



Wayzata Planning Commission Workshop Meeting Agenda

Monday, July 20, 2015

Community Room,
600 Rice Street East,
Wayzata, Minnesota

- 7:00 p.m.**
- 1. Call to Order and Roll Call, and Approval of Minutes**
 - 2. Workshop Items:**
 - a. Alternative Energy Ordinance Discussion
 - 3. Other Items:**
 - a. Review of Development Activities
 - b. Other items
- 9:00 p.m.**
- 4. Adjournment**

NOTES:

¹ Time(s) are estimated and provided for informational purposes only.

² Members of the Planning Commission and some staff may gather at the Wayzata Bar and Grill immediately after the meeting for a purely social event. All members of the public are welcome.

WAYZATA PLANNING COMMISSION
DRAFT WORKSHOP MEETING MINUTES
JULY 6, 2015

AGENDA ITEM 1. Call to Order, Roll Call and Approval of Minutes.

Chair Vanderheyden called the meeting to order at 7:00 p.m.

Present at roll call were Commissioners: Vanderheyden, Young, Gonzalez, Ramy, Iverson, and Gnos. Absent and excused was: Commissioner Gruber. Director of Planning and Building Gadow, City Attorney David Schelzel, and Management and Planning Intern Jason Peters were also present.

Chair Vanderheyden stated the minutes to be reviewed are from the June 15, 2015 meeting.

It was noted that Commissioner Gonzalez submitted corrections to the minutes prior to the meeting.

Mr. Gadow stated the following corrections to the minutes should be made: on page 6, line 18 and line 31, change "2-feet" to "26-feet". He clarified that he had misspoke during the June 15 meeting regarding the Subdivision Ordinance's variance criteria regarding economic considerations. The Subdivision Ordinance does include economic considerations as a criteria, and this was added to the draft City Council Resolution.

Commissioner Gonzalez made a motion, Seconded by Commissioner Ramy, to approve the June 15, 2015 meeting minutes, as amended. The motion carried unanimously.

AGENDA ITEM 2. Workshop Items:

a. Update on Downtown Parking Project/Parking Ordinance – SRF Consulting

Mr. Gadow stated at the April 6, 2015 Planning Commission meeting, Jo Ann Olsen from LSA Design provided the Commission with an update on the downtown parking study that the City Council authorized in 2014. One of the items that LSA Design (now part of SRF Consulting) is tasked with is an evaluation of the City's existing Parking Ordinance to recommend what parking requirements may need to be modified in connection with the larger review of downtown parking.

Ms. Jo Ann Olsen, SRF Consulting Group, Inc., stated since April 6, 2015 there have been three (3) City Council meetings and one (1) City Council Workshop to review a potential parking and mobility district, parking ratios, and shared parking, along with program and layout options for a potential Mill Street Ramp. SRF has also performed a downtown parking study and initiated a number of pilot projects to address parking concerns. The City Council approved expanding the Phase 1 Parking and Mobility District to include properties south of Lake Street. The overall

1 project schedule has been extended for the Mill Street Ramp to allow more time to review design
2 concepts, and have a full vetting and public process. The construction of the ramp has been
3 pushed to 2016/2017.

4
5 Commissioner Gnos asked what features were included in the design layout provided for the
6 ramp.

7
8 Ms. Olsen stated there is a section for potential development, and a portion of the road in front of
9 the ramp could serve a dual purpose and be closed off during set times of the day for pedestrian
10 use. There would be access off Broadway and Superior in this design option.

11
12 Mr. Gadow stated the City Council is also considering adding some retail on the Broadway side
13 of the ramp, the possibility of a green roof, and the possibility of adding solar panels of some
14 type. These items would be discussed more as the design phase moves forward.

15
16 Commissioner Gonzalez stated the Mayor was not in support of a green roof because of
17 problems with these types of roofs. She asked what type of problems there have been with these
18 types of roofs.

19
20 Mr. Gadow stated there are maintenance concerns and questions with green roofs. The
21 engineering of the ramp would also have to be designed to accommodate this type of roof. The
22 City does not have any green roofs on its buildings but other cities do. Staff will take a look at
23 these as the design process moves forward.

24
25 Commissioner Iverson asked if irrigation would be added because this would be a new
26 construction.

27
28 Mr. Gadow stated the cost would be a consideration but Staff would look at these costs as the
29 process moves forward.

30
31 Ms. Olsen reviewed the results of the public opinion parking survey. The summary of this
32 survey is on the City's website. There will be another survey at the end of July that is more
33 focused on businesses and the pilot projects that have been initiated.

34
35 Commissioner Iverson stated there was not a large response to the survey, with less than 1% of
36 the City's population responding. She asked what would be done in the future to make these
37 surveys more statistically valid.

38
39 Ms. Olsen stated they had been looking into this for potential future surveys. They have not
40 been able to determine how many respondents are residents and, of those, who want more
41 downtown parking, versus visitors to the City who want more downtown parking.

42
43 Commissioner Iverson expressed concerns that the survey would be used to make decisions
44 regarding downtown parking when it is not statistically valid, with less than 1% of Wayzata
45 residents responding.

46

1 Chair Vanderheyden stated it was his opinion that the non-resident opinion would carry more
2 weight than residents, since the non-residents are the population group the City is targeting.

3
4 Commissioner Ramy asked if the survey had asked respondents if they felt a parking ramp would
5 be the best solution to the downtown parking issues.

6
7 Ms. Olsen stated this survey did not go into this type of detail. If the City would like, when they
8 do the next survey for businesses and the pilot projects, they could look at expanding that
9 particular survey to gather more detailed feedback.

10
11 Commissioner Gonzalez stated there would need to be better advertising and communication if
12 there is another survey because there were several residents that were not aware of the survey.

13
14 Ms. Olsen reviewed the pilot projects that have been initiated including the 2-hour parking
15 enforcement, public valet parking, and employee parking. She stated she would send the data to
16 the Planning Commission regarding the actual numbers for public valet parking.

17
18 Chair Vanderheyden asked what the revenue would be from a parking ticket, and if the City had
19 received any communication from the Police Department on the additional monitoring of this
20 area.

21
22 Mr. Gadow stated he did not have the exact amount of the parking ticket but it was under \$50.
23 They were surprised that they have only written eleven tickets. The City is still trying to
24 determine if the 2-hours limit is adequate time or if this should be increased. If the enforcement
25 of a time limit is something the City decides to continue, then they would look at this. The
26 Community Service Officer does most of the ticketing and chalking.

27
28 Commissioner Young asked if there would be more people participating in the public valet
29 parking if the charge was less, and if the use of valet parking would decrease the need for a
30 permanent parking structure.

31
32 Ms. Olsen stated they would look at implementing a lower fee for public valet parking for the
33 next portion of the pilot program.

34
35 Commissioner Iverson asked if they had looked at what happens seasonally as far as volume of
36 parking needed.

37
38 Mr. Gadow stated there had been parking studies done in 2012, with an update in 2013, that
39 looked at the demand of parking in October and July in order to compare the seasonality of the
40 parking demands.

41
42 Ms. Olsen reviewed the proposed parking ratio changes. She noted that the City Council does
43 support reducing the City's current parking ratio requirements.

44
45 Commissioner Young stated the City needs to be careful with the methodology it uses when
46 trying to determine if a parking ramp is needed. The parking ratio requirement Wayzata uses for

1 restaurant parking is high compared to other communities, and if the City used a ratio more in
2 line with that average, there may not be a deficit in parking. If there is not a deficit in parking,
3 then the other methods the City is currently doing as part of the pilot projects may be enough to
4 meet the parking demands.

5
6 Chair Vanderheyden asked if there was data that shows the opportunity costs of not meeting the
7 parking demands, and how significant this amount truly is.

8
9 Commissioner Iverson stated good survey data would provide these answers.

10
11 Commissioner Gonzalez stated Wayzata requires too much parking, especially for office
12 buildings.

13
14 Mr. Gadow stated optimizing shared use for parking stalls would decrease the amount of parking
15 required in the City.

16
17 Ms. Olsen stated in addition to reducing the parking ratios for the City, implementation of shared
18 parking calculations for land uses in the Parking and Mobility District would be recommended.
19 She reviewed the percentages used by other communities. There is already shared parking
20 occurring in this area but they would suggest making it a part of the parking calculations for the
21 Parking and Mobility District. These calculations would be used for future development. She
22 explained the proposed changes to the Parking Ordinance would be: revise Section 20.15 to
23 reduce the retail, restaurant and office parking requirements and apply this to the whole City;
24 revise Section 20.15 to add shared parking calculations and apply this to the Parking and
25 Mobility District only; and apply these new regulations towards new or revised land uses after
26 adoption.

27
28 Mr. Gadow stated if there were other updates needed in Section 20, Staff would make those
29 proposed changes and recommendations at the same time.

30
31 Ms. Olsen stated the next steps for revising the Parking Ordinance would be to draft revisions to
32 Chapter 20, present the draft Ordinance to the Planning Commission for review, the Planning
33 Commission would hold a public hearing on the Chapter 20 amendments, then it would go to the
34 City Council for review and adoption.

35
36
37 **AGENDA ITEM 3. Other Items:**

38
39 **a. Review of Development Activities**

40
41 Mr. Gadow introduced Mr. Jason Peters, the City's Management and Planning Intern. He stated
42 upcoming development projects may be available for Planning Commission review in August.

43
44 Commissioner Ramy asked about possible development opportunities at the 600-700 block of
45 Lake Street.

46

1 Mr. Gadow stated if a ramp were to be built, one of the things the City would look at would be
2 including a retail face to this ramp along Broadway Avenue, there may also be some
3 redevelopment near the area known as the Gold Mine building. The Council has had some
4 discussions about the Lake and Superior corner, and the Bay Center has the first right of
5 negotiation on this parcel. The Council has decided they would prefer not to look at
6 redevelopment on this parcel at this time. There was discussion about potential redevelopment
7 on the western side of Lake Street. This would be part of Parking District 2, and the City would
8 be able to look at this separately. There may potentially be redevelopment of the north side of
9 Lake Street as well. There is nothing coming to the Planning Commission in the near future for
10 redevelopment in this area.

11
12 **b. Other Items**

13
14 Mr. Gadow provided an update on City Council actions pertaining to the 532 Ferndale Road
15 West application. The Council did approve the variance for the garage and denied the Shoreland
16 CUP and variances for the tennis court.

17
18 Commissioner Gonzalez stated if she was available, she would attend the upcoming Heritage
19 Preservation Board meeting.

20
21
22 **AGENDA ITEM 4. Adjournment.**

23
24 There being no further business, Commissioner Young made a motion, seconded by
25 Commissioner Ramy, to adjourn the meeting. The motion passed unanimously.

26
27 The meeting was adjourned at 7:54 p.m.

28
29 Respectfully submitted,

30
31 Tina Borg
32 *TimeSaver Off Site Secretarial, Inc.*

CITY OF WAYZATA



PLANNING DEPARTMENT

MEMORANDUM

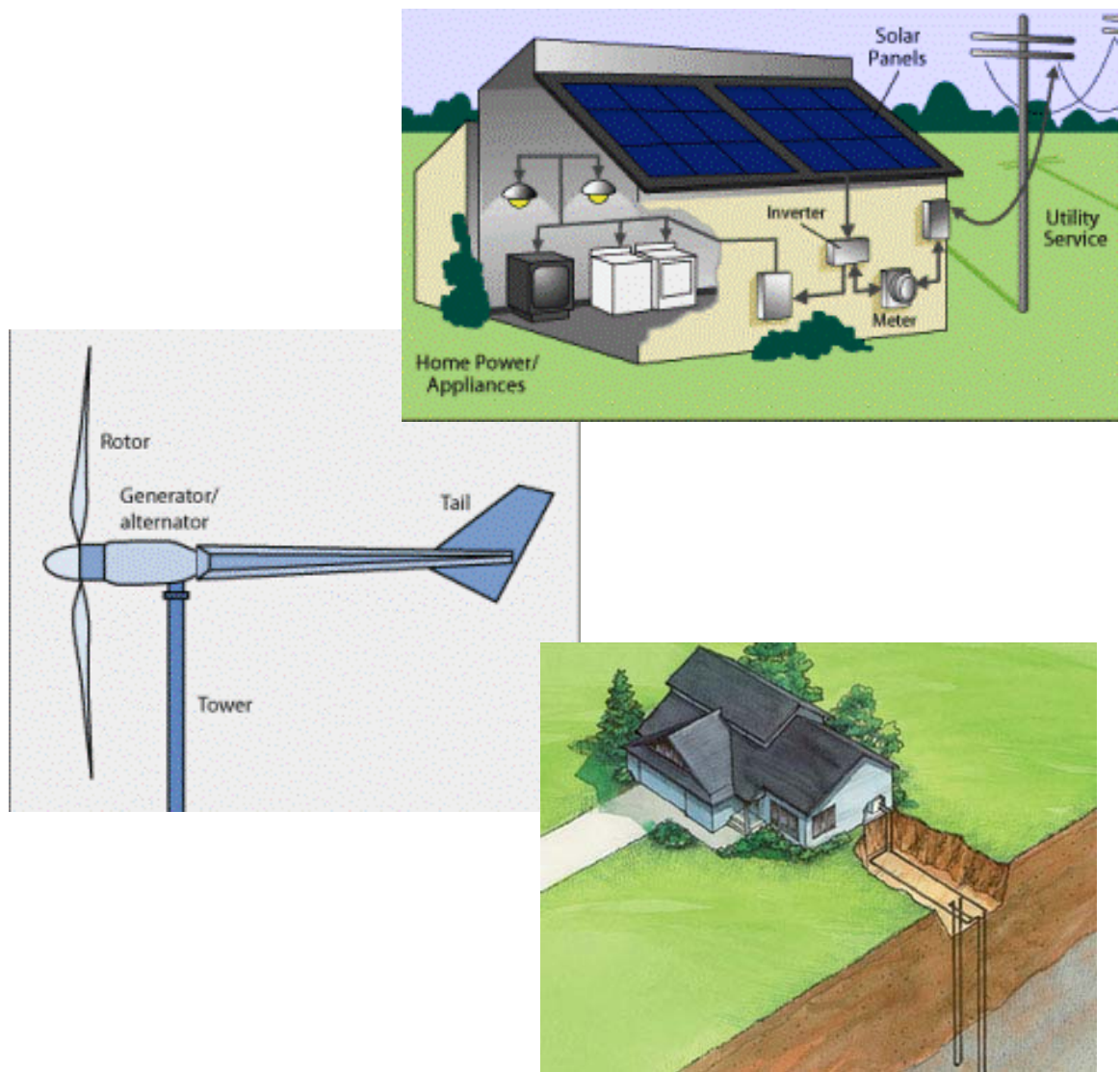
To: Planning Commission
From: Bryan Gadow, Director of Planning and Building
Date: July 16, 2015
Re: Alternative Energy Ordinance Discussion

In 2014, the Commission expressed interest in discussing the topic of alternative energy and review local ordinances on wind turbines and other forms of energy. The purpose of this workshop session is to discuss some general perimeters for a potential draft ordinance, and identify questions and areas for additional research.

To assist with this discussion, I have included a number of resource documents on zoning for alternative energy, and example ordinances from metro area communities.

Please find attached the following items:

1. City of Woodbury, MN – Alternative Energy Ordinance
2. City of Maplewood, MN – Renewable Energy Ordinance
3. League of Minnesota Cities Resource – Planning for Wind Turbines
4. City of Delano, MN Ordinance on Wind Energy Conversion Systems (WECS)
5. City of Ramsey, MN Report on WECS
6. City of Ramsey, MN Ordinance
7. City of Watertown, MN – Alternative Energy Ordinance
8. Minnesota Division of Energy – Model Solar Energy Ordinance



Alternative Energy Systems Ordinance

Planning Commission Recommendation - September 21, 2009

Chapter 24 ZONING
Article VI. Supplemental Performance Standards

Division 5. Alternative Energy Systems

24-401 Scope.

This division applies to alternative energy systems in all zoning districts.

24-402 Purpose and intent.

It is the goal of the city council, as expressed in the Comprehensive Plan, to provide a sustainable quality of life for the city's residents, making careful and effective use of available natural, human and economic resources and ensuring that resources exist to maintain and enhance the quality of life for future residents. In accordance with that goal, the city finds that it is in the public interest to encourage alternative energy systems that have a positive impact on energy production and conservation while not having an adverse impact on the community. Therefore, the purposes of this ordinance include:

- (a) To promote rather than restrict development of alternative energy sources by removing regulatory barriers and creating a clear regulatory path for approving alternative energy systems.
- (b) To create a livable community where development incorporates sustainable design elements such as resource and energy conservation and use of renewable energy.
- (c) To protect and enhance air quality, limit the effects of climate change and decrease use of fossil fuels.
- (d) To encourage alternative energy development in locations where the technology is viable and environmental, economic and social impacts can be mitigated.

24-403 Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section:

Accessory means a system designed as a secondary use to existing buildings or facilities, wherein the power generated is used primarily for on-site consumption.

Alternative energy system means a ground source heat pump, wind or solar energy system.

Building-integrated solar energy system means a solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building including, but not limited to, photovoltaic or hot water solar systems contained within roofing materials, windows, skylights and awnings.

Closed loop ground source heat pump system means a system that circulates a heat transfer fluid, typically food-grade antifreeze, through pipes or coils buried beneath the land surface or anchored to the bottom in a body of water.

Closed loop ground source heat pump system means a system that circulates a heat transfer fluid, typically food-grade antifreeze, through pipes or coils buried beneath the land surface or anchored to the bottom in a body of water.

Flush-mounted solar energy system means a roof-mounted system mounted directly abutting the roof. The pitch of the solar collector may exceed the pitch of the roof up to 5% but shall not be higher than 10 inches above the roof.

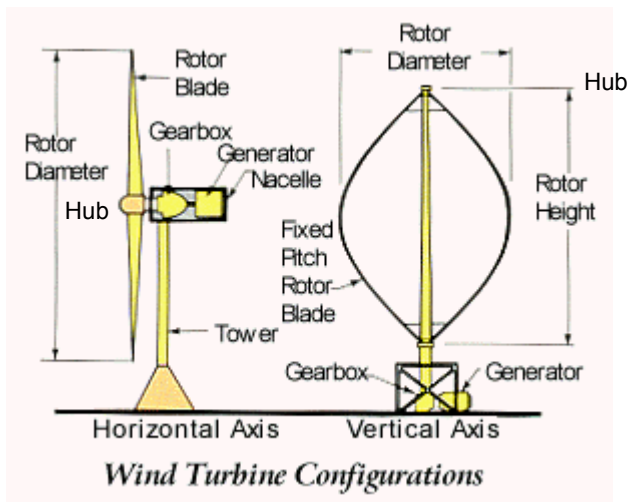
Ground source heat pump system means a system that uses the relatively constant temperature of the earth or a body of water to provide heating in the winter and cooling in the summer. System components include open or closed loops of pipe, coils or plates; a fluid that absorbs and transfers heat; and a heat pump unit that processes heat for use or disperses heat for cooling; and an air distribution system.

Horizontal ground source heat pump system means a closed loop ground source heat pump system where the loops or coils are installed horizontally in a trench or series of trenches no more than 20 feet below the land surface.

Heat transfer fluid means a non-toxic and food grade fluid such as potable water, aqueous solutions of propylene glycol not to exceed 20% by weight or aqueous solutions of potassium acetate not to exceed 20% by weight.

Horizontal axis wind turbine means a wind turbine design in which the rotor shaft is parallel to the ground and the blades are perpendicular to the ground.

Hub means the center of a wind generator rotor, which holds the blades in place and attaches to the shaft.



Hub height means the distance measured from natural grade to the center of the turbine hub.

Monopole tower means a tower constructed of tapered tubes that fit together symmetrically and are stacked one section on top of another and bolted to a concrete foundation without support cables.

Open loop ground source heat pump system means a system that uses groundwater as a heat transfer fluid by drawing groundwater from a well to a heat pump and then discharging the water over land, directly in a water body or into an injection well.

Passive solar energy system means a system that captures solar light or heat without transforming it to another form of energy or transferring the energy via a heat exchanger.

Photovoltaic system means a solar energy system that converts solar energy directly into electricity.

Residential wind turbine means a wind turbine of 10 kilowatt (kW) nameplate generating capacity or less.

Small wind turbine means a wind turbine of 100 kW nameplate generating capacity or less.

Solar energy system means a device or structural design feature, a substantial purpose of which is to provide daylight for interior lighting or provide for the collection, storage and distribution of solar energy for space heating or cooling, electricity generation or water heating.

Total height means the highest point above natural grade reached by a rotor tip or any other part of a wind turbine.

Tower means a vertical structure that supports a wind turbine.

Utility wind turbine means a wind turbine of more than 100 kW nameplate generating capacity.

Vertical axis wind turbine means a type of wind turbine where the main rotor shaft runs vertically.

Vertical ground source heat pump system means a closed loop ground source heat pump system where the loops or coils are installed vertically in one or more borings below the land surface.

Wind energy system means an electrical generating facility that consists of a wind turbine, feeder line(s), associated controls and may include a tower.

Wind turbine means any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind.

24-404 Ground source heat pump systems.

(a) *Zoning districts.* Ground source heat pump systems in accordance with the standards in this section are allowed as a permitted accessory use in all zoning districts.

(b) *Standards.*

(1) *System requirements.*

- a. Only closed loop ground source heat pump systems utilizing heat transfer fluids as defined in Section 24-403 are permitted. Open loop ground source heat pump systems are not permitted.
- b. Ground source heat pump systems in public waters may be permitted as an interim conditional use in accordance with Section 24-407 subject to approval from the Minnesota Department of Natural Resources and subject to written consent of all property owners and/or approval by an association in accordance with its adopted bylaws.
- c. Ground source heat pump systems in water bodies owned or managed by the City of Woodbury are not permitted.

(2) *Setbacks.*

- a. All components of ground source heat pump systems including pumps, borings and loops shall be set back at least 5 feet from interior side lot lines and at least 10 feet from rear lot lines.
- b. Above-ground equipment associated with ground source heat pumps shall not be installed in the front yard of any lot or the side yard of a corner lot adjacent to a public right-of-way and shall meet all required setbacks for the applicable zoning district.

(3) *Easements.* Ground source heat pump systems shall not encroach on public drainage, utility roadway or trail easements.

(4) *Noise.* Ground source heat pump systems shall comply with Minnesota Pollution Control Agency standards outlined in Minnesota Rules Chapter 7030.

(5) *Screening.* Ground source heat pumps are considered mechanical equipment and subject to the requirements of Section 24-307(a)(10).

(6) *Deviations.* Any deviation from the required standards of this ordinance may be permitted through an interim conditional use permit in accordance with Section 24-407.

(d) *Safety.* Ground source heat pumps shall be certified by Underwriters Laboratories, Inc. and meet the requirements of the State Building Code.

- (e) *Abandonment.* If the ground source heat pump system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute a public nuisance. The owner shall remove the abandoned system at their expense after a demolition permit has been obtained in accordance with the following:

- (1) The heat pump and any external mechanical equipment shall be removed.
- (2) Pipes or coils below the land surface shall be filled with grout to displace the heat transfer fluid. The heat transfer fluid shall be captured and disposed of in accordance with applicable regulations. The top of the pipe, coil or boring shall be uncovered and grouted.
- (3) Lake ground source heat pump systems shall be completely removed from the bottom of the body of water.

(f) *Permits.* A building permit and interim conditional use permit, if required, shall be obtained for any ground source heat pump system prior to installation. Borings for vertical systems are subject to approval from the Minnesota Department of Public Health.

24-405 Wind energy systems.

(a) *Zoning districts.* Residential wind turbines in accordance with the standards in this section are permitted accessory uses on lots at least 3 acres in size in the R-1, Urban Reserve, and the R-2, Rural Estate; on lots at least 20 acres in size in the R-4, Urban Residential zoning districts; and on lots at least 1.5 acres in size in the B-2, General Business, and the I-1, Light Industrial provided the lot does not abut a residential zoning district. Wind energy systems are not permitted in any other zoning districts.

(b) *Standards.*

- (1) *Number.* No more than one wind energy system is permitted per parcel.
- (2) *Height.* In the R-1, Urban Reserve, zoning district, a maximum hub height of 60 feet is allowed as a permitted accessory use; additional height, up to 120 feet in total height, may be permitted as an interim conditional use in accordance with Section 24-207. In the R-2, Rural Estate, R-4, Urban Residential, B-2, General Business, and I-1, Light Industrial zoning districts, a maximum hub height of 45 feet is allowed as a permitted accessory use. Additional height, up to 75 feet in total height, may be permitted as an interim conditional use in accordance with Section 24-207.
- (3) *Blade length.* A maximum blade length of 15 feet is permitted.
- (4) *Roof mounting.* Roof mounted wind turbines are not permitted.
- (5) *Setbacks.* The base of the wind turbine tower shall be set back from all property lines a distance equal to the hub height. Wind energy systems shall not be installed in the

front yard of any lot or in the side yard of a corner lot adjacent to a public right-of-way.

- (6) *Easements.* Wind energy systems shall not encroach on public drainage, utility roadway or trail easements.
 - (7) *Noise.* Wind energy systems shall comply with Minnesota Pollution Control Agency standards outlined in Minnesota Rules Chapter 7030 at all property lines.
 - (8) *Screening.* Wind energy systems are exempt from the requirements of Section 24-307(a)(10).
 - (9) *Aesthetics.* All portions of the wind energy system shall be a non-reflective, non-obtrusive color, subject to the approval of the Community Development Director. Only monopole towers are permitted. The appearance of the turbine, tower and any other related components shall be maintained throughout the life of the wind energy system pursuant to industry standards. Systems shall not be used for displaying any advertising. Systems shall not be illuminated.
 - (10) *Feeder lines.* The electrical collection system shall be placed underground within the interior of each parcel. The collection system may be placed overhead near substations or points of interconnection to the electric grid.
 - (11) *Deviations.* Any deviation from the required standards of this ordinance may be permitted through an interim conditional use permit in accordance with Section 24-407.
- (d) *Safety.*
- (1) *Standards and Certification.*
 - a. *Standards.* Wind energy systems shall meet minimum standards such as International Electrotechnical Commission (IEC) 61400-2 or the American Wind Energy Association's (AWEA) Small Wind Turbine Performance and Safety Standard or other standards as determined by the Community Development Director.
 - b. *Certification.* Wind energy systems shall be certified by Underwriters Laboratories, Inc. and the National Renewable Energy Laboratory, the Small Wind Certification Council or other body as determined by the Community Development Director. The City reserves the right to deny a building permit for proposed wind energy systems deemed to have inadequate certification or testing for operation in a severe winter climate.
 - c. *Maintenance.* Wind energy systems shall be maintained under an agreement or contract by the manufacturer or other qualified entity.

- (2) *Utility Connection.* All grid connected systems shall have an agreement with the local utility prior to the issuance of a building permit. A visible external disconnect must be provided if required by the utility.

(e) *Abandonment.* If the wind energy system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute a public nuisance. The owner shall remove the abandoned system at their expense after a demolition permit has been obtained. Removal includes the entire structure including foundations to below natural grade and transmission equipment.

(f) *Permits.* A building permit and interim conditional use permit, if required, shall be obtained for any wind energy system prior to installation.

24-406 Solar energy systems.

(a) *Zoning districts.* Solar energy systems in accordance with the standards in this section are allowed as a permitted accessory use in all zoning districts.

(b) *Standards.*

- (1) *Exemption.* Passive or building-integrated solar energy systems are exempt from the requirements of this section and shall be regulated as any other building element.
- (2) *Minimum Lot Size.* In the R-4, Urban Residential Zoning District, a minimum lot size of 8,000 square feet is required for ground-mounted solar energy systems.
- (3) *Height.* Roof-mounted solar energy systems shall comply with the maximum height requirements in the applicable zoning district. Ground-mounted solar energy systems shall not exceed 15 feet in height.
- (4) *Location.* In residential zoning districts, ground-mounted solar energy systems are limited to the rear yard. In non-residential zoning districts, ground-mounted solar energy systems may be permitted in the front yard of any lot or the side yards on corner lots but shall not encroach in the minimum 20-foot landscaped area adjacent to public rights-of-way.
- (5) *Setbacks.* Ground-mounted solar energy systems including any appurtenant equipment shall be set back a minimum of 15 feet from all property lines and a minimum of 30 feet from all dwellings located on adjacent lots. Roof-mounted systems shall comply with all building setbacks in the applicable zoning district and shall not extend beyond the exterior perimeter of the building on which the system is mounted.
- (6) *Roof mounting.* Roof-mounted solar collectors shall be flush mounted on pitched roofs. Solar collectors may be bracket mounted on flat roofs.

- (7) *Easements.* Solar energy systems shall not encroach on public drainage, utility roadway or trail easements.
 - (8) *Screening.* Solar energy systems shall be screened from view to the extent possible without reducing their efficiency, but are exempt from the strict requirements of Section 24-307(a)(10). Screening may include walls, fences or landscaping.
 - (9) *Maximum Area.* In the R-4, Urban Residential, zoning district, ground-mounted solar energy systems shall be limited to a maximum area of 200 square feet. In other residential zoning districts, ground-mounted solar energy systems shall be limited to a maximum area consistent with the accessory structure limitations in Section 24-281(b) or no more than 25 percent of the rear yard, whichever is less.
 - (10) *Aesthetics.* All solar energy systems shall use colors that blend with the color of the roof or other structure. Reflection angles from collector surfaces shall be oriented away from neighboring windows. Where necessary, screening may be required to address glare.
 - (11) *Feeder lines.* The electrical collection system shall be placed underground within the interior of each parcel. The collection system may be placed overhead near substations or points of interconnection to the electric grid.
 - (12) *Deviations.* Any deviation from the required standards of this ordinance may be permitted through an interim conditional use permit in accordance with Section 24-407.
- (d) *Safety.*
- (1) *Standards and Certification.*
 - a. *Standards.* Solar energy systems shall meet the minimum standards outlined by the International Electrotechnical Commission (IEC), the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE), ASTM International, British Standards Institution (BSI), International Electrotechnical Commission (IEC), International Organization for Standardization (ISO), Underwriter's Laboratory (UL), the Solar Rating and Certification Corporation (SRCC) or other standards as determined by the Community Development Director.
 - b. *Certification.* Solar energy systems shall be certified by Underwriters Laboratories, Inc. and the National Renewable Energy Laboratory, the Solar Rating and Certification Corporation or other body as determined by the Community Development Director. The City reserves the right to deny a building permit for proposed solar energy systems deemed to have inadequate certification.
 - (2) *Utility Connection.* All grid connected systems shall have an agreement with the local utility prior to the issuance of a building permit. A visible external disconnect must be provided if required by the utility.

(e) *Abandonment.* If the solar energy system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute a public nuisance. The owner shall remove the abandoned system at their expense after a demolition permit has been obtained. Removal includes the entire structure including transmission equipment.

(f) *Permits.* A building permit and interim conditional use permit, if required, shall be obtained for any solar energy system prior to installation.

24-407 Interim conditional use permit.

Deviations to the standards in this division may be permitted as an interim conditional use in accordance with Section 24-45. In granting an interim conditional use permit, the city council shall consider the criteria in Sections 24-43 and 24-45 and the following additional criteria unique to alternative energy systems:

(a) That the deviation is required to allow for the improved operation of the alternative energy system;

(b) That the alternative energy system has a net energy gain;

(c) That the alternative energy system does not adversely affect solar access to adjacent properties;

(d) That the alternative energy system complies with all other engineering, building, safety and fire regulations; and

(e) That the alternative energy system is found to not have any adverse impacts on the area, including the health, safety and general welfare of occupants of neighboring properties and users of public rights-of-way.

24-408 Interpretation.

In interpreting this ordinance and its application, the provisions of these regulations shall be held to be the minimum requirements for the protection of public health, safety and general welfare. This ordinance shall be construed broadly to promote the purposes for which it was adopted.

24-409 Conflict.

This ordinance is not intended to interfere with, abrogate or annul any other ordinance, rule or regulation, statute or other provision of law except as provided herein. If any provision of this ordinance imposes restrictions different from any other ordinance, rule or regulation, statute or provision of law, the provision that is more restrictive or imposes high standards shall control.

24-410 Separability.

If any part or provision of this ordinance or its application to any developer or circumstance is judged invalid by any competent jurisdiction, the judgment shall be confined in its operation to the part, provision or application directly involved in the controversy in which the judgment shall be rendered and shall not affect or impair the validity of the remainder of these regulations or the application of them to other developers or circumstances.

Sec. 24-132. R-1 urban reserve district.

- (b) *Permitted uses.* Permitted uses are as follows:

~~Solar energy systems and structures.~~

- (c) *Permitted accessory uses.* Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Wind energy systems on lots at least 3 acres in size up to 60 feet in height in accordance with Section 24-405.

Solar energy systems in accordance with Section 24-406.

- (e) *Height, setback and area requirements:*

- (1) Maximum height: Two and one-half stories or 35 feet, except for silos, grain elevators, ~~windmills~~, water towers, church roofs or spires, etc.

- (g) *Uses by interim conditional use permit.* The following uses are allowed by an interim conditional use permit:

Wind energy systems on lots at least 3 acres in size up to 120 feet in height in accordance with Section 24-405.

Sec. 24-133. R-2 single-family estate district.

- (c) *Permitted accessory uses.* Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Wind energy systems on lots at least 3 acres in size up to 45 feet in height in accordance with Section 24-405.

Solar energy systems ~~and solar structures~~ in accordance with Section 24-406.

- (h) *Uses by interim conditional use permit.* The following uses are allowed by interim conditional use permit:

Wind energy systems on lots at least 3 acres in size up to 75 feet in height in accordance with Section 24-405.

Sec. 24-134. R-4 urban residential district.

(c) *Permitted accessory uses.* Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Wind energy systems on lots at least 20 acres in size up to 45 feet in height in accordance with Section 24-405.

Solar energy systems ~~and solar structures~~ in accordance with Section 24-406.

(e) *Interim conditional use permit.* The following uses are allowed by interim conditional use permit:

- (1) Farmers' market at the Bielenberg Sports Center.
- (2) Telecommunications tower as regulated in section 24-313.
- (3) Wind energy systems on lots at least 20 acres in size up to 75 feet in height in accordance with Section 24-405.

Sec. 24-135. B-1 office park district.

(c) *Permitted accessory uses.* Permitted accessory uses are as follows:

- (1) Exterior.
 - a. Off-street parking and loading subject to article VI, division 4 of this chapter.
 - b. Signs subject to chapter 18.5.
 - c. Electrical generators.
 - d. Bicycle racks and transit shelters.
 - e. Ground source heat pump systems in accordance with Section 24-404.
 - f. Solar energy systems in accordance with Section 24-406.

Sec. 24-136. B-2 general business district.

(c) *Permitted accessory uses.* Permitted accessory uses are the same as allowed in the B-1 district. In addition, the following are also permitted accessory uses:

Adult uses [see Code section 11-300 et seq.]

Wind energy systems on lots at least 1.5 acres in size up to 45 feet in height in accordance with Section 24-405.

(d) *Uses by conditional use permit.* The following uses are allowed by conditional use permit:

~~Outdoor temporary/seasonal sales or farmer's markets in shopping centers over 100,000 square feet as an interim conditional use permit.~~

- (e) Interim conditional use permit. The following uses are allowed by interim conditional use permit:

Outdoor temporary/seasonal sales or farmer's markets in shopping centers over 100,000 square feet.

Wind energy systems on lots at least 1.5 acres in size up to 75 feet in height in accordance with Section 24-405.

- (fe) *Height, setback and area requirements.*

Sec. 24-138. FD-1 freeway mixed use district.

- (c) Permitted accessory uses. Permitted accessory uses are as follows:

(4) Ground source heat pump systems in accordance with Section 24-404.

(5) Solar energy systems in accordance with Section 24-406.

Sec. 24-139. FD-2 freeway transition district.

- (c) Permitted Accessory uses. ~~Accessory uses allowed include:~~ Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Solar energy systems in accordance with Section 24-406.

Sec. 24-140. FD-3 freeway special impact district.

- (d) Permitted Accessory uses: Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Solar energy systems in accordance with Section 24-406.

Sec. 24-141. FD-4 freeway commercial impact district.

(c) Permitted Accessory uses. Permitted accessory uses are as follows:

- (1) Adult uses ~~as an accessory to a primary use.~~
- (2) Ground source heat pump systems in accordance with Section 24-404.
- (3) Solar energy systems in accordance with Section 24-406.

Sec. 24-142. I-1 light industrial district.

(c) Permitted accessory uses. Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Wind energy systems on lots at least 1.5 acres in size up to 45 feet in height in accordance with Section 24-405.

Solar energy systems in accordance with Section 24-406.

(e) Interim conditional use permit. The following uses are allowed by interim conditional use permit:

Wind energy systems on lots at least 1.5 acres in size up to 75 feet in height in accordance with Section 24-405.

(f) Height, setback and area requirements.

Sec. 24-143. BC business campus district.

(d) Permitted Accessory uses. Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Solar energy systems in accordance with Section 24-406.

Sec. 24-144. CC city center district.

- (c) *Permitted accessory uses.* Permitted accessory uses are those existing on April 14, 1971 within the boundaries of the city center. In addition, the following are permitted accessory uses:

Adult uses.

Ground source heat pump systems in accordance with Section 24-404.

Solar energy systems in accordance with Section 24-406.

Sec. 24-146. MX Mixed Use Overlay District.

- (e) *Permitted ~~Accessory~~ uses.* Permitted accessory uses are as follows:

Ground source heat pump systems in accordance with Section 24-404.

Solar energy systems in accordance with Section 24-406.

Sec. 24-147. MCD, Medical Campus District.

- (c) *Permitted accessory uses.* Permitted accessory uses are as follows:

- (1) Exterior as an accessory use to the primary use.

g. Ground source heat pump systems in accordance with Section 24-404.

h. Solar energy systems in accordance with Section 24-406.

Sec. 24-271. ~~Solar energy systems and solar structures.~~ Reserved.

~~Solar energy systems and solar structures shall be a permitted use in all districts provided the system is in compliance with minimum lot requirements and setbacks.
(Mins. of 6-27-2001)~~

Sec. 24-283. Height limitation and setbacks for certain accessory structures.

- (a) Accessory structures such as ~~windmills~~, antennas, or other similar structures shall be limited to 45 feet in height in all districts. Such structures shall be so constructed as to have a minimum setback equal to the height of the structure.

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ORDINANCE NO. 914

AN ORDINANCE TO THE MAPLEWOOD MUNICIPAL CODE REGARDING RENEWABLE ENERGY SYSTEMS (Wind, Solar, Geothermal)

The Maplewood City Council approves the following addition to the Maplewood Code of Ordinances. This ordinance creates a new renewable energy ordinance which will be placed in the Environment Chapter (Chapter 18) of the city code.

Section 1. Scope.

This ordinance applies to the regulations of on-site renewable energy systems within the City of Maplewood, Ramsey County, MN. The ordinance focuses on wind turbines, solar systems, and geothermal ground-source heat pumps which are located on the site for which the generation of energy will be used, with excess energy distributed into the electrical grid.

Section 2. Purpose and Intent.

It is the goal of the city to provide a sustainable quality of life for the city's residents, making careful and effective use of available natural resources to maintain and enhance this quality of life. Cities are enabled to regulate land use under Minnesota Statutes 394 and 462 for the purpose of "promoting the health, safety, morals, and general welfare of the community."

As part of this regulatory power, Maplewood believes it is in the public interest to encourage renewable energy systems that have a positive impact in energy conservation, with limited adverse impact on the community. While Maplewood strongly encourages increased energy conservation and improved energy efficiency, the city also finds that increased use of appropriate renewable energy systems will be an important part of improving urban sustainability.

The renewable energy regulations are intended to supplement existing zoning ordinances and land use practices, and ensure these systems are appropriately designed, sited and installed. These regulations are in place to balance the need to improve energy sustainability through increased use of renewable energy systems with concerns for preservation of public health, welfare, and safety, as well as environmental quality, visual and aesthetic values, and existing neighborhood social and ecological stability. With these regulations, Maplewood is concerned that renewable energy systems, particularly wind energy systems, be designed to minimize the negative impacts on bird and bat species which are vulnerable to mortality from these energy gathering machines.

Section 3. Wind Energy Sources and Systems

a. Definitions, Wind Energy Sources and Systems

The following words, terms and phrases, when used in this Section, shall have the meaning provided herein, except where the context clearly indicates otherwise:

Feeder Line. Any power line that carries electrical power from one or more wind turbines or individual transformers associated with an individual wind turbine to the point

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of interconnection with the electric power grid. In the case of interconnection with the high voltage transmission systems the point of interconnection shall be the substation serving the WECS.

Ground mounted WECS. Freestanding WECS mounted to the ground with footings or other apparatus.

Large WECS. A WECS of equal to or greater than 100 kW in total nameplate generating capacity. The energy must be used on-site with excess energy distributed into the electrical grid. Large WECS are limited to one-hundred twenty five (125) feet in height.

Property Line. The boundary line of the area over which the entity applying for WECS permit has legal control for the purposes of installation of a WECS. This control may be attained through fee title ownership, easement, or other appropriate contractual relationship between the project developer and landowner.

Roof Mounted WECS. A WECS utilizing a turbine mounted to the roof of a structure.

Significant Tree. Any tree defined as a Significant Tree in the city's tree preservation ordinance.

Small WECS. A WECS of less than 100kW in total nameplate generating capacity. The energy must be used on-site with excess energy distributed into the electrical grid. Small WECS are limited to sixty (60) feet in height.

Tower. Vertical structures that support the electrical generator, rotor, and blades, or the meteorological equipment.

Tower Height. The total height of the WECS, including tower, rotor, and blade to its highest point of travel.

Turbine Cut-In Speed. The lowest wind speed at which turbines generate power to the utility system.

Wind Energy. Kinetic energy present in wind motion that can be converted into electrical energy.

WECS. A Wind Energy Conversion System which is an electrical generating facility comprised of one or more wind turbines and accessory facilities, including but not limited to, power lines, transformers, substations and metrological towers that operate by converting the kinetic energy of wind into electrical energy. The energy must be used on-site with excess energy distributed into the electrical grid.

Wind Energy System. An electrical generating facility that consists of a wind turbine associated controls and may include a tower.

Wind Turbine. A wind turbine is any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind.

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b. WECS Districts

1. Large WECS Districts.

- (a) Ground and Roof Mounted Large WECS shall be allowed with approval of a conditional use permit as outlined in section d (conditional use permit procedure) in the following zoning districts and land use designations:
 - (1) In all properties located in commercial zoning districts (Heavy Manufacturing, Light Manufacturing, Business Commercial, Business Commercial Modified, Limited Business Commercial, Commercial Office, Neighborhood Commercial, Shopping Center).
 - (2) In all properties located in multiple dwelling residential zoning districts (Multiple Dwelling Residential and Multiple Dwelling Residential Townhouse) for purposes of shared WECS energy production among the residential dwelling units.
 - (3) In all properties approved as a planned unit development for purposes of shared WECS energy production among the businesses/organizations, residential dwelling units, or adjoining businesses/organizations/residential dwelling units.
 - (4) In all properties guided as Government or Institutional in the city's Land Use Designations of the Comprehensive Plan.
- (b) Ground and Roof Mounted Large WECS shall be prohibited in all properties guided as park or open space in the city's Land Use Designations of the Comprehensive Plan.

2. Small WECS Districts.

- (a) Roof Mounted Small WECS shall be deemed permissible in all zoning districts.
- (b) Ground Mounted Small WECS shall be deemed an accessory structure, permissible in the following zoning districts and land use designations:
 - (1) In all properties located in commercial zoning districts (Heavy Manufacturing, Light Manufacturing, Business Commercial, Business Commercial Modified, Limited Business Commercial, Commercial Office, Neighborhood Commercial, Shopping Center).
 - (2) In all properties located in multiple dwelling residential zoning districts (Multiple Dwelling Residential and Multiple Dwelling Residential Townhouse) for purposes of shared WECS energy production among the residential dwelling units.
 - (3) In all properties approved as a planned unit development for purposes of shared WECS energy production among the businesses/organizations, residential dwelling units, or adjoining businesses/organizations/residential dwelling units.

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- (4) In all properties guided as Government or Institutional in the city's Land Use Designations of the Comprehensive Plan.
- (5) In all properties guided as park in the city's Land Use Designations of the Comprehensive Plan.
- (c) Ground Mounted Small WECS shall be deemed an accessory structure, permissible in double or single dwelling residential zoning districts if the following neighborhood consent requirements are met:

Written consent of one hundred (100) percent of the owners or occupants of privately or publicly owned real estate that are located adjacent (i.e., sharing property lines) on the outer boundaries of the premises for which the permit is being requested, or in the alternative, proof that the applicant's property lines are one-hundred fifty (150) feet or more from any house.

Where an adjacent property consists of a multiple dwelling or multi-tenant property, the applicant need obtain only the written consent of the owner or manager, or other person in charge of the building. Such written consent shall be required on the initial application and as often thereafter as the officer deems necessary.

c. Placement and Design

1. Ground Mounted WECS.

(a) Height

- (1) Large WECS shall have a total height, including tower and blade to its highest point of travel, of no more than one-hundred twenty-five (125) feet.
- (2) Small WECS shall have a total height, including tower and blade to its highest point of travel, of no more than sixty (60) feet.

(b) Placement

- (1) Large WECS shall be located as follows:
 - a) Shall not be located between a principal structure and a public street, unless the city determines that such a location would lessen the visibility of the Large WECS or would lessen the negative impacts of such a WECS on nearby properties.
 - b) Have a minimum setback distance from the base of the monopole of one (1) times the height from any property line, electric substation, transmission line, or other WECS.

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In addition, the setback distance must be increased by twenty-five (25) feet from any property that is zoned or planned for residential.

- c) Have a minimum setback distance from the base of the monopole of one and one-half (1-1/2) times the height from any public right of way, occupied structure, or public use area.
 - d) Have a minimum setback distance from the base of the monopole of six hundred (600) feet from any property guided as park or open space in the city's Land Use Designations of the Comprehensive Plan.
 - e) Have a minimum setback distance from the base of the monopole of one-fourth ($\frac{1}{4}$) mile or one thousand three hundred and twenty (1,320) feet from any bluff.
- (2) Small WECS shall be located
 - a) Shall not be located between a principal structure and a public street, unless the city determines that such a location would lessen the visibility of the Small WECS or would lessen the negative impacts of such a WECS on nearby properties.
 - b) Have a minimum setback distance from the base of the monopole of one (1) times the height from any property line, public right-of-way, electric substation, transmission line, or other WECS.
- (c) Number
 - (1) Large WECS. One (1) large WECS shall be allowed on a single lot of one (1) to five (5) acre(s). All other larger parcels will be limited to one (1) large WECS per five (5) acres of land area.
 - (2) Small WECS. One (1) small WECS shall be allowed on a single lot up to one (1) acre in size. All other larger parcels will be allowed one (1) small WECS per five (5) acres of land area.
- (d) Design
 - (1) Tower Configuration. All ground mounted WECS shall:
 - a) Be installed with a tubular, monopole type tower.
 - b) Have no guyed wires attached to the tower or other components.
 - c) Have no ladder, step bolts, rungs, or other features used for tower access to extend within eight (8) feet of the

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ground. Lattice-style towers shall have a protective barrier to prevent unauthorized access to the lower eight (8) feet of the tower.

- (2) Signs. A WECS operator is required to provide a single posting, not to exceed four (4) square feet, at the base of a WECS prohibiting trespassing, warning of high voltage, and providing the emergency contact information for the operator.

2. Roof Mounted WECS.

(a) Height

(1) Large Roof Mounted WECS:

- a) Total height of not more than twenty-five (25) feet, measured from the top of the roof to the blade tip at its highest point of travel.

(2) Small Roof Mounted WECS:

- a) Total height of not more than twenty-five (25) feet, measured from the top of the roof to the blade tip at its highest point of travel.
- b) Residential Installation: In addition to the twenty-five (25) foot height restriction for the Small Roof Mounted WECS, the height of the WECS and the structure on which it is attached must not exceed the maximum height allowed in the residential zoning district for which it is installed.

(b) Placement

Roof mounted WECS must be erected above the roof of a building or structure. The mounts associated with the WECS may extend onto the side of the building or structure.

(c) Number

- (1) Large Roof Mounted WECS. The maximum number of Large Roof Mounted WECS shall be approved through the conditional use permit process.
- (2) Small Roof Mounted WECS. No more than three (3) roof mounted Small WECS shall be installed on any rooftop.

d. **Conditional Use Permit Procedure.** Procedures for granting conditional use permits from this ordinance are as follows:

- 1. The city council may approve conditional use permit requirements in this ordinance.

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2. Before the city council acts on a conditional use permit the environmental and natural resources commission and the planning commission will make a recommendation to the city council.
3. In reviewing the conditional use permit the environmental and natural resources commission, planning commission, and city council will follow the requirements for conditional use permit approvals as outlined in Article V (conditional use permits).

e. General Standards

1. The following provisions will apply to all WECS erected under the provisions of this ordinance:
 - (a) Noise: Have a maximum noise production rating of fifty-five (55) dB fifty (50) dBA and shall conform to this standard under normal operating conditions as measured at any property line.
 - (b) Over Speed Controls: Shall be equipped with manual and automatic over speed controls to limit the blade rotation within design specifications.
 - (c) Lighting: Have no installed or accessory lighting, unless required by federal or state regulations.
 - (d) Intent to Install: Prior to the installation or erection of a WECS, the operator must provide evidence showing their regular electrical service provider has been informed of the customer's intent to install an interconnected, customer-owned generator. Off-grid systems shall be exempt from this requirement.
 - (e) Signs: The placement of all other signs, postings, or advertisements shall be prohibited on the units. This restriction shall not apply to manufacturer identification, unit model numbers, and similar production labels.
 - (f) Commercial Installations: All WECS shall be limited to the purpose of on-site energy production, except that any additional energy produced above the total on-site demand may be sold to the operator's regular electrical service provider in accordance with any agreement provided by the same or applicable legislation.
 - (g) Feeder Lines: Any lines accompanying a WECS, other than those contained within the WECS' tower or those attached to on-site structures by leads, shall be buried within the interior of the subject parcel, unless there are existing lines in the area which the lines accompanying a WECS can be attached.
 - (h) Clearance: Rotor blades or airfoils must maintain at least 20 feet of clearance between their lowest point and the ground.
 - (i) Blade Design: The blade design and materials must be engineered to insure safe operation in an urban area.

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- (j) Energy Storage: Batteries or other energy storage devices shall be designed consistent with the Minnesota Electric Code and Minnesota Fire Code.
2. In addition to the provisions outlined in Section 3, item e(1) above, the following provisions will apply to large WECS erected under the provisions of this ordinance:
- (a) Color: Turbine paint color and high levels of ultraviolet and infrared components of paint could have an impact on the attraction of insect species to the structure, which may attract birds and bats and cause bird and bat mortality. As such, turbine paint color may be approved as part of the conditional use permit process and must be shown to reduce the negative impacts to birds and bats and be a non-obtrusive color so not to cause negative visual impacts to surrounding properties.
 - (b) Warnings: 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.
 - (c) Environmental Standards: The applicant shall provide the following information in the conditional use permit application. The information will be evaluated in meeting the criteria of a conditional use permit for purposes of minimizing impacts on the environment:
 - (a) Natural Heritage Review by the Minnesota Department of Natural Resources.
 - (b) Lands guided as park or open space in the city's Land Use Designation of the Comprehensive Plan that are located within one (1) mile of the project.
 - (c) Conservation easements and other officially protected natural areas within a quarter mile of the project.
 - (d) Shoreland, Mississippi Critical Area, Greenways, wetland buffers, wildlife corridors and habitat complexes.
 - (e) All significant trees impacted by the project.
 - (f) A plan for turbine-cut in speed strategies where feasible in order to reduce bird and bat deaths. Studies have shown that bird and bat fatalities would be significantly reduced by changing turbine cut-in speed and reducing operational hours during low-wind periods, evening hours (one-half hour before sunset to one-half hour after sunrise-only in spring, summer, and early fall), and migration times in spring and fall.

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3. In addition to the provisions outlined in Section 3, item e(1) above, the following provisions will apply to small WECS erected under the provisions of this ordinance:

- (a) Color: Turbine paint color must be a non-obtrusive color so not to cause negative visual impacts to surrounding properties.

f. Abandonment

A WECS that is allowed to remain in a nonfunctional or inoperative state for a period of twelve (12) consecutive months, and which is not brought in operation within the time specified by the city after notification to the owner or operator of the WECS, shall be presumed abandoned and may be declared a public nuisance subject to removal at the expense of the operator.

Section 4. Solar Energy Sources and Systems

a. Definitions, Solar Energy Sources and Systems

The following words, terms and phrases, when used in this Section, shall have the meaning provided herein, except where the context clearly indicates otherwise:

Building-Integrated Solar System. An active solar system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. Building-integrated systems include, but are not limited to, photovoltaic or hot water solar systems that are contained within roofing materials, windows, skylights, and awnings.

Ground Mounted Panels. Freestanding solar panels mounted to the ground by use of stabilizers or similar apparatus.

Photovoltaic System. An active solar energy system that converts solar energy directly into electricity.

Roof or Building Mounted SES. Solar energy system (panels) that are mounted to the roof or building using brackets, stands or other apparatus.

Roof Pitch. The final exterior slope of a building roof calculated by the rise over the run, typically, but not exclusively, expressed in twelfths such as 3/12, 9/12, 12/12.

Solar Access. A view of the sun, from any point on the collector surface that is not obscured by any vegetation, building, or object located on parcels of land other than the parcel upon which the solar collector is located, between the hours of 9:00 AM and 3:00 PM Standard time on any day of the year.

Solar Collector. A device, structure or a part of a device or structure for which the primary purpose is to transform solar radiant energy into thermal, mechanical, chemical, or electrical energy.

Solar Energy. Radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.

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Solar Energy System (SES). An active solar energy system that collects or stores solar energy and transforms solar energy into another form of energy or transfers heat from a collector to another medium using mechanical, electrical, or chemical means.

Solar Hot Water System. A system that includes a solar collector and a heat exchanger that heats or preheats water for building heating systems or other hot water needs, including residential domestic hot water and hot water for commercial processes.

b. Districts

Solar energy systems (SES) shall be allowed as an accessory use in all zoning districts.

c. Placement and Design

1. Height

- (a) Roof or building mounted SES shall not exceed the maximum allowed height in any zoning district. For purposes for height measurement, solar systems other than building-integrated solar systems shall be considered to be mechanical devices and are restricted consistent with other building-mounted mechanical devices.
- (b) Ground mounted SES shall not exceed the height of an allowed accessory structure within the zoning district when oriented at maximum tilt.

2. Placement

- (a) Ground mounted SES must meet the accessory structure setback for the zoning district in which it is installed.
- (b) Roof or Building Mounted SES. The collector surface and mounting devices for roof or building mounted SES shall not extend beyond the required setbacks of the building on which the system is mounted.

3. Coverage

Ground mounted SES may not exceed the area restrictions placed on accessory structures within the subject zoning district.

4. Visibility

- (a) SES shall be designed to blend into the architecture of the building or be screened from routine view from public right-of-ways other than alleys. The color of the solar collector is not required to be consistent with other roofing materials.
- (b) Building Integrated Solar Systems - Building integrated solar systems shall be allowed regardless of visibility, provided the building component in which the system is integrated meets all required setback, land use or

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performance standards for the zoning district in which the building is located.

- (c) Ground mounted SES shall be screened from view to the extent possible without reducing their efficiency. Screening may include walls, fences, or landscaping.

d. General Standards

1. Notification. Prior to the installation or erection of a SES, the operator must provide evidence showing their regular electrical service provider has been informed of the customer's intent to install an interconnected, customer-owned SES. Off-grid systems shall be exempt from this requirement.
2. Feeder lines. Any lines accompanying a SES, other than those attached to on-site structures by leads, shall be buried within the interior of the subject parcel, unless there are existing lines in the area which the lines accompanying an SES can be attached.
3. Commercial. All SES shall be limited to the purpose of on-site energy production, except that any additional energy produced above the total onsite demand may be sold to the operator's regular electrical service provider in accordance with any agreement provided by the same or applicable legislation.
4. Restrictions on SES Limited. No homeowners' agreement, covenant, common interest community, or other contract between multiple property owners within a subdivision of Maplewood shall restrict or limit solar systems to a greater extent than Maplewood's renewable energy ordinance.
5. Maplewood encourages solar access to be protected in all new subdivisions and allows for existing solar to be protected consistent with Minnesota Statutes. Any solar easements filed, must be consistent with Minnesota Statutes, Chapter 500, Section 30.

e. Abandonment

A SES that is allowed to remain in a nonfunctional or inoperative state for a period of twelve (12) consecutive months, and which is not brought in operation within the time specified by the city, shall be presumed abandoned and may be declared a public nuisance subject to removal at the expense of the operator.

Section 5. Geothermal Energy Sources and Systems

a. Definitions, Geothermal Energy Sources and Systems

The following words, terms and phrases, when used in this Section, shall have the meaning provided herein, except where the context clearly indicates otherwise:

Closed Loop Ground Source Heat Pump System. A system that circulates a heat transfer fluid, typically food-grade antifreeze, through pipes or coils buried beneath the land surface or anchored to the bottom in a body of water.

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Geothermal Energy. Renewable energy generated from the interior of the earth and used to produce energy for heating buildings or serving building commercial or industrial processes.

Ground Source Heat Pump System (GSHPs). A system that uses the relatively constant temperature of the earth or a body of water to provide heating in the winter and cooling in the summer. System components include closed loops of pipe, coils or plates; a fluid that absorbs and transfers heat; and a heat pump unit that processes heat for use or disperses heat for cooling; and an air distribution system. The energy must be used on-site.

Heat Transfer Fluid. A non-toxic and food grade fluid such as potable water, aqueous solutions of propylene glycol not to exceed twenty percent (20%) by weight or aqueous solutions of potassium acetate not to exceed twenty percent (20%) by weight.

Stormwater Pond. These are ponds created for stormwater treatment. A stormwater pond shall not include wetlands created to mitigate the loss of other wetlands.

b. Districts

Ground source heat pump systems (GSHPs) shall be deemed an accessory structure, permissible in all zoning districts.

c. Placement and Design

1. Placement

- (a) All components of GSHPs including pumps, borings and loops shall be set back at least five (5) feet from interior and rear lot lines.
- (b) Easements. All components of GSHPs shall not encroach on easements.
- (c) GSHPs are prohibited in surface waters, except for stormwater ponds where they are permitted.

2. Design

- (a) Only closed loop GSHPs utilizing Minnesota Department of Health approved heat transfer fluids are permitted.
- (b) Screening. Ground source heat pumps are considered mechanical equipment and subject to the requirements of the city's zoning ordinance.

d. General Standards

- 1. Noise. GSHPs shall comply with Minnesota Pollution Control Agency standards outlined in Minnesota Rules Chapter 7030.

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e. Abandonment

A GSHPS that is allowed to remain in a nonfunctional or inoperative state for a period of twelve (12) consecutive months, and which is not brought in operation within the time specified by the city after notification to the owner or operator of the GSHPS, shall be presumed abandoned and may be declared a public nuisance subject to removal at the expense of the operator.

Section 6. General Ordinance Provisions

a. Interpretation

In interpreting this ordinance and its application, the provisions of these regulations shall be held to be the minimum requirements for the protection of public health, safety and general welfare. This ordinance shall be construed broadly to promote the purposes for which it was adopted.

b. Conflict

This ordinance is not intended to interfere with, abrogate or annul any other ordinance, rule or regulation, statute or other provision of law except as provided herein. If any provision of this ordinance imposes restrictions different from any other ordinance, rule or regulation, statute or provision of law, the provision that is more restrictive or imposes high standards shall control.

c. Severability

If any part or provision of this ordinance or its application to any developer or circumstance is judged invalid by any competent jurisdiction, the judgment shall be confined in its operation to the part, provision or application directly involved in the controversy in which the judgment shall be rendered and shall not affect or impair the validity of the remainder of these regulations or the application of them to other developers or circumstances.

Section 7. Ordinance Placement

The ordinance places all environmental ordinances under the Environment Chapter (Chapter 18) by adding Article V (Environmental Protection and Critical Areas) and including the following ordinances under the new Article: wetlands and streams, tree protection, slopes, Mississippi Critical Area, Flood Plain Overlay District, Shoreland Overlay District, and Renewable Energy. Following is the revised Chapter 18 Article headings (additions are underlined):

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Chapter 18

ENVIRONMENT

Article I. In General

Sec. 18-1 - 18-25. Reserved.

Article II. Nuisances

Division 1. Generally

Sec. 18-26 Unlawful to cause, create or commit.
Sec. 18-27 Common law and statutory nuisances adopted by reference.
Sec. 18-28 Unlawful to permit; cellars, drains cesspools or sewers.
Sec. 18-29 Rental agents to disclose name of owner or principal to city manager upon request.
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City of Maplewood

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Division 7. Shoreland Overlay District

Division 8. Renewable Energy

City of Maplewood

The city council approved the first reading of this ordinance on September 26, 2011.

The city council approved the second reading of this ordinance on October 10, 2011.

Signed:

Will Rossbach, Mayor

Date

Attest:

Karen Guilfoile, City Clerk



CONNECTING & INNOVATING
SINCE 1913

RISK MANAGEMENT INFORMATION PLANNING FOR WIND TURBINES

Wind power is increasingly being harnessed to generate electricity across Minnesota and the country. When wind farms arrived in southwestern Minnesota in the 1990s, they were largely in rural areas and not generally on the municipal horizon. As wind energy has increased in popularity, an interest in smaller-scale turbines has emerged in many communities. The location of wind turbines can present land use issues for cities to address under their comprehensive planning and zoning authority.

Land Use Regulations

As increased focus and resources have been brought to bear on developing and installing renewable energy sources, many cities in Minnesota are considering where wind turbines are allowed if at all under existing land use regulations. Some cities have discovered their zoning ordinances are unintentionally restrictive and have amended them to allow establishment of wind turbines. Others may be concerned about whether to allow them at all.

Wind Energy Conservation Systems (WECS)

How a city regulates the location of wind turbines depends on the size of the operation.

Minnesota statute addresses wind energy conversion systems (WECS) by distinguishing between two types—large and small.

Large WECS are defined as any combination of WECS with a combined generating capacity of 5,000 kilowatts or more and are subject to a site permit issued by the state Public Utilities Commission. Local government, such as municipalities, are specifically pre-empted from regulating placement of large systems via zoning, building, or land use rules (city and the public can participate in providing input to PUC).

Small WECS are defined by statute as any combination of WECS with a combined capacity of less than 5,000 kilowatts. Small systems may be constructed without state permit, and local governments are expressly authorized to establish requirements for their siting and construction. “Small” systems themselves can vary greatly in size and scale. A turbine designed to generate power for a utility with 1,000 kilowatt capacity may be hundreds of feet tall. In contrast, there are considerably smaller turbines designed to generate electricity for a single residence or business.

Your League Resource

Contact the League’s Research Department at 651-281-1220 for sample ordinances from other cities. Cities with wind energy ordinances in place include: Arlington, Buffalo, Big Lake, Hutchinson, Otsego, and Plymouth.

Zoning Regulations

Many cities have zoning ordinances that may not address the location of wind turbines, as the ordinance may not include them as an allowed use in any zoning district. Also, typical height limits would likely effectively prevent the installation of many, if not most, turbines. Even though the city may have never considered the issue when planning and zoning, the zoning ordinance may prohibit. Without a change in a zoning ordinance, wind turbines may not be legally installed. A number of cities have amended their ordinances in the last several years to permit and regulate the location of WECS, and several model wind ordinances have been promulgated.

Impacts

Concerns generally relate to the impact on neighboring properties, generally visual impacts, and noise. Wind towers can be hundreds of feet tall and seen for miles, much like a water tower or telecommunication tower. Noise impacts include not only the noise of turbine blades moving through the air, but also humming of mechanical gears. Typically, the way to accommodate these concerns is to establish setbacks from property lines, dwellings, and natural resources. In fully developed, dense neighborhoods, there simply may not be sufficient space to accommodate a turbine of any significant size. Larger turbines may not be appropriate in residential areas.

Learn More

To find out more information, check out "[Can I have a wind turbine?](#)" by the Department of Commerce, as well as their general [wind energy information](#).

Commercial versus Non-Commercial Turbines

The city will need to determine what size of WECS they wish to allow where and whether they will be conditional uses or permitted uses. The zoning ordinance may divide WECS into different classes for local regulation, with larger turbines being more restricted as to district if they're allowed at all.

Some ordinances distinguish between commercial sized turbines and non-commercial turbines. For example, commercial turbines might be defined as WECS of 100 kilowatts or greater, and restricted to a conditional use in some agricultural or industrial districts. Non-commercial WECS of less than 100 kilowatts might be designated as permitted uses in the agricultural or industrial districts, and as conditional in certain commercial, institutional or low-density districts. Cities may also wish to consider setting separate, more permissive standards for very small 2 to 5 kilowatt micro systems marketed to single residences.

Learn More

Dive deeper into the particulars of WECS by checking out [Small Wind Electric Systems: A Minnesota Consumer's Guide](#) written by the US Department of Energy.

Setbacks and Height Limits

Setbacks are the primary method of reducing the impact of turbines on adjoining landowners. Often a zoning ordinance might provide a relatively substantial setback from dwellings, such as 500 or 750 feet. Setbacks from property lines and/or road right-of-way may be set at the height of the tower or distance of a fall zone as determined by the engineer. Setbacks from natural resources like wetlands and bluffs may also be established.

Height limits are another consideration. Ordinance height limits for noncommercial turbines vary greatly. Some allow turbines up to 200 feet in height, while others are more restrictive at 60 or 100 feet. Safety is a concern, and ordinances generally require certification to industry design and safety standards. Other ordinance provisions may deal with buried electrical transmission lines, what happens if the WECS is decommissioned, and addressing impacts heavy turbines might have when they are transported to site.

Affects on Wildlife

Some opponents protest the impact of wind turbines on wildlife. While there may be some birds and bats killed by turbines, it seems the numbers generally would be no greater than those killed by all sorts of human-made structures, such as buildings and towers. A greater concern about wildlife is that large wind turbines arrays in a natural environment may impact ecosystems and disturb prairie habitats.

Community-Based Energy Development (C-BED)

In the last several years, the so-called community wind movement has taken off, which focuses on locally-owned wind projects. Some of these projects may involve local governments, schools and universities, municipal utilities, and electrical cooperatives. In 2005, the legislature passed Community-Based Energy Development (C-BED) legislation which requires electric utilities to consider community-based wind energy projects when seeking to add wind generation to its supply mix. A number of wind turbine demonstration projects have been sponsored or installed by schools and counties.

If your city has not yet considered the issue of how to plan and zone for wind turbines, it may be worthwhile to do so. Eventually, someone may wish to install a wind turbine in your community. Engaging wind in the land use planning process provides a useful and necessary framework.

Learn More

For more on the 2005 Minnesota Model Wind Energy Conversion Ordinance, visit http://www.cleanenergyresourceteams.org/files/2005_model_wind_ordinance.pdf

-OR-

http://www.cleanenergyresourceteams.org/files/2005_model_wind_ordinance_comp.pdf

**CITY OF DELANO
COUNTY OF WRIGHT
STATE OF MINNESOTA**

ORDINANCE NO. _____

**AN ORDINANCE AMENDING SECTION 51.01 (DEFINITIONS) AND ADDING
SUBDIVISION O TO SECTION 51.03 (GENERAL PROVISIONS) OF THE ZONING
ORDINANCE RELATING TO WIND ENERGY CONVERSION SYSTEMS (WECS)**

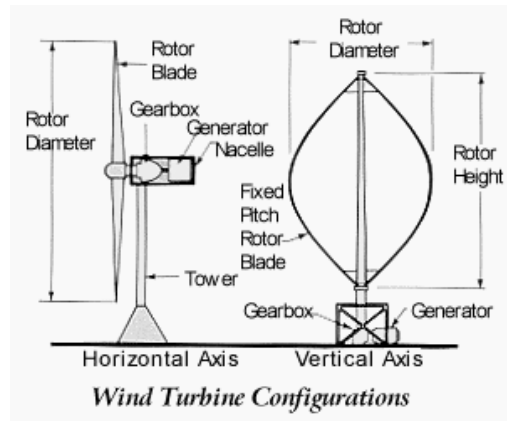
Section 1. Section 51.01, Subd. B.2 of the Delano Zoning Ordinance is hereby amended to read as follows:

Wind Energy Conversion Systems (WECS) Related:

1. Accessory System: a system designed as a secondary use to existing buildings or facilities, wherein the energy generated is used primarily for on-site consumption.
2. Horizontal Axis Wind Turbine: a wind turbine design in which the rotor shaft is parallel to the ground and the blades are perpendicular to the ground.
3. Hub: the center of a wind generator rotor, which holds the blades in place and attaches to the shaft.
4. Hub Height: the distance measured from natural grade to the center of the turbine hub.
5. Monopole Tower: a tower constructed of tapered tubes that fit together symmetrically and are stacked one section on top of another and bolted to a concrete foundation without support cables.
6. Residential Wind Turbine: a roof-mounted wind turbine of 10 kilowatt (kW) generating capacity or less.
7. Small Wind Turbine: a wind turbine of 100 kilowatt (kW) generating capacity or less.
8. Total Height: the highest point above natural grade reached by a rotor tip or any other part of a wind turbine.

9. Tower: a vertical structure that supports a wind turbine.
10. Utility Wind Turbine: a wind turbine of more than 100 kW nameplate generating capacity.
11. Vertical Axis Wind Turbine: a type of wind turbine where the main rotor shaft runs vertically.
12. Wind Conversion Energy System (WECS): an electrical generating facility that consists of a wind turbine, feeder line, and/or other associated controls and may include a tower.
13. Wind Turbine: any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind.

Figure 3 – Wind Turbine Configuration



Section 2. Section 51.03, Subd. O of the Delano Zoning Ordinance is hereby added to read as follows:

Subd. O. Wind Energy Conversion Systems (WECS)

1. Purpose and Intent.

- a. The intent of this Section is to establish standards and procedures by which the installation and operation of wind energy conversion systems and small wind energy conversion systems shall be governed within the City. The city finds that it is in the public interest to encourage alternative

energy systems that have a positive impact on energy production and conservation while not having an adverse impact on the community.

b. Objectives.

- 1) To create a livable community where development incorporates sustainable design elements such as resource and energy conservation and use of renewable energy.
- 2) To protect and enhance air quality, limit the effects of climate change and decrease use of fossil fuels.
- 3) To encourage alternative energy development in locations where the technology is viable and environmental, economic and social impacts can be mitigated.
- 4) To control potential nuisances and hazards created with the placement of WECS.

2. Zoning Districts.

- a. Utility Wind Turbines shall be allowed as an accessory conditional use in the I-1 and I-2 Districts.
- b. Small Wind Turbines shall be allowed as an accessory conditional use in all zoning districts.
- c. Residential Wind Turbines shall be allowed as an accessory administrative use in all residential districts.

3. Number. No more than one WECS is allowed per parcel.

4. Declaration of Conditions. In addition to the provisions of this Section, the City Council may impose such conditions on the granting of WECS conditional use permit as may be necessary to carry out the purpose and provisions of this Section and to maintain compatibility.

5. Application Information. All applications for a WECS conditional use permit or administrative permit shall be accompanied by a detailed plans and specifications including, but not limited to, the following information:

- a. Site Plan showing:

- 1) Lot lines and dimensions.
 - 2) Location and height of all buildings, structures, above ground utilities, and trees on the lot, including both existing and proposed structures and guy wires anchors.
 - 3) Locations and height of all adjacent buildings, structures, above ground utilities and trees located within three hundred (350) feet of the exterior boundaries of the property in question.
 - 4) Existing and proposed setbacks of all structures located on the property in question.
- b. Scaled drawings accurately depicting the proposed location of the WECS and its relationship to structures on adjacent lots.
 - c. WECS specifications including manufacturer and model, rotor diameter, power generation capabilities, engineering analysis and certification of the tower and data pertaining to the tower's safety and stability.
 - d. Soil analysis documentation from the manufacturer or a professional engineer that the site's soil conditions meet minimum standards as specified by the manufacturer.

6. Compliance with State Building Code.

- a. Standard drawings of the structural components of the wind energy conversion system and support structures, including base and footings shall be provided along with the engineering data and calculations to demonstrate compliance with the structural design provisions of the State Building Code especially with regards to wind and icing loads. Drawings and engineering calculations shall be certified by a registered engineer.
- b. Roof-mounted WECS shall include detailed plans illustrating roof construction, mounting techniques and wind load capacity.

7. Compliance with National Electrical Code. WECS electrical equipment and connections shall be designed and installed in adherence to the National Electrical Code as adopted by the City.

8. Manufacturer Warranty. The applicant shall provide documentation or other evidence from the dealer or manufacturer that the WECS has been successfully

operated in atmospheric conditions similar to the conditions within the City. The WECS shall be warranted against any system failures reasonably expected in severe weather operation conditions.

9. Design Standards.

- a. Height: The permitted maximum height of a WECS shall be determined based on the type of system proposed. In determining the height of the WECS, the total height of the system shall be included.

1) Utility Wind Turbines:

- a) A ratio of one point two (1.2) feet of the distance to the closest property line to one (1) foot of the height of the system between the base of WECS and the nearest property line.
- b) A maximum system height of three hundred (300) feet.
- c) The height of a WECS must also comply with FAA Regulation Part 77 "Objects Affecting Navigable Air Space" and/or MnDOT Rule 14, MCAR 1.3015 "Criteria for Determining Obstruction to Air Navigation."

2) Small Wind Turbines:

- a) A ratio of one point two (1.2) feet of the distance to the closest property line to one (1) foot of the height of the system between the base of WECS and the nearest property line.
- b) A maximum system height of one hundred fifty (150) feet.

3) Residential Wind Turbines:

- a) A maximum height of twenty (20) feet above the roofline of the principal structure.

- b. Setbacks: All WECS shall be set back a distance equal to its total height from:

- 1) All property lines
- 2) Above ground utility lines

3) Road right-of-ways

4) All existing buildings and parking lots located on the same parcel.

- c. Rotor Clearance: Blade-arcs created by the WECS shall have a minimum of thirty (30) feet of clearance over any structure or tree within a three hundred (300) foot radius.
- d. Rotor Design: The blade design and materials are to be designed and constructed to ensure safe operation in an urban/rural area.
- e. Rotor Safety: Each WECS shall be equipped with both a manual and automatic braking device capable of stopping WECS operation in high wind or in conditions of imbalance.
- f. Lightning Protection: Each WECS shall be grounded to protect against natural lightning strikes in conformance with the National Electrical Code as adopted by the City.
- g. Appearance, Color and Finish. The wind turbine and tower shall remain painted and finished the color or finish that was originally applied by the manufacturer, unless otherwise approved as part of the conditional use permit.
- h. Tower Access: To prevent unauthorized climbing, WECS towers must comply with one of the following provisions:
 - 1) Tower climbing apparatus shall not be located within twelve (12) feet of the ground.
 - 2) A locked anti-climb device shall be installed on the tower.
 - 3) Tower capable of being climbed shall be enclosed by a locked, protective fence at least eight (8) feet high.
- i. Signs: WECS shall have one sign, not to exceed two (2) square feet at the base of the tower and said sign shall contain the following information:
 - 1) Warning high voltage.
 - 2) Manufacturer's name.
 - 3) Emergency phone number.
 - 4) Emergency shutdown procedures.
- j. Lightning: WECS shall not have affixed or attached any lights, reflectors, flashers or any other illumination, except for illumination devices required by the FAA or other State or Federal agency.

- k. Electromagnetic Interference: WECS shall be designed and constructed so as not to cause radio and television interference.
- l. Noise Emissions: Noises emanating from the operation of WECS shall be in compliance with and regulated by the State of Minnesota Pollution Control Standards, Minnesota Regulations NPC 1 and 2, as amended.
- m. Utility Company Interconnection: No WECS shall be interconnected with the local electrical utility company until the utility company and the City Utility Manager have review and approved such proposal. The Utility Manager and the applicant shall negotiate an interconnection for any excess power generated. The interconnection of the WECS with the utility company shall adhere to the National Electrical Code as adopted by the City. All connecting power lines shall be buried underground.

Deleted: Superintendent

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- 10. **Ornamental Wind Devices.** Ornamental wind devices that are not a WECS shall be exempt from the provisions of this Section and shall conform to other applicable provisions of this Chapter and the City Code.
- 11. **Building Permit Required.** A building permit shall be required for the installation of a WECS in the City.
- 12. **Inspection.** The City hereby reserves the right upon issuing any WECS conditional use permit or administrative permit to inspect the premises on which the WECS is located. If a WECS is not maintained in operational condition and poses a potential safety hazard, the owner shall upon written notice from the City, take expeditious action to correct the situation.
- 13. **Abandonment.** Any WECS or tower which is not used for six (6) successive months shall be deemed abandoned and shall be dismantled and removed from the property at the expense of the property owner.

Section 3. Effective Date. This ordinance shall be in full force and effect immediately following its passage and publication.

ADOPTED by the Mayor and City Council of Delano, Minnesota this ____ day of _____ 2009.

Joseph McDonald, Mayor

ATTEST:

Marlene E. Kittock, Clerk/Treasurer

Wind Energy Conversion Systems
Wind Permitting and Zoning Special Report
City of Ramsey, MN

July 29, 2009

Acknowledgements

City of Ramsey
Wind Permitting Special Report
June 2009

City Council

Mayor Bob Ramsey
Matt Look
Jeff Wise
David W. Elvig
Colin McGlone
John P. Dehen
David Jeffrey

Planning Commission

Gary Levine, Chair
Gary Van Scoy, Vice-Chair
H. Ralph Hunt
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Teresa Cleveland
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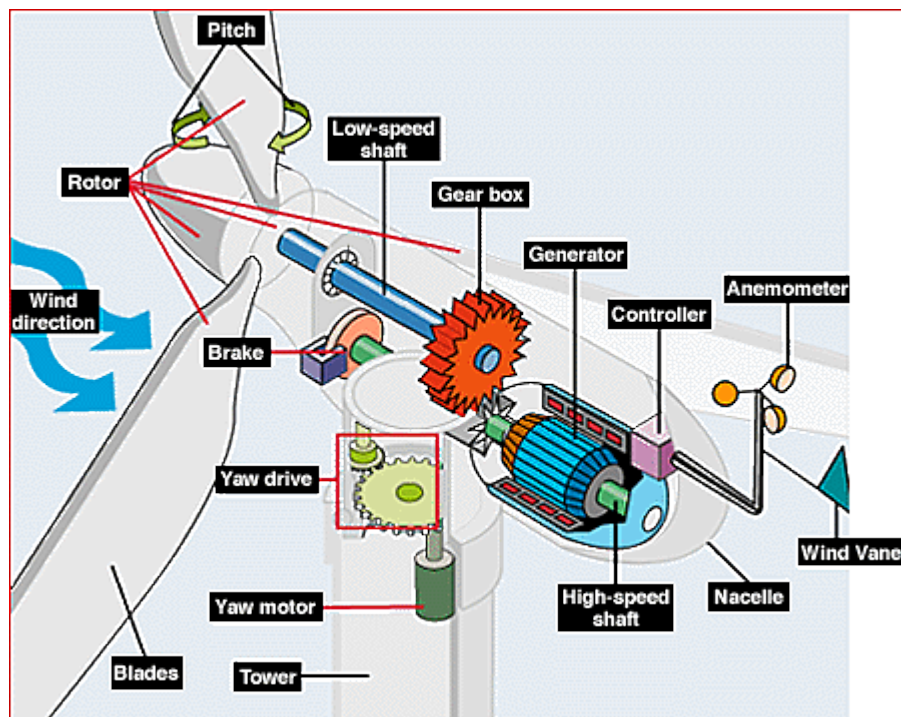
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Components of a Wind Energy Conversion System

A Wind Energy Conversion System (WECS) is a compilation of several components that act together in order to use natural occurring wind to convert into electricity. Common components found in a WECS include a nacelle, nose cone, blade, drive train, main shaft, gears, cables, generator, anemometer, and a tower, according to the American Wind Energy Association (AWEA 2003). Traditional technologies include horizontal-axis blades as depicted below. New advents in technology have included vertical-axis blades in an attempt to create a sleeker profile.

Diagram: Inside the nacelle of a utility-scale wind turbine



Source: http://www1.eere.energy.gov/windandhydro/wind_how.html

The components that are applicable in creating a zoning regulation for these units typically include a tower, and blades. When determining heights and setbacks, it is important to include all components in these measurements.

Wind Conditions

Wind conditions on a national scale are ranked on a scale of 1-7 with one being the lowest quality. According to the AWEA, Minnesota has wind conditions ranging from 2-4. Ramsey appears to be in a

Level 2-3 wind condition. These conditions are generalized on a state level. Studies at a site specific level are required to determine the true wind condition and suitability of a WECS.

An area within the Zone 4 classification in Minnesota known as the Buffalo Ridge is commonly associated with high quality conditions for WECS units. This area is in southwestern Minnesota and is the location of several medium and utility-scale WECS units.

Table 3. Classes of Wind Power Density at Heights of 10 m and 50 m (a)				
Wind Power Class ^a	10 m (33 ft)		50 m (164 ft)	
	Wind Power Density (W/m ²)	Speed ^(b) m/s (mph)	Wind Power Density (W/m ²)	Speed ^(b) m/s (mph)
1	0	0	0	
	100	4.4 (9.8)	200	5.6 (12.5)
2	150	5.1 (11.5)	300	6.4 (14.3)
3	200	5.6 (12.5)	400	7.0 (15.7)
4	250	6.0 (13.4)	500	7.5 (16.8)
5	300	6.4 (14.3)	600	8.0 (17.9)
6	400	7.0 (15.7)	800	8.8 (19.7)
7	1,000	9.4 (21.1)	2,000	11.9 (26.6)

^a Vertical extrapolation of wind speed based on the 1/7 power law.

^b Mean wind speed is based on Rayleigh speed distribution of equivalent mean wind power density. Wind speed is for standard sea-level conditions. To maintain the same power density, speed increases 3%/1000 m (5%/5000 ft) elevation.

^{*} Note: Each wind power class should span two power densities. For example, Wind Power Class = 3 represents the Wind Power Density range between 150 W/m² and 200 W/m². The offset cells in the first column attempt to illustrate this concept.

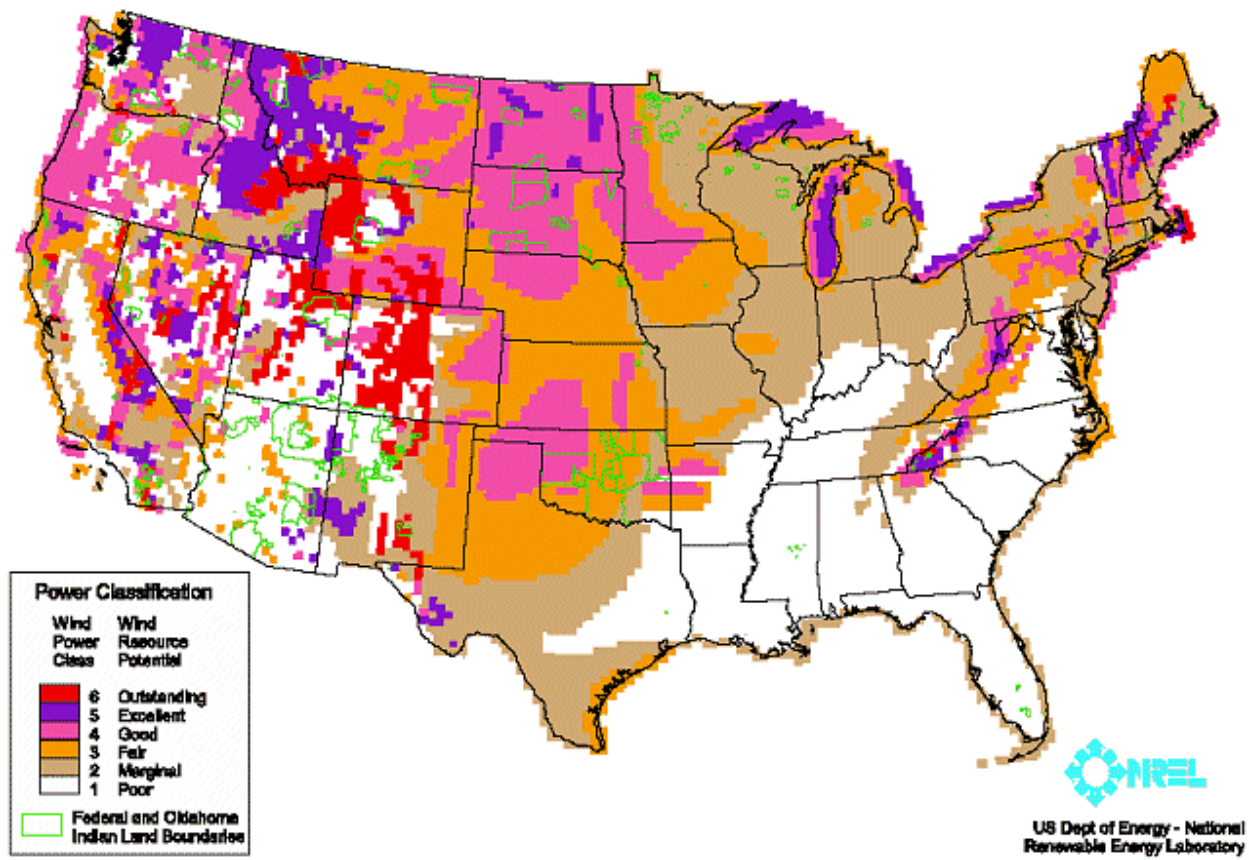


Figure: US Wind Conditions

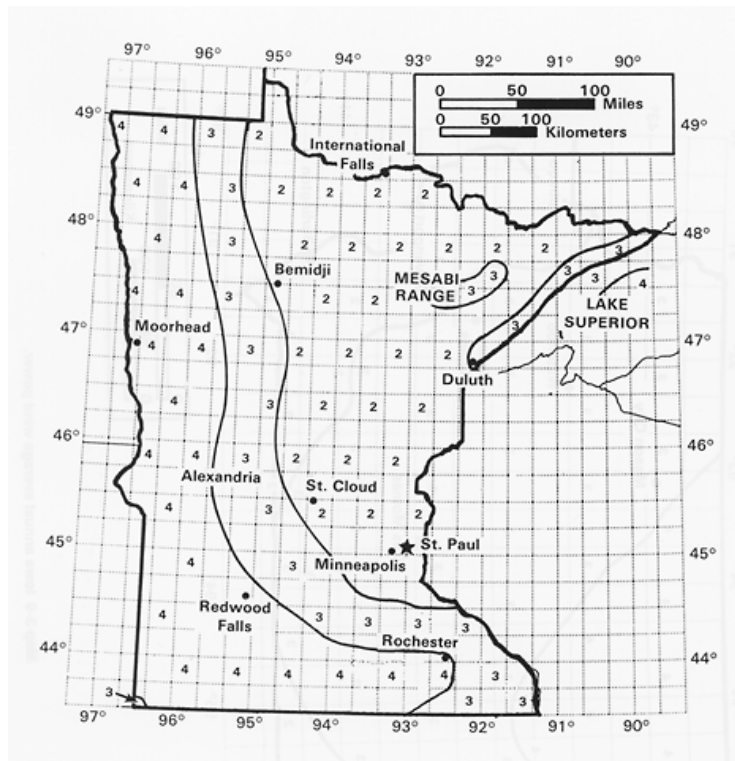
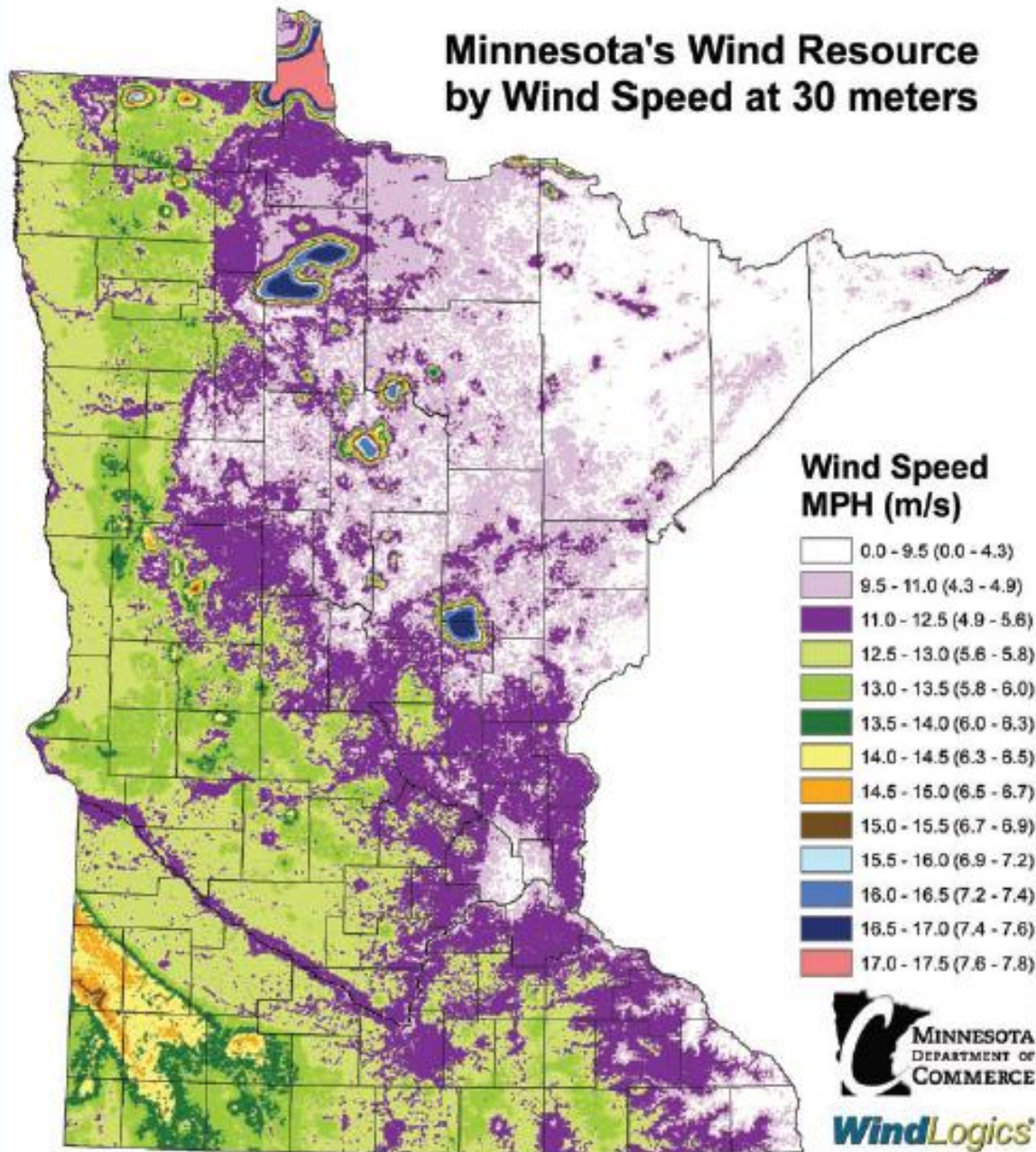


Figure: Minnesota Wind Conditions

Minnesota's Wind Resource by Wind Speed at 30 meters

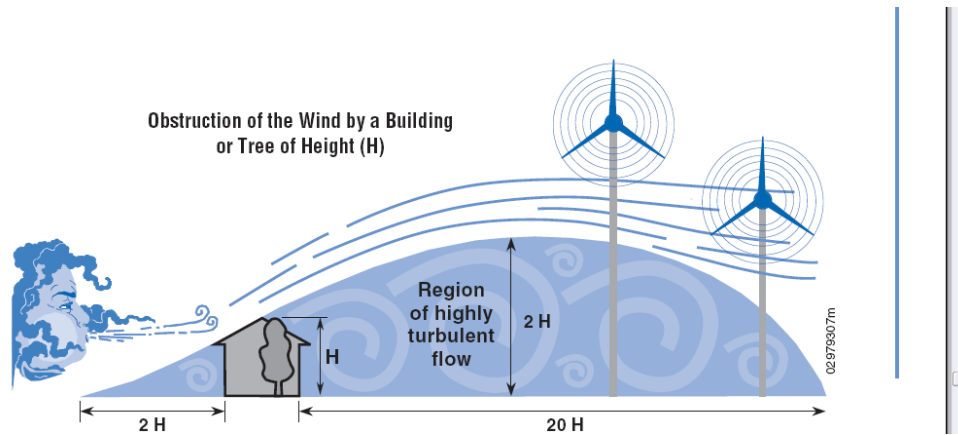


This map has been prepared under contract by WindLogics for the Department of Commerce using the best available weather data sources and the latest physics-based weather modeling technology and statistical techniques. The data that were used to develop the map have been statistically adjusted to accurately represent long-term (40 year) wind speeds over the state, thereby incorporating important decadal weather trends and cycles. Data has been averaged over a cell area 500 meters square, and within any one cell there could be features that increase or decrease the results shown on this map. This map shows the general variation of Minnesota's wind resource and should not be used to determine the performance of specific projects.

January 2006

Clean Wind vs. Dirty Wind

An important factor in the overall wind score for each specific site is the conditions surrounding the proposed site. Ideally, a WECS should be allowed thirty feet (30') higher than the next highest obstacle (Heller and Stimmel 2008). Winds closest to these obstructions create turbulent or dirty air, which reduces the output of electricity created by the WECS (USDE).



Source: US Department of Energy (2007)

Types of Wind Energy Conversion Systems

There are essentially four types of wind energy conversion systems including micro-scale, small-scale, medium-scale, and large-scale (also known as utility-scale). The amount of kilowatts per hour (kW/h) is what essentially determines the separation between the four types. Other factors include height, location, and connection to a utility grid or other parcels.

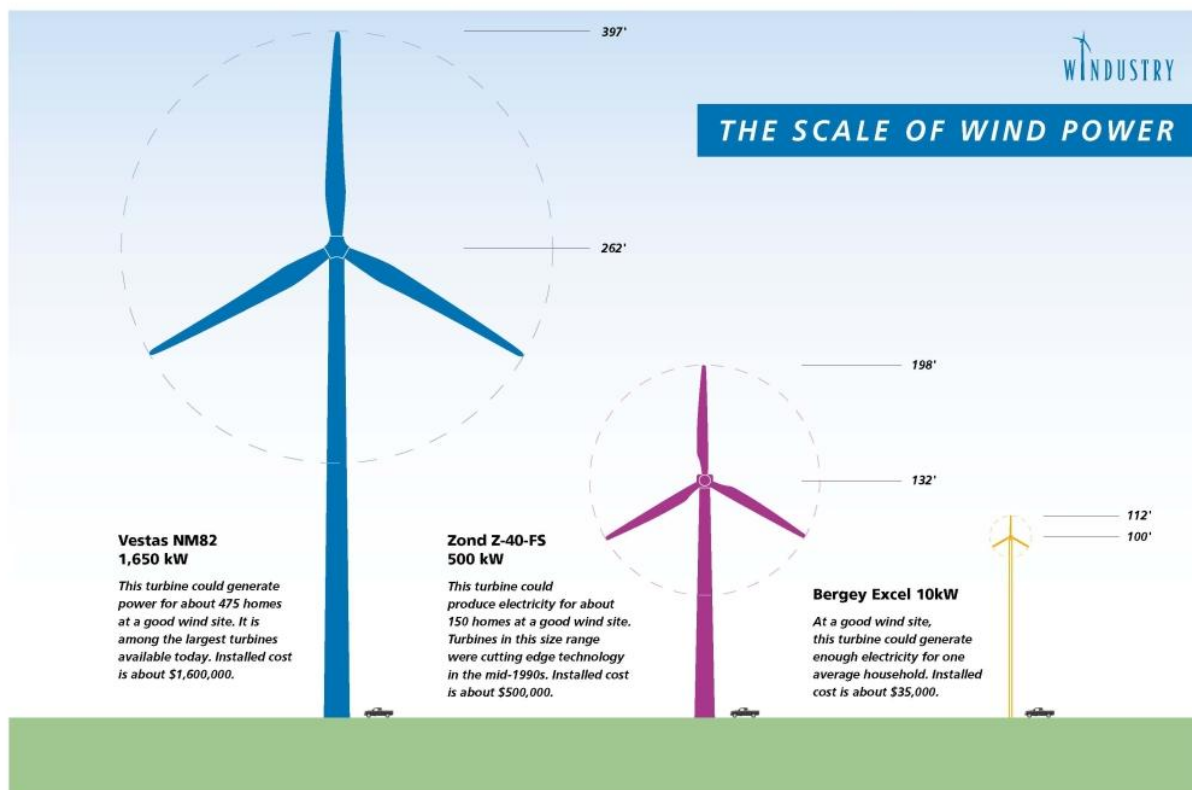


Figure: Sample Heights of types of WECS

Utility-Scale WECS

The utility scale WECS units appear to be the most commonly associated type of WECS. These units are those that are commonly constructed and located in groups to create a large energy-producing facility generally known as a wind farm. Utility scale WECS units typically require a wind score of five (5) or greater (Heller and Stimmel 2008). According to the state-wide analysis, the City of Ramsey appears to be within Level 2-3, which does not support ideal conditions for Utility Scale WECS.

Minnesota State Statute permits the Minnesota Public Utilities Commission to issue site permits for these types of systems (over five megawatts). Systems less than five megawatts are subject to local jurisdiction (Public Utilities Commission 2009).

Medium-Scale WECS

The medium scale WECS units appear to be most commonly used as a private source of electricity to larger business complexes. These units do not typically require contribution to the overall grid and usually contribute to a portion of a larger business' needs. Medium scale WECS units are showing to be less common as it appears that most units are either utility-scale or smaller, personal-scale units. A

commonly known Minneapolis-Saint Paul metro area medium-scale WECS is the unit at Great River Energy in Maple Grove, MN. That unit is approximately 166 feet tall including blades (Chaput 2009). In Elk River, a 65 foot tower (height of the tower only) is erected along US 169 (Schmitz 2003).

Small-Scale WECS

The small scale WECS units are units that are intended to provide electricity to individual residential property owners. These units can either be on or off grid and produce less than 100 kwh and actually typically only produce 10 kwh (Heller and Stimmel 2009).

Micro-Scale WECS

The micro scale WECS units are those that capitalize on existing infrastructure such as rooftops and are most commonly associated with densely populated urban areas without sufficient space for towers and associate setbacks. These units are typically roof mounted turbines. Special consideration should be given to the engineering of the roof to ensure that it can properly support the turbine.

Potential Impacts

There are a few potential impacts that can be easily addressed through zoning regulations, provided that the zoning regulation is not so restrictive that it creates an economically-infeasible condition (Heller and Stimmel 2009). These common concerns include, but are not limited to (info gathered from the AWEA):

- Noise and Vibration
- Shadow Flicker
- Aesthetics
- Safety
- Decline in Property Value
- Impact Upon Wildlife Populations
- Disruption of Communication Signals

Noise and Vibration

Sound levels of a wind generator are dependent upon the size of the generator. In general, the smaller the generator and turbine, the less noise that is emitted. The sound level from a wind turbine can range from 40 to 60 decibels. This can be compared to 70 dB made by a vacuum cleaner and 30 dB inside the average bedroom. The sound of the wind blowing is often louder than the wind generator itself. In

general, the noise of a turbine can be classified as white noise, and is masked by ambient noise, especially in the case of medium and smaller generators. However it is important to note that people subjectively perceive a 10 dB increase in volume as two times as loud. The issue of vibration is only associated with large scale wind generators.

The issue of noise can be mitigated by use of a setback from adjoining property and the use of landscaping surrounding the generator. Many ordinances require a setback of 1,000 feet or greater. According to an article in the Albert Lea Tribune, state law requires a setback of 500 feet from residences and must be quieter than 50 decibels for 54 minutes every hour for wind farms.

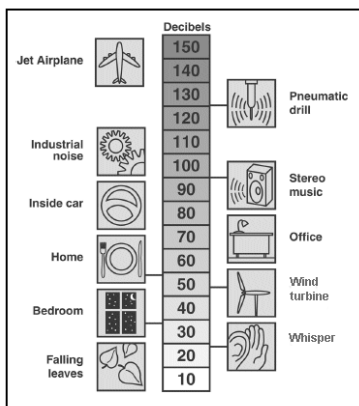


Photo Credit: AWEA

Shadow Flicker

Shadow flicker is the phenomenon where a flicker is created by the shadow of the moving blades. This phenomenon generally occurs at times of low sun angles and is most noticeable indoors. In a large scale generator, the effect is not perceptible beyond 0.6 miles. Further, in the large scale turbines, the cumulative effect of shadow flicker is less than a few hours over a year's time. The smaller the blades, the less impact of shadow flicker.

The issue of shadow flicker can also be addressed with the use of landscaping, and a calculation of the angles of impact when selecting a site for the system. In addition, adequate setbacks of 1,000 feet or greater to impacted structures can mitigate the concern.

Aesthetics

Concerns regarding the aesthetics of wind turbines are often expressed. In most cases, it is the sheer size of the turbines that raises this concern. Limiting the size to medium scale or smaller turbines will mitigate the negative aesthetic impacts. Additional mitigating factors include limiting lighting on a turbine to that required by the FAA, requiring turbines to be painted a neutral color, and prohibiting signage other than warnings.

Safety

Safety is another concern that is raised when discussing wind generators. Topics include system failure, ice shedding, structural failure, and lightning strikes. Each wind generator should allow for the capability of a manual override in case of electrical or system failure. Ice shedding is when ice accumulates on the blade and is thrown off by the motion of the blade. Utilization of setbacks will address the concerns of ice shedding and structural failure. Ice shedding can also be eliminated by ceasing to use the turbine in times of severe ice accumulation. The average recommendation for a setback is 1.1 to 1.5 times the height, which reduces noise, safety issues, and shadow flicker. Finally, all wind generators built today have protection against lightning strikes built into the electrical system.

Decline in Property Values

To date, there has been no formal study linking the existence of a wind generator and a decline in adjoining property values. There is anecdotal evidence showing a link between the presence of a wind generator and a rise in property values. This topic continues to be researched.

Impact upon Wildlife Populations

Another issue that is often raised is the impact of wind turbines upon wildlife populations. Wind turbines tend to have the greatest impact on bat and avian populations, with deaths resulting from collisions with the blades. However, wind turbines only account for 1 out of every 10,000 bird deaths caused by human activities. Any impact can be mitigated by the height and placement of the tower. The American Wind Energy Association recommends that studies of the local wildlife population be performed before erecting a generator. The Audubon Society has maps of migratory bird patterns that can aid in placement of a wind generator.

Disruption of Communication Signals

Disruption of communication or television signals has also been identified as a concern in the placement of wind generators. Generally, signals are only disrupted when a large generator is in the line of sight of a communication tower. Radio signals are disrupted only if the tower for the wind generator is placed in close proximity to a broadcast antenna. Any signal disruption can be mitigated by careful placement of the wind generator.

Advocacy Groups

Numerous advocacy groups have surfaced in response to many of the facilities. One such group formed in response to a proposed project in Freeborn County, MN, the Bent Tree Wind Farm (Engstrom 2009). This project is proposed to contain 266 systems and produce approximately 400 megawatts of energy.

The advocacy group, Safe Wind in Freeborn County, states it believes this facility will lead to wind turbine syndrome, which would create sleeping problems, headaches, dizziness, exhaustion, irritability

and difficulty concentrating. This group cites personal interviews with property owners containing such systems, or near these systems.

Other similar sites include www.wind-watch.org, www.windturbinesyndrome.com, and www.windwisehaven.com. These sites do cite studies from registered MDs, but much of the research is not peer-reviewed.

Advantages and Disadvantages

According to the US Department of Energy (2005), there are several advantages and disadvantages to Wind Energy. First, wind energy is considered a clean energy in that it doesn't pollute the air as some other forms of energy. In addition, it can be harnessed domestically and is relatively low priced to generate, approximately 4 to 6 cents per kilowatt hour. Finally, it can be a good economic development tool for rural areas by providing an additional revenue stream.

Wind energy is disadvantaged by a high initial start up cost and intermittent winds. Developers are still looking for a good way to store the energy, especially in times of low wind conditions. Wind energy often requires additional transmission lines to carry energy from remote locations to urbanized areas. This factor is less important if the intent of the ordinance is to allow for smaller scale systems geared towards supplementing existing energy needs on a smaller scale, such as the case with small and medium scale systems.

Building in Flexibility to the Ordinance

There are several ways to add in flexibility to the ordinance, if desired. Variances to setbacks could be granted provided that proof of enhanced engineering would limit the fall zone in the event of failure.

Flexibility in the WECS Ordinance as well as the overall Zoning Code could be added as a device to provide incentive to constructing a WECS unit. As-of-right deviations to setbacks could be built into City Code to entice the construction of these units. This could also be used as an economic development tool as well.

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ORDINANCE #09-__

**CITY OF RAMSEY
ANOKA COUNT
STATE OF MINNESOTA**

**AMENDMENT TO CHAPTER 9 WHICH IS KNOWN AS ZONING AND SUBDIVISION
OF LAND.**

**AN ORDINANCE AMENDING CHAPTER 9, SECTION 9.02 TITLED “DEFINITIONS”
AND CHAPTER 9, SECTION 9.20 TITLED “ZONING DISTRICTS” AND ADDING
CHAPTER 9, SECTION 9.17 TITLED “WIND ENERGY CONVERSION SYSTEMS” OF
THE CITY CODE OF RAMSEY, MINNESOTA**

The City of Ramsey ordains:

SECTION 1. AUTHORITY

This ordinance is adopted pursuant to and under the authority of the City Charter of the City of Ramsey.

SECTION 2. AMENDMENT

Section 9.02 of the City Code entitled Definitions is amended to include the following:

Wind Energy Conversion System (WECS). Any device such as a wind charger, wind mill, or wind turbine and associated facilities that converts wind energy to electrical energy. This equipment includes any base, blade, foundation, generator, nacelle, rotor, tower, transformer, vane, wire, inverter, or other component used in the system.

WECS, Blade. A component of a WECS mounted to the rotor, causing the rotor to rotate under wind conditions.

WECS, Medium-Scale. A WECS with a height between 101 feet and 200 feet tall, including the blade.

WECS, Micro-Scale. A WECS mounted to an existing Structure.

WECS, Small-Scale. A WECS with a height no greater than 50 feet tall, including the blade.

WECS, Utility-Scale. A WECS with a height greater than 200 feet, including the blade.

Section 9.20 of the City Code entitled Zoning Districts is amended to include the following:

Micro-Scale WECS and Small-Scale WECS shall be permitted as a Conditional Use in the R-1 Residential, R-2 Residential, R-3 Residential, B-1 Business, B-2 Highway Business, E-1 Employment, E-2 Employment, Public/Quasi Public, TC-1, TC-2, TC-3, and TC-5 Zoning Districts.

Medium-Scale WECS shall be permitted as a Conditional Use in the B-1 Business, B-2 Highway Business, E-1 Employment, E-2 Employment, Public/Quasi Public, TC-1, TC-2, TC-3, and TC-5

Zoning Districts.

Section 9.17 entitled Wind Energy Conversion Systems (WECS) is added as follows:

9.17 Wind Energy Conversion Systems (WECS)

9.17.01 Purpose. In order to accommodate the energy needs of residents and businesses while protecting the public health, safety, and general welfare of the community, the Council finds that these regulations are necessary in order to:

- a. facilitate the provision of alternative energy sources to the residents and businesses of the City;
- b. minimize adverse visual effects of wind towers, turbines, and generators through careful design and site selection standards;
- c. avoid potential damage to adjacent properties from tower failure through structural standards and setback requirements.

9.17.02 Location. WECS units shall be allowed by conditional use if listed as a Conditional Use in the underlying zoning district. Furthermore, WECS units shall not be allowed in the Critical River, Wild and Scenic River, and Shoreland Overlay Districts, except for Micro-Scale WECS provided that it does not violate the maximum structure height of the overlay district.

9.17.03 Bulk Standards.

Subd. 1. General Requirements. No part of the WECS, equipment, guyed wires, blades, or braces shall at any time extend across or over any part of the public right-of-way, public street, highway, sidewalk, or recreation trail.

Subd. 2. Setback. All Small Scale WECS and Medium Scale WECS units shall maintain a minimum setback of 1.5 times the height of the tower. In addition, WECS units in any R-1, R-2, or R-3 Residential District must maintain a minimum setback of 1,000 feet from any principle dwelling unit on adjacent parcels.

- a. Setbacks shall be measured from the center of the WECS Tower to the nearest property line.

Subd. 2. Height. Height for any WECS shall be restricted by the definition of the WECS as listed in City Code Section 9.03 Definitions.

- a. The City Council may increase the height of a Small Scale WECS up to an overall height of 100 feet if the applicant is able to demonstrate to the satisfaction of the City Council that the surrounding topography, structures, vegetation, and other factors make the height limit for a complying WECS impractical.
- b. A Micro-Scale WECS is limited to 25 feet taller than the Structure to which it is mounted and can be no taller than the maximum Building Height of the underlying Zoning District. A Variance, processed in

accordance with Section 9.03.07 (Variance Procedures) is required for any Micro-Scale WECS proposed to be taller than these restrictions.

Subd. 3. Blade Clearance. Any WECS Blade shall maintain a minimum ground clearance of 30 feet.

Subd. 4. Restricted Climbing Apparatus. Any WECS tower shall be designed to have removable climbing apparatuses a minimum of 25 feet from the ground. All climbing apparatus within 25 feet of the ground must be removed when not being serviced.

Subd. 5. Site Location in Residential Districts. A WECS may only be located in the rear yard in the R-1, R-2, and R-3 Residential Districts.

- a. The City Council may approve a WECS in the front yard if the Applicant is able to demonstrate setbacks would be unable to be met in the rear yard.

9.17.04 Design Standards. A proposed or modified WECS shall meet the following minimum design standards.

Subd. 1. Tower Design. Any WECS shall be of a monopole design unless the City Council determines that an alternative design is preferred in cases where structural or design considerations, neighborhood compatibility, or location availability is better suited with an alternate design.

Subd. 2. Architectural Design. Any WECS shall be designed to blend into the surrounding environment through the use of color and design, except in instances where the color is dictated by federal or state authorities such as the Federal Aviation Administration.

- a. Architectural design standards are subject to final City Council approval.
- b. The City Council may deny a WECS if it determines the design standards are incompatible with the surrounding area.

9.17.05 Use of City Owned Land for WECS

a. **Priority of Users**

1. City of Ramsey;
2. Public safety agencies, including law enforcement, fire, and ambulance services, which are not part of the City of Ramsey and private entities with a public safety agreement with the City of Ramsey;
3. Other governmental agencies, for uses which are not related to public safety; and
4. Entities providing licensed commercial wireless telecommunication services including cellular, personal communication services (PCS), specialized mobilized radio (SMR), enhanced specialized mobilized

radio (ESMR), paging, and similar services that are marketed to the general public or wireless telecommunication services.

5. Entities providing alternative energy sources including WECS.

b. **Minimum Requirements**

1. The user must obtain a lease from the City, which shall take the following criteria into consideration:
 - (a) The WECS will not interfere with the purpose for which the City owned property is intended;
 - (b) The WECS will have no adverse impact on surrounding private property;
 - (c) The applicant is willing to obtain adequate liability insurance and commit to a lease agreement which includes equitable compensation for the use of public land and other necessary provisions and safeguards. The fees shall be established by the City Council after considering comparable rates in other cities, potential expenses, risks to the City, and other appropriate factors;
 - (d) The WECS will not interfere with other users who have a higher priority as discussed in Section a;
 - (e) Upon reasonable notice, the WECS may be required to be removed at the user's expense;
 - (f) The applicant must reimburse the City for any costs which it incurs because of the presence of the applicant's WECS; and
2. The user must obtain all necessary land use approvals, including a conditional use permit from the City.

c. **Special Requirements.** The use of certain City owned property, such as water tower sites and parks, for a WECS brings with it special concerns due to the unique nature of these sites. The placement of a WECS on these special City owned sites will be allowed only when the following additional requirements are met:

1. **Water Tower Sites.** The City's water tower represents a large public investment in water pressure stabilization and peak capacity reserves. Protection of the quality of the City's water supply is of prime importance to the City. As access to the City's water storage system increases, so too increases the potential for contamination of the public water supply. For these reasons, the placement of a WECS on existing or future water tower sites will be allowed only when the City is fully satisfied that the following requirements are met:

- (a) The applicant's access to the facility will not increase the risks of contamination to the City's water supply;
 - (b) There is sufficient room on the structure and/or on the grounds to accommodate the applicant's facility;
 - (c) The presence of the facility will not increase the water tower maintenance costs to the City; and
 - (d) The presence of the facility will not unreasonably interfere with maintaining the water tower.
- 2. **Parks.** The presence of certain WECS represents a potential conflict with the purpose of some City owned parks. A WECS will be considered only in parks after the recommendation of the Park and Recreation Commission and approval of the City Council.
- d. **Application Process.** All applicants who wish to locate a WECS on any property must submit to the City Administrator, or his/her designee, a completed application and detailed plan that complies with the submittal requirements of the Zoning Ordinance along with other pertinent information requested by the City.
- e. **Termination.** The City Council may terminate any lease if it determines that any one of the following conditions exist:
 - 1. A potential user with a higher priority cannot find another adequate location and the potential use would be incompatible with the existing use;
 - 2. The WECS unreasonably interferes with other users of a higher priority, including wireless communication, regardless of whether or not this interference was adequately predicted in the technical analysis; or
 - 3. A user violates any of the standards in this policy or the conditions attached to the City's permission.

Before taking action, the City will provide thirty (30) days notice to the user of the intended termination and the reasons for it, and provide an opportunity for the user to address the City Council regarding the proposed action. This procedure need not be followed in emergency situations.
- f. **Reservation of Right.** Notwithstanding the above, the City Council reserves the right to deny, for any reason, the use of any or all City owned property by any one or all applicants.
- g. **Use of Revenue.** All revenue generated through the lease of City owned property for a WECS shall be made payable to the City of Ramsey and transmitted to the City's Department of Finance.

Revenue shall be credited as follows:

1. To the specific operating activity using the land upon which the wireless telecommunication towers and antennas are located:
 - a. To the Water Utility Fund when located on water utility property;
 - b. To the Park Improvement Fund if located on park or open space land;
 - c. Any revenues not meeting the above criteria shall be applied as general revenues of the General Fund.

9.17.07 Co-location Requirements. Whenever possible, the City encourages co-location of wireless telecommunication facilities on a WECS in accordance of Section 9.15.

9.17.08 Tower Construction Requirements. Any WECS erected, constructed, or located within the City, and all wiring therefore, shall comply with the requirements set forth of Chapter 8 of this Code. Towers shall be designed to be properly grounded in the event of a lightning strike.

9.17.09 WECS Lighting. Towers shall not be illuminated by artificial means and shall not display strobe lights unless such lighting is specifically required by the Federal Aviation Administration or other federal or state authority for a particular tower, or if required by the City Council for safety reasons. When incorporated into the approved design of the tower, light fixtures used to illuminate ball fields, parking lots, or similar areas may be attached to the tower.

9.17.10 Signs and Advertising. The use of any portion of a tower for signs other than warning or equipment information signs is prohibited.

9.17.11 Accessory Utility Buildings. All utility buildings and structures accessory to a WECS shall be architecturally designed to blend in with the surrounding environment and shall meet the minimum setback requirements of the underlying zoning district. Ground mounted equipment shall be screened from view by suitable vegetation, except where a design of non-vegetative screening better reflects and complements the architectural character of the surrounding neighborhood, as determined by the City Council.

9.17.12 Abandoned or Unused WECS or Portions of a WECS. Abandoned or unused WECS or portions of a WECS shall be removed as follows:

- a. All abandoned or unused WECS and associated facilities shall be removed within twelve (12) months of the cessation of operations at the site unless a time extension is approved by the City Council. A copy of the relevant portions of a signed lease which requires the applicant to remove the tower and associated facilities upon cessation of operations at the site shall be submitted at the time of application.
- b. The replacement of portions of a WECS previously removed requires the issuance of a new conditional use permit.

9.17.13 Interference with Public Safety Telecommunications. No new or existing WECS with co-location of telecommunications antennas shall interfere with public safety telecommunications, in accordance with the rules and regulations of the Federal Communications Commission. Before the introduction of new service or changes in existing service, telecommunication providers shall notify the City at least ten (10) calendar days in advance of such changes and allow the City to monitor interference levels during the testing process.

9.17.14 Submittal Requirements. In addition to the information required elsewhere in this Code, development applications for WECS shall include the following supplemental information:

- a. A report from a qualified and licensed professional engineer which:
 1. describes the WECS height and design including a cross-section and elevation,
 2. includes other information necessary to evaluate the request.
- a. Written documentation from the U.S. Fish and Wildlife Service or applicable government agency, documenting that the proposed site will not interfere with migratory bird patterns.
- b. Before the issuance of a building permit, the following supplemental information shall be submitted:
 1. Affirmation that the proposed WECS will comply with any applicable regulations administered by the Federal Aviation Administration, and
 2. A report from a qualified and licensed professional engineer which demonstrates the compliance of the WECS with the aforementioned structural and electrical (but not radio frequency) standards.
 - a. Electrical standards are set by State Statute/Law and inspected by the State Electrical Inspector.
 3. Certificate of insurance for the WECS.

9.17.19 Conditional Use Permit Required. Except as otherwise provided for in this Section of the Code, it shall be unlawful for any person, firm, or corporation to erect, construct in place, place or re-erect, or replace any WECS without first making application to the City Council and securing a conditional use permit therefore as hereinafter provided. Routine maintenance of the WECS and related structures shall not require the issuance of a conditional use permit.

9.17.20 Violations. Any person who shall violate any of the provisions of this Section shall be guilty of a misdemeanor.

9.17.21 Existing WECS. Any WECS in existence as of the effective date of this Ordinance, which do not conform to or comply with this Section of the Code are subject to the following provisions:

- a. The WECS may continue in use for the purpose now used and as now existing but may not be replaced or materially altered without complying in all respects with this Section.

- b. If such WECS are hereafter damaged or destroyed due to any reason or cause whatsoever, the WECS may be repaired and restored to its former use, location, and physical dimensions upon obtaining a building permit therefor, but without otherwise complying with this Section, provided, however, that if the cost of repairing the WECS to its former use, physical dimensions, and location would exceed 50% of the cost of a new WECS of like kind and quality, then the WECS may not be repaired or restored except in full compliance with this Section.

SECTION 3. SUMMARY

The following is the official summary of Ordinance #09-__ which has been approved by the City Council of the City of Ramsey as clearly informing the public of the intent and effect of the Ordinance.

The Ordinance updates the zoning districts to allow Wind Energy Conversion Systems as a conditional use in the R-1 Residential, R-2 Residential, R-3 Residential, B-1 Business, B-2 Business, E-1 Employment, E-2 Employment Districts and Town Center Sub-Districts 1, 2, 3, & 5. Only small-scale WECS shall be permitted in residentially zoned districts. In addition to Small-Scale WECS, Medium-Scale WECS shall also be permitted in B-1, B-2, E-1, and E-2 Districts and Town Center Sub-Districts 1, 2, 3, and 5. Small-Scale and Medium-Scale WECS is not permitted in the environmental overlay districts.

SECTION 4. EFFECTIVE DATE

The effective date of this Ordinance is thirty (30) days after its passage and publication, subject to City Charter Section 5.07.

Adopted by the Ramsey City Council the ____ day of _____, 2009.

Mayor

ATTEST:

City Clerk

Introduction Date:

Posting Dates:

Adoption Date:

Publication Date:

Effective Date:

City of Watertown

Chapter 61 - ALTERNATIVE ENERGY SYSTEMS

ARTICLE I. - IN GENERAL

Sec. 61-1. - Purpose and intent.

- (a) The purpose of this chapter is to promote the effective and efficient use of energy sources, herein referred to as "alternative energy systems" (AES) to reduce dependency on and consumption of fossil fuels as sources of energy.
- (b) The intent of this chapter is to set forth installation and operation regulations for alternative energy systems by establishing location requirements and circumstances under which the use of alternative energy sources may be implemented without detriment to the public health, safety, and general welfare of the residents of the City of Watertown.

(Ord. No. 351, § 1, 8-9-10)

Sec. 61-2. - Enforcement, violations, remedies, and penalties.

Enforcement of the alternative energy systems ordinance shall be done in accordance with process and procedure established in the City of Watertown Zoning Ordinance.

(Ord. No. 351, § 1, 8-9-10)

Sec. 61-3. - Definitions.

Commercial wind energy conversion system (WECS) means a WECS of equal to or greater than 40kW in total nameplate generating capacity.

Feeder line means a power line that carries electrical power from one or more wind turbines or individual transformers associated with individual wind turbines to the point of interconnection with the electrical power grid, in the case of interconnection with the high voltage transmission systems the point of interconnection shall be the substation servicing the WECS.

Horizontal axis wind turbine (HAWT) means a wind turbine that revolves around an axis which is parallel to the ground.

Meteorological tower means towers erected to measure wind speed and direction plus other data relevant to siting WECS.

Nameplate generator capacity means the maximum capacity of the generator as printed on the nameplate of the generator by the manufacturer.

Non-commercial wind energy conversion system (WECS) means a WECS of less than 40kW in total nameplate generating capacity.

Photovoltaic cell means a singular assembly of materials using the photovoltaic effect to generate electrical energy.

Solar energy systems means solar energy systems, including solar collectors, photovoltaic arrays, storage facilities and distribution components for space heating and cooling and domestic water heating.

Solar panels means a panel consisting of several packaged and interconnected photovoltaic cells.

Rotor diameter means the diameter of the circle described by the moving rotor blades.

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Vertical axis wind turbine (VAWT) means a wind turbine which revolves around an axis which is perpendicular to the ground.

WECS total height means the highest point above ground reached by a rotor tip or any other part of the WECS.

WECS tower means a vertical structure that supports an electrical generator, rotor blades, and/or meteorological equipment used in the operation of a WECS.

Wind energy conversion system (WECS) means an electrical generating facility comprised of one or more wind turbines and accessory facilities, included but not limited to: Power lines, transformers, substations and meteorological towers, that operated by converting the kinetic energy of wind into electrical energy. The energy may be used on-site or distributed into the electrical grid.

Wind turbine means any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind.

(Ord. No. 351, § 1, 8-9-10)

Sec. 61-4. - Conditional use.

Application for alternative energy systems (AES) shall be reviewed and processed in accordance with the conditional use permit procedures established in division 5 of the Watertown Zoning Ordinance or as otherwise set forth in this chapter. A conditional use permit may be granted by the city council after demonstration by evidence that:

- (1) The establishment, maintenance, or operation of the special use will not be detrimental to or endanger the public health, safety, comfort or general welfare;
- (2) The special use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purpose already permitted;
- (3) The establishment of the special use will not impede the normal and orderly development and improvement of surrounding property for uses permitted in the district;
- (4) Adequate utilities, access roads, drainage, and necessary facilities have been or will be provided;
- (5) Adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets;
- (6) The special use shall, in all other respects, conform to the applicable regulations of the district in which it is located.

(Ord. No. 351, § 1, 8-9-10)

ARTICLE II. - WIND ENERGY CONVERSION SYSTEM (WECS)

WECS may be either a horizontal axis wind turbine (HAWT) or a vertical axis wind turbine (VAWT). This chapter is not concerned and is not intended to regulate the design, performance, or cost of the WECS. This chapter is concerned only with the safety and welfare of the residents of the City of Watertown.

Sec. 61-5. - Application procedures.

The following information is required in addition to the information required for a conditional use permit application:

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- (1) The application for all WECS shall include the following information:
 - a. The name(s) of project applicant.
 - b. The name(s) of the project owner.
 - c. The legal description and address of the project.
 - d. A description of the project including: number, type, nameplate generating capacity, tower height, rotor diameter, and total height of all wind turbines and means of interconnecting with the electrical grid.
 - e. Property survey, 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.
 - f. Evidence that the applicant can obtain and maintain adequate liability insurance for the WECS and subject property.
 - g. Engineer's certification.
 - h. Documentation of land ownership or legal control of the property.
- (2) The application for commercial WECS shall also include:
 - a. An FAA permit application, if required.
 - b. A decommissioning plan.
 - c. A noise study, prepared by a qualified professional, that demonstrate that except for intermittent episodes, the WECS shall not emit noise in excess of the limits established in Minnesota Rules 7030 governing noise.
 - d. A shadow flicker model that demonstrates that shadow flicker shall not fall on, or in, any existing residential structure. Shadow flicker expected to fall on a roadway or a portion of a residentially zoned property may be acceptable if the flicker does not exceed 30 hours per year; and the flicker will fall more than 100 feet from an existing residence; or the traffic volumes are less than 500 vehicles (ADT). The shadow flicker model shall:
 1. Map and describe with a 1,000 foot radius of the proposed dispersed wind energy system the topography, existing residences and location of their windows, location of other structures, wind speeds and directions, existing vegetation and roadways. The model shall represent the most probable scenarios of wind constancy, sunshine constancy, and wind directions and speed;
 2. Calculate the locations of shadow flicker caused by the proposed project and the expected durations of the flicker at these locations, calculate the total number of hours per year of flicker at all locations.
 3. Identify problem areas where shadow flicker will interfere with existing or future residences and roadways and describe proposed mitigation measures, including, but not limited to, a change in siting of the WECS, a change in the operation of the WECS, or grading or landscaping mitigation measures.

(Ord. No. 351, § 1, 8-9-10)

Sec. 61-6. - Additional submittal requirements.

- (a) Site plan drawing. All applications for WECS conditional use permit shall be accompanied by a detailed site plan drawn to scale and dimensioned, displaying the following information:
 - (1) Lot lines and dimensions.

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- (2) Location and height of all buildings, structures, above ground utilities and trees on the lot, including both existing and proposed structures and guy wire anchors.
 - (3) Locations and height of all adjacent buildings, structures, above ground utilities and trees located within 350 feet of the exterior boundaries of the property in question.
 - (4) Existing and proposed setbacks of all structures located on the property in question.
 - (5) Sketch elevation of the premises accurately depicting the proposed WECS and its relationship to structures on adjacent lots.
- (b) The owner shall provide engineered drawings for tower mounted units which are over 30 feet in height, or manufacturers recommended erection or mounting drawings for structure mounted units or towers 30 feet high or less.

(Ord. No. 351, § 1, 8-9-10)

Sec. 61-7. - Horizontal axis wind turbine (HAWT) and vertical axis wind turbine (VAWT).

- (a) Zoning. The construction, erection, and installation of a wind energy conversion systems (WECS) will be conditionally permitted or not permitted based on the generating capacity and land use district as established in table 1 below. The planning commission may recommend and the city council may impose conditions on the granting of the conditional use permit for a WECS as may be necessary to carry out the purpose and provisions of this chapter.

TABLE 1

Zoning District	Non-Commercial WECS	Commercial WECS	Meteorological Tower
C-1, C-2, C-3	Not Permitted	Not Permitted	Not Permitted
I-1, PUD-BP	Conditionally Permitted	Conditionally Permitted	Conditionally Permitted
A-1	Conditionally Permitted	Not Permitted	Conditionally Permitted
R-1, R-2	Conditionally Permitted	Not Permitted	Conditionally Permitted
R-3, R-4	Not Permitted	Not Permitted	Not Permitted
P-1, P-2	Conditionally Permitted	Conditionally Permitted	Conditionally Permitted
PUD-FH	Conditionally Permitted	Not Permitted	Conditionally Permitted
PUD-RP, PUD-TV, PUD-G	Not Permitted	Not Permitted	Not Permitted

- (b) Setbacks.

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- (1) All required setbacks shall be measured from the center of the base.
- (2) No part of a WECS shall be located within or above any required front, side, or rear yard setback.
- (3) Ground mounted WECS towers shall adhere to the setbacks established in table 2 below. Setbacks for rooftop-mounted WECS shall be consistent with the underlying zoning district in which in the WECS will be sited.

TABLE 2

	Non-Commercial WECS	Commercial WECS	Meteorological Towers
Property Lines	1.1 times the total height	1.1 times the total height	1.1 times the total height
Neighboring Structures	Setback to property lines of 1.1 times the total height	750 feet	Guyed towers: The fall zone, as certified by a professional engineer +10 feet Non-guyed towers: 1.1 times the total height
Road right-of-way and other right-of-ways (railroads, power lines, etc.)	Guyed towers: the fall zone, as certified by a professional engineer +10 feet; Non-guyed towers: 1.1 times the total height	1.1 times the height	
Other existing WECS	NA	600 feet	600 feet
Wetlands, USFW, Types III, IV, and V	NA	600 feet	600 feet

(c) Requirements and Standards.

- (1) Total height. Ground mounted WECS shall have a total height of less than 150 feet, as measured from the base of the tower to the peak of the highest turbine blade. The pole cannot exceed 120 feet in height, as measured from the base to the hub of the tower, not including the turbine portion of the tower. A HAWT or VAWT that is mounted to the roof of a residence shall not exceed a height of five feet above the highest roof ridge of a residence.

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- (2) Tower configuration. All wind turbines, which are part of a commercial WECS, shall be installed with tubular, monopole type tower and shall be self-supporting and shall not use guy wires or chains.
- (3) Scale. There shall be no more than one WECS per parcel and such parcel shall be large enough to accommodate the required setbacks as determined in table 2. A principal structure must be located on the parcel where the WECS is proposed.
- (4) Color and finish. Towers shall be painted a non-contrasting color consistent with the surrounding area such as pale gray or white or another non-obtrusive color. Finishes shall be matt or non-reflective. The applicant shall demonstrate through project site planning and proposed mitigation that the WECS visual impacts will be minimized to the extent possible for surrounding neighbors and the community. This may include buffering, turbine design, or appearance, or site selection.
- (5) Lighting. No tower shall have affixed or attached lights, reflectors, flashers, or any other illumination, except for any devices required by the FAA.
- (6) Engineering certification. For all WECS, the manufacture's 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.
- (7) Rotor clearance. Blade arcs created by the WECS shall have a minimum of 30 feet of clearance over any structure or tree within a 200-foot radius.
- (8) Rotor safety. Each WECS shall be equipped with both a manual and automatic braking device capable of stopping the WECS operation in high winds (40 miles per hour or greater).
- (9) Feeder lines. All communication and feeder lines installed as part of a WECS shall be buried.
- (10) Decommissioning plan. 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 estimates shall be made 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.
- (11) Noise. All WECS shall comply with Minnesota Rules 7030, as amended, governing noise.
- (12) Complaint resolution. The owner/operator of the WECS shall develop a process to resolve complaints from nearby residents. The process shall use an independent mediator or arbitrator and include a time frame for acting on a complaint. The owner/operator shall make every reasonable effort to resolve any complaint.
- (13) Electrical code and standards. All WECS and accessory equipment and facilities shall comply with the Minnesota State Electrical Code and other applicable standards. The tower shall be grounded and shielded to protect against natural lightning strikes, in conformance with the Minnesota State Electrical Code.
- (14) Uniform Building Code. All WECS shall comply with the Uniform Building Code adopted by the State of Minnesota. Standard drawings of the structural components of the wind energy conversion system and support structures, including base and footings shall be provided along with engineering data and calculations to demonstrate compliance with the structural design provisions of the building code. Drawings and engineering calculations shall be certified by a Minnesota licensed engineer.
- (15) Interference. The WECS shall be filtered, shielded or otherwise designed and constructed so as not to cause electrical, radio frequency, television, and other communication signal interference.
- (16) Shadow flicker. Shadow flicker may not exceed 30 hours per year and shall not fall more than 100 feet from an existing residential property.

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- (17) If a WECS is not maintained in operational condition and poses a safety hazard, the owner shall take expeditious action to correct the situation.
- (d) Federal and state code compliance.
- (1) All WECS shall be in compliance with all applicable federal, state, and county regulatory standards including but not limited to the FAA, FCC, EPA, and MPCA.
 - (2) Copies of any permits, applicable regulations, certifications, and inspection reports must be submitted to the city prior to the WECS being put into service.
- (e) Utility company interconnection.
- (1) No WECS shall be interconnected with a local utility company until the utility company has reviewed and commented upon it.
 - (2) The interconnection of the WECS with the utility company shall adhere to the Minnesota State Electrical Code.
- (f) Tower access. All WECS shall be reasonably protected against unauthorized access or climbing of a tower. To prevent unauthorized access or climbing of a tower, the WECS shall comply with at least one of the following provisions:
- (1) Tower climbing apparatus shall not be located within 12 feet of the ground.
 - (2) A locked anti-climb device shall be installed on the tower.
 - (3) The access to the WECS shall be restricted by a six-foot high non-climbable fence with a locking gate. The gate shall remain locked at all times except when providing access to appropriate personnel associated with the WECS.
- (g) Signs. Electric warning signs are required to be posted on the tower, transformer and substation. Signs with emergency contract information shall also be posted on the turbine or at another suitable point. Painted aviation warnings are recommended on meteorological towers less than 200 feet. All signage on site shall comply with the City of Watertown sign ordinance. Additional signs may be required on the basis of individual applications as safety needs dictate.
- (h) Discontinued use or abandonment. A WECS shall be considered abandoned if its use has been discontinued (no energy production) for 12 consecutive months or more unless the owner notifies the city in writing of the situation causing the shutdown of the WECS and the intention to put the WECS back into service when such situation has been corrected. Situations may include but are not limited to the following:
- (1) Difficulty obtaining repair parts.
 - (2) Compliance with interference regulations.
 - (3) Structural repairs.
 - (4) Mandated shut-down from the EPA, FAA, FCC, MPCA, Utility Company, or other entities that may have authority to require shut-down.
- (i) Dismantling. Upon declaration of abandonment, the WECS shall be dismantled and removed within three months by the property owner in accordance with the following:
- (1) A demolition permit is required for the dismantling of any WECS regardless of size, unless otherwise instructed by the city building code inspector.
 - (2) Upon demolition and removal of the WECS, the property shall be restored as close as possible to its condition prior to the construction of the WECS, or to a condition compatible with the function, use, and aesthetics of the property, whichever is more appropriate as determined by the zoning administrator, planning commission, and city council.

(Ord. No. 351, § 1, 8-9-10)

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Sec. 61-8. - Temporary meteorological equipment.

- (a) Temporary meteorological equipment located upon a temporary tower used on an interim basis to gather wind and meteorological data to determine feasibility of the WECS shall require the processing of an interim use permit and shall comply with the following standards:
- (1) No more than one such temporary tower shall be permitted on a lot at one time.
 - (2) The tower shall be placed on the property for no longer than 24 months from the date of interim use permit issuance. Any abandoned or obsolete temporary tower shall be removed within 30 days from the cessation of operation at the site.
 - (3) The tower shall be temporary by nature and shall not have permanent foundations. Guy wires may be used as long as the connections to the ground are temporary and the wires are designed to support the wind and ice load of the tower.
 - a. The tower and any related guy wires shall be protected against unauthorized climbing.
 - (4) The tower shall meet the minimum wind and ice load design required by City Code and the Minnesota State Building Code.
 - (5) The tower shall be grounded and shielded to protect against natural lightning strikes, in conformance with the Minnesota State Electrical Code.
 - (6) No tower shall have affixed or attached lights, reflectors, flashers or any other illumination, except for those devices required by the Federal Aviation Administration.

(Ord. No. 351, § 1, 8-9-10)

Secs. 61-9—61-12. - Reserved.

ARTICLE III. - SOLAR ENERGY SYSTEMS AND STRUCTURES

Sec. 61-13. - Solar equipment.

- (a) Solar energy systems are permitted within all zoning districts pursuant to the regulations of this chapter. Any equipment or device that utilizes, operates or supplies energy derived from the sun shall meet the following standards:
- (1) The equipment or device must meet all setback requirements for principal structures in the zoning district where located.
 - (2) The equipment or device may extend up to five feet above the roof surface on which they are installed, even if this exceeds the maximum height limit in the district in which it is located.
 - (3) The equipment or device must be designed and constructed in compliance with all applicable building and electrical codes.
 - (4) The equipment or device must be in compliance with all state and federal regulations regarding co-generation of energy.
 - (5) All solar arrays or panels shall be installed or positioned so as not to cause any glare or reflective sunlight onto neighboring properties or structures, or obstruct views.
 - (6) The zoning administrator may require compliance with any other conditions, restrictions or limitations deemed reasonably necessary to protect the residential character of the neighborhood.

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- (7) A solar energy system or structure which, when installed, cannot prevent abutting properties from being developed in conformance with all applicable codes and regulations.
- (8) Design guidelines in section 61-16 have been provided to help owners think about appropriate locations and methods for installing a solar energy system. The location of detached solar arrays should consider visibility from adjacent properties, which shall be reduced to the extent possible while still maintaining solar access.

(Ord. No. 351, § 1, 8-9-10)

Sec. 61-14. - Conditional use.

- (a) Free standing solar energy systems, free standing solar structures, and structurally attached solar panels installed on building projecting vertically more than 12 inches above the roof shall be permitted by conditional use in all districts; provided, that the systems and/or structures is in compliance with minimum setbacks of the underlying zoning district and such structure or system meets the requirements of section 61-13
- (b) Solar panels structurally attached to the principal structure not exceeding more than 12 inches from the roof shall be a permitted accessory use in all districts and subject to administrative review and approval as part of the building permit process and shall meet the requirements of section 61-13. In addition, structurally attached solar panels installed on a building with a sloped roof shall not project vertically above the peak of the roof.

(Ord. No. 351, § 1, 8-9-10)

Sec. 61-15. - Application procedures.

The application for all solar energy systems and structures 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) A description of the project including: Property survey with location of the solar panel system indicated on the plans including roof plan, elevation and mounting details for panel installation. The site layout shall include distances and be drawn to scale. For ground mounted solar systems, provide dimensions from existing structure on lot to solar unit edge. Provide details of solar unit's maximum height from grade and overall size of panel array.
- (5) Documentation of land ownership or legal control of the property.
- (6) Solar applications located in a multi-family zoning district (R-2, R-3, R-4) will require a homeowner's association or management approval letter with plan submittal, if applicable.
- (7) A decommissioning plan shall be submitted outlining the anticipated means and cost of removing the solar equipment at the end of their serviceable life.

(Ord. No. 351, § 1, 8-9-10)

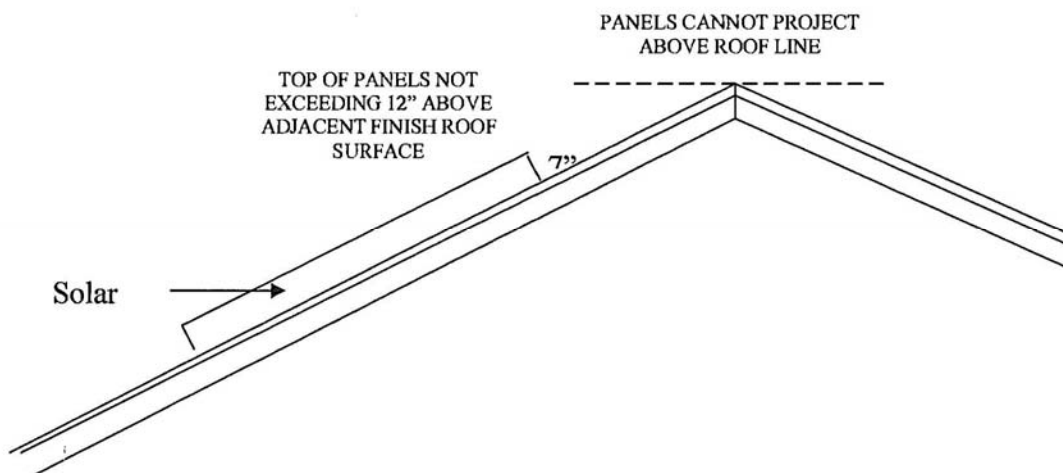
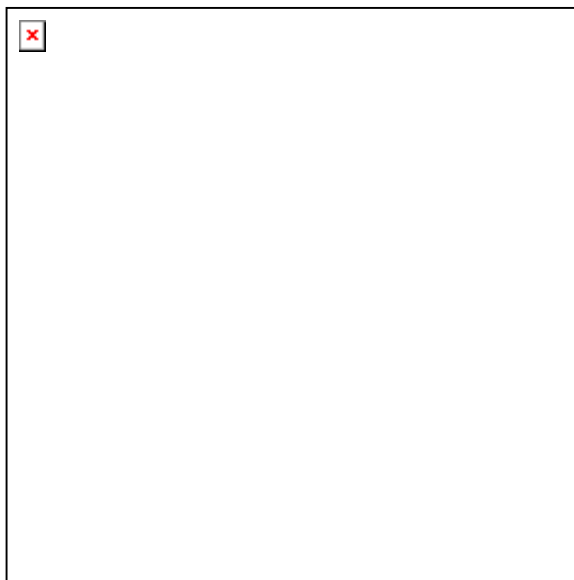
Sec. 61-16. - Solar panel placement design guidelines.

- (a) The following guidelines are to be used in the design and placement of solar panels (photovoltaic and solar thermal systems) on pitched and flat roofs of single-family and multi-family dwellings for

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the purpose of compatible design. With foresight and planning, a solar system can be effectively integrated into the design of new and existing roofs.

- (1) Solar panels should be low profile and parallel with the plane of the pitched roof.
- (2) Panels should not project above the roof ridge line.
- (3) Set solar panels and solar devices back from the edge of a flat roof to minimize visibility. Panels and devices may be set at a pitch and elevated, if not highly visible from public streets.
- (4) Select solar panels, solar devices, mechanical equipment and mounting structures with non-reflective finishes such as an anodized finish. Color of panel frames and support structures should be neutral and compatible with the roof surface color.
- (5) Placement of panels should be uniform. Consider the panels as part of the overall roof configuration. Match the slope and proportions of the array with the shape and proportions of the roof.



- (b) For free standing/ground mounted systems and structures, the following guidelines are to be used in the design and placement.
 - (1) Location: Location shall be in the rear or side yard.

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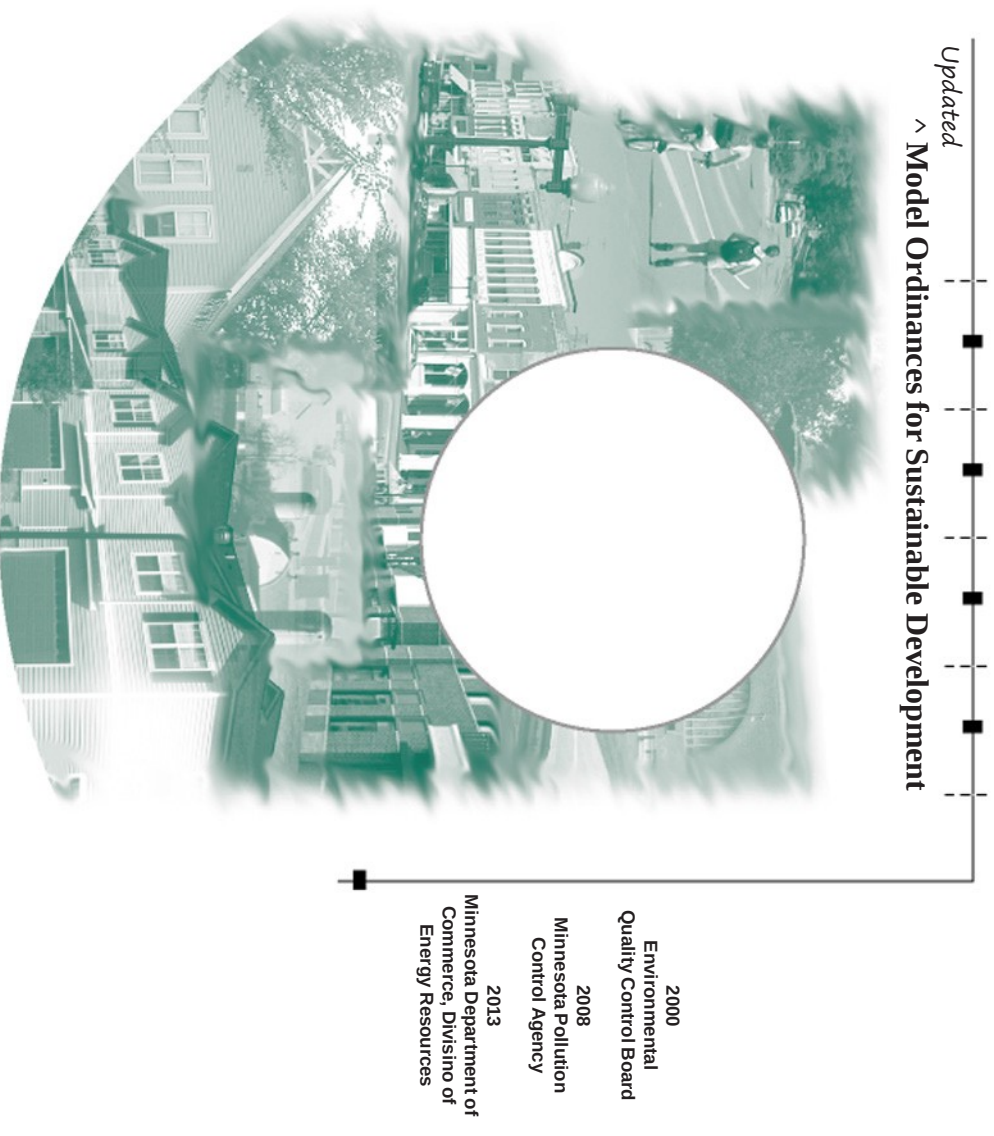
- (2) Setback: The system, structure, and support apparatus shall be within the building setback as determined by the underlying zoning district.
- (3) Maximum height: The maximum height shall be six feet.

(Ord. No. 351, § 1, 8-9-10)

From Policy to Reality

Updated

^ **Model Ordinances for Sustainable Development**



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INTRODUCTION

In spite of its cold and dark reputation, Minnesota has good solar potential, as good as Houston, Texas and many parts of Florida. As solar energy system components have become more efficient and less costly an increasing number of solar energy installations have been installed in Minnesota. Since 2005, the interest in solar energy has rapidly increased such that many communities have had to address solar installations as a land use issue. Solar energy components continue to improve in efficiency and decline in price; the U.S. Department of Energy forecasts that solar energy will start to reach widespread cost parity with retail electric costs by 2016.

But solar energy is much more than an alternative (or supplement) to utility power. Solar energy has become a symbol of energy self-sufficiency and environmental sustainability. The growth in solar installations is attributable more to the non-economic benefits than as an economic substitute for the electric utility. Households and businesses wanting to reduce their carbon footprint see solar energy as a strong complement to energy efficiency. Volatility in natural gas prices makes free solar fuel look attractive as a price hedge.

Solar energy issues

Local governments will need to address solar energy installations in their development regulation in the near future. Three primary issues tie solar energy to development regulations:

- 1) *Nuisance and safety considerations.* Solar energy systems have few nuisances, but visual impacts and safety concerns by neighbors sometimes create opposition to solar installations. Good design and attention to aesthetics can answer most concerns. But the misperception that solar energy systems are ugly and unsafe, rooted in poorly designed 1970s solar installations, have sometimes resulted in unnecessary regulation or outright prohibitions.
- 2) *Protecting access to solar resources.* Development regulations can limit a property owner's ability to access their solar resource. Moreover, solar access can be limited by buildings or vegetation on adjacent lots, and should be a consideration in zoning districts that allow tall buildings or in developing communities where subdivisions should enhance or protect homeowner's access direct sunlight.
- 3) *Climate protection goals.* Local governments that have committed to meeting climate protection goals can meet some of their commitment by removing regulatory barriers to solar energy and incorporating low or no-cost incentives in development regulations to spur solar investment.

Model Solar Energy Standards

This ordinance is based primarily on the model solar energy ordinance created for Solar Minnesota, under a Million Solar Roofs grant from the U.S. Department of Energy. It has been updated several times to reflect different needs of Minnesota communities and the evolving solar industry, last updated February, 2014

Statutory Solar Access Requirement

Local governments within the seven-county metropolitan region are required under state law to address solar access in their comprehensive plans, and thus indirectly in their development regulation that implements the comprehensive plan (Minn. Stat. 473.859, Subd. 2[b]). Refer to the Metropolitan Council Land Planning Handbook for more information.

Components of a solar standards ordinance

Solar energy standards should consider the following elements:

- Remove regulatory barriers and create a clear regulatory path (an as-of-right installation) to solar development for both accessory and (if appropriate) principal uses such as solar farms and ground-mount community shared solar installations.
- Address solar access issues within the subject property to ensure reasonable access not unduly limited by height, setback, or coverage limitation, recognizing the distinct design and function of solar technologies.
- Define aesthetic standards that retain an as-of-right installation while balancing design concerns in urban neighborhoods, historic districts, and new subdivisions.
- Address solar access issues across property lines in subdivisions and zoning districts that allow taller buildings on smaller (urban density) lots.
- Encourage solar-ready subdivision and building design.
- Incorporate regulatory incentives that can spur private-sector solar investment.

Urban and rural communities

The model ordinance language addresses concerns that are primarily in cities rather than counties or townships. Issues of solar access and nuisances associated with solar energy systems are of less consequence outside urban density areas, where lot sizes are almost always greater than one acre. Aesthetic issues or solar access issues might come into play in lakeshore areas or conservation development areas, where homes are closer together or protected trees might limit solar access. The incentive portion of the model ordinance can also be applied in rural areas. Some provisions of this model are applicable to low-density or rural areas, but more appropriate language is provided in the model County ordinance provided in a separate document.

Principal and accessory uses

This ordinance addresses solar energy as an accessory use to the primary residential or commercial use in an urban area. Solar energy systems are also sometimes the primary use as on “solar farms” that are large arrays of hundreds or thousands of ground or pole-mounted panels, or in the case of solar thermal power plants, such as seen in the desert southwest. These land uses have different issues and need to be addressed in a substantially different manner than discussed in this model. Sample language addressing these principal solar land uses is provided in the county model solar ordinance.

I. Scope - This article applies to all solar energy installations in Model Community.

II. Purpose - Model Community has adopted this regulation for the following purposes:

- A. **Comprehensive Plan Goals** - To meet the goals of the Comprehensive Plan and preserve the health, safety and welfare of the Community's citizens by promote the safe, effective and efficient use of active solar energy systems installed to reduce the on-site consumption of fossil fuels or utility-supplied electric energy. The following solar energy standards specifically implement the following goals from the Comprehensive Plan:
 1. **Goal** – Encourage the use of local renewable energy resources, including appropriate applications for wind, solar, and biomass energy.
 2. **Goal** – Promote sustainable building design and management practices in residential, commercial, and industrial buildings to serve the needs of current and future generations.
 3. **Goal** – Assist local businesses to lower financial and regulatory risks and improve their economic, community, and environmental sustainability.
 4. **Goal** – Efficiently invest in and manage public infrastructure systems to support development and growth.
- B. **Climate Change Goals** - As a signatory of the Cool Cities program, Model Community has committed to reducing carbon and other greenhouse gas emissions. Solar energy is an abundant, renewable, and nonpolluting energy resource and that its conversion to electricity or heat will reduce our dependence on nonrenewable energy resources and decrease the air and water pollution that results from the use of conventional energy sources.
- C. **Infrastructure** - Distributed solar photovoltaic systems will enhance the reliability and power quality of the power grid and make more efficient use of Model Community's electric distribution infrastructure.
- D. **Local Resource** - Solar energy is an under used local energy resource and encouraging the use of solar energy will diversify the community's energy supply portfolio and exposure to fiscal risks associated with fossil fuels.
- E. **Improve Competitive Markets** - Solar energy systems offer additional energy choice to consumers and will improve competition in the electricity and natural gas supply market.

Comprehensive Plan Goals

Tying the solar energy ordinance to Comprehensive Plan goals is particularly important when the solar standards include regulatory incentives or solar requirements as described in the last section of this ordinance. If the Comprehensive Plan does not include goals that could address solar energy, and the community does not have some of Policy Foundation for encouraging private investment in solar energy (such as climate protection goals) the community should consider creating a local energy plan.

Climate Protection Strategies

Solar energy should be part of every community's portfolio for addressing climate change or energy transitions (also known as "peak oil") considerations. Local governments that are participating in the Cities for Climate Protection program, Mayor's Climate Protection signatories, or the Cool Cities/ Cool Counties program can use private solar investment as a vehicle for meeting goals. Additional community benefits that improve sustainability are also spelled out in the findings section.

III. Definitions

Active Solar Energy System - A solar energy system whose primary purpose is to harvest energy by transforming solar energy into another form of energy or transferring heat from a collector to another medium using mechanical, electrical, or chemical means.

Building-integrated Solar Energy Systems - An active solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. Building-integrated systems include but are not limited to photovoltaic or hot water solar energy systems that are contained within roofing materials, windows, skylights, and awnings.

Grid-intertie Solar Energy System - A photovoltaic solar energy system that is connected to an electric circuit served by an electric utility company.

Off-grid Solar Energy System - A photovoltaic solar energy system in which the circuits energized by the solar energy system are not electrically connected in any way to electric circuits that are served by an electric utility company.

Passive Solar Energy System - A solar energy system that captures solar light or heat without transforming it to another form of energy or transferring the energy via a heat exchanger.

Photovoltaic System - An active solar energy system that converts solar energy directly into electricity.

Renewable Energy Easement, Solar Energy Easement - An easement that limits the height or location, or both, of permissible development on the burdened land in terms of a structure or vegetation, or both, for the purpose of providing access for the benefited land to wind or sunlight passing over the burdened land.

Renewable Energy System - A solar energy or wind energy system. Renewable energy systems do not include passive systems that serve a dual function, such as a greenhouse or window.

Roof Pitch - The final exterior slope of a building roof calculated by the rise over the run, typically but not exclusively expressed in twelfths such as 3/12, 9/12, 12/12.

Solar Access - Unobstructed access to the solar resource (see definition below) on a lot or building, including access across adjacent parcel air rights, for the purpose of capturing direct sunlight to operate a solar energy system.

Solar Definitions

Not all these terms are used in this model ordinance, nor is this a complete list of solar definitions. As a community develops its own design standards for solar technology, many of the concepts defined here may be helpful in meeting local goals. For instance, solar daylighting devices may change the exterior appearance of the building, and the community may choose to distinguish between these devices and other architectural changes.

Solar Resource - A view of the sun from a specific point on a lot or building that is not obscured by any vegetation, building, or object for a minimum of four hours between the hours of 9:00 AM and 3:00 PM Standard time on any day of the year.

Solar Collector - A device, structure or a part of a device or structure for which the primary purpose is to transform solar radiant energy into thermal, mechanical, chemical, or electrical energy.

Solar Collector Surface - Any part of a solar collector that absorbs solar energy for use in the collector's energy transformation process. Collector surface does not include frames, supports and mounting hardware.

Solar Daylighting - A device specifically designed to capture and redirect the visible portion of the solar spectrum, while controlling the infrared portion, for use in illuminating interior building spaces in lieu of artificial lighting.

Solar Energy - Radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.

Solar Energy Device - A system or series of mechanisms designed primarily to provide heating, cooling, electrical power, mechanical power, solar daylighting or to provide any combination of the foregoing by means of collecting and transferring solar generated energy into such uses either by active or passive means. Such systems may also have the capability of storing such energy for future utilization. Passive solar energy systems shall clearly be designed as a solar energy device such as a trombe wall and not merely a part of a normal structure such as a window.

Solar Energy System - A device or structural design feature, a substantial purpose of which is to provide daylight for interior lighting or provide for the collection, storage and distribution of solar energy for space heating or cooling, electricity generating, or water heating.

Solar Heat Exchanger - A component of a solar energy device that is used to transfer heat from one substance to another, either liquid or gas.

Solar Hot Air System - (also referred to as Solar Air Heat or Solar Furnace) – An active solar energy system that includes a solar collector to provide direct supplemental space heating by heating and re-circulating conditioned building air. The most efficient performance typically uses a vertically mounted collector on a south-facing wall.

Solar Hot Water System (also referred to as Solar Thermal) - A system that includes a solar collector and a heat exchanger that heats or preheats water for building heating systems or other hot water needs, including residential domestic hot water and hot water for commercial processes.

Solar Resource

Understanding what defines a "solar resource" is foundational to understanding how land use regulation affects solar development. Solar energy resources are not simply where sunlight falls. A solar resource has minimum spatial and temporal characteristics, and needs to be considered not only today but also into the future. Solar energy equipment can not function as designed if installed in partial shade, with too few hours of daily or annual direct sunlight, or without southern or near-southern exposure. Many provisions of the model ordinance are predicated on the concept that a solar resource has definable characteristics that are affected by local land use decisions and regulation.

Solar Energy Standards

Height - Rooftop System

This ordinance notes exceptions to the height standard when other exceptions are granted in the ordinance. Communities should directly reference the exception language, rather than use the placeholder language here.

Height - Ground or Pole Mounted

This ordinance sets a 20-foot height limit, assuming a standard that is higher than typical height limits for accessory structures, but lower than the principal structure. Communities may want to consider balancing height with setback, allowing taller systems if set back farther, for instance, an extra foot of height for every additional two feet of setback.

Building Integrated PV

Building integrated solar energy systems can include solar energy systems built into roofing (existing technology includes both solar shingles and solar roofing tiles), into awnings, skylights, and walls. This ordinance only addresses building integrated PV, but examples of building integrated solar thermal applications may also be available.

Roof-Mounted Solar Energy Systems

This ordinance sets a threshold for solar panels that they not be steeper than the finished roof pitch. Mounted systems steeper than the finished roof pitch change the appearance of the roof, and sometimes create additional considerations in regard to the wind and drift load on structural roof components. Safety risks can be mitigated through structural review or roof structure modification if the aesthetic impacts are not a concern to the community.

Solar Mounting Devices - Racking, frames, or other devices that allow the mounting of a solar collector onto a roof surface or the ground.

Solar Storage Unit - A component of a solar energy device that is used to store solar generated electricity or heat for later use.

IV. Permitted Accessory Use - Active solar energy systems shall be allowed as an accessory use in all zoning classifications where structures of any sort are allowed, subject to certain requirements as set forth below. Active solar energy systems that do not meet the visibility standards in C. below will require a conditional use permit, except as provided in Section V. (Administrative Variances).

A. Height - Active solar energy systems must meet the following height requirements:

1. Building- or roof- mounted solar energy systems shall not exceed the maximum allowed height in any zoning district. For purposes for height measurement, solar energy systems other than building-integrated systems shall be given an equivalent exception to height standards as building-mounted mechanical devices or equipment.
2. Ground- or pole-mounted solar energy systems shall not exceed 20 feet in height when oriented at maximum tilt.

B. Set-back - Active solar energy systems must meet the accessory structure setback for the zoning district and primary land use associated with the lot on which the system is located.

1. **Roof-mounted Solar energy systems** - In addition to the building setback, the collector surface and mounting devices for roof-mounted solar energy systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built, unless the collector and mounting system has been explicitly engineered to safely extend beyond the edge, and setback standards are not violated. Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure.
2. **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. Visibility - Active solar energy systems shall be designed to blend into the architecture of the building or be screened from routine view from public right-of-ways other than alleys. The color of the solar collector is not required to be consistent with other roofing materials.

1. **Building Integrated Photovoltaic Systems** - Building integrated photovoltaic solar energy systems shall be allowed regardless of whether the system is visible from the public right-of-way, provided the building component in which the system is integrated meets all required setback,

land use or performance standards for the district in which the building is located.

2. **Solar Energy Systems with Mounting Devices** - Solar energy systems using roof mounting devices or ground-mount solar energy systems shall not be restricted if the system is not visible from the closest edge of any public right-of-way other than an alley. Roof-mount systems that are visible from the nearest edge of the street frontage right-of-way shall not have a highest finished pitch steeper than the roof pitch on which the system is mounted, and shall be no higher than twelve (12) inches above the roof.
3. **Coverage** - Roof or building mounted solar energy systems, excluding building-integrated systems, shall allow for adequate roof access to the south-facing or flat roof upon which the panels are mounted. The surface area of pole or ground mount systems shall not exceed half the building footprint of the principal structure.
4. **Historic Buildings** - Solar energy systems on buildings within designated historic districts or on locally designated historic buildings (exclusive of State or Federal historic designation) will require an administrative variance, as provided in this ordinance.

D. **Approved Solar Components** - Electric solar energy system components must have a UL listing and solar hot water systems must have an SRCC rating.

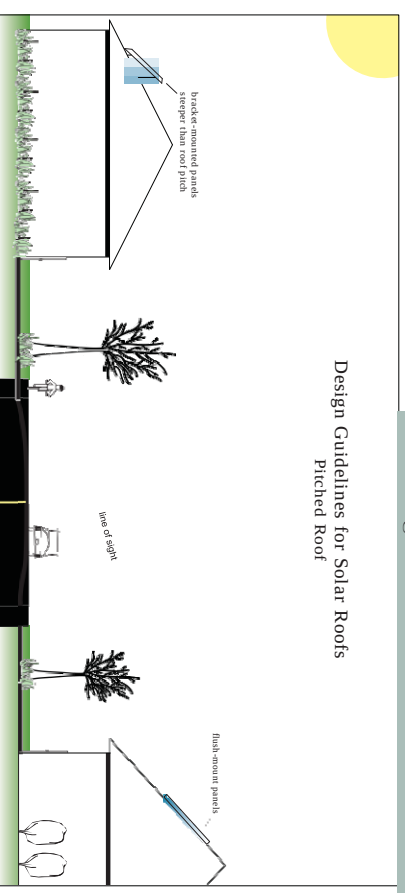
E. **Plan Approval Required** - All solar energy systems shall require administrative plan approval by Model Community zoning official.

1. **Plan Applications** - Plan applications for solar energy systems shall be accompanied by to-scale horizontal and vertical (elevation) drawings. The drawings must show the location of the system on the building or on the property for a ground-mount system, including the property lines.
2. **Pitched Roof Mounted Solar Energy Systems** - For all roof-mounted systems other than a flat roof the elevation must show the highest finished slope of the

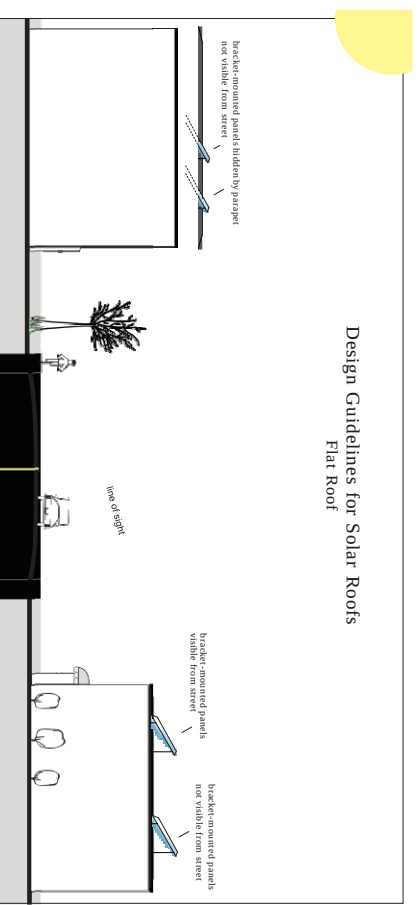
Coverage

Roof coverage limitations are generally not necessary, as some of the roof is likely to be shaded or otherwise not suitable for solar energy. Coverage is an issue of concern in order to ensure ready roof access in the event of a fire. Coverage limits can be a percentage limitation, such as 80% of the total south-facing roof, or a required setback from one or more edges.

Design Guidelines for Solar Roofs
Pitched Roof



Design Guidelines for Solar Roofs
Flat Roof



Administrative Variance

This model language uses an administrative variance process to balance between aesthetic design considerations and the building owner's choice to use the property for generating renewable energy. Administrative variances allow staff to departures from the design standards when such departures are necessary in order to allow for efficient harvest of solar energy, without having to get Planning Commission approval or pay additional fees. The administrative variance standards spell out the conditions that staff would use to judge if the system genuinely could not be designed consistently with Section IV. (such as a lack of solar access except on the front of the building), and the metrics by which staff would judge screening or visual integration with the building. Some communities will have other means to allow this, or will have a conditional use permit process that does not create burdensome additional regulation.

Restrictions on Solar Energy Systems

One of the most common barriers to solar energy in developing areas are restrictive covenants in new subdivisions. The covenants are intended to maintain an the appearance of homes, property values, and scalability. If, however, the local government provides solar design standards that protect against poor design of solar accessory uses, it is reasonable to prevent the developer or homeowner's association from creating unwarranted restrictions on a sustainable source of energy.

solar collector and the slope of the finished roof surface on which it is mounted.

- b. **Flat Roof Mounted Solar Energy Systems** - For flat roof applications a drawing shall be submitted showing the distance to the roof edge and any parapets on the building and shall identify the height of the building on the street frontage side, the shortest distance of the system from the street frontage edge of the building, and the highest finished height of the solar collector above the finished surface of the roof.

2. **Plan Approvals** - Applications that meet the design requirements of this ordinance, and do not require an administrative variance, shall be granted administrative approval by the zoning official and shall not require Planning Commission review. Plan approval does not indicate compliance with Building Code or Electric Code.

- F. **Compliance with Building Code** - All active solar energy systems shall meet approval of local building code officials, consistent with the State of Minnesota Building Code, and solar thermal systems shall comply with HVAC-related requirements of the Energy Code.

- G. **Compliance with State Electric Code** - All photovoltaic systems shall comply with the Minnesota State Electric Code.

- H. **Compliance with State Plumbing Code** - Solar thermal systems shall comply with applicable Minnesota State Plumbing Code requirements.

- I. **Utility Notification** - All grid-intertie solar energy systems shall comply with the interconnection requirements of the electric utility. Off-grid systems are exempt from this requirement.

V.

- Administrative Variance (or conditional use)** - Model Community encourages the installation of productive solar energy systems and recognizes that a balance must be achieved between character and aesthetic considerations and the reasonable desire of building owners to harvest their renewable energy resources. Where the standards in Section IV. A, B, or C. cannot be met without diminishing, as defined below, the minimum reasonable performance of the solar energy system, an administrative variance (or CUP) may be sought from the zoning official. An administrative variance (or CUP) shall be granted if the standards are met.

- A. **Minimum Performance Design Standards** - The following design thresholds are necessary for efficient operation of a solar energy system:

1. **Fixed-Mount Active Solar Energy Systems** - Solar energy systems must be mounted to face within 45 degrees of south (180 degrees azimuth).

2. **Solar Electric (photovoltaic) Systems** - Solar collectors must have a pitch of between 20 and 65 degrees.
3. **Solar Hot Water Systems** - Solar collectors need to be mounted at a pitch between 40 and 60 degrees.
4. **System Location** - The system is located where the lot or building has a solar resource.

B. **Standards for an Administrative Variance (CUP)** - A variance shall be granted by the zoning official if the applicant meets the following safety, performance and aesthetic conditions:

1. **Aesthetic Conditions** - The solar energy system must be designed to blend into the architecture of the building or be screened from routine view from public right-of-ways other than alleys to the maximum extent possible while still allowing the system to be mounted for efficient performance.
2. **Safety Conditions** - All applicable health and safety standards are met.
3. **Non-Tracking Ground-Mounted Systems** - Pole-mounted or ground-mounted active solar energy systems must be set back from the property line by one foot.

VI. **Restrictions on Solar Energy Systems Limited** - No homeowner's agreement, covenant, common interest community, or other contract between multiple property owners within a subdivision of Model Community shall restrict or limit solar energy systems to a greater extent than Model Community's solar energy standards.

VII. **Solar Access** - Model Community encourages solar access to be protected in all new subdivisions and allows for existing solar to be protected consistent with Minnesota Statutes.

A. **Solar Easements Allowed** - Model Community has elected to allow solar easements to be filed, consistent with Minnesota Stat. Chapter 500 Section 30. Any building owner can purchase an easement across neighboring properties to protect access to sunlight. The easement is purchased from or granted by owners of neighboring properties and can apply to buildings, trees, or other structures that would diminish solar access.

B. **Easements within Subdivision Process** - Model Community may require new subdivisions to identify and create solar easements when solar energy systems are implemented as a condition of a PUD, subdivision, conditional use, or other permit, as specified in Section 8 of this ordinance.

Solar Easements

Minnesota allows the purchase and holding of easements protecting access to solar and wind energy. The easement must specify the following information:

Required Contents - Any deed, will, or other instrument that creates a solar or wind easement shall include, but the contents are not limited to:

- (a) A description of the real property subject to the easement and a description of the real property benefiting from the solar or wind easement; and
- (b) For solar easements, a description of the vertical and horizontal angles, expressed in degrees and measured from the site of the solar energy system, at which the solar easement extends over the real property subject to the easement, or any other description which defines the three dimensional space, or the place and times of day in which an obstruction to direct sunlight is prohibited or limited;
- (c) A description of the vertical and horizontal angles, expressed in degrees, and distances from the site of the wind power system in which an obstruction to the winds is prohibited or limited;
- (d) Any terms or conditions under which the easement is granted or may be terminated;
- (e) Any provisions for compensation of the owner of the real property benefiting from the easement in the event of interference with the enjoyment of the easement, or compensation of the owner of the real property subject to the easement for maintaining the easement;
- (f) Any other provisions necessary or desirable to execute the instrument.

Source: Minnesota Stat. 500.30 Subd. 3.

Renewable Energy Conditions (previous page)

The community can use traditional development tools such as conditional use permits, PUDs, or other discretionary permits to encourage private investment in solar energy systems. This model ordinance notes these opportunities for consideration by local governments. In most cases, additional ordinance language would need to be inserted into the community's ordinances. For instance, a provision that PUDs incorporate solar energy would need to be included in the community's PUD ordinance, or if a condition of a CUP was to make the building solar-ready, this would need to be included in the conditional use permit section of the ordinance.

Solar Roof Incentives

This section of the model ordinance includes a series of incentives that can be incorporated into development regulation. Most cities and many counties make requirements or use incentives to ensure that certain public amenities are included in development. These same tools and incentives can be used to encourage private investment in solar energy. Communities will not want to use all these incentives, but should select which ones make the most sense in their community (or create some other incentive that encourages solar energy). As with any incentive, an important element of creating the incentive is to engage planning or economic development staff in the creation of the incentive, so that staff can assist the developer in taking advantage of the provisions.

VIII. Renewable Energy Condition for Certain Permits

- A. **Condition for Rezoning or Conditional Use Permit** - Model Community may, in an area where the local electric distribution system was installed more than twenty years ago, or where the local electric utility has documented a near-term need for additional distribution substation or conductor capacity, require on-site renewable energy systems as a condition for a rezoning or a conditional use permit.
 1. The renewable energy condition may only be exercised for new construction or major reconstruction projects.
 2. The renewable energy condition may only be exercised for sites that have 90% unimpeded solar or wind energy access, and for which the renewable energy system can reasonably meet all performance standards and building code requirements.
- B. **Condition for Planned Unit Development (PUD) Approval** - Model Community may require on-site renewable energy systems as a condition for approval of a PUD permit, in order to mitigate for:
 1. Risk to the performance of the local electric distribution system,
 2. Increased emissions of greenhouse gases,
 3. Other risks or effects inconsistent with Model Community's Comprehensive Plan.

IX.

Solar Roof Incentives - Model Community has identified the following incentives for development applications or subdivisions that will include buildings using active solar energy systems.

- A. **Density Bonus** - Any application for subdivision of land in the _____ Districts that will allow the development of at least four new lots of record shall be allowed to increase the maximum number of lots by 10% or one lot, whichever is greater, provided all building and wastewater setbacks can be met with the increased density, if the applicant enters into a development agreement guaranteeing at each one kilowatt of PV or 64 square feet of solar hot water collector installed for each new residence.
- B. **Vacant Lot Preference** - When Model Community disposes of vacant parcels of land that are under City ownership through auction, Model Community shall award a 10% bid preference up to \$5,000 for every kilowatt of solar capacity that is to be incorporated into the fully-built out parcel, when awarding the bid. The bidder must also meet all land use and dimensional requirements, and must post a bond for the amount of the bid preference granted.
- C. **Solar-Ready Buildings** – Model Community encourages builders to use solar-ready design in buildings. Buildings that submit a completed U.S. EPA's Renewable Energy Ready Home Solar Photovoltaic Checklist and associated documentation will be certified as a Model Community solar ready

home, a designation that will be included in the permit home's permit history.

D. **Solar Access Variance** - On a site where the solar access standards of the subdivision ordinance are difficult to meet due to topography or road connectivity, the zoning administrator shall grant an administrative exception from the solar access standards provided the applicant meets the following conditions:

1. **Solar Access Lots Identified** - At least % of the lots, or a minimum of lots, are identified as solar development lots.
2. **Covenant Assigned** - Solar access lots are assigned a covenant that homes built upon these lots must include an active solar energy system. Photovoltaic systems must be at least one (1) KW in capacity and solar thermal systems must have at least 64 square feet of collector area.
3. **Additional Fees Waived** - Model Community will waive any additional fees for filing of the covenant.

E. **Affordable Housing Offset** - On a site where 90% of the potential solar access is unimpeded, and the local electrical distribution system was installed more than twenty years ago, Model Community may substitute a requirement for grid-intertie photovoltaic systems or active solar thermal systems for up to 50% of the affordable housing requirement. For each unit of affordable housing for which a solar energy substitution is made:

1. The photovoltaic system must have at least 2 kilowatts (KW) of capacity with 90% unobstructed solar access.
2. The active solar thermal system must be sized and have sufficient solar access to generate 75% of the estimated domestic hot water load for a family of four.

F. **Commercial Parking Requirement Offset** - On a site where 90% of the potential solar access is unimpeded, and which has access to mass transit within a block of the development site or which has an approved Travel Demand Management (TDM) plan, or which has entered into a shared parking arrangement with another commercial business that has distinct peak parking profiles, Model Community may substitute a requirement for grid-intertie photovoltaic systems or an active solar thermal systems for up to 50% of the parking requirement, up to a maximum of 5 spaces. For each parking space for which a solar energy substitution is made:

1. The photovoltaic system must have at least one (1) kilowatt (KW) of capacity with 90% unobstructed solar access; or
2. An active solar thermal system must have at least 64 square feet of solar collector, and must have sufficient summer load to utilize collector output.

MEMO TO: Wayzata Planning Commission

DATE: July 15, 2015

FROM: M. Graciela Gonzalez, Planning Commissioner

REGARDING: Wayzata Heritage Preservation Board Meeting

On Tuesday, July 14, 2015 I attended the HPB meeting on behalf of the Planning Commission. All the board members expressed a strong interest in furthering cooperation with the PC. Here is my report of their discussions and updates:

- Scott Rowe contacted the HPB to arrange for them to photograph the former MacMillan home at 151 Westwood before it is demolished to make room for the two new homes redevelopment of the property.
- WISE HOME: It looks like the developer and the new owner of the building have set a target date of July 20 to July 24 to move the home to its new location next to the Post Office Park. Mr. Foster (the new owner) is interested in opening the home to the public at its new location during J.J. Hills Days (September 12 and 13, 2015). With this building, there will be three historic sites on the same block; namely, the Wise House, the Post Office, and the Ferrell/Brastad House (the blue house at the corner of Rice and Minnetonka). Unfortunately, it looks like some 20 to 23 trees in its current neighborhood will need severe trimming to move the house.
- SECTION FOREMAN'S HOUSE. The HPB and the Lake Front Committee are working to nominate the site for inclusion in the National Registry of Historic Places. It is only one of two section foreman's houses left in Minnesota. The other one has been preserved and it is in Nobles County. The Lake Front group is considering all kinds of possible uses for the house, but it is in desperate need to repair. The city may have to remove the front porch to restore it to its historical design, but that may limit the space for uses/events.
- TRAPPERS' CABIN. The HPB is working on installing rustic benches at the site to be used during events. They are also exploring with the Wayzata Library the idea of having story time at the cabin during the summer months.
- PLAQUES: The HPB is working on a plaque to be installed on the site of the Indian burring mounds left in the city to educate residents and visitors about that side of Wayzata's history.
- RENOVATION CELEBRATION. The HPB will host on October 9, 2015 at 7:00 PM in the Community Room an event to highlight the experience of people who have renovated their homes rather than tearing them down. There will be all kinds of resources for people interested in renovating exiting homes. Mark your calendars and let us show our support.
- NEXT MEETING: Tuesday, August 11, 2015 at 7:00 PM. We need a volunteer to attend this meeting.