Highlights from the Winona County Comprehensive Plan:

Sustainability Value Statement
Winona County promotes a sustainable community through the encouragement of sustainable development. A sustainable community uses its resources to meet current needs while ensuring that adequate resources are available for future generations. A sustainable community seeks a better quality of life for all its residents while maintaining nature's ability to function over time by minimizing waste, preventing pollution, promoting efficiency and developing local resources to revitalize the local economy. Decision-making in a sustainable community stems from a rich civic life and shared information among community members. A sustainable community resembles a living system in which human, natural and economic elements are interdependent and draw strength from each other.

CHAPTER 12: ALTERNATIVE ENERGY

"CHAPTER 12: ALTERNATIVE ENERGY"

Action: Rename chapter "CHAPTER 12: RENEWABLE ENERGY"
Reason: Renewable Energy is more descriptive than Alternative Energy
Justification: 1) "Alternative Energy" does not mean anything. The title itself does say what it is the alternative to. "Renewable Energy" clearly shows that the energy source is renewable. 2) "Alternative" has derogatory connotations. Winona County's position is stated as encouraging sustainability; "renewable" is more associated with sustainable than "alternative" is. 3) The industry and government refer to what Chapter 12 covers as "Renewable Energy"

12.1 Purpose

The purpose of the Chapter is to promote the installation and construction of alternative energy systems throughout Winona County to ensure residents have the access to affordable, efficient, reliable, and environmentally sound energy options. The provisions contained in this Chapter have the function through reasonable restrictions and standards, to preserve the public health and safety without significantly increasing the cost or decreasing the efficiencies of alternative energy systems, and to protect esthetic resources within the County. The types of systems covered in this chapter include Wind Energy Conversion Systems (WECS), Solar Energy Systems, and Geothermal Energy Systems.

12.2 Wind Energy Conversion Systems (WECS)

Establish regulations relating to the installation and operation of public and private Wind Energy Conversion Systems (WECS) within Winona County Zoning authority not otherwise subject to siting and oversight by the State of Minnesota under the Minnesota Power Plant Siting Act (MS 116C.51-116C.697.)

12.2.1 Procedures

"12.2.1 Procedures"
"7. Engineer's certification."

Action: Modify scope of requirement to commercial WECS, or remove
Reason: Undue burden for non-Commercial WECS
Justification: 1) Engineer is not defined. Commonly someone with a college engineering degree is considered an engineer. In some situations and localities, the term engineer refers to a licensed professional engineer (P.E.). 2) The cost to certify an entire WECS can be substantial. The cost of analysis on a small tower alone is above $1,000. Given the vague language of this requirement, it could be interpreted to mean that the whole system including the turbine must be certified by a professional engineer. A Minnesota licensed professional engineer cannot stamp (i.e. certify) something that they have not designed themselves. This is a unique to Minnesota requirement which causes additional cost and hardship to an applicant. 3) Setbacks already establish that in the event of a catastrophic failure, there would be no impact on adjacent land. So even if the worst case failure happens, nobody besides the WEC owner and operator will be impacted.

WECS, public and/or private based upon physical total height or KW, require a WECS permit, Conditional Use Permits or Variance and shall be applied for and reviewed under the procedures established in Chapter 5, except where noted below.

A permit shall be required for all WECS according to the specific requirements, exceptions and application procedures as set forth in Chapter 12, Wind Energy Conversion Systems (WECS).

The application for all WECS shall include the following information:

1. The names of project applicant.
2. The name of the project owner.
3. The legal description and address of the project.
4. The parcel number of the project.
5. A description of the project including: number, type, name plate generating capacity, tower height, rotor diameter, total height of all wind turbines, and means of interconnecting with the electrical grid.
6. Site layout, including the location of property lines, wind turbines, electrical wires, interconnection points with the electrical grid, and all related accessory structures. The site layout shall include distances and be drawn to scale.
7. Engineer's certification.
8. Mitigation plan, in reference to public utilities for construction and decommissioning.
9. Documentation of land ownership or legal control of the property.

"8. Mitigation plan, in reference to public utilities for construction and decommissioning."

Action: Remove requirement
Reason: Not defined, impossible to comply with
Justification: 1) Mitigation plan is not defined. 2) Reference to public utilities is not defined. I, and other knowledgeable people I have consulted, have not been able to determine what this requirement means.

"The application for Commercial WECS shall also include the following:"
"4. FAA Permit Approval."

Action: Remove requirement
Reason: Redundant
Justification: Federal (FAA) jurisdiction preempts Winona County jurisdiction.

"7. Description of potential impacts on nearby WECS and wind resources on adjacent properties."

Action: Remove requirement
Reason: Impossible to comply with
Justification: Determining the impact of a new WEC on existing WECS or neighboring wind resources is an impossible task. The science to quantify impact on adjacent properties is an area that is under research. On the commercial scale, proper design of a wind farm would already take this into account. Wind and/or property rights would be secured to prevent potential impact later in time.

The application for Commercial WECS shall also include the following:

1. The latitude and longitude of individual wind turbines.
2. A USGS topographical map, or map with similar data, of the property and surrounding area, including any other WECS within ten (10) rotor diameters of the proposed WECS.
3. Location of wetlands, floodplain, shoreland, sensitive natural features, scenic, and natural areas, including bluffs, within quarter (1/4) mile of the proposed WECS.
4. FAA Permit Approval.
5. Location of all known Communications Towers within two (2) miles of the proposed WECS.
6. Decommissioning Plan, including a line of credit, bond, cash deposit for one hundred and five (105) percent of total project cost.
7. Description of potential impacts on nearby WECS and wind resources on adjacent properties.

12.2.2 Conditional Use Permit

Section 5.5.4.6 of Chapter 5 of this Ordinance describes the procedure for obtaining a Conditional Use Permit through the County Board for a Micro and/or Non-Commercial Wind Energy Conversion Systems not complying with the required setbacks.

12.2.3 Aggregated Projects – Procedures

Aggregated Projects may jointly submit a single application and be reviewed under joint proceedings, including notices, hearings, reviews and as appropriate approvals. Permits will be issued and recorded separately. Joint applications will be assessed fees as one project. Aggregated projects having a combined capacity equal to or greater than the threshold for State oversight as set forth in MS Statute 116C.691 through 116C.697 shall be regulated by the State of Minnesota.

12.2.4 District Regulations

WECS will be permitted, conditionally permitted or not permitted based on the generating capacity/height and land use district as established in the Table 12.1.

Table 12.1 WECS Generating Capacity/Height & Land Use District

DISTRICT	MICRO WECS	Non Commercial WECS	Commercial WECS	Meteorological Tower
A/RC	DV*	DV*	CUP	CUP
RR	DV*	DV*	NP	CUP
CD/ CD2	DV*	DV*	NP	CUP
UR	DV*	DV*	NP	CUP
B	DV*	DV*	NP	CUP
I	DV*	DV*	CUP	CUP
Shoreland	DV*	NP	NP	NP
Floodplain	DV*	NP	NP	NP

Table 12.2 Zoning Districts Key

A/RC	Agricultural Resource Conservation
RR	Rural Residential
CD/CD2	Community Development
UR	Urban Residential
B	Business and Recreation
I	Industrial

Table 12.3 WECS Permit Key

DV	Development Permit
CUP	Conditional Use Permit
NP	Not Permitted

* WECS (Micro and Non-Commercial) not meeting the Setbacks as cited in Table 12.4, would have the option to allow a closer setback, if approved through a Conditional Use Permit process.

12.2.5 Performance Standards

1. Setbacks:

*measured from the center of the tower base:

a. Commercial WECS: 1.1 times the total tower height or five (5) times rotor diameter, whichever is greater, from all Wind Turbines, Meteorological Towers and from property lines.
b. Micro WECS and Non-Commercial WECS: 1.1 times the overall height from property lines.
c. Neighboring Dwellings: 1.5 times the total height from all Wind Turbines and Meteorological Towers (dwelling associated with WECS is exempt).
d. Road Right of Ways: 1.1 times the total height from all Wind Turbines and Meteorological Towers.
e. Other right of ways (railroad, utility lines, gas lines, etc.): 1.1 times the total height from all Wind Turbines and Meteorological Towers.
f. Wetlands USFW types III, IV, and V:
    I. 1.1 times the total height from Micro and Non- Commercial WECS.
    II. Six hundred (600) feet for Commercial WECS and Meteorological Towers.
g. Neighboring Accessory Structures: 1.5 times the total height from all Wind Turbines and Meteorological Towers. (Accessory structures on tower property are exempt).
h. Bluffs:
    I. Micro WECS: One hundred feet (100) to the top of the bluff.
    II. Non-Commercial WECS: Three hundred feet (300) to the top of the bluff.
    III. Commercial WECS: Five hundred feet (500) to the top of the bluff.
    IV. Meteorological Towers: Three hundred feet (300) to the top of the bluff.

"12.2.5 Performance Standards"

"1. Setbacks:"

"e. Other right of ways (railroad, utility lines, gas lines, etc.): 1.1 times the total height from all Wind Turbines and Meteorological Towers."

Action: Modify language to only include above ground rights of way and allow exemptions
Reason: Undue burden
Justification: This is a very odd requirement. 1) Rights of way are contractual or legal obligations that already have established parameters. There is nothing fundamentally new or different about WECS that would require this setback to be established. If the right of way does not pertain or interact with the WECS system, there is no reason to establish a setback from the right of way. As an example, most buried utility rights of way would not be impacted by any WECS. And the right of way contract or law would already establish the distribution of rights in the event that there was any impact. 2) Requiring a setback of 1.1 times the total WECS height from rights of way will make large portions of Winona County off limits to WECS systems. As an example, I own property that has a Tri-County Electric right of way easement that covers the entire property. That would make that entire property off limits to a WECS. This language may even be triggered when the utility puts in service equipment specifically to serve a WECS.

"2. Safety Design Standards:"

"a. For all WECS, the manufacturers engineer or another qualified engineer shall certify that the turbine, foundation and tower design of the WECS is within accepted professional standards, given local soil and climate conditions."

Action: Modify scope to cover only commercial WECS
Reason: Undue burden for small and micro WECS
Justification: This language appears to be written to cover commercial WECS, and is being misapplied to non-commercial WECS. Most micro and some small wind turbines are not provided as complete systems. The turbine is sold as one part. And the mounting structure, typically a tower or mast, is sold as another part by a different manufacturer. The installer or designer of the system selects or builds the appropriate turbine and the appropriate mounting structure. This ordinance clearly establishes required setbacks which would limit the impact of any system problems to only the property owner and WECS operator. So even if there was a problem with the turbine and foundation and tower design, the problem would be isolated to property that is under controll of the WECS owner or operator. If engineered certification is required, it would be analogous to Winona County not allowing residents to select what brand a tread style tires they can install on their vehicle unless the manufacturer of the vehicle certified the combination. Requiring a licensed structural engineer to design a mounting structure for a small wind turbine would often be substantially more costly than the entire wind system. An example of this would be a Southwest Wind Power Air-X micro wind turbine. It is sold at Menards for less than $500. It fits in a small box and can be lifted with one hand. The manufacturer of this turbine does not approve mounting systems for the turbine.

"c. For all Non Commercial/Commercial WECS, a sign or signs shall be posted on the tower, transformer and substation warning of high voltage. [Signs with emergency contact information shall also be posted on the turbine or at another suitable point.]"

Action: Remove
Reason: Redundant with National Electric Code, may violate National Electric Code
Justification: 1) National Electric Code, which this ordinance requires, already defines requirements for warning placards. NEC defines in much greater detail these requirements. 2) Most wind turbines, including commercial wind turbines, are not high voltage. The 2008 National Electric Code, which is in effect in Minnesota, section 490.2, defines high voltage as 600 volts. For turbines that are not high voltage, it would be in violation of National Electric Code to mark them as high voltage.

"d. For all guyed towers, visible and reflective objects, such as plastic sleeves, reflectors or tape, shall be placed on the guy wire anchor points and along the outer and innermost guy wires up to a height of eight (8) feet above the ground. Visible fencing shall be installed around anchor points of guy wires."

Action: Remove
Reason: Violates further requirements in ordinance, unnecessary
Justification: 1) The next section of the ordinance requires WECS, including towers, to be non-reflective and matte colors. 2) The ordinance requires all commercial WECS to be non-guyed monopole type towers. So this applies only to Micro and Non-Commercial WECS which have a height which does not exceed 200 feet. These size towers do not have substantial guy wires. The size and visual impact of the this requirement great exceeds that of the guy wires themselves. Fencing the guy wires would make sizeable areas of land around the WECS non-productive. The benefit of making the guy wires fenced AND wrapped in visible and reflective objects would be negligible.

"3. Design Standards"

"c. All WECS shall be anchored to objects that have been approved by the manufacture of the WECS. A statement from a licenced (sic) structural engineer shall be submitted to the Planning Department starting that the WECS can be mounted to a alternative structure."

Action: Modify scope to cover only commercial WECS, correct wording
Reason: Undue burden for WECS
Justification for modification: 1) "licenced" is not a word. Replace with "licensed". 2) Most micro and some small wind turbines are not provided as complete systems. Many manufacturers do not specify or make all inclusive lists of possible mounting structures. Instead mounting structure determination is the responsibility of the installer of the system. This ordinance clearly establishes required setbacks which would limit the impact of any mounting structure problems to only the property owner and WECS operator. Requiring a licensed structural engineer to design a mounting structure for a small wind turbine would often be substantially more costly than the entire wind system. An example of this would be a Southwest Wind Power Air-X micro wind turbine. It is sold at Menards for less than $500. It fits in a small box and can be lifted with one hand. The manufacturer of this turbine does not approve mounting systems for the turbine. Under the wording shown, the owner of this small wind turbine would need to hire a "licenced" structural engineer to design the system. This would be analogous to requiring a vascular surgeon to apply a band-aid to a paper cut on a finger. This does not promote wind power in Winona County. 3) The proposed wording appears to be incorrect. As shown, it would require a WECS to be anchored to an object that is approved by the manufacture of the WECS. And it also then requires that a "licenced" structural engineer design an alternative structure. This does not make sense. If it is required that the WECS be mounted to an approved object, then why would you pay to have an alternative mount designed. I believe that it was the intention of the author to require a licensed structural engineer to design an alternative mounting structure only if it is required. If implemented as written, the additional requirement to design an alternative, unnecessary, mounting structure for commercial WECS would be in the tens of thousands of dollars per turbine. This does not promote wind power in Winona County.

Table 12.4 WECS Setbacks

	MICRO WECS	Non Commercial WECS	Commercial WECS	Meteorological Tower
Property Lines	1.1 toh*	1.1 toh	1.1 toh or 5 times rotor diameter, whichever is greater	1.1 toh
Neighboring Dwellings	1.5 toh	1.5 toh	1.5 toh	1.5 toh
Road Right of Ways	1.1 toh	1.1 toh	1.1 toh	1.1 toh
Other Right of Ways (railroad, utility, gas lines)	1.1 toh	1.1 toh	1.1 toh	1.1 toh
Wetlands USFW Types III, IV, and V	1.1 toh	1.1 toh	600 feet	600 feet
Neighboring Accessory Structures	1.5 toh	1.5 toh	1.5 toh	1.5 toh
Bluffs	100 feet	300 feet	500 feet	300 feet

*toh is an abbreviation for "times overall height"

2. Safety Design Standards:
   a. For all WECS, the manufacturers engineer or another qualified engineer shall certify that the turbine, foundation and tower design of the WECS is within accepted professional standards, given local soil and climate conditions.
   b. Rotor blades or air foils must maintain at least sixteen (16) feet of clearance between their lowest point and the ground.
   c. For all Non Commercial/Commercial WECS, a sign or signs shall be posted on the tower, transformer and substation warning of high voltage. [Signs with emergency contact information shall also be posted on the turbine or at another suitable point.]
   d. For all guyed towers, visible and reflective objects, such as plastic sleeves, reflectors or tape, shall be placed on the guy wire anchor points and along the outer and innermost guy wires up to a height of eight (8) feet above the ground. Visible fencing shall be installed around anchor points of guy wires.
3. Design Standards
   a. Total height / kW output:
      I. Micro WECS: shall have a total height of less than or equal to forty-five (45) feet and having five (5) kW nameplate generating capacity or less.
      II. Non-Commercial WECS: shall have a total height between forty-six (46) feet and two hundred (200) feet and having

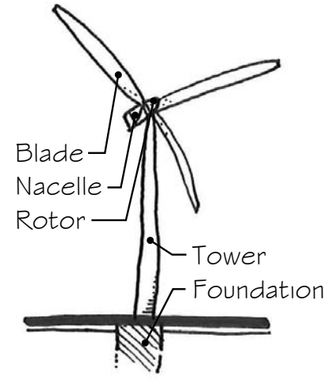

Figure 12.1 WECS Parts Identified

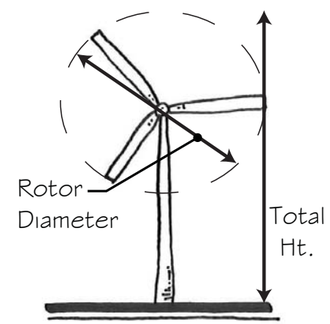

Figure 12.2 WECS Dimensions

between five (5) kW and one hundred (100) kW nameplate generating capacity.

III. Commercial WECS: shall have a total height of two hundred (200) feet or more having more than one hundred (100) kW nameplate generating capacity.

b. All wind turbines, which are part of a commercial WECS, shall be installed with a tubular, monopole type tower. Meteorological towers may be guyed.

c. All WECS shall be anchored to objects that have been approved by the manufacture of the WECS. A statement from a licenced structural engineer shall be submitted to the Planning Department stating that the WECS can be mounted to a alternative structure.

d. All wind turbines and towers shall be white, grey or of a similar tone in color.

e. Blades may be black in order to facilitate deicing.

f. Finishes shall be matte or nonreflective.

g. Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by Federal Aviation Administration permits and regulations,. Red strobe lights are preferred for night-time illumination to reduce impacts on migrating birds. Red pulsating incandescent lights should be avoided. Exceptions may be made for metrological towers, where concerns exist relative to aerial spray applicators.

h. All advertising devices on site shall comply with Chapter 9. The manufacturer's or owner's company name and logo, relating to the WECS, may be placed upon the nacelle, blades, or the compartment containing the electrical generator, of the WECS. No off site advertising may be placed, attached, or hung upon the nacelle, tower, blades or upon a substation.

i. All communications and feeder lines, equal to or less than 34.5 kV in capacity, installed as part of a WECS shall be buried [where reasonably feasible]. Feeder lines installed as part of a WECS shall not be considered an essential service. This standard applies to all feeder lines subject to Winona County authority.

j. Solid and Hazardous wastes, including but not limited to crates, packaging materials, damaged or worn parts, as well as used oils and lubricants, shall be removed from the site promptly and disposed of in accordance with all applicable local, state and federal regulations.

k. Commercial WECS shall be considered a discontinued use after one (1) year without energy production, unless a plan is developed and submitted to the Planning Director outlining the steps and schedule for returning the WECS to service.

l. All WECS and each Commercial WECS shall have a Decommissioning plan outlining the anticipated means and cost of removing WECS at the end of their serviceable life or upon becoming a discontinued use. The cost of removing Commerical WECS shall be estimated by a competent

"d. All wind turbines and towers shall be white, grey or of a similar tone in color."
"f. Finishes shall be matte or nonreflective"

Action: Remove 12.2.5.2.d or modify these
Reason: Impossible to have a tower that is reflective, white or grey, and nonreflective
Justification: Alone these requirements are reasonable. However they block the previous requirement that a guyed tower have visible and reflective markings on the guy wires.

"g. Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by Federal Aviation Administration permits and regulations,. Red strobe lights are preferred for night-time illumination to reduce impacts on migrating birds. Red pulsating incandescent lights should be avoided. Exceptions may be made for metrological towers, where concerns exist relative to aerial spray applicators."

Action: Modify wording
Reason: Difficult to comply with, as written
Justification for modification: I suggest you add "greatly" to the first sentence between "...shall adhere to but not [greatly] exceed the requirements established by Federal Aviation Administration...". This is because in some cases it may not be possible to buy a product that exactly meets the FAA lighting requirements but does not exceed them. FAA requirements are not tied to actual products, but instead they set the minimum specification for lighting. As written, the ordinance would likely require lighting that is not commercially obtainable.

"h. All advertising devices on site shall comply with Chapter 9. The manufacturer's or owner's company name and logo, relating to the WECS, may be placed upon the nacelle, blades, or the compartment containing the electrical generator, of the WECS. No off site advertising may be placed, attached, or hung upon the nacelle, tower, blades or upon a substation."

Action: Modify to permit markings on the tail.
Reason: Does not address small WECS
Justification for modification: Most small wind turbines have manufacturers' marks placed on the tail. This is because the nacelle, blades, or the compartment containing the electrical generator are too small to make visible markings.

"j. Solid and Hazardous wastes, including but not limited to crates, packaging materials, damaged or worn parts, as well as used oils and lubricants, shall be removed from the site promptly and disposed of in accordance with all applicable local, state and federal regulations."

Action: Eliminate this requirement
Reason: Redundant and undue burden
Justification for removal: 1) Local, state, and federal regulations already apply and do not need to be repeated in this requirement. 2) Waste should be treated the same as all other waste. As written, this requirement would impose a substantial burden on all WECS operators. Commercial operators would not be allowed to keep used parts on site as spares or to consolidate shipping. Smaller operators, including farms and homes, would not be allowed to keep potentially valuable parts on their property. As an example, worn blades for a small wind generator have substantial value and could be repaired if needed. As written, the owner would have to dispose of the blades and could not store them. Car analogy: Keeping used cars parts would not be allowed. If an owner removed an engine from their vehicle, they would have to promptly remove it from their garage and dispose of it, even though it still has substantial value.

"l. All WECS and each Commercial WECS shall have a Decommissioning plan outlining the anticipated means and cost of removing WECS at the end of their serviceable life or upon becoming a discontinued use. The cost of removing Commercial WECS shall be estimated by a competent party; such as a Professional Engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning. The plan shall also identify the financial resources that will be available to pay for the decommissioning and removal of the WECS and accessory facilities, in the form of a bond, line of credit, or cash in an amount one hundred and five (105) percent of the project cost."

Action: Modify scope to commercial WECS only
Reason: Undue burden to non-commercial WECS
Justification:

party; such as a Professional Engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning. The plan shall also identify the financial resources that will be available to pay for the decommissioning and removal of the WECS and accessory facilities, in the form of a bond, line of credit, or cash in an amount one hundred and five (105) percent of the project cost.

m. Upon issuance of a Conditional Use Permit, all Commercial WECS shall notify the Environmental Quality Board, indicating the project location and details on the survey form specified by the Environmental Quality Board.
n. All WECS shall comply with Minnesota Rules 7030 governing noise.
o. All WECS and accessory equipment and facilities shall comply with the National Electrical Code and other applicable standards.
p. All WECS shall comply with FAA standards and permits.
q. All WECS shall comply with the Uniform Building Code adopted by the State of Minnesota.

12.2.6 Interference

The applicant shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals cause by any WECS. The applicant shall notify all communication tower operators within five (5) miles of the proposed WECS location upon application to the county for permits. No WECS shall be constructed so as to interfere with County or Minnesota Department of Transportation microwave transmissions.

12.2.7 Avoidance and Mitigation of Damages to Public Infrastructure

Applicants shall:

1. Identify all county, city or township roads to be used for the purpose of transporting commercial WECS, substation parts, cement, and/or equipment for construction, operation or maintenance of the WECS and obtain applicable weight and size permits from the impacted road authorities prior to construction.
2. The Applicant shall be responsible for immediate repair of damage to public drainage systems stemming from construction, operation or maintenance of the commercial WECS.

12.3 Solar Energy Systems

Solar Energy Systems are a permitted accessory use in all zoning districts, subject to the following standards.

1. Height. Building or roof mounted Solar Energy Eystems shall not exceed ten (10) feet above the highest portion of the building.
2. Location within Lot. Solar Energy Systems must meet the accessory structure setback for the zoning district.

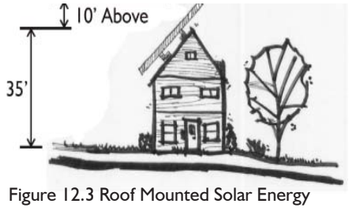

Figure 12.3 Roof Mounted Solar Energy Systems Height

"o. All WECS and accessory equipment and facilities shall comply with the National Electrical Code and other applicable standards."

Action: Eliminate this requirement.
Reason: Redundant with state law.
Justification: There are potential situations where the National Electrical Code is not relevant. Off-grid WECs, in some cases, would be an example of this. Further, the requirement to meet National Electrical Code is already codified by state law and stating it in this ordinance is redundant. At minimum, however, I recommend removing "and other applicable standards." If there are other applicable standards, they should be specified by the ordinance. Otherwise it is impossible to comply with all applicable standards, many of which would be mutually exclusive.

"p. All WECS shall comply with FAA standards and permits."

Action: Eliminate this requirement.
Reason: Redundant with federal law.
Justification: Federal laws preempt the county zoning ordinance, so the requirements by the FAA will be present regardless.

"q. All WECS shall comply with the Uniform Building Code adopted by the State of Minnesota."

Action: Eliminate this requirement
Reason: Incorrect and inapplicable.
Justification: 1) Uniform Building Code was last adopted by the State of Minnesota in 1997. It has been superseded multiple times by the International Building Code, as recently as 2006. As such, Uniform Building Code is no longer an active code in the State of Minnesota. 2) Building codes, whether Uniform Building Code or International Building Code, do not apply to much of a WECS. Some tower design criteria is addressed by UBC and IBC. But much of WECS system is not in the scope of these documents. As such, it is impossible for *any* WECS to comply with building code. Because of this, the State of Minnesota Department of Labor and Industry, along with all other government entities in the USA treat WECS as specialized machinery.
References: http://en.wikipedia.org/wiki/Uniform_Building_Code http://www.doli.state.mn.us/CCLD/CCLDContactus.asp I spoke with Paul Helmkes, who is the senior building code representative for our region. He says Uniform Building Code was last adopted in 1997 in Minnesota. They now work under International Building Code from 2006. I spoke with Jerry Norman, building plan supervisor for the State of Minnesota. He basically said the ordinance language was flat out incorrect. And that wind turbines are not treated as buildings. And if they were, they would not be permitted.

"12.2.6 Interference"
"The applicant shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals cause by any WECS. The applicant shall notify all communication tower operators within five (5) miles of the proposed WECS location upon application to the county for permits. No WECS shall be constructed so as to interfere with County or Minnesota Department of Transportation microwave transmissions."

Action: Eliminate this requirement
Reason: Already covered by Federal Communications Commission laws
Justification: 1) The Federal Communications Commission, or FCC, is the regulatory agency which controls electromagnetic communications in the US. The FCC already has laws, in much more detail than this requirement, that protect the rights of licensed and unlicensed communications systems. 2) As written, this is too vague to comply with. The FCC maintains a database of some communications towers, but it does not include all towers. To the best of my knowledge, Winona County does not maintain a database of "all communication tower operators" either.

"12.3 Solar Energy Systems"
"2. Location within Lot. Solar Energy Systems must meet the accessory structure setback for the zoning district."
"a. Roof-mounted Solar Energy Systems. In addition to the building setback, the collector surface and mounting devices for roof-mounted Solar Energy Systems that are parallel to the roof surface shall not extend beyond the exterior perimeter of the building on which the system is mounted or built. The collector and racking for roof-mounted systems that have a greater pitch than the roof surface shall be set back from all roof edges by at least two (2) feet. Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure."

Action: Eliminate this requirement
Reason: Overly restrictive, eliminates many conventional solar designs
Justification: 1) The ordinance already covers set backs. Within these setbacks, a solar energy system should be treated no differently than the structure it is mounted on is. 2) As written, this requirement would not allow solar energy systems to be architectural elements. For instance, solar panels on a roof could not extend over a roof to be an awning.

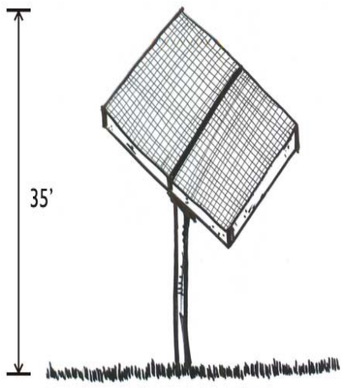

Figure 12.4 Ground Mounted Solar Energy Systems Height

a. Roof-mounted Solar Energy Systems. In addition to the building setback, the collector surface and mounting devices for roof-mounted Solar Energy Systems that are parallel to the roof surface shall not extend beyond the exterior perimeter of the building on which the system is mounted or built. The collector and racking for roof-mounted systems that have a greater pitch than the roof surface shall be set back from all roof edges by at least two (2) feet. Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure.
b. Ground-mounted Solar Energy Systems. Ground-mounted Solar Energy Systems may not extend into the side-yard or rear setback when oriented at minimum design tilt.
c. Ground-mounted Solar Energy Systems. Ground-mounted Solar Energy Systems shall not exceed thirty five (35) feet in overall height.
d. Large Ground-mounted Systems. In the A/RC Ground-mounted Solar Energy Systems that result in the creation of (1) one or more acres of impervious surface or are a commercial solar system must apply for a Conditional Use Permit.

3. Approved Solar Components. Electric Solar Energy System components must have an Underwriters Laboratory (UL) listing.
4. Compliance with State Electric Code. All Solar Energy Systems shall comply with the Minnesota State Electric Code.
5. Utility Notification. No grid-intertie Solar Energy System shall be installed until evidence has been given to the Planning Department that the owner has notified the utility company of the customer's intent to install an interconnected customer-owned generator. Off-grid systems are exempt from this requirement
6. No owner, occupier or person in control of property shall allow vegetation or structures to be placed or grow so as to cast a shadow on a Solar Energy System which is greater than the shadow cast by a hypothetical wall ten (10) feet high located along the boundary line of said property between the hours of 9:30 a.m. and 2:30 p.m. Central Standard Time on December 21 provided, however, this standard shall not apply to vegetation or structures which casts a shadow upon the Solar Energy System at the time of installation of said Solar Energy System or to vegetation existing at the time of installation of said Solar Energy System.
   a. Violation of this standard shall constitute a private nuisance, and any owner or occupant whose solar energy system is shaded because of such violation, so that performance of the system is impaired, may have in tort for damages sustained thereby and may have such nuisance abated.
7. As a means of evidencing existing conditions, the owner of a Solar Energy System may file notarized photographs of the affected area with the County prior to installation of said system.

"3. Approved Solar Components. Electric Solar Energy System components must have an Underwriters Laboratory (UL) listing."

Action: Eliminate this requirement
Reason: Overly restrictive in favor of single for-profit company
Justification: The solar section imposes serious limitations on the type of components that can be used for solar. Such that it is most likely impossible to comply with and produce a functioning solar electric system. Specifically, it states: "Approved Solar Components. Electric Solar Energy System components must have an Underwriters Laboratory (UL) listing." In the US, there are a number of Nationally Recognized Testing Laboratories (NRTL). UL just happens to be one of them. But UL doesn't have any special designation. All of the NRTL are treated equally. By Winona County forcing only Underwriters Laboratory (UL) listed products, that means that a large percentage (if not a majority) of solar electric products and components would not be allowed. It is quite analogous to saying that Winona County residents may only drive Ford vehicles.
References: http://www.osha.gov/dts/otpca/nrtl/

"4. Compliance with State Electric Code. All Solar Energy Systems shall comply with the Minnesota State Electric Code."

Action: Eliminate this requirement
Reason: Redundant with state law.
Justification: There are potential situations where the National Electrical Code is not relevant. Off-grid WECs, in some cases, would be an example of this. Further, the requirement to meet National Electrical Code is already codified by state law and stating it in this ordinance is redundant.

"5. Utility Notification. No grid-intertie Solar Energy System shall be installed until evidence has been given to the Planning Department that the owner has notified the utility company of the customer's intent to install an interconnected customer-owned generator. Off-grid systems are exempt from this requirement"

Action: Eliminate this requirement
Reason: Redundant, may be impossible to comply
Justification: 1) Utilities already require interconnection applications and agreements. 2) Some utilities will not proceed with interconnection application until permits are issued. This would create a catch-22 situation. 3) This is regulated by the state Public Utilities Commission and state law.

12.4 Geothermal Energy Systems

Geothermal Energy Systems are allowed in all zoning districts, subject to the following standards.

12.4.1 Land Disturbance Permit

A Land Disturbance Permit is required for the following situations when installing a Geothermal Enerty System:

a. When there is to be excavation or filling of land that would deprive an adjoining property owner of lateral support.
b. When there is to be excavation of earthen material of more than one thousand (1,000) cubic yards, for the installation of a geothermal heat pump system.
c. When there is to be excavation of earthen material, for the installation of a geothermal heat pump system located within Shoreland, Floodplain, or on steep slopes as described in Chapter 11.