DEPARTMENT OF COMMUNITY DEVELOPMENT SERVICES

Planning Division

m e m o r a n d u m

TO: Urbana Plan Commissioners

FROM: Robert Myers, AICP, Planning Manager

DATE: September 3, 2010

SUBJECT: Plan Case No. 2115-T-09: Request by the Zoning Administrator to amend the Urbana Zoning Ordinance by enacting Section XIII-7, Wind Energy Systems.

Introduction and Background

City staff introduced this case at the August 5, 2010 Plan Commission meeting with an in depth presentation with Commissioner discussion and direction provided at the August 19, 2010 meeting. This memorandum and attached draft ordinance address the specific changes requested at that meeting. Additionally, some minor refinement of wording and formatting have been made. In the attached draft proposed additions are underlined and proposed deletions are ~~struck out~~.

Limits on the number of wind turbines allowed on buildings. As requested, absolute limits on the number of wind turbines allowed on buildings have been removed.

Allow co-locations of other utilities on wind turbine towers. As requested, telecommunications apparatus maybe located on wind turbine towers.

Remove the reference to the University Zoning District from the proposed text amendment. The University of Illinois is actively working on plans to erect a wind turbine in the City of Urbana's extraterritorial jurisdiction on Yankee Ridge (east of Philo Road and south of Old Church Road). The University of Illinois anticipates issuing a Request of Proposals within the next few months. The two references in the draft ordinances to the university show the City's willingness to constructively review the proposed towered in the context of our local community standards for wind energy systems. Wording in the draft ordinance has accordingly been revised to "…any future University zoning district."

Define wind energy production. Some discussion took place at the August 19 meeting whether the definitions were sufficient. Following review, City staff is recommending to add a definition of "wind turbine" and modify the definition for "wind energy system."

Add a commercial service area option. Options have been added for commercial and industrial wind energy system service areas which would be small clusters of turbines used to cooperatively generate power for several nearby users.

Reference to Illinois Pollution Control Board's standards. City staff can present further information on this topic at the September 9, 2010 Plan Commission meeting. But essentially the Illinois Pollution Control Board standards are performance standards with decibel limits for different frequency ranges for both day and night time (10:00 p.m. to 7:00 a.m.) These limits are not tied to a particular technology.

Design Review Districts. Under existing ordinances and design guidelines, construction of wind energy systems in City-designated historic districts and on landmark properties would require review by the Historic Preservation Commission and issuance of a Certificate of Appropriateness. For other design review districts (MOR, Lincoln-Busey Corridor, and East Urbana), building-mounted wind energy systems would likely require review and approval by the respective review body – either the MOR Development Review Board or the Design Review Board. Tower-mounted wind energy systems would not trigger design review in non-historic design review districts. However, due to the proposed setback requirements and existing narrow lot widths in these districts, it seems highly unlikely that a tower-mounted turbine would be constructed. Consequently City staff recommends that no further changes are necessary to address this issue.

Recommendation

Having incorporated the changes requested at the August 19, 2010 Plan Commission meeting, staff recommends that the Plan Commission forward Plan Case No. 2115-T-09 to the Urbana City Council with a recommendation for **APPROVAL**, including the evidence and findings from the August 2, 2010 City staff memorandum.

City staff encourages the Plan Commission to make its recommendation at the September 9 meeting so that these standards may help guide and inform review of the University of Illinois' proposed South Farms wind energy system.

Attachments:

Exhibit A: Proposed Wind Energy Systems Text Amendment

CC:

John Hall, Champaign County Department of Planning and Zoning

Section XIII-7. Wind Energy Systems

A. Purpose

The purpose of this section is to further the goals and objectives of the Urbana Zoning Ordinance in promoting the use of wind as an alternative energy source. This section regulates the siting, installation and operation of wind energy systems ~~wind turbines~~ to allow the effective and efficient use of wind resources while protecting the health, safety, and welfare of nearby residents and the general public.

B. Wind Energy System Definitions

Ambient Sound: The all-encompassing sound at a given location, usually a composite of sounds from many sources near and far. For the purpose of this section, the "ambient sound level" shall mean the quiescent background level, that is, the quietest of 10-second average sound levels measured when there are no nearby or distinctly audible sound sources. Daytime ambient measurements should be made during mid-morning, weekday hours while nighttime measurements should be made after midnight.

Anemometer Tower: A temporary wind speed indicator constructed for the purpose of analyzing the potential for utilizing a wind energy system at a given site. This includes the tower, base plate, anchors, cables and hardware, wind direction vanes, booms to hold equipment, data logger, instrument wiring, and any telemetry devices that are used to monitor or transmit wind characteristics over a period of time for either instantaneous wind information or to characterize the wind resource at a given location.

Horizontal-Axis Wind Turbine: A tower-mounted turbine in which the rotor is mounted horizontally.

Rotor: The rotating part of a wind turbine, including the blades and blade assembly or the rotating portion of the generator.

Rotor Diameter: The diameter of the circle swept by the rotor. For measurement purposes this means the distance from the outer-most tip of the blade to the center of the turbine rotor multiplied by two.

Shadow Flicker: A repetitive oscillation of light and shadow cast when light passes through and is interrupted by moving wind turbine blades. ~~The moving shadow cast on the ground and stationary objects, created by the sun shining through the moving blades of a wind energy system.~~

Sound Level: The A-weighted sound pressure level in decibels (dB) (or the C-weighted level if specified) as measured using a sound level meter that meets the requirements of a Type 2 or better precision instrument according to the American National Standards Institute (ANSI) S1.4. The "average" sound level is time-averaged over a suitable period using an integrating sound level meter that meets the requirements of ANSI S12.43.

System: See definition for *Wind Energy System*.

System Height: The vertical distance measured from the finished grade at the foot of the system ~~of the parcel~~ to the outer-most tip of the rotor when the tip is at its highest point.

Tower-Mounted Wind Turbine: A wind turbine mounted on a structure that is designed and constructed primarily for the purpose of elevating and supporting a wind generator, including freestanding lattice towers, monopole towers or guyed towers.

Urbana Extraterritorial Jurisdiction: The unincorporated territory lying within one and one-half (1½) miles of the corporate limits of the City of Urbana, excluding the areas located within the subdivision jurisdiction of another municipality ~~city or village~~.

Vertical-Axis Wind Turbine: A wind turbine in which the rotor is mounted vertically.

Wind Energy System: ~~A rotary device that extracts energy from the wind.~~ A wind turbine and all directly supporting components, including ~~This device includes~~ any base, blade, foundation, generator, nacelle, rotor, tower, transformer, vane, wire, inverter, and batteries. ~~or other components used in the system~~.

Wind Energy System, Building-Mounted: A relatively small wind turbine and components ~~generating facility~~, mounted on a building and which generates power for on-site use.

Wind Energy System, On-Site: A Wind Energy System that is incidental and subordinate to and which ~~is designed to~~ generates power for the principal use of the zoning lot on which it is situated. A wind energy system is considered on-site even if excess electricity ~~electric power, generated by the system, and not presently needed for on-site use,~~ is used by the utility company in exchange for a reduction in the cost of electrical power supplied by that company.

Wind Energy System, Pre-Existing: Any wind energy system which is operational on the effective date of this section.

Wind Energy System, ~~Residential~~ Service Area: A wind energy system intended to provide power to a small grouping of uses within a single zoning district. ~~residential subdivision or small grouping of residential dwellings~~.

Wind Energy System, Utility:

a) A wind energy system that exceeds the maximum system height, or maximum rotor diameter ~~or maximum quantity~~ standards provided by this Section for an on-site tower-mounted wind energy system; or

b) Groupings of wind energy systems, often maintained by one entity, which generate ~~original~~ power on-site to be transferred to a transmission system for distribution to customers.

Wind Turbine: A rotary mechanical device that extracts energy from the wind for either direct mechanical use or conversion to electrical energy.

C. Applicability

1. The provisions of this section shall apply to wind energy systems erected and operated within the corporate limits of the City of Urbana and within the unincorporated territory lying within one and one-half (1½) miles of those corporate limits (Urbana Extraterritorial Jurisdiction) per statutory authority granted in Chapter 65 ILCS 5/11-13-26.

2. All zoning districts and zoning regulations cited are as enacted ~~set~~ by the City of Urbana or Champaign County, whichever is applicable to the subject property.

3. All wind energy systems shall be erected, constructed, installed and ~~or~~ modified in conformance with the provisions of this section, and all other applicable regulations, as evidenced by the issuance of a Building Permit, and any other necessary zoning or development approvals.

4. Pre-existing wind energy systems shall be exempt from the provisions of this section with the exception of maintenance, removal of abandoned systems and those which specifically apply to pre-existing systems. Pre-existing wind energy systems shall be permitted to continue per Section XIII-7.N.

D. Temporary Wind Turbines

1. *Anemometer Towers.* An anemometer tower is permitted in all zoning districts as a temporary use.

   a) ~~An anemometer tower shall not be erected, constructed, installed or modified unless a building permit has been issued by the City of Urbana.~~ [Already covered by Section XIII-7.C.3]

   b) ~~An anemometer tower shall be permitted~~ for no more than eighteen (18) months. An extension of this time period, not to exceed an additional eighteen (18) months, may be granted at the discretion of the Zoning Administrator upon submittal and review of sufficient evidence to support the requested extension.

E. Wind Energy Systems ~~Turbines~~ Permitted by Right

1. *Building-Mounted Wind Energy Systems.* Within all zoning districts, a building-mounted wind energy system is permitted as an accessory use to any permitted principal use other than common-lot-line dwellings. A building-mounted wind energy system shall only be permitted within a condominium development if authorized by the condominium association board, and if provisions are made for the maintenance of said system in the condominium development bylaws or other applicable legal document, subject to the review and approval of the City of Urbana. ~~A building-mounted wind energy system shall not be erected, constructed, installed or modified unless a building permit has been issued by the City of Urbana.~~ [Already covered by Section XIII-7.C.3]

   All building-mounted wind energy systems shall be subject to the following requirements:

   a) Design Standards as set forth in Section XIII-7.I.

   b) *Maximum Height*: 10 feet as measured from the highest point of the roof for all uses in residential zoning districts; and 15 feet as measured from the highest point of the roof for all uses in non-residential zoning districts.

   c) *Maximum Rotor Diameter*: 10 feet.

   d) *Minimum Setback*: Shall be equal to the required minimum yard (front, rear, side) for the zoning district in which it is located. The setback shall be measured horizontally from the furthest outward extension of all moving parts to the nearest property line.

   e) *Minimum Separation*: If more than one building-mounted wind energy system is installed, a minimum distance equal to the height of the highest system must be maintained between the bases of each system.

   f) *Maximum Quantity*: ~~No more than one building-mounted wind energy system shall be allowed per zoning lot in residential zoning districts. For all uses in non-residential zoning districts the~~ The maximum number of systems per property shall be based on setback and separation requirements as set forth in this section.

   g) *Building Support*: The building upon which the system is to be mounted shall be able to safely support operation of the wind energy system. Certification by a structural engineer licensed in the State of Illinois shall be required as part of the building permit process by the City of Urbana.

2. *On-Site Tower-Mounted Wind Energy System.* An on-site tower-mounted wind energy system is a permitted accessory use within all zoning districts. An on-site tower-mounted wind energy system shall only be permitted on the commons area within a condominium development if authorized by the condominium association board, and if provisions are made for the maintenance of said system in the condominium development bylaws or other applicable legal document, subject to the

review and approval of the City of Urbana. ~~An on-site tower-mounted wind energy system shall not be erected, constructed, installed or modified unless a building permit has been issued by the City of Urbana.~~ [Already covered by Section XIII-7.C.3]

All on-site tower-mounted wind energy systems shall be subject to the following requirements:

a) Design Standards as set forth in Section XIII-7.I.

b) *Maximum System Height*:

(1) Residential Zoning Districts: 120 feet.
(2) Non-Residential Zoning Districts: 175 feet, except that the maximum system height shall be limited to 120 feet if located within 500 feet of an existing residence, the boundary of a residentially zoned property, or the boundary of a property that is in Urbana's ETJ and designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s).

c) *Maximum Rotor Diameter*:

(1) Residential Zoning Districts: 30 feet.
(2) Non-Residential Zoning Districts: 70 feet, except that maximum rotor diameter shall be limited to 30 feet if located within 500 feet of an existing residence, the boundary of a residentially zoned property, or the boundary of a property that is in Urbana's ETJ and designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s).

d) *Lot Size*: No minimum lot size.

e) *Location*: Entirely behind the principal building in residential and commercial zoning districts. Wind energy systems shall not be constructed on any public easement.

f) *Minimum Setback*: A distance equal to the system height from all property lines, public street right-of-way lines and overhead utility lines. The setback shall be measured from the center of the tower's base. No guy wire anchors may extend closer than ten feet to the property line, or the distance of the required setback in the respective zoning district, whichever results in a greater setback.

~~g) Maximum Quantity: One per zoning lot.~~

F. Wind Turbines Permitted by a Special Use Permit

1. ~~*Residential*~~ *Service Area Tower-Mounted Wind Energy System<u>s</u>.* A ~~residential~~ service area tower-mounted wind energy system may be erected in all ~~residential~~ zoning districts with the issuance of a Special Use Permit. A Special Use Permit for a proposed ~~residential~~ service area tower-mounted wind energy system shall be evaluated in consideration of the factors set forth in Section XIII-7.G and along with compliance to the design standards of Section XIII-7.I. A Special Use Permit application shall be submitted in accordance with Article VII of this Ordinance. ~~Said system shall not be erected, constructed, installed or modified unless a building permit has been issued by the City of Urbana.~~ [Already covered by Section XIII-7.C.3] If the owner of a system is not the owner of land on which the system is located, the City may require that a bond be posted, at time of approval of a Special Use Permit, for the removal of the system.

All ~~residential~~ service area tower-mounted wind energy conversion systems permitted as a special use shall be subject to the following requirements:

a) Design Standards as set forth in Section XIII-7.I.

b) *Maximum System Height*: 175 feet.

c) *Maximum Rotor Diameter*: 70 feet.

d) *Minimum Setback*: A distance equal to the system height from property lines of those properties which are not a part of the service area, public street right-of-way lines and overhead utility lines. The setback shall be measured from the center of the tower's base.

e) *Maximum Quantity*: As determined by the Special Use Permit.

2. *Utility Tower-Mounted Wind Energy System.* A utility tower-mounted wind energy system may be erected in all agricultural and industrial zoning districts as established by either the City of Urbana or by Champaign County within Urbana's ETJ and in the CRE and any future university zoning districts as established by the City of Urbana with the issuance of a Special Use Permit. A Special Use Permit for a proposed utility tower-mounted wind energy system shall be evaluated in consideration of the factors set forth in Section XIII-7.G and along with compliance to the design standards of Section XIII-7.I. A Special Use Permit application shall be submitted in accordance with Article VII of this Ordinance. ~~Said system shall not be erected, constructed, installed or modified unless a building permit has been issued by the City of Urbana.~~ [Already covered by Section XIII-7.C.3] If the owner of a system is not the owner of land on which the system is located, the City may require that a bond be posted, at time of approval of a Special Use Permit, for the removal of the system.

   All utility tower-mounted wind energy conversion systems permitted as a special use shall be subject to the following requirements:

   a) Design Standards as set forth in Section XIII-7.I.

   b) *Maximum System Height*: 400 feet.

   c) *Maximum Rotor Diameter*: 300 feet.

   d) *Lot Size*: The minimum lot size shall be equal to the minimum lot size for the zoning district in which the system is located.

   e) *Minimum Setback*: A distance equal to the total height of the system from all property lines, public street right-of-way lines and overhead utility lines. In addition said system shall be located a minimum of 1,200 feet from an existing residence, the boundary of a residentially zoned property, or the boundary of a property that is in Urbana's ETJ and designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s). The setback shall be measured from the center of the tower's base.

   ~~f) Maximum Quantity:~~
      ~~i. City of Urbana: Two per development.~~
      ~~ii. Urbana's ETJ: Five per development.~~

TABLE XIII-1 SUMMARY OF WIND ENERGY SYSTEMS ALLOWED

TURBINE TYPE	USE STANDARD		MINIMUM SETBACK	MAXIMUM SYSTEM HEIGHT	MAXIMUM ROTOR DIAMETER	~~MAXIMUM QUANTITY~~
	Permitted Use (Accessory Use Only)	*Special Use* (Accessory or Principal Use)				
Building Mounted	All Zoning Districts		Shall be equal to the required minimum yard (front, rear, side) for the zoning district in which it is located.	10 feet as measured from the highest point of the roof for all uses in residential zoning districts; and 15 feet as measured from the highest point of the roof for all uses in non-residential zoning districts	10 feet	~~No more than one building-mounted wind energy system shall be allowed per zoning lot in residential zoning districts. For all uses in non-residential zoning districts the number of systems shall be based on setback and separation requirements as set forth in this section.~~
On-Site Tower-Mounted	Residential Zoning Districts		A distance equal to the system height from all property lines, public street right-of-way lines and overhead utility lines.	120 feet	30 feet	~~One per zoning lot.~~
	Non-residential Zoning Districts			175 feet, except that the maximum system height shall be limited to 120 feet if located within 500 feet of an existing residence, the boundary of a residentially zoned property, or the boundary of a property that is in Urbana's ETJ and designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s).	70 feet, except that the maximum rotor diameter shall be limited to 30 feet if located within 500 feet of an existing residence, the boundary of a residentially zoned property, or the boundary of a property that is in Urbana's ETJ and designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s).	
~~Residential~~ Service Area Tower-Mounted		All Zoning ~~Residential~~ Districts	A distance equal to the system height from property lines of those properties which are not a part of the service area, public street right-of-way lines and overhead utility lines.	175 feet	70 feet	~~As determined by the SUP.~~
Utility Tower-Mounted		All agricultural and industrial zoning districts as established by either the City of Urbana or by Champaign County within Urbana's ETJ and in the CRE and any future University zoning districts as established by the City of Urbana	A distance equal to the total height of the system from all property lines, public street right-of-way lines and overhead utility lines. In addition said system shall be located a minimum of 1,200 feet from an existing residence, the boundary of a residentially zoned property, or the boundary of a property that is in Urbana's ETJ and designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s).	400 feet	300 feet	~~Two per development in the City of Urbana and five per development in Urbana's ETJ.~~

G. Evaluation of a Wind Energy System Special Use Permit

Following the procedures established in Article VII, the Plan Commission, in evaluating a Special Use for a utility or residential service area tower-mounted wind energy system, shall consider the following factors in addition to the requirements identified in Section VII-4.A:

1. Number of systems and their location;

2. The number of systems relative to the size of the parcel on which the systems are proposed to be located;

3. The height of the system relative to the size of the parcel on which the system is proposed to be located;

4. The need for the proposed height of the system in order to allow the system to operate efficiently;

5. The need for the rotor diameter and/or number of systems in order to serve the site effectively;

6. The uniformity of design, including tower type, color, number of blades, and direction of blade rotation for multiple system proposals;

7. The building density of the general area in which the system is proposed to be located;

8. The nature of existing and planned future land use on adjacent and nearby properties;

9. Proximity to an existing residence, residential zoning district ~~the boundary of a residentially zoned property~~, or the boundary of a property that is in Urbana's ETJ and designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s);

10. Land use compatibility and impact on orderly development;

11. Location of other wind energy systems in the surrounding area;

12. Proximity to transmission lines to link the systems to the electric power grid;

13. Surrounding topography;

14. Proximity to environmentally sensitive areas and the environmental impact of the system;

15. Whether the design of the proposed system reflects compliance with the design standards of Section XIII-7.I;

16. Whether a substantial adverse effect on public safety will result from the height or rotor diameter of the system or some other aspect of the system's design or proposed construction;

17. Consistency with the Urbana Comprehensive Plan; and

18. Any other factors relevant to the proposed system.

H. Wind Energy System Special Use Expiration. A Special Use Permit issued pursuant to this section expires if:

1. A building permit for the wind energy system has not been requested by means of a complete application within two years of approval of the Special Use Permit.

2. The wind energy system is abandoned and removed per Section XIII-7.M.

I. Design Standards. In addition to all other applicable requirements of this Section, wind energy systems shall be constructed in conformance with the following design standards:

1. Visual Appearance

a) *Tower Type*: Monopole type tower is required in all zoning districts with the exception of all City of Urbana industrial districts and in all Champaign County agricultural and industrial zoning districts in Urbana's ETJ, where other tower types may be permitted.

b) *Color*: Non-reflective, non-obtrusive color such as off white, light gray, or other neutral color, or the color supplied by the manufacturer. The required coloration and finish shall be maintained throughout the life of the system.

c) *Lighting*: No artificial lighting is allowed unless required by the Federal Aviation Administration (FAA) or other applicable authority. If lighting is required, the lighting alternatives and design chosen must cause the least disturbance to surrounding land uses.

d) *Signs*: All signs, both temporary and permanent, are prohibited on a wind energy system with the exception of warning signs. One warning sign no more than four square feet in area is permitted per system.

~~e) No telecommunications dishes, antennas, cellular telephone repeaters or other similar devices shall be attached to wind energy systems.~~

e) *Electrical System*: All on-site electrical transmission lines connecting a wind energy system to a building or public utility electricity distribution system shall be located underground. As-built plans shall be submitted showing the location of underground conduit and cable located within the public right-of-way.

2. Safety

a) *Tower Access*: Towers shall be designed to prevent climbing within the first 12 feet from the ground. Access to the tower shall be limited by locating all climbing apparatus to no lower than 12 feet from the ground and by providing any other applicable anti-climbing measures.

b) *Equipment Access*: All ground-mounted electrical and control equipment shall be labeled and secured to prevent unauthorized access.

c) *Ground Clearance*: The minimum distance between the ground and any part of the rotor blade system of a tower-mounted horizontal-axis wind energy system shall be 20 feet. For a tower-mounted vertical-axis wind energy system, no moving portions of the turbine shall be located any closer than 10 feet above the adjacent finished grade.

d) *Overspeed Controls*: All on-site tower-mounted wind energy systems shall be equipped with automatic and manual braking systems. Utility tower-mounted wind energy systems shall be equipped with a redundant braking system, including both aerodynamic over-speed controls and mechanical brakes.

e) *Force Wind Standard*: At a minimum, a wind energy system shall be engineered to withstand a wind velocity 110 miles per hour.

3. Electromagnetic Interference. All wind energy systems shall be designed and sited such that no disruptive electromagnetic interference is caused to communication systems, contrary to Federal Communication Commission requirements for electromagnetic interference and/or other State or

local laws. All turbines shall utilize nonmetallic rotor blades unless the applicant can supply documentation from an independent testing laboratory certifying that any proposed metallic blade rotor will not cause electromagnetic interference.

4. *Vibration*. All wind energy systems shall not produce vibrations which are humanly perceptible beyond the property on which a wind energy system is situated.

5. *Sound Level Limitations*

   a) The sound level limits identified below shall apply. Established Sound Level Measurement Procedures shall be used that account for ambient sound contributions.

Receiving Property	Hours of Operation	Sound Level Limits
Residential	10:00 pm – 7:00 am	45 dB(A)
Residential	7:00 am – 10:00 pm	55 dB(A)
Non-Residential	24 hours	60 dB(A)
Industrial	24 hours	65 dB(A)

   b) No system shall operate with an average sound level more than 5 dB (A) above the non-operational ambient level, as measured at the property line.

   c) To limit the level of low frequency sound, the average C-weighted sound level during system operation shall not exceed the A-weighted ambient sound level by more than 20 dB.

   d) Applications for wind energy systems requiring a Special Use Permit shall include an environmental sound impact study that gives:

      (1) Certified manufacturer's specification of the sound emissions from similar turbines that specifically state that the overall sound level as well as the 1/3-octave band levels measured in accordance with IEC 61400-11.

      (2) The expected maximum one minute averaged A- and C-weighted sound level at the property line with all turbines operating.

      (3) The daytime and night time quiescent ambient sound levels at the property line as measured by an environmental acoustics expert (board certified by the Institute of Noise Control Engineering).

6. *Shadow Flicker*

   a) Applications for wind energy systems requiring a Special Use Permit shall include a shadow flicker study. Using available software, the applicant shall show calculated locations of shadow flicker caused by a wind energy system and the expected duration in total number of hours per year of the flicker cast upon adjacent dwellings ~~residences~~, residential zoning districts, ~~residentially zoned properties~~ or areas in Urbana's ETJ that are designated for future residential use by the Urbana Comprehensive Plan Future Land Use Map(s).

   b) Wind energy systems requiring a Special Use Permit shall be sited in a manner that does not result in significant shadow flicker impacts on adjacent properties. Significant shadow flicker is defined as more than 30 hours per year on any residential structure. The applicant has the burden of providing evidence that the shadow flicker will not have significant adverse impact. Potential shadow flicker shall be addressed either through siting or other approved mitigation measures.

7. *Federal Aviation Administration (FAA) Compliance.* All wind energy systems shall comply with all applicable regulations of the FAA, including required FAA permits for installation closer than two

miles to an airport. The applicant shall be responsible for determining the applicable FAA regulations and securing the necessary approvals.

8. *Industry Standards.* All wind energy systems shall conform to applicable industry standards, including those of the American National Standards Institute (ANSI). Owners shall submit certificates of design compliance that equipment manufacturers have obtained from Underwriters Laboratories (UL), National Renewable Energy Laboratories (NREL), Det Norske Veritas (DNV), Germanischer Lloyd Wind Energie (GL), or an equivalent third party.

J. *Code Compliance*. All wind energy systems shall meet the City of Urbana Building Code, Erosion Control Ordinance, Subdivision and Land Development Code and all other applicable codes and ordinances of the City of Urbana.

K. *Maintenance*. All wind energy systems shall be maintained in good condition and in safe working order throughout the life of the system. If the system is not maintained in operational condition and/or poses a potential safety hazard, the owner shall immediately correct the situation at their expense. Any wind energy system found to be unsafe by the Zoning Administrator or appointed designee, must stop operation immediately upon notification. If the owner fails to correct the unsafe condition, the Zoning Administrator may remove or cause to be removed, altered or repaired an unsafe wind energy system immediately and without notice, if, in his/her opinion, the condition of the system is such as to present an immediate threat to the safety of the public. If a wind energy system remains inoperable for a period of 180 days, it shall be deemed abandoned and the procedures under Section XIII-7.M applied.

L. *Violation*. Should a wind energy system or any part thereof violate the requirements of this Section, the owner shall cease operations immediately. Upon receipt of a complaint or the notice of a complaint from the owner, the Zoning Administrator shall make a determination as to whether there is a violation requiring the immediate cessation of operation. The system may resume operation once the violation(s) have been remedied.

M. Abandonment and Removal. A wind energy system shall be deemed abandoned it not functioning for a continuous period of 180 days, and there is no demonstrated plan to restore the equipment to operating condition. The City will issue a Notice of Abandonment for the removal of an abandoned wind energy system as follows:

1. The Zoning Administrator is authorized to issue a Notice of Abandonment to the owner of a wind energy system that is deemed to be abandoned, and in cases where immediate safety is not of concern, the owner shall have 30 days from Notice receipt date to respond.

2. Following the 30-day response period, and if the Zoning Administrator determines that the system remains ~~has been~~ abandoned, the owner of the system shall remove the abandoned system at their expense within 180 days of the original Notice of Abandonment. A demolition permit shall be obtained for the removal of the abandoned system.

3. Failure to remove the abandoned system within said 180 days constitutes a violation of this Section. Following said 180 days, the City, or a contractor hired by the City, shall have the authority to enter the subject property and cause removal of the system at the owner's expense. In the case of such removal the City may ~~has the right to~~ file a lien for reimbursement, of any and all expenses incurred by the City without limitation, including attorney fees and accrued interest. For those cases in which the owner of a wind energy system is not the owner of land on which the system is located, the City may execute the bond posted at the time of approval of the system.

N. Pre-Existing Wind Energy Systems

1. Pre-existing wind energy systems shall be allowed to continue. Routine maintenance shall be permitted on such pre-existing systems.

2. A building permit and any other necessary zoning and development approvals shall be obtained to alter, enlarge, extend, replace or relocate a pre-existing wind energy system.

3. If a pre-existing wind energy system is nonconforming with this Section, it shall not be altered, enlarged, extended or relocated such that the nonconformity of the system is increased.

4. Pre-existing wind energy systems that are substantially damaged or destroyed must be rebuilt to conform with this Section.