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ITEM # 32
DATE: 02-09-10

COUNCIL ACTION FORM

SUBJECT: WIND ENERGY SYSTEMS

BACKGROUND:

On November 10, 2009, the City Council adopted Ordinance 4013 establishing regulations for solar energy systems. Adoption of those regulations followed extensive discussions with the City Council, Planning & Zoning Commission, and the community at large pertaining to both solar and wind energy systems in all zones of the City. During an August 2009 work session the City Council determined that provisions for solar power were likely less complex or controversial than wind power, particularly in residential zones. Therefore, the Council moved forward on the solar energy standards and directed staff to explore wind energy under a separate proposal. A copy of the memo and staff report is attached.

Accordingly, **staff developed the following alternative concepts allowing and regulating wind energy production for discussion purposes**. These concepts are largely based on Council comments from the August work session.

Concept One: Commercial / Industrial (Limited Residential)
- By Special Use Permit only
- Standard Special Use Permit criteria

This alternative would **not allow freestanding wind energy systems in residential zones, but would allow them in all other zones.** After some non-residential freestanding installations become more commonplace, and after the public has had a chance to know what visual or noise impacts may be associated with these, the Council could later consider whether or not to allow freestanding systems in residential zones. This concept would:

- Allow **only smaller rooftop systems in residential** zones based on mixed public feedback about freestanding tower systems in neighborhoods.
- Allow **rooftop and freestanding systems in non-residential** zones while also keeping in mind sensitive areas such as overlay zones or historic districts.
- Require special buffers when towers are adjacent to residential or other sensitive areas.
- Require Special Use Permit (SUP) approval to generate public awareness and participation.

Under this alternative, the City Council could determine after one or two years if public sentiment is favorable to systems experienced in commercial/industrial zones and might also accept them in residential zones.

Concept Two: All Zones – Two Tiered

- By administrative or Special Use Permit
- Special Use permit criteria
- Dimensional standards established for staff-level review

This alternative would allow wind energy systems in all zones, but with a more stringent criteria applied to residential properties. The key with this alternative is the exhaustive engineering and monitoring that would be required to ensure that compliance is met at the time of application and **also** maintained during the future operation of the system. The cost burden to the applicant could be significant and also difficult for the city staff to enforce. This alternative would allow staff to approve applications that meet base criteria for height, setback, and lot size. If the application is to exceed any of those criteria, approval to a higher limit could be approved by the Zoning Board of Adjustment (ZBA). The ZBA can place any additional conditions it deems necessary on the Special Use Permit (SUP). This concept would:

- Adopt sound/vibration limits using dBA, mHz and Frequency standards.
- Adopt glare limits (percentage of time moving blades reflect on adjacent property).
- Adopt shadow-flicker limits (percentage of time moving shadows fall on adjacent property or windows).
- Regulate color and construction-style standards - (monopole preference unless alternative approved through SUP).
- Adopt height limits - Staff approved up to a given height, or SUP for some increase.
- Adopt setbacks - Staff approved for minimum setback, or SUP required for lesser setback (subject to fall-zone easement or other mitigation measures.).
- Require one or two acre minimum lot size - Staff approve for minimum lot size; SUP required for smaller lots.
- Allow in rear yard only.
- Limit the number of systems to one per lot – Staff approved for one system, or SUP required for additional systems, but not to exceed one per net acre

Concept Three: All Zones – Flexible Special Use Permit

- By Special Use Permit only
- Standard Special Use Permit criteria
- No dimensional standards

This alternative would allow wind energy systems in all zones with ZBA approval for every application. Significant emphasis would be placed on the ZBA to weigh site specific neighborhood facts before making a decision, such as topography, vegetation, building scale, and open space. Special SUP conditions to mitigate site-specific impacts can be added by the ZBA. Under this approach, there would be no minimum standards or set regulations other than general SUP criteria for the applicant and ZBA to address.

This concept would respond to the public comments that there is such a wide variety of lot and site conditions that technical, rigid criterion should not be the baseline. The specific characteristics of a lot would be the baseline and the equipment would be allowed according to the scale and topography of that immediate area—not the "one-size fits all" approach.

Concept Four: All Zones – Rigid Special Use Permit

- By Special Use Permit only
- Limited Special Use Permit criteria
- Dimensional standards established for ZBA-level review

This alternative is an adaptation to Concept 2 above, in that systems would be allowed in all zones, but the ZBA would not have the authority within the SUP process to exceed the base criteria. However, public input may provide new information that would result in the ZBA imposing more stringent standards than the base standards. Under this concept:

- Dimensional or other measurable criteria are not flexible, although ZBA still has the final say and can make different findings than staff, depending on the outcome of a public hearing.
- The ZBA's burden is reduced because its authority would be to approve or deny the application, but not to approve a reduced setback, higher tower, or louder generator.

Public Engagement. Input received from the public has been diverse. Some people believe that small wind systems are attractive based on principle because of their environmental purpose and should be allowed with little or no restrictions. Others believe that small wind systems are unsightly, disruptive, and unsafe, and will lead to declining adjacent property values. There are very few examples of small wind systems in urban environments with which to base either of these two extremes across the range of opinions.

By beginning to allow freestanding towers only in non-residential areas (Concept #1), the public could begin to gain confidence and understanding of small wind systems. Therefore, a cautious approach to their development could foster a community wide process of beginning to accept a **balance between potential concerns and the environmental benefits** of new green energy technologies. However, if there are no interested non-residential property owners, this option may be less successful. The City may then wish to explore other options to facilitate small wind development within a shorter time frame.

These concepts can be further developed or have various attributes changed. For example, Concept #1 (non-residential) could be administered with some of the contextual standards of Concept #3. A matrix of the attribute details can also be created to compare the Concepts on a deeper technical level. Staff can prepare this matrix once a general policy direction about location is chosen.

Land Use Policy Plan. Goal 3 of "Goals for a New Vision," regarding "Environmental-Friendliness" is supportive of Concept #1, because it promotes awareness of small wind energy and could eventually lead to property owners city wide having the option to conserve traditional energy sources by installing small wind equipment on their properties.

Goal 4 of "Goals for a New Vision," regarding a "greater sense of place and connectivity" and "assuring a more healthy, safe and attractive environment" is consistent with Concept #1, because it seeks to build consensus among various types of property owners before opening small wind opportunities city wide. The concept proposes to allow small wind energy equipment in a way that is sensitive to the character of the surrounding built environment.

Recommendation of the Planning & Zoning Commission. At its meeting of January 20, 2010, with a vote of 5-0, the Planning & Zoning Commission recommended that the City Council direct staff to prepare text amendments for Concept 1, the "Commercial / Industrial (Limited Residential)" Alternative as a way to facilitate small wind energy systems on an active, yet cautious basis. Concern was expressed by some Commission members about including residential areas in this concept.

Discussion of the Planning & Zoning Commission. The Commission discussed the merits of allowing only smaller rooftop systems in residential zones as a way to protect residential areas until such future time that the Council may decide that enough awareness has occurred to support a freestanding component. Some Commission members also discussed the disadvantage of not allowing freestanding systems in residential zones since text amendments would be required if such a request was submitted. The Commission also discussed how the concept of green energy systems was supported by the Land Use Policy Plan. Although some Commission members varied slightly in their desired implementation for wind energy system text amendments, they decided to vote unanimously for Concept 1 to show the Council their support of wind energy systems in the City of Ames.

ALTERNATIVES:

1. The City Council can direct staff to prepare text amendments for Concept #1, the Commercial / Industrial (Limited Residential) Alternative, as a way to facilitate small wind energy systems on an active, yet cautious basis.

2. The City Council can direct staff to prepare text amendments from another concept or revision of a concept in this report.

3. The City Council can make no changes regarding wind energy in the zoning code, therefore maintaining the status quo and not allowing small scale wind energy production.

MANAGER'S RECOMMENDED ACTION:

The City Manager recommends that the City Council act in accordance with Alternative #1, which is to direct staff to prepare text amendments for Concept #1, the Commercial/ Industrial (Limited Residential) Alternative, as a way to facilitate small wind energy systems on an active, yet cautious basis.

Alternative #1 is focused on a policy decision about location with little detail about processing, review, and implementation methods. If the Council desires to give direction to staff with more specifics, those details can be brought out in the discussion and included in draft amendments reviewed by the Planning and Zoning Commission. The staff could also hold additional information sessions with the public on this proposal if the Council determines that more education or input is needed prior to formal public hearings.

Renewable Energy in Neighborhoods

Department of Planning & Housing

CITY OF AMES IOWA

Caring People
Quality Programs
Exceptional Service

REPORT TO PLANNING & ZONING COMMISSION
June 3, 2009

From: Sam Perry, Planner

On May 18, 2009, an "open house" was held to engage the public regarding solar and wind equipment in residential neighborhoods. The attendance was about 40 people total, which was considered very good by planning staff. There were a few middle-school aged students, who attended with their parents, for educational extra credit by a local science teacher. Even with a relatively small percentage of the community present, there was a good cross section of the community. As observed by staff, there were building trade professionals, scientists, environmentalists, property owners, investors and educators present. No sign-in was required, which allowed anonymous participation. After an initial introduction and Q&A session, the atmosphere was more casual, much like a science fair. The attendees had three different methods of providing feedback: (1) verbally to planning staff, (2) written, on the survey forms, and (3) by rating pictures with colored stickers. All of the planning staff was available for answering questions.

Before releasing the attendees to study the 3-d model and the 20 photographed scenarios, a brief summary of common concerns associated with wind and solar equipment was given. The audience was asked to imagine themselves in the position of a neighboring property owner. What concerns might they have with these scenarios? If they think they might have concerns, can those concerns be mitigated? Or, is the benefit of the equipment worth more than the "cost" of the concern? Questions were asked about the noise of wind turbines and if there was radio frequency interference caused by them. There were also questions about how net metering works, which was explained by Don Kom, Director of Electric Services. There was generally support of residentially-generated power by the attendees with an expressed desire for more information about what the real systems actually look and sound like. Since the open house, staff has located some real sites, where property owners have agreed to allow staff to direct people to drive by their properties.

Some trends observed from the open house and within the survey responses were:

- The City should be cautious about regulating placement angles and locations because conditions are very site-specific. The City should also be cautious about architectural review.
- Equipment can be obtrusive in a neighborhood. Property value effect is a concern. More subtle systems were favored by some. Additional landscaping could help.
- Even though they generate very little power, the smaller, less obtrusive wind equipment, such as vertical axis, and roof-mounted, should be allowed.
- Solar and wind access can be problematic in neighborhoods. People may not want to invest if they can not ensure many years of access. How can the City help?
- Overall, all attendees favored the concept, and a few individuals thought all forms should be allowed without must restraint, but some had concerns which reduced the acceptance because of obtrusive location, size or height. In some of the limited acceptance of responses, the location, size and height concern did not have to do with aesthetics, but did have to do with noise, safety, or reflection. Of those concerns, more information to educate was requested.

- Community/neighborhood-based power generation was supported by several attendees, as a way for neighbors to team up and pool their resources. It was unknown whether this was possible for existing developments or only for new developments.
- Neighbor input can be helpful in a public setting if negative impacts are expected by staff.
- More education or real working examples may be needed to gain community acceptance and understanding.

A verbal presentation of the survey results will be provided at the Commission meeting. The display boards shown at the open house, as well as the 3-d model will also be available at the Commission meeting.

Attached is a copy of the one page program from the open house.

Sample images used for the open house and surveys are on a special webpage:

http://www.cityofames.org/HousingWeb/Planning/Renewable%20Energy/Renewable%20Energy.htm

Alternatively, you can search using the term "renewable energy" on the City's website.

During this report and discussion, staff anticipates receiving additional feedback from the Commission before bringing back recommended code language options at an upcoming meeting.

It has also been suggested that the display boards be placed in location where additional members of the public can comment on the scenarios to continue receiving feedback throughout the code writing and review process.

Example scenario photo of model:

cc: Mayor, City Council
Steve Schainker, City Manager
Susan Gwiasda, Public Relations Officer
Donald Kom, Director, Electric Administration
David Brown, Building Official
Historic Preservation Commission
Zoning Board of Adjustment

CITY OF AMES IOWA

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Memo

Department of Planning & Housing

TO: Mayor, City Council

FROM: Sam Perry, Planner

DATE: August 14, 2009

SUBJECT: August 18 Workshop on Code Amendments for Solar and Wind Energy Systems

There have been about a dozen inquiries over the past year from property owners interested in generating their own electricity on a small scale, using solar or wind equipment. The zoning ordinance currently does not allow "energy production" as an accessory use in residential zones. The Industrial zones are the only zones which allow the use. The City Council referred this issue to staff on **September 23, 2008.**

After the referral, staff began actively researching the issue by:

1. Contacting other cities in Iowa which have passed or are currently working on regulations
2. Contacting other cities outside of Iowa (typically Southwestern or Northeastern cities) that have had regulations under implementation for some time.
3. Contacting the trade experts: manufacturers, installers and retailers of the equipment.
4. Researching state and federal regulations and provisions.
5. Attending educational seminars and meetings.
6. Visiting and learning about active wind and solar energy system installations.

- On **February 18, 2009**, the staff presented the research findings, in addition to some draft policy options to the Planning & Zoning Commission. The Commission recommended the staff actively engage the public regarding the aesthetic impacts. A special email address and webpage were created to facilitate the communication. An open house was planned.
- On **May 18, 2009**, the staff hosted an open house to educate the public and solicit feedback. The main purpose of the open house was to receive comments about different visual preferences and possible scenarios. Of the 40 in attendance, a good cross section of opinions was represented.
- On **June 3, 2009**, the staff presented the results of the open house to the Commission and received direction to incorporate the open house comments.
- On **July 15, 2009**, the staff and Commission held a roundtable discussion to work out the technical parameters. A balancing of opinions from the open house was drafted within the policies. Several changes were made to the draft policy.
- On **August 5, 2009**, the staff and Commission visited a small wind turbine prior to the meeting. The changes to the draft from the prior meeting were discussed and the Commission voted to forward the draft to the Council.

- On **August 18, 2009**, the City Council will hold a workshop to review the draft policies (attached 12 page document). A summary of the policies are:
    - Scale and location regulations for free standing small wind energy systems (towers)
    - Scale and location regulations for roof-mounted small wind energy systems
    - Scale and location regulations for building-mounted solar energy systems
    - Scale and location regulations for freestanding solar energy systems
    - Administrative approval for wind or solar energy systems within certain criteria
    - Zoning Board of Adjustment approval for systems exceeding certain criteria

- Depending on the input from the City Council, the Commission will likely hold a public hearing on **September 16th** or **October 7, 2009**.
- Depending on the Commission's public hearing, the City Council will hold a first reading of the ordinances on **October 6th** or **October 20, 2009.**

The staff intends to engage the Council at the **August 18th** workshop by providing:

- Example photographs
- 3-D neighborhood model
- Sample scenarios of implementing the proposed criteria, regarding setbacks and height
- Presentation of lot sizes in Ames to compare with other cities who are using lot size as a requirement for small wind tower energy systems

Project email address: renew@city.ames.ia.us

Project webpage: http://www.cityofames.org/HousingWeb/Planning/Renewable%20Energy/Renewable%20Energy.htm

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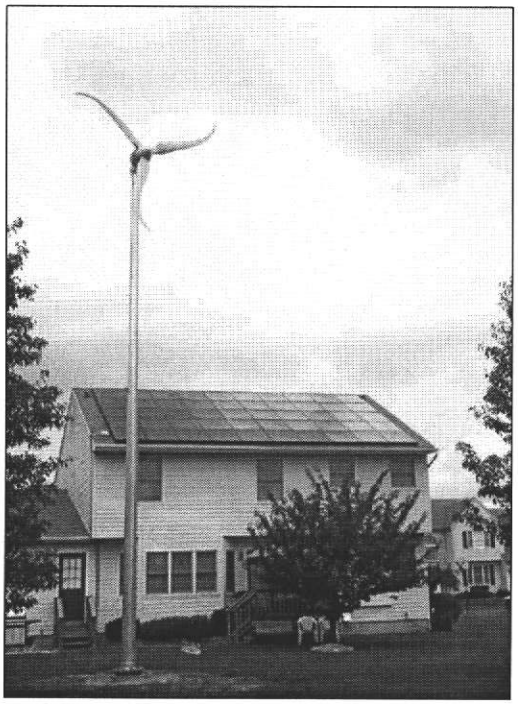
City Council Workshop
August 18, 2009

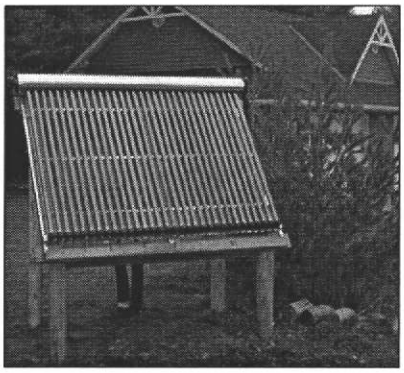
Draft Policy Document for small scale solar and wind energy systems

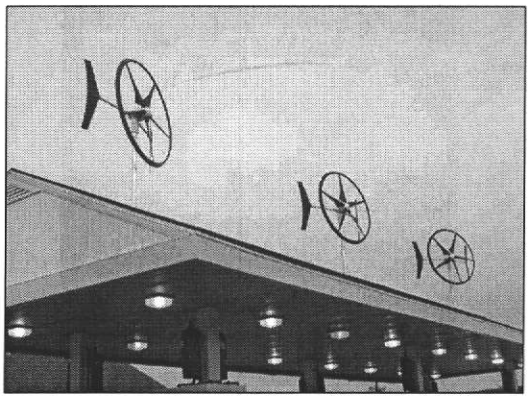
Prepared by the Department of Planning & Housing with the Planning & Zoning Commission and interested citizens through four public meetings

Table of Contents:

Example Pictures (Not in Ames):







Section 13.09 Solar Energy Systems

Solar Energy Systems as defined in the Definitions shall be considered an accessory use in all zoning districts. The purpose of this section is to establish regulations to facilitate the installation and construction of Solar Energy Systems so that systems are safe, effective, and efficient, as well as harmonious with the character of the adjacent area where located.

The following standards shall apply to the development of Solar Energy Systems:

1. Freestanding Solar Energy Systems shall not be located in any front setback, but can be allowed within the front yard that is beyond the front setback, subject to approval of a Special Use Permit by the Zoning Board of Adjustment.

2. Setbacks: Six (6) feet from all property lines and other structures.

3. Location: The system shall be located on the same lot as the building being served. Where there is no building, the system is not allowed, unless through an approved Neighborhood Solar Energy System.

4. Height: Freestanding systems shall not exceed six (6) feet in height in side and rear yards. Freestanding systems in a front yard shall not exceed four (4) feet in height. The height shall be measured from the grade at system base to the highest peak, including any adjustable systems.

5. Size: Freestanding systems on residentially used properties shall not exceed the greater of one-tenth (1/10) the footprint of the principal structure or one hundred (100) square feet, whichever is greater. The size of systems for non-residential properties shall not exceed one-half (1/2) of the footprint of the principle structure. Freestanding system installation shall not cause non-conformance with the maximum site coverage and minimum landscaped area in the applicable zone. The measurement of the system is of the surface area in the plane parallel to the receiving surface, regardless of angle of the surface. There is no size limit on attached systems.

6. Calculation-Exempt Freestanding systems:

    a) A freestanding system, or portion thereof, not visible from abutting street rights of way at any time of the year
    b) Calculation-Exempt systems still require all permits, but are not included in square footage limits. See definition.

7. Zoning Permit-Exempt systems:

    a) Systems in which the cumulative surface area of all systems on the property is 4 square feet or less
    b) Systems or building parts integral to the structure, that are passive (Passive Solar Energy Systems) in nature and do not project from the structure

8. Attached Solar Energy Systems are permitted to be located on the roof or attached to a building or a structure, subject to all of the following:

    a) No part of the system shall extend more than five (5) feet above the roof line or 5 feet in any direction from the exterior surface of supporting structure; and

b) Systems shall not exceed the maximum height in the zone, for the structure to which it is attached; and
c) System installation is certified as structurally sound by an engineer licensed in Iowa.
d) The building must have another primary purpose; and
e) The flush mount requirement below; and
f) No system shall be attached to a structure that is not in conformance with height and setback standards for the zone, unless the system does not cause an increase in the height or setback nonconformity; and
g) Attached systems are allowed on the front wall of the principal structure subject to approval of a Special Use Permit by the Zoning Board of Adjustment; and
h) Attached systems are allowed on other walls, without a Special Use Permit. Attached systems can project into a required setback subject to approval of a Special Use Permit.

9. Flush mount requirement. Attached, Roof Mounted on Residentially Zoned or Residentially Used Property: Roof attached systems may be mounted on principal and accessory building roofs provided they conform to the maximum height standards established in the zone. Additionally, systems shall be mounted parallel to the pitch of the roof and be no higher than 6 inches from the roof surface. Systems not meeting this standard are allowed subject to approval of a Special Use Permit by the Zoning Board of Adjustment. A system or a portion of a system not visible from abutting street rights of way is exempt from this requirement. Attached systems not on residential properties do not have to meet this requirement.

10. Code Compliance: Solar Energy Systems shall comply with all applicable building and electrical codes.

11. Solar Access: A property owner who has installed or intends to install a solar energy system shall be responsible for negotiating with other property owners in the vicinity for any necessary solar easement.

12. Historic Districts: All solar energy systems within a historic overlay district shall apply for a certificate of appropriateness subject to approval by the Historic Preservation Commission and standards within Chapter 31, Municipal Code. None are exempt. A denial of a certificate of appropriateness by the HPC shall disallow applications for zoning and building permits for same.

13. Review Procedure: The Planning Director shall prescribe the application form and any necessary submittal requirements, as needed, to determine compliance with this section. When review is completed, the approval shall constitute a Solar Energy System Zoning Permit and the applicant shall then seek any other necessary permits and approvals before installation. The Zoning Permit can be revoked if there is documented evidence which documents non-compliance with the permit. The Zoning Permit application shall include, but not limited to:

a) A plot plan showing:
    1) structures on the lot
    2) proposed system
    3) property lines
    4) setback dimensions
    5) rights of way

b) elevation views and dimensions
c) manufacturer's photographs

d) manufacturer's spec sheet including capacity
e) a statement certifying that there are no applicable restrictive covenants
f) Demarcation of dimensions. For systems claiming exemption due to "no-visibility" from abutting street rights of way, the applicant shall place demarcation posts, guides or balloons and schedule an appointment for staff to confirm no visibility.
g) Written statement of support from Historic Preservation Commission, if applicable

When a Solar Energy System Special Use Permit is required, it shall constitute the equivalent of the Solar Energy System Zoning Permit, and shall be approved by the Zoning Board of Adjustment, by considering the below criteria only (and not the general criteria other Special Use Permits in Section 15). The Variance procedure shall only apply if the Special Use Permit is not an option set forth in this section. The ZBA can request additional information if insufficient information is presented to determine conformance with the criteria. The Special Use Permit can be revoked after public hearing, if there is documented evidence which documents non-compliance with the permit.

All of A, B, C, D and E:

a) The system will be harmonious with the character of the neighboring properties as they exist on the date of approval, which is defined as properties within 200 feet of the system property
b) Access to open space (air and light) from the neighboring properties is not significantly reduced
c) If in a historic district, the HPC shall provide a written recommendation of support to the Zoning Board of Adjustment
d) The building density of the general area in which the system is proposed to be located
e) Whether the system conforms with all other city, state and federal regulations

AND EITHER

f) If a unique (as compared with neighboring properties) topography, vegetation or lot configuration exists which can allow the system to be located and operated to not have significant impact on neighboring properties as listed in a-d above

OR

g) If unique placement of the principal structure (as compared with neighboring properties) on the lot exists which can allow the system to be located and operated in a way that does not have significant impact on neighboring properties as listed in a-d above

14. Interconnection: Interconnected Solar Energy Systems are allowed subject to the standards in this section. Evidence of a signed interconnection agreement with the applicable electric utility shall be submitted to the Department of Planning & Housing prior to approval of any interconnected solar energy system. The applicant is encouraged to work with the applicable utility before purchasing equipment. The maximum allowable rated capacity of an Interconnected Solar Energy System is 10 kW, or 10,000 Watts unless evidence from the applicable utility has demonstrated that safe interconnection can be achieved and the need is justifiable for the principal use of the property. Any system over 100 kW is not allowed.

15. Abandonment: System use shall be determined abandoned under the provisions of Section 29.307, which requires notice by the Zoning Enforcement Officer. The system shall be removed within 90 days of the termination date, at the cost of the property owner.

16. Screening: Systems shall not be considered mechanical equipment or units and shall not require screening as defined in Section 29.408(4) except as determined through the Special Use Permit process.

17. Covenants: Before a Solar Energy System Zoning Permit is issued, the applicant shall certify that there are no covenants or restrictions on the property preventing the system or use.

18. Signage: All signs, other than the manufacturer's or installer's identification, appropriate warning signs, or owner identification on a system, building, or other structure associated with a solar energy system visible from any street right of way shall be prohibited.

19. Commercial systems: A Commercial Solar Energy System is not allowed in the City of Ames.

20. Neighborhood systems: A Neighborhood Solar Energy System is only allowed in the F-PRD (Floating - Planned Residence District) zone.

22. Finish and Appearance: The supporting structures and attachment devices shall be non-reflective and subtle in paint color and finish material. The property owner of any solar energy system shall maintain such system in a safe and attractive manner, including replacement of defective parts, painting, cleaning, and other acts that may be required for the maintenance and upkeep of the function and appearance of such a system. The owner shall also maintain the ground upon which the system is located in an orderly manner, such that is free of debris, tall grass and weeds, and any associated structures remain quality in appearance.

23. Industry standard: Before any Solar Energy System zoning permit is issued for a Solar Energy System, evidence shall be shown that the system and parts meet industry standards, such as Underwriters Laboratories (UL), or another standard applicable to the technology and materials of the system.

Definitions:

Solar Energy System – All exterior and above ground parts of a panel or other solar energy device including legs/braces and/or supporting devices, the primary purpose of which is to provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling or water heating.

Freestanding Solar Energy System – A Solar Energy System which is completely self-supported. A freestanding system is not an accessory structure, as defined in Section 29.402.

Attached Solar Energy System – A Solar Energy System which requires support by another structure, whether roof or otherwise, and does not connect directly to the ground. An attached system is not a minor projection, as defined in Section 29.402.

Interconnected Solar Energy System – A Solar Energy System which produces electricity and is capable of distributing surplus electricity to the public or other properties outside the control of the system's owner, even if the system is temporarily or automatically disconnected by a switch or other mechanical device.

Passive Solar Energy System – A Solar Energy System that does not produce electricity and does not use active mechanical systems for energy transfer.

Calculation-Exempt Solar Energy System – A Freestanding Solar Energy System that is not included in square footage maximums set forth in this section. Not exempt from all other codes, regulations, permits, and approvals. A zoning permit is still required.

Zoning Permit-Exempt Solar Energy System – A Solar Energy System that does not require a zoning permit for installation. Not exempt from all other codes, regulations, permits and approvals.

Commercial Solar Energy System – A Solar Energy System which is intended to produce electricity for sale to a rate regulated or non-regulated utility or for use off site.

Neighborhood Solar Energy System – A Solar Energy System that is intended to serve a single subdivision, neighborhood or small grouping of residential dwellings.

This section intentionally left blank

Section 13.10 Wind Energy Systems

Wind Energy Systems as defined in the Definitions shall be considered an accessory use in all zoning districts. The purpose of this section is to establish regulations to facilitate the installation and construction of Wind Energy Systems so that systems are safe, effective, and efficient, as well as harmonious with the character of the adjacent area where located.

The following standards shall apply to the development of Wind Energy Systems (WES):

1. Tower Height: For property sizes less than 5 acres the tower height shall be limited to 80 ft. For property sizes of 5 acres or more, tower heights are limited to 120 feet. Exceeding tower heights is allowed subject to approval of a Special Use Permit by the Zoning Board of Adjustment and an engineer's certification that the height is needed for achieving clearance from obstructions existing at the time of application.

2. Size: In residential zones, the diameter of the swept area for freestanding systems shall be no larger than 12 feet, measured at the greatest width. In other zones, the diameter is limited to 30 feet. Greater diameter is allowed subject to approval of a WES Special Use Permit.

3. Set-back: The wind energy system shall be setback a distance equal to one hundred ten (110) percent of the height of the tower, plus the blade length from all adjacent property lines, and a distance equal to one hundred fifty (150) percent of the tower plus blade length from any dwelling inhabited by humans on neighboring property on the date of approval of any Wind Energy System zoning permit. These setbacks may be reduced by approval of a Special Use Permit when notarized consent of the owner of the property on which the requested wind energy system is to be erected and the adjoining landowner whose property line or dwelling falls within specified distance on the date of approval is submitted. Wind energy systems shall also meet all setback requirements for principal structures for the zoning district. Additionally, no portion of the wind energy system, including guy wire anchors, may extend closer than ten (10) feet to the property line. Freestanding wind energy systems in residential zones shall be located no closer to any public street right of way than the principal structure, unless completely in the rear yard, but not less than 110 percent of the height of the tower plus the blade length. There is no minimum lot size requirement.

4. Location: Freestanding wind energy systems shall not be located in the front yard of any zone. Freestanding systems shall be located on a lot only as an accessory use/structure to an existing principal use/structure, unless through an approved Neighborhood Wind Energy System.

5. Audible and Low Level Noise: Wind energy systems located within or abutting a residential zoning district shall not be audible from the property line. Low level sound: no wind system in any zone shall be operated so that impulsive low frequency sound adversely affects the habitability or use of any off-site dwelling unit, hospital, school, library or nursing home.

In the event the noise levels resulting from the proposed wind energy system exceed the criteria listed above, a Special Use Permit may be granted by the Zoning Board of Adjustment provided that the following has been accomplished:

Written consent from the affected property owners has been obtained stating that they are aware of the wind system and the noise limitations imposed by this Ordinance, and that consent is granted to allow noise levels to exceed the maximum limits otherwise allowed.

6. Industry Standard: Small wind turbines must have been approved under a small wind certification program recognized by an industry standard such as American Wind Energy Association. Before any Wind Energy System zoning permit is issued for a Wind Energy System, evidence shall be shown that the system and parts meet industry standards, such as Underwriters Laboratories (UL), or another standard applicable to the technology and materials of the system.

7. Compliance with Building Code: Building Permit applications for small wind energy systems shall be accompanied by standard drawings of the wind turbine structure, including the tower, base, and footings. An engineering analysis of the tower showing compliance with the Building Code and certified by a licensed professional engineer shall also be submitted. This analysis is frequently supplied by the manufacturer. Iowa licensed engineer wet stamps shall not be required unless soil conditions are outside of manufacturer parameters. If the soil conditions are not readily known, the Building Official may require a soil study by an engineer licensed in Iowa. A building permit application must be submitted simultaneous with an application for any Wind Energy System zoning permit, whether attached, or freestanding.

8. Airport Protection: No wind energy system shall be constructed, altered, or maintained so as to project above any of the imaginary airspace surfaces described in FAR Part 77 of the FAA guidance on airspace protection unless notice has been given to the FAA and the system is, in writing, not deemed a hazard by the FAA or the local airport administrator. Lighting shall not be permitted on any wind energy system. If lighting is a recommendation of the FAA, for the system, the system shall only be allowed in General Industrial Zones.

9. Compliance with National Electric Code: Building Permit applications for small wind energy systems shall be accompanied by a line drawing of the electrical components in sufficient detail to allow for a determination that the manner of installation conforms to the National Electrical Code. This information is frequently supplied by the manufacturer.

10. Interconnection: Interconnected Wind Energy Systems are allowed subject to the standards in this section. Evidence of a signed interconnection agreement with the applicable utility shall be submitted to the Department of Planning & Housing prior to approval of any interconnected system. The applicant is encouraged to work with the applicable utility before purchasing equipment. The maximum allowable rated capacity of an Interconnected Wind Energy System is 10 kW, or 10,000 Watts unless evidence from the applicable utility has demonstrated that safe interconnection can be achieved and the need is justifiable for the principal use of the property. Any system over 100 kW is not allowed.

11. Abandonment: System use shall be determined abandoned under the provisions of Section 29.307, which requires notice by the Zoning Enforcement Officer. The system shall be removed within 90 days of the termination date, at the cost of the property owner.

12. Screening: Systems shall not be considered mechanical equipment or units and shall not require screening as defined in Section 29.408(4) except as determined through the Special Use Permit process.

13. Covenants: Before a Wind Energy System Zoning Permit is issued, the applicant shall certify that there are no covenants or restrictions on the property preventing the system or use.

14. Tower type: Monopole type towers shall be the only type allowed, except for General Industrial Zones. Other types of towers are allowed in zones not General Industrial subject to ZBA approval of a Special Use Permit. Monopoles in residential zones shall be limited to 18

inches in diameter at the base. Exceeding these width criteria is allowed subject to approval of a Special Use Permit.

15. Number of Systems: Only one converter is allowed for properties less than 5 acres in size. More than one converter is allowed subject to approval of a Wind Energy System Special Use Permit, but not to exceed the gross density of more than one converter per acre of the subject property.

16. Attached Wind Energy Systems (roof mounted or otherwise) are allowed in any zone, subject to the following (a-g). Building projection exemptions in Chapter 29, Article 4 do not apply to this section.

a) Limited to 6 square feet in size, measured in a single plane
b) Systems not visible from a street right of way any time of the year are not limited in size.
c) No attached system on a residential property can extend more than 5 feet higher than the overall structure height to which it is attached.
d) No attached system can exceed the maximum height allowable in the zone for the structure to which attached
e) No system shall be attached to a structure that is not in conformance with height and setback standards for the zone, unless the system does not cause an increase in the height or setback nonconformity
f) System installation is certified as structurally sound by an engineer licensed in Iowa
g) The building to which attached must have another primary purpose
h) Proposed systems exceeding any of these criteria can only be approved subject to the approval of a WES Special Use Permit.

17. Wind Access: A property owner who has installed or intends to install a wind energy system shall be responsible for negotiating with other property owners in the vicinity for any necessary wind easement.

18. Historic Districts: All wind energy systems within a historic overlay district shall apply for a certificate of appropriateness subject to approval by the Historic Preservation Commission and standards within Chapter 31, Municipal Code. None are exempt. A denial of a certificate of appropriateness by the HPC shall disallow applications for zoning and building permits for same.

19. Zoning Permit Exempt systems: Attached systems integral to the structure, that do not project from the structure, such as systems with architecturally concealed turbines.

20. Review Procedure: The Planning Director shall prescribe the application forms and any necessary submittal requirements, as needed, to determine compliance with this section. When review is completed, the approval shall constitute a Wind Energy System Zoning Permit and the applicant shall seek any other necessary permits and approvals before installation. The Zoning Permit can be revoked, if there is documented evidence which documents non-compliance with the permit. The zoning permit application shall include, but not limited to:

a) A plot plan showing:
    1) structures on the lot
    2) proposed system

3) property lines
4) setback dimensions
5) rights of way

b) elevation views and dimensions
c) manufacturer's photographs
d) manufacturer's spec sheet including capacity
e) a statement certifying that there are no applicable restrictive covenants
f) a copy of a complete application materials for building permit application
g) a statement from the Building Official regarding code compliance for proposal
h) Demarcation of dimensions. For systems claiming exemption due to "no-visibility" from abutting street rights of way, the applicant shall place demarcation posts, guides or balloons and schedule an appointment for staff to confirm no visibility.
i) Written statement of support from Historic Preservation Commission, if applicable

When a Wind Energy System Special Use Permit is required, it shall constitute the equivalent of the Wind Energy System Zoning Permit, and shall be approved by the Zoning Board of Adjustment, by considering the below criteria only (and not the general criteria other Special Use Permits in Section 15). The Variance procedure shall only apply if the Special Use Permit is not an option set forth in this section. The ZBA can request additional information if insufficient information is presented to determine conformance with the criteria. The Special Use Permit can be revoked after public hearing, if there is documented evidence which documents non-compliance with the permit.

All of A, B, C, D and E:

a) The system will be harmonious with the character and uses of the neighboring properties as they exist on the date of approval, which is defined as properties within 200 feet of the system property
b) Access to open space (air and light) from the neighboring properties is not significantly reduced
c) If in a historic district, the HPC shall provide a written recommendation of support to the Zoning Board of Adjustment
d) The building density of the general area in which the system is proposed to be located
e) Whether the system conforms with all other city, state and federal regulations

AND EITHER

f) If a unique (as compared with neighboring properties) topography, vegetation or lot configuration exists which can allow the system to be located and operated to not have significant impact on neighboring properties as listed in a-d above

OR

g) If unique placement of the principal structure (as compared with neighboring properties) on the lot exists which can allow the system to be located and operated in a way that does not have significant impact on neighboring properties as listed in a-d above

21. Access: Any climbing foot pegs or rungs below 12 feet of a freestanding tower shall be removed to prevent unauthorized climbing. For lattice or guyed towers, sheets of metal or wood may be fastened to the bottom tower section such that it cannot readily be climbed. Fencing is not required unless otherwise required by Special Use Permit.

22. Signage: All signs, other than the manufacturer's or installer's identification, appropriate warning signs, or owner identification on a wind generator, tower, building, or other structure associated with a wind energy system visible from any street right of way shall be prohibited.

23. Commercial systems: A Commercial Wind Energy System is not allowed in the City of Ames.

24. Neighborhood systems: A Neighborhood Wind Energy System is only allowed in the F-PRD (Floating - Planned Residence District) zone.

25. Finish and Appearance: The supporting structures and attachment devices shall be non-reflective and subtle in paint color and finish material. The property owner of any wind energy system shall maintain such system in a safe and attractive manner, including replacement of defective parts, painting, cleaning, and other acts that may be required for the maintenance and upkeep of the function and appearance of such a system. The owner shall also maintain the ground upon which the system is located in an orderly manner, such that is free of debris, tall grass and weeds, and any associated structures remain quality in appearance. All electric wires from the wind system to the control facilities, shall be located underground or concealed by the supporting structure.

Definitions:

Wind Energy System (WES) – An aggregation of exterior and above ground parts including the base, tower, generator, rotor, blades, supports, guywires, and accessory equipment such as utility interconnect, etc, in such configuration as necessary to convert the power of wind into mechanical or electrical energy, e.g., wind charger, windmill, or wind turbine. This definition includes electric and non-electric systems.

Small Wind Energy System – A Wind Energy System which has a rated capacity of up to one hundred (100) kW and which is incidental and subordinate to a permitted use on the same parcel or lot. A system is considered a small wind energy system only if it supplies electrical power solely for on site use, except that when a parcel on which the system is installed also receives electrical power supplied by a utility company, excess electrical power generated and not presently needed for on site us may be used by the utility company in accordance with section 199, chapter 15.11(5) of the Iowa Administrative Code.

Commercial Wind Energy System – A Wind Energy System which is intended to produce electricity for sale to a rate regulated or non-regulated utility or for use off site.

Freestanding Wind Energy System – A Wind Energy System which is completely self-supported. A freestanding system is not an accessory structure, as defined in Section 29.402.

Attached Wind Energy System – A Wind Energy System which requires support by another structure, whether roof or otherwise, and does not connect directly to the ground.

Interconnected Wind Energy System – A Wind Energy System which produces electricity and is capable of distributing surplus electricity to the public or other properties outside the control of the system's owner, even if the system is temporarily or automatically disconnected by a switch or other mechanical device.

Neighborhood Wind Energy System – A Wind Energy System that is intended to serve a single subdivision, neighborhood, or small grouping of residential dwellings.

Zoning Permit-Exempt Wind Energy System – A Wind Energy System that does not require a zoning permit for installation. Not exempt from all other codes, regulations, permits and approvals.

Blade – The device or assembly of devices which responds to the wind movement and is attached to the converter.

Converter – The device which is either a mechanical or mechanical/electrical component that converts wind movement to another form of energy, such as the inverter in the case of an electrical system, and the gearbox, in the case of a mechanical system.

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