS addressed under County ordinance is the Small Wind Energy Conversion System, or SWECS. As provided in the definitions, a SWECS has a rated capacity of 10 to 100 kW or a system height of 35 feet or more.

Small Wind Energy Conversion Systems

17.49.030 Small Wind Energy Conversion System (SWECS)

A. Purpose and Intent

The purpose of these regulations is to provide a uniform and comprehensive set of standards for the installation and use of Small Wind Energy Conversion Systems designed for on-site home, farm, and small commercial use that are used primarily to reduce on-site consumption of utility power. The intent of these regulations is to protect the public health, safety and community welfare without unduly restricting the development of Small Wind Energy Conversion systems.

B Permitted Use

Small Wind Energy Conversion Systems shall be considered an accessory use on parcels of land three (3) acres or larger.

C Special Requirements

SWECS are subject to the following requirements.

1) Tower Height Tower height shall be thirty-five feet (35') to eighty feet (80').

2) Setbacks All parts of the SWECS structure shall be set back a distance equal to 1.1 times the system height from the front, side and rear property lines; the principal structure; and any electric or other utility lines.

3) Noise Noise levels shall not exceed standards set by the Illinois Pollution Control Board for noise emissions from Class C land to Class A land regardless of the land use of the receiving land. Noise levels shall be enforced by both the State of Illinois and Sangamon County.

4) Certification All SWECS shall conform to applicable industry standards of the American National Standards Institute (ANSI) and be approved by a small wind certification program recognized by the American Wind Energy Association.

5) Appearance SWECS surface shall be a non-reflective, unobtrusive color (usually white or gray). No advertising signs or graphic designs shall be permitted on the SWECS. The manufacturer's identification with ratings is allowed.

6) Safety All SWECS shall be unclimbable for fifteen (15') above ground level. A visible "High Voltage" warning sign shall be placed on the SWECS.

7) Lighting The SWECS shall not be lighted except as required by the Federal Aviation Administration or other state or federal law.

8) Building Codes All county, state and national construction codes shall be followed.

9) Use The SWECS shall provide electricity for on-site use only. However, the SWECS may be connected to the commercial grid. Only one WECS shall be allowed per land parcel or per principal structure.

SWECS 17.49.030, Special Requirements (Continued)

D Certificate of Compliance

Before a certificate of compliance shall be issued, the following shall be submitted to the Sangamon County Department of Zoning and Building Safety for review.

1) **Site Plan showing:**

a) Name, address and phone number of the property owner

b) Property lines

c) All structures

d) Septic field

e) Setback lines

f) Location of the tower, guy lines or anchor bases

g) Location of any above ground utility lines

2) **Additional information to be supplied with the site plan:**

a) SWECS manufacturer

b) Name-plate generating capacity

c) Height according to manufacturer

3) Evidence that the local electric utility has been informed of the customer's intent to install an interconnected customer-owned generator.

4) Letter from the Federal Aviation Administration (FAA) stating that the SWECS com plies with FAA regulations.

5) Additional structural and anchoring information may be required before a building permit is issued.

The largest size of WECS addressed under County ordinance is the WECS.

A WECS is defined in ordinance as: "The system by which wind energy is converted to electricity including wind turbines, towers, support systems, blades and associated control and conversion electronics which has a rated capacity over one hundred (100) kW. "

These are contemplated as utility-grade systems.

Wind Energy Conversion Systems

17.49.040 Wind Energy Conversion System (WECS)

A Purpose and Intent

The purpose of these regulations is to provide a uniform and comprehensive set of standards for the installation and use of Wind Energy Conversion Systems designed for commercial energy production. The intent of these regulations is to protect the public health, safety and community welfare while allowing development of wind energy resources for commercial purposes.

B Conditional Permitted Use

WECS shall be a conditional permitted use in the A Agriculture zoning district on single or contiguous parcels of land totaling forty (40) acres or more in size. An existing principal structure on a parcel does not preclude placement of a WECS.

C Petition

All policies, procedures and standards of Chapter 17.58 – Conditional Permitted Uses – shall apply. In addition, the petition for a Conditional Permitted Use (CPU) shall include:

1) A written summary of the project including:

a) a general description of the project, including its approximate name plate generating capacity;

b) The potential equipment manufacturer(s) and type(s) of WECS(s);

c) Number of WECS towers, and name plate generating capacity of each WECS;

d) The system height;

e) Diameter of the WECS(s) rotor(s); and

f) Description of the applicant, owner and operator, including their previous WECS ex perience.

2) The name(s), address(es), and phone numbers(s) of the owner and operator.

3) A site plan of the WECS site showing:

a) Boundaries of the project;

b) Location of each WECS tower, guy lines and anchor bases (if any);

c) All WECS structures including, but not limited to, the project substation, interconnect substation and location and voltage of any overhead transmission lines;

d) Property lines;

e) Setback lines;

f) Public access roads;

g) Location of all existing structures with their uses identified; and

h) Land use, zoning, public roads and structures within one thousand feet (1000') of the WECS site.

WECS 17.49.040, Special Requirements (Continued)

D. Special Requirements

WECS are subject to the following requirements:

1) **Location** A WECS shall not be located within one and one-half (1½) miles of an incorporated area with a population over ten thousand (10,000) or within one-half (1/2) mile of an incorporated area with a population of less than ten thousand (10,000). WECS shall not be located so that they interfere with contiguous urban development.

2) **Height** Height shall meet the requirements of the Federal Aviation Administration or other state or federal laws.

3) **Setbacks**

a) perimeter setback – one thousand two hundred feet (1,200'). If the distance from the WECS tower to the WECS site perimeter is less than one thousand two hundred feet (1,200'), the difference may be provided through a setback easement granted to the WECS owner allowing the easement property to be included as part of the one thousand two hundred foot (1,200') setback. The easement shall clearly state that the property may be subject to adverse impacts from the WECS and no habitable structure shall be con structed. The time limit of the setback easement shall be the same as the projected life of the turbine for which the easement is providing a setback. The easement shall not be automatically renewable.

b) principal structures on each parcel – one thousand feet (1,000') or three (3) times the rotor diameter, whichever is greater.

c) third party utility lines – 1.1 times the system height.

d) public road – 1.1 times the system height.

4) **Noise** Noise levels shall not exceed standards set by the Illinois Pollution Control Board for noise emissions from Class C land to Class A land regardless of the land use of the receiving land. Noise levels shall be enforced by both the State of Illinois and Sangamon County.

E. Certification

WECS shall conform to applicable industry standards, including those of the American National Standards Institute (ANSI). Applicants shall submit certificates of design compliance that equipment manufacturers have obtained from Underwriters Laboratories (UL), Det Norske Veritas (DNV), Germanischer Lloyd Wind Energie (GL), or an equivalent third party.

All applicable county, state and national construction and electric codes shall be followed.

F. Appearance

WECS surface shall be a non-reflective, unobtrusive color (usually white or gray). No advertising signs or graphic designs shall be permitted on the WECS. The manufacturer's identification with ratings is allowed.

The Sangamon County ordinance applies special requirements to WECS that are not provided for Mini and Small wind energy systems .

WECS 17.49.040, Safety (Continued)

G. Safety

1) All wiring between wind turbines and the wind energy facility substation shall be underground whenever possible.

2) Wind turbine towers shall not be climbable up to fifteen (15) feet above ground level.

3) All access doors to wind turbine towers and electrical equipment shall be lockable.

4) Appropriate signs warning of high voltage shall be placed on wind turbine towers, electrical equipment, and wind energy facility entrances.

5) All WECS shall be equipped with a redundant braking system. This includes both aerodynamic overspeed controls (including variable pitch, tip, and other similar 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.

H. Lighting

The WECS shall not be lighted except as required by the Federal Aviation Administration or other state or federal law.

I. Use of Public Roads

The owner or operator shall identify all public roads to be used for transporting WECS or substation parts and/or equipment for construction, operation, or maintenance of the WECS(s) or substation(s) and shall:

1) Conduct a pre-construction baseline survey to determine existing road conditions for assessing potential future damage; and

2) Submit an acceptable financial security in an amount determined by the appropriate highway authority to be used for the purpose of repairing any damage to public roads caused by constructing, operating or maintaining the WECS if not done by the WECS owner/operator when construction of the project is completed.

J. Electromagnetic Interference

No WECS shall be installed in any location where its proximity with existing fixed broadcast, retransmission, or reception antenna for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception. No WECS shall be installed in a 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.

The applicant shall provide the applicable microwave transmission providers, local emergency service providers and the Sangamon County Emergency Telephone System Department copies of the project summary and site plan. If these providers demonstrate a likelihood of interference with their communications resulting from the WECS, the applicant shall take measures to mitigate anticipated interference or relocate the WECS tower or facility.

If the WECS causes interference with local residential broadcast TV, steps to mitigate the problem must be taken.

WECS 17.49.040, Shadow Flicker (Continued)

K. Shadow Flicker

The applicant shall conduct a study on potential shadow flicker. The study shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations. The study shall identify problem areas where shadow flicker may interfere more than one (1) hour per year with residences and other existing uses and describe measures that shall be taken to eliminate or mitigate the problems. Any safety problems identified by the County Engineer caused by shadow flicker on roads shall be eliminated or mitigated.

L. Decommissioning Plan

The WECS project must provide a decommissioning plan to insure that the WECS equipment is removed and land is restored to its previous use upon the end of the project's life or as stated in Sec. 17.49.050. The plan shall include:

1) provisions for the removal of structures, debris and cabling on the surface and at least 5' below the surface.

2) Provisions for the restoration of the soil and vegetation;

3) An estimate of the decommissioning costs certified by a professional engineer in current dollars;

4) A financial plan approved by Sangamon County to ensure funds will be available for decommissioning and land restoration;

5) A provision that the terms of the decommissioning plan shall be binding upon the owner or operator and any of their successors, assigns, or heirs; and

6) A provision that Sangamon County shall have access to the site and to the funds outlined in 17.49.040L. (4) above to effect or complete decommissioning one (1) year after cessation of operations.

M. Certificate of Compliance

1) **Required Submission**

The following items shall be submitted to the Sangamon County Department of Zoning and Building Safety:

a) Site plan with all items previously required. Additional items to be included are:

1) Electrical cabling from the WECS tower to the substation(s);

2) Ancillary Equipment;

3) Third party transmission lines;

4) Wells;

5) Septic fields;

6) Field tile location;

7) Existing easements;

8) Floodplain location and elevation, if applicable;

9) Wetland location, if any

b) noise assessment including average and maximum noise levels at perimeter property lines and at housing units within the project.

WECS 17.49.040, Certificate of Compliance (Continued)

c) Phase I Avian Screening Report by a qualified third party and all correspondence with the Illinois Department of Natural Resources and U.S. Fish and Wildlife Service regarding the project.

d) Letter from the FAA stating the project is in compliance with FAA height and lighting requirements.

e) Letter of compliance from the Illinois Historic Preservation Agency.

f) Emergency plan.

g) All required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.

2) **Review**

Due to the complexity of the project and the information submitted, it shall be reviewed by a committee consisting of one or more representatives from:

a) Sangamon County Department of Zoning and Building Safety

b) Springfield-Sangamon County Regional Planning Commission

c) Sangamon County Engineer

d) Sangamon County Emergency Telephone System Department

e) Sangamon County Administrator

f) Sangamon County State's Attorney

g) Applicable fire protection district

If the committee determines that all requirements of the ordinance have been met, the Zoning Administrator shall issue a Certificate of Compliance.

The building permit may be reviewed at the same time.

WECS Cessation of Operations

This section addresses how the County will determine that a system is no longer in operation and notification for removal of the system.

17.49.050 Cessation of Operations

If any Wind Energy Conversion System provided for in this chapter (Mini WECS, SWECS and-WECS) has not been operation and producing electricity for at least two hundred seventy (270) consecutive days, it shall be removed. The Sangamon County Zoning Administrator shall notify the owner to remove the system. Within thirty (30) days, the owner shall either submit evidence showing that the system has been operating and producing electricity or remove it. If the owner fails to or refuses to remove the Wind Energy Conversion System, the violation shall be referred to the Sangamon County States Attorney for enforcement.

Penalties Under WECS Ordinance

17.49.051 Penalties

A failure to obtain applicable building permit(s) for the construction of a Wind Energy Conversion System or failure to comply with the requirements of a building permit or the provisions of this Ordinance shall be deemed a violation of this ordinance. The State's Attorney may bring an action to enforce compliance of the requirements of this Ordinance by filing an action before the Sangamon County Ordinance Violation Hearing Department or by filing an action in the Circuit Court for an injunction requiring conformance with this ordinance or seek such other order as the court deems necessary to secure compliance with this ordinance.

Any person who violates this ordinance shall be fined not less than twenty five dollars ($25) or more than five hundred dollars ($500). A separate offense shall be deemed committed upon each day during or on which a violation occurs or continues.

Nothing herein shall prevent the County from seeking such other legal remedies available to prevent or remedy any violations of this ordinance.

This section provides for penalties for the construction of a system without appropriate permits or otherwise not following the provisions of the ordinance.

Standards for Granting a Conditional Permitted Use (CPU)

While Mini and Small WECS are permitted uses in Sangamon County, WECS are not [see 17.49.040 (C) above], which are a conditional permitted use (CPU). For this reason we include the section from the Sangamon County Zoning Ordinance addressing the standards for granting a CPU. As per 17.58.010 of the Sangamon County Code, the purpose of a CPU is to "provide for the location of special classes of uses which are desirable for the public welfare within a given district or districts that are potentially incompatible with typical uses" permitted within them.

17.58.080 Standards for granting — Generally

No conditional permitted use shall be granted by the County Board unless the conditional permitted use:

A. Is so proposed that the proposed location, design and method of operation of such use will minimize the adjacent effects on the character of the surrounding area; (Res. 16A. 11-19-85)

B. Is so proposed to be operated, designed and located so that the public health, safety, and welfare will be protected;

C. Will not cause substantial injury to the value of other property in the vicinity in which it is located;

D. In addition to the above general standards for all conditional permitted uses that may be allowed, no conditional permitted use listed below shall be granted unless the proposed use can meet the standards as noted:

5. Wind energy conversion systems - A WECS shall not be located within one and one-half miles of an incorporated area with a population over ten thousand or within one-half mile of an incorporated area with a population of less than ten thousand. WECS shall not be located so that they interfere with continuous urban development.

Planning today for tomorrow's vital and livable communities.

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Regularly Scheduled Events:

- **The Springfield-Sangamon County Regional Planning Commission meets in the Sangamon County Board Chamber at 9:30 AM on the third Wednesday of each month unless otherwise posted.**
- **The Springfield Area Transportation Study Technical Committee meets in Room 212 of the County Building at 8:30 AM on the first Thursday of each month, with the Policy Committee meeting at noon on the following Thursday, unless otherwise posted.**
- **The Sangamon County Historic Preservation Commission will meet in Room 212 of the County Building at 4:00PM on the first Wednesday of every month unless otherwise posted.**

ANY SSCRPC DOCUMENTS NOTED IN THIS *TrendLines*, AS WELL AS OTHER ANALYTIC WORK ON CURRENT TOPICS OF INTEREST, ARE AVAILABLE ON THE COMMISSION'S WEBSITE.

About the Springfield-Sangamon County Regional Planning Commission

The Springfield-Sangamon County Regional Planning Commission (SSCRPC) is the joint planning body for the City of Springfield and Sangamon County. Along with this on-going responsibility, the Commission works with many other municipalities, public agencies, and public-private entities throughout the region to promote orderly growth and development.

Through the work of its professional staff, the Commission provides overall planning services related to land use, housing, recreation, transportation, economics, and the environment, as well as special projects of local and regional interest.

In carrying out its tasks, the SSCRPC conducts numerous research studies, analytic reviews and planning projects each year.

The SSCRPC prepares area-wide planning documents and assists the county, cities, and villages, as well as special districts, with planning activities. The staff reviews all proposed subdivisions, makes recommendations on all Springfield and County zoning and variance requests, and serves as the Floodplain Administrator.

It also acts in regional capacities, for example serving as the Metropolitan Planning Organization for transportation planning, directing the development of the Sangamon Regional Comprehensive Plan, and serving as the A-95 review clearinghouse.

The Commission that oversees this work is made up of 17 members including representatives from the Sangamon County Board, Springfield City Council, special units of government, and six appointed citizens from the city and county.

The Commission's Executive Director is appointed by the Executive Policy Board of the Commission and confirmed by the Sangamon County board. He serves as County Plats Officer and also oversees the County's Department of Zoning.