



Sustainable power zoning code amendments

Recommended changes to allow for
wind energy systems in all districts

PUBLIC HEARING PRESENTATION

Planning Commission

Nov. 3, 2017



Introduction

- Overview & charge
- History of wind turbine permitting in Saint Paul
- Types of wind turbines
- Research
- Examples
- Recommendation
- Questions



History

- Approval of determination of similar use – Macalester, 2002
- Approval of determination of similar use – 1010 N. Dale, 2011
 - Extended in 2013 via Planning Commission decision
- Denial of determination of similar use – Metropolitan State, 2012
 - City Council decision upon neighborhood appeal of Planning Commission approval
- Request by late Planning Commissioner, zoning committee member and architect, Paula Merrigan, initiated this study

Capitol Lien 1010 N. Dale

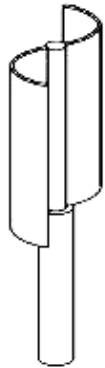


Capitol Lien 1010 N. Dale

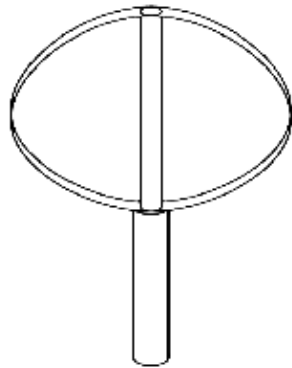


Types of wind turbines

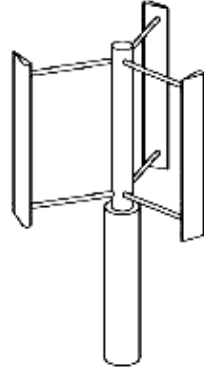
Vertical axis wind turbines



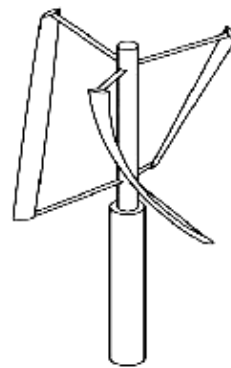
SAVONIUS VAWT



DARRIEUS VAWT

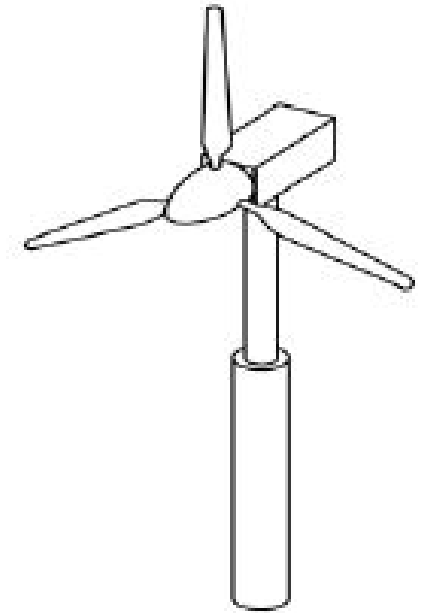


H-BLADE VAWT



GORLOV VAWT

Horizontal axis wind turbines



HAWT



Research

- Practical applications
- Land use impacts
- Other cities
 - Code considerations



Residential roof-mounted systems

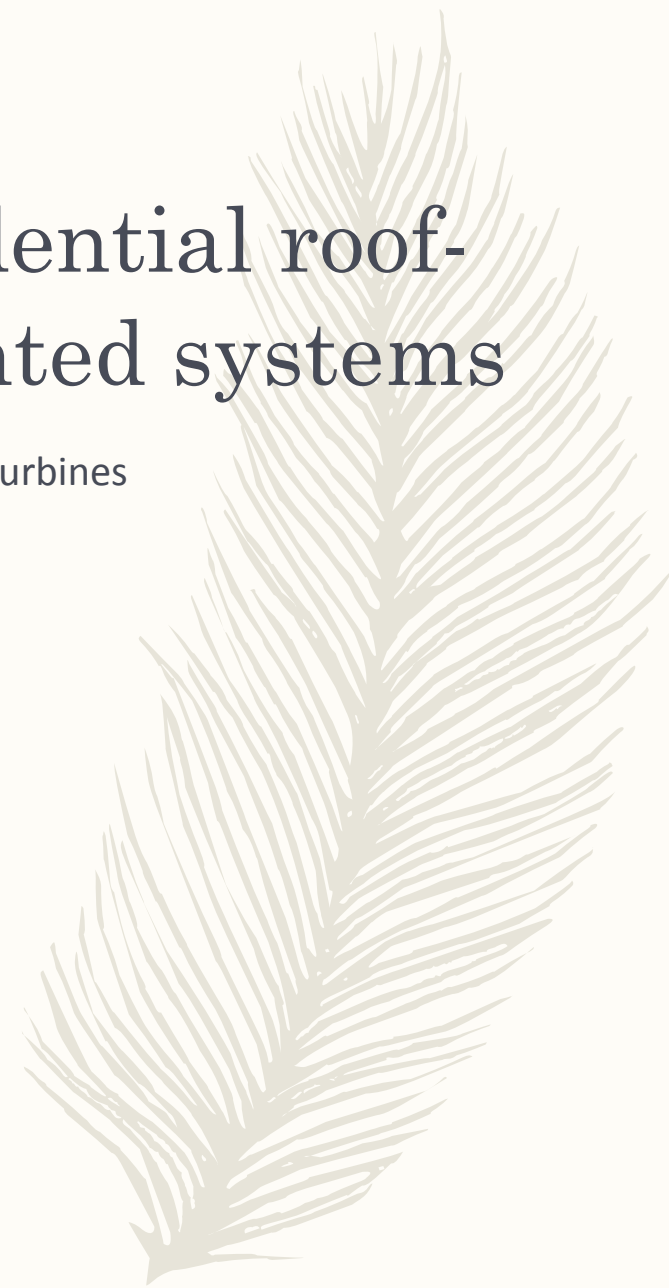
500W wind turbines





Residential roof-mounted systems

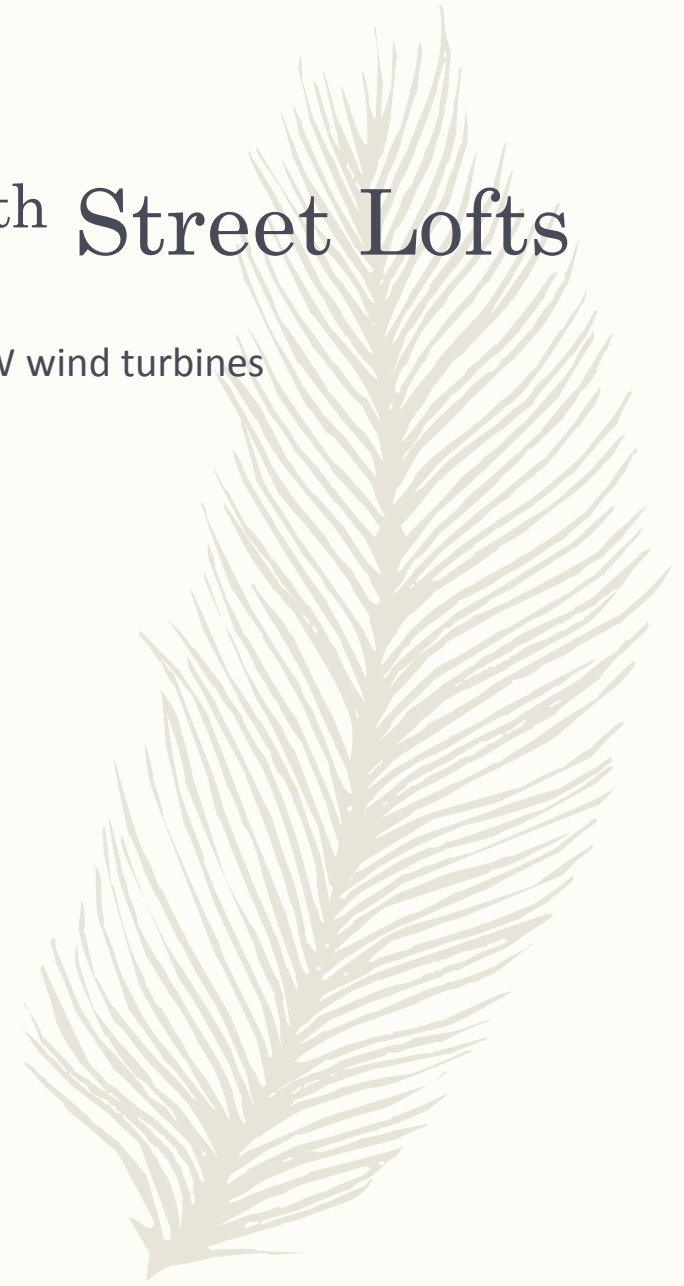
500W wind turbines





9th Street Lofts

4kW wind turbines





9th Street Lofts

4kW wind turbines

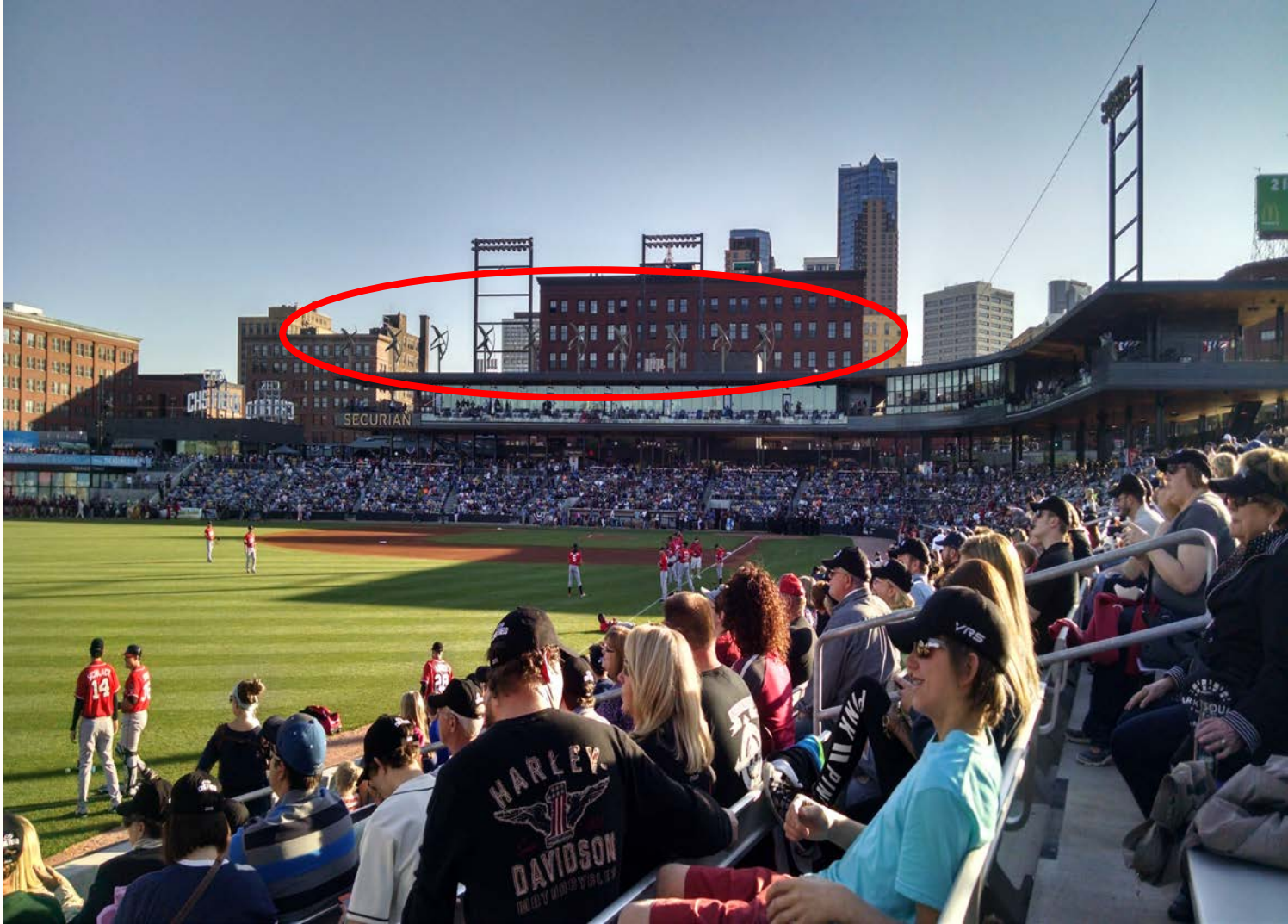




CHS Field

4kW wind turbines





CHS Field

4kW wind turbines

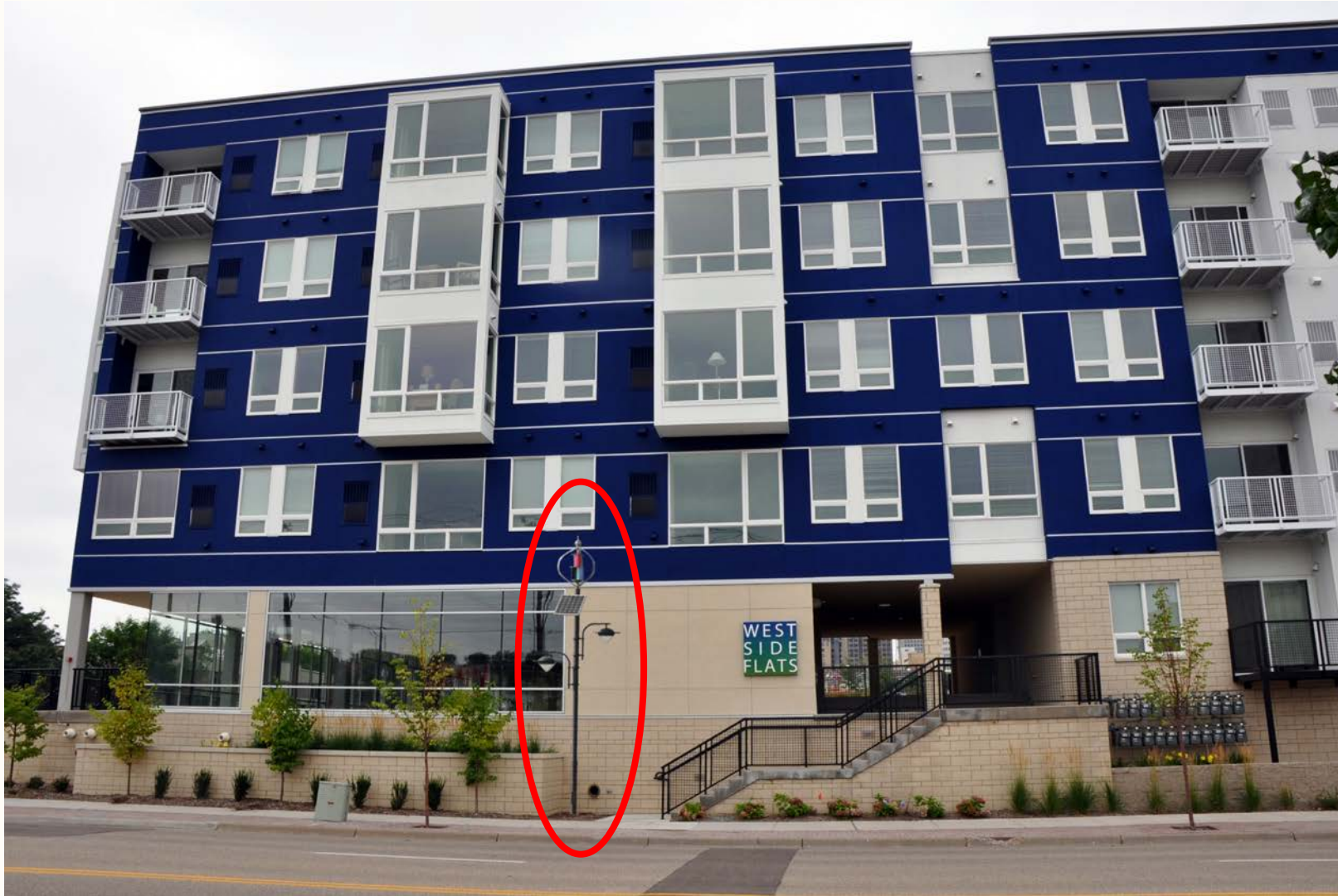




Hybrid lamppost

300w (shown at West Side Flats)





Hybrid lamppost

300w (shown at West Side Flats)



Recommendation

- Wind energy regulated as an accessory use
 - As are solar installations
- Understood to be permitted in all districts
- Standards/conditions express where/how
- Not listed in a use table – convention has been to list accessory uses in use tables only when they are exceptions
- Regulated similar to surrounding communities
- Code language allows for advances in technology
- Adds a standard to exterior lighting for hybrid fixtures

Recommended code language

Sec. 63.116. Exterior lighting.

... (d) Hybrid (wind/solar) light fixtures will be placed so as to minimize flicker impacts and shall not exceed 25 feet in height. They shall be set back from other principal structures by at least one (1) times the height of the fixture.

Rationale: adds a standard for hybrid (wind/solar) light fixtures

Recommended code language (continued):

Sec. 65.925. Wind energy conversion system. Any device such as a windmill or wind turbine that converts wind energy to electrical energy, and associated facilities including the support structure of the system.

Rationale: Adds a new section to define and address Wind Energy Conversion Systems, with standards and conditions

Recommended code language (continued):

Sec. 65.925 Standards and conditions:

- (a) A building-mounted wind energy conversion system shall be subject to the maximum building height specified for the district or a maximum of fifteen (15) feet above the height of the building to which it is attached, whichever is greater. In residential districts the system shall be set back a minimum of ten (10) feet from all exterior walls of the building to which it is attached.
- (b) In residential, traditional neighborhood and business districts, a conditional use permit is required for a freestanding wind energy conversion system with a capacity of more than two (2) kilowatts (kW).
- (c) In residential, traditional neighborhood and business districts, a freestanding wind energy conversion system with a capacity of more than two (2) kilowatt shall be subject to the following standards and conditions:
 - 1) Freestanding systems shall not exceed one hundred (125) feet in height.
 - 2) The system shall not be located in a required front or side yard and shall be set back one and one tenth (1.1) times the height of the system from residential buildings.
 - 3) In residential and traditional neighborhood districts, the freestanding wind energy conversion system shall be on institutional use property at least one (1) acre in area. In business districts, the zoning lot on which the freestanding system is located shall be in an area of contiguous business or industrial zoning at least five (5) acres in area. A maximum of one (1) wind energy conversion system per acre of lot area shall be allowed.

Recommended code language (continued):

Sec. 65.925 Standards and conditions (continued):

- d) In industrial districts, a freestanding wind energy conversion system shall not exceed one hundred fifty (150) feet in height, shall not be located in a required front or side yard, and shall be set back one and one tenth (1.1) times the height of the system from residential buildings.
- e) Wind energy conversion systems shall conform to the uniform building code, electric code, Minnesota Rules Section 7030 governing noise, and Chapter 293, Noise Regulations. System noise shall not exceed 50 dB(A) at the nearest residential property line. For property within a locally designated heritage preservation site or district, the system shall be subject to review and approval of the heritage preservation commission.
- f) Freestanding systems shall be mounted on a monopole type tower with a non-reflective, subdued finish that does not require guyed wires or any other means to support the tower.
- g) Blade arcs created by the WECS shall have a minimum of thirty (30) feet of clearance over any structure or tree within a two hundred (200) foot radius.
- h) Wind energy facilities shall be sited in a manner that minimizes shadowing or flicker impacts. The applicant has the burden of proving that this effect does not have significant adverse impact on adjacent uses.

Recommended code language (continued):

Sec. 65.925 Standards and conditions (continued):

- i) Electrical equipment shall be housed within an existing structure whenever possible. If a new equipment building is necessary, it shall be permitted and regulated as an accessory building.
- j) Wind energy conversion systems that are no longer used shall be removed within one (1) year of nonuse.
- k) An applicant for a building permit for a wind energy conversion system shall provide written certification to the building official from a licensed structural engineer that:
 - 1) For building-mounted systems, the structure has the structural integrity to carry the weight and wind loads;
 - 2) The system is designed not to cause electrical, radio frequency, television and other communication signal interference.
- l) If the applicant plans to connect the system to the electricity grid, written evidence that the electric utility service provider serving the property has been informed of the applicant's intent to install a wind energy conversion system shall also be submitted to the building official.



Questions

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