County of Yolo

PLANNING AND PUBLIC WORKS DEPARTMENT

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WORKSHOP ONLY **MARCH 12, 2009**

PLANNING COMMISSION STAFF REPORT

FILE #2007-080: Amend the zoning regulations in the County Code (Title 8, Chapter 2) by adding Section 8-2.2418 (Small Wind Energy Systems); and amending Sections 8.2.403, 8-2.603, 8-2.613, 8-2.704, 8-2.714, 8-2.1204, 8-2.1304, 8-2.1404, 8-2.1504, 8-2.1604, 8-2.1704, and 8-2.1804 to allow small wind energy systems with either a Site Plan Review or a Minor Conditional Use Permit.

APPLICANT: Yolo County

LOCATION: All parcels in the unincorporated Yolo County area zoned for Agricultural uses (the A-P. A-1, AGI zones), for Residential Suburban and Rural Residential use (the R-S and RRA zones), for Commercial uses (the C-1, C-2, C-3, and C-H zones), and Industrial uses (the M-L, M-1 and M-2 zones)

ZONING: Agricultural zones (A-P. A-1, AGI zones); Residential Suburban and Rural Residential (the R-S and RRA zones); Commercial zones (the C-1, C-2, C-3, and C-H zones); and Industrial zones (the M-L, M-1 and M-2 zones)

GENERAL PLAN: Agricultural (AG); Rural Residential Agricultural (RRA), Residential, Very Low density (VLR); all Commercial designations (C, LC, HCS, NC, GC); and all Industrial designations (I, Li)

FLOOD ZONE: various

SOILS: various

FIRE ZONE: various

ENVIRONMENTAL DETERMINATION: Negative Declaration to be prepared.

REPORT PREPARED BY:

Eric Parfrey, Principal Planner

REVIEWED BY:

for David Morrison, Assistant Director

RECOMMENDED ACTION

1. Hold a public workshop hearing, consider public comments, and give further direction to staff regarding the proposed amendments allowing small wind energy systems **(Attachment A)**;

2. Direct staff to circulate the proposed zoning regulations for public review and comment, and prepare an appropriate environmental document; and

3. Return to the Commission for future consideration of the final zoning regulations.

REASONS FOR RECOMMENDED ACTION

Previously enacted State law (California Government Code Section 65892.13, **Attachment B**), provided criteria for, and encouraged, the installation of small wind energy systems in order to reduce demands on public utilities. The previous State law set minimum design standards for wind energy systems that apply in the absence of local regulations. However, the original State Legislation included a "sunset" provision. The law was repealed in 2006 and the State Legislature has not yet passed a new law to take its place. These proposed amendments to the County Code would bring county regulations into conformance with the previous State law (which is assumed to be re-enacted in some similar form later this year), and add design standards specific to Yolo County.

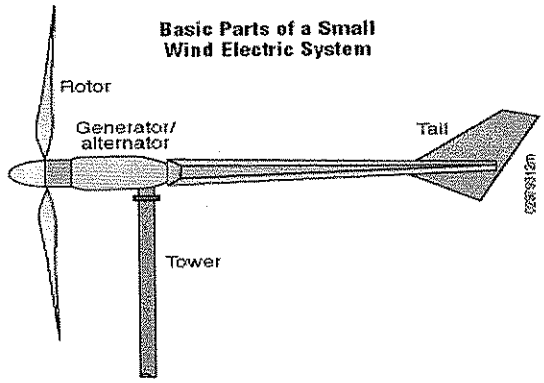
BACKGROUND

Description of Typical Small Wind Energy Systems

Small wind energy systems are designed and scaled to provide electricity for uses located on the site. A typical wind energy system consists of a rotor, alternator, and generator (turbine) mounted on top of a monopole or lattice tower, typically 60 feet to 120 feet in height, plus associated ground equipment (see the illustration below, and **Attachment C**). Residential turbine rotors (blades) for residential uses are generally about 23 feet in diameter.

The rotor collects kinetic energy from the wind and the attached generator/alternator converts it to electricity. Towers need to be of sufficient height to elevate the rotor above turbulence generated by trees, structures, and other obstacles on the ground. As a rule of thumb, the rotor needs to be at least 30 feet above any obstacles (buildings or trees) that are within 300 feet. Also, wind velocity and, therefore, generation of electricity increases with altitude. For example, a 100-foot tall system can produce roughly 29% more power than a 60-foot system.

In typical residential applications, a home is served simultaneously by the wind energy system and a local utility. If the wind speed is below "cut-in speed" (7-10 mph), all of the needed electricity is obtained from the utility. As wind speed increases, the system's electrical output increases and the amount of power from the utility is proportionately decreased. When the system produces more electricity than the house needs, the extra power may be sold to the utility.



The economics of a wind system largely depend on the average wind speed, and the cost of electricity. The cost of equipment and permit approval are also significant factors. In general, to be cost-effective, wind speed should average at least 10 MPH, and electricity should cost at least 10 cents/kWh. Annual mean wind speeds in Yolo County, at 30 meters above the ground, range from 10.1 to 12.3 MPH (**Attachment D**, Wind Resource Maps). At 50 meters in elevation, annual mean wind speeds in portions of the county reach 12.3 to 13.4 MPH. Electricity currently costs approximately 16 cents/kWh.

The following Web site provides additional information regarding small wind generation systems in California: http://www.awea.org/smallwind/california.html.

State Law

California Government Code Section 65892.13 (now repealed) previously established statewide standards for the development of small wind energy systems (**Attachment B**). The law allowed jurisdictions to apply higher standards within specified limits. For example, the State's minimum standards required 30–foot property line setbacks rather than setbacks equal to the height of the wind energy system, which are typically 60 to 120 feet in height (the maximum State standard). In addition, the State's standards did not address aesthetic impacts.

By 2010, twenty percent of the electricity sold in California is supposed to come from renewable energy resources (Senate Bill 107, Chapter 464, Statutes of 2006). In addition, the California Energy Commission's 2004 Integrated Energy Policy Report Update recommends that 33 percent of the State's energy demands be met with renewable energy sources by 2020. Wind energy is expected to play a key role in reducing the consumption of non renewable energy, according to the California Energy Commission.

STAFF ANALYSIS

The attached additional section to the County Code proposes a tiered review process for wind energy systems, based on the height of the wind tower, the size of the parcel, the zone district where it is to be located, and whether the wind system conforms to a list of Design Standards. Small wind systems (defined as over 35 feet in height) would be allowed in agricultural, rural residential, commercial, and industrial zones, and would be prohibited in urban residential zones. Wind turbines under 35 feet in height are allowed with a building permit only.

Wind turbines over 35 feet and up to 100 feet in height would be allowed in all agricultural zones and would be approved with a ministerial, "over the counter" Site Plan Review approval. Small wind systems in the agricultural areas would not require a public hearing, unless the application failed to meet the specific Design Standards set forth in the ordinance, in which case the application would be referred by staff to the Zoning Administrator or the Planning Commission for a hearing and issuance of a Minor or Major Use Permit. Wind systems up to 80 feet in height would be allowed in rural residential, commercial, and industrial zones, upon issuance of either a Minor or Major Use Permit, again depending whether the application met the specific Design Standards.

The Design Standards are intended to address all potential impacts related to small wind energy systems. . The impacts of the systems are generally related to: aesthetic/compatibility issues; biological impacts (bird collisions); public safety concerns; and noise. The proposed zoning regulations for small wind systems address each of these specific issues.

Design , Aesthetic, and Land Use Compatibility Issues

In terms of design, aesthetic, and land use compatibility issues, in the flat terrain that spans much of Yolo County, towers of any kind can be seen from a considerable distance. Generally, lattice towers with guide wires are considered to have greater visual impact than slim monopoles. These impacts can be mitigated by locating the tower where it will be obscured by trees, structures, or terrain. In addition, the tower can be finished or painted so that it looks less conspicuous.

The proposed ordinance prohibits wind energy systems on small parcels of less than one acre, consistent with industry recommendations. The American Wind Energy Association notes that "A residential wind turbine can be a relatively large device and is not suitable for urban or small-lot suburban homes. Except for very small wind turbines (i.e., with rotors one meter or less in diameter) on very small towers, a property size of one acre or more is desirable."

As noted above, the proposed zoning regulations allow the construction of small wind energy systems on rural lands zoned for agricultural uses (including the Agricultural Preserve (A-P) zone, the Agricultural General (A-1) zone, and the Agricultural Industry (AGI) zone) through the issuance of a Site Plan Review approval by staff. If the application fails to meet the Design Standards set forth in the regulations, the application may be referred to the Zoning Administrator for a hearing and decision. The Design Standards include minimum parcel size; height; setback distance to nearest property line; screening; adjacency to nearby residences and to any scenic corridors or resources; proposed design and colors; lighting; noise; and other issues.

Small wind energy systems are also allowed on properties within non-agricultural areas that are zoned for rural residential, commercial, and industrial uses, through the issuance of a Minor or Major Use Permit. Specifically, small wind systems are permitted with approval of a Minor Use Permit, issued by the Zoning Administrator after a public hearing, on lots of two acres or more, in areas zoned for Residential Suburban (R-S) uses, Rural Residential (RRA) uses, commercial uses (in the C-1, C-2, C-3, and C-H zones), and industrial uses (in the M-L, M-1 and M-2 zones).

If the application for a small wind energy system is proposed in a rural residential, commercial, or industrial area on a small lot of less than two acres, or if the application fails to meet the Design Standards set forth in the regulations, the application is referred to the Planning Commission for a public hearing and issuance of a Major Use Permit.

Biological Issues

In terms of biological impacts, the main concern is the fact that birds and bats, including protected species, do collide with wind energy towers, and result in fatalities. The California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development, October 2007 (http://www.energy.ca.gov/renewables/06-OII-1/), provides a methodology for assessing the risks wind energy systems pose for birds and bats, and identifies mitigation measures to minimize potential impacts. The proposed zoning regulations prohibit wind systems in areas in close proximity to identified nesting and wintering locations, bat roosts, rookeries, wildlife refuges, wetlands, and migratory flyways, unless environmental analysis determines the energy system will not have a significant impact on any protected birds and bats.

Public Safety

In terms of public safety, the siting of wind energy towers must take into account any potential risks to aircraft, such as nearby general or private aviation airports, as well as crop dusting of fields. The proposed regulations require that small wind energy systems comply with all applicable Federal Aviation Administration (FAA) height hazard requirements and adopted airport master plans. The

regulations also require the county, when processing a wind energy application, to notify and solicit comments from pest control aircraft pilots registered to operate in the county. Small wind energy systems shall not be allowed where the Zoning Administrator determines they would pose a risk for pilots spraying fields.

The California Building Code requires that wind energy systems be designed to withstand expected winds and environmental conditions. However, occasionally towers fall down. In addition, ice can form on the rotor blades and pose a risk for people in the vicinity. These risks can be addressed by separating the tower from occupied structures by a distance equal to the system's height. There also is a possibility that people might climb a tower and fall. To address that concern, towers are required to be fitted with anti-climbing devices.

Noise Issues

In terms of noise, wind turbines produce some noise, usually described as a "swishing" or "whooshing" sound, as their revolving rotor blades encounter turbulence in the passing air. The proposed regulations require that small wind energy systems comply with existing maximum noise levels applied pursuant to the Noise Element of the General Plan, or accompanying noise ordinance, and not to exceed 60 decibels during normal operations.

ATTACHMENTS:

A: Ordinance Adding Provisions of the Yolo County Code Relating to Small Wind Energy Systems
B: California Government Code Section 65892.13 (repealed)
C: Background Information and Illustrations of Small Wind Energy Systems
D: Wind Resource Maps

ATTACHMENT A

ORDINANCE NO. _____

(An Ordinance Adding Provisions of the Yolo County Code
Relating to Small Wind Energy Systems)

The Board of Supervisors of the County of Yolo hereby ordains as follows:

Section 1. Purpose.

The purpose of this Ordinance is to add regulations relating to the permitting of small wind energy systems, consistent with previous, repealed State law that encouraged such the construction of such systems to conserve energy. These changes are also necessary to improve and enhance public welfare and safety, and to implement the Yolo County General Plan.

Section 2. Revisions to Title 8, Chapter 2, of the Yolo County Code.

A. New Definitions. The following definitions shall be added to Article 2 of Chapter 2 of Title 8 of the Yolo County Code, together with appropriate revisions to the table of contents to Chapter 2 of Title 8 to reflect the inclusion of new definitions:

Sec. 8-2.204.1. On-site.
"On-site" shall mean only the parcel upon which a small wind energy system and its associated accessory structure(s) are located and the location upon which the electrical power generated is primarily used.

Sec. 8-2.204.1. Small wind energy system.
"Small wind energy system" shall mean a system that utilizes wind energy to pump a fluid or gas, or to drive a mechanical device to generate electricity, consisting of a wind turbine, a tower, and associated control or conversion electronics. Such uses shall have a rated capacity that does not exceed the allowable rated capacity under the Emerging Renewables Fund of the Renewables Investment Plan administered by the California Energy Commission and which will be used primarily to reduce onsite consumption of utility power. Such uses are accessory to a primary use on the site.

Sec. 8-2.204.1. System height.
"System height" shall mean the height above existing grade of the fixed portion of the small wind energy system tower, wind turbine and associated components.

Sec. 8-2.204.1. Tower height.
"Tower height" shall mean the height above existing grade of the fixed portion of the small wind energy system tower, excluding the wind turbine.

Section 3. Addition of Section 8-2.2418 to Title 8, Chapter 2, of the Yolo County Code.

Section 8-2.2418 shall be added to Chapter 2 of Title 8 of the Yolo County Code, and shall read in full as follows:

Sections:

8-2.2418.1 Purpose

The purposes of this section are as follows:

(a) To provide for the placement of small, accessory wind energy systems to enable generation of electricity from the wind, primarily for on-site use, thereby reducing the consumption of electricity supplied by utility companies.

(b) To minimize potential adverse impacts associated with wind energy systems on area residents, historic sites, aesthetic quality and wildlife through careful siting, design and screening, consistent with State law.

(c) To avoid or minimize public safety risks associated with wind energy systems by providing standards for the placement, design, construction, modification and removal of such systems, consistent with federal, state and local regulations.

8-2.2418.3 Applicability.

The provisions of this section apply to small wind energy systems that generate more than one (1) kilowatt of electricity, or are greater than thirty-five (35) feet in height, or have rotors one (1) meter or more in diameter. Small wind energy systems over these size criteria require the issuance of a Site Plan Review, Minor Use Permit, or Major Use Permit approval, as set forth below. The installation of any wind energy system below these size criteria is allowed in any zone district and requires issuance of a building permit only.

8-2.2418.4 Locations, Minimum Parcel Size, and Approvals Required

(a) Permitted Locations. Small wind energy systems used primarily to reduce onsite consumption of electricity may be installed and operated in the following districts: agricultural (the Agricultural Preserve (A-P) Zone, the Agricultural General (A-1) Zone, and the Agricultural Industry (AGI) Zone); rural residential (the Rural Residential (RRA) Zone and the Residential Suburban (R-S) Zone); commercial (the Neighborhood Commercial (C-1) Zone, the Community Commercial (C-2) Zone, the General Commercial (C-3) Zone, and the Highway Commercial (C-H) Zone); and industrial (the Limited Industrial (M-L) Zone, the Light Industrial (M-1) Zone, and the Heavy Industrial (M-2) Zone).

(b) Prohibited Locations. Small wind energy systems may not be allowed or permitted in the following locations or anywhere they are otherwise prohibited by any of the following:

(1) Sites listed in the National Register of Historic Places or the California Register of Historical Resources pursuant to Section 5024.1 of the Public Resources Code.

(2) A comprehensive land use plan and any implementing regulations adopted by an airport land use commission pursuant to Article 3.5 (commencing with Section 21670) of Chapter 4 of Division 9 of Part 1.

(3) The terms of an open-space easement entered into pursuant to the Open-space Easement Act of 1974, Chapter 6.6 (commencing with Section 51070) of Division 1 of Title 5 of the Government Code.

(4) The terms of an agricultural conservation easement entered into pursuant to the California Farmland Conservancy Program Act, Division 10.2 (commencing with Section 10200) of the Public Resources Code.

(5) The terms of a contract entered into pursuant to the Williamson Act, Chapter 7 (commencing with Section 51200) of Division 1 of Title 5 of the Government Code.

(6) The terms of any easement entered into pursuant to Chapter 4 (commencing with Section 815) of Division 2 of Part 2 of the Civil Code.).

(c) Minimum Parcel Size. All small wind energy systems shall be located on parcels of at least two (2) acres in size, unless a Minor or Major Use Permit is issued, as required below. In no case shall a small wind energy system be permitted on a parcel of less than one (1) acre in size.

(d) Construction of small wind energy systems on rural lands zoned for agricultural uses (including the Agricultural Preserve (A-P) zone, the Agricultural General (A-1) zone, and the Agricultural Industry (AGI) zone) may be approved through the issuance of a Site Plan Review approval by staff. This approval is a ministerial, "over the counter" approval like a building permit, and does not require a public hearing, unless the application fails to meet the specific Design Standards set forth in Section 8-2.2418.4(e), below, in which case the application may be referred by staff to the Zoning Administrator or the Planning Commission for a hearing and decision to issue a Minor or Major Use Permit, consistent with Sections 8-2.3203 or 8-2.2804.

(e) Construction of small wind energy systems located on properties within non-agricultural areas that are zoned for rural residential, commercial, and industrial uses are also allowed through the issuance of a Minor or Major Use Permit, depending on the application's consistency with all of the Design Standards set forth in Section 8-2.2418.5, below. Specifically, wind systems are permitted with approval of a Minor Use Permit, issued by the Zoning Administrator after a public hearing, consistent with Section 8-2.3203, on lots of two acres or more, and which meet all of the Design Standards set forth in Section 8-2.2418.5, below, in areas zoned for Residential Suburban (R-S) uses, Rural Residential (RRA) uses, commercial uses (in the C-1, C-2, C-3, and C-H zones), and industrial uses (in the M-L, M-1 and M-2 zones). If the application for a mall wind energy system is proposed on a small lot of less than two acres, or if the application fails to meet any of the Design Standards, the application may be referred by staff to the Planning Commission for a public hearing and issuance of a Major Use Permit, consistent with Section 8-2.2804.

8-2.2418.5 Design Standards

Design Standards. Applications for small wind energy systems shall meet all of the following standards and any permit issued for such a system shall be conditioned to meet the standards, unless

findings of fact to justify a waiver of any of the standard are adopted by the Zoning Administrator or the Planning Commission:

(a) Maximum tower height. The height of towers used in small wind energy systems shall not exceed the height recommended by the manufacturer or the following:
  (1) Fifty (50) feet on parcels within the Residential Suburban (R-S) and Rural Residential (RRA) zones; the commercial (C-1, C-2, C-3, and C-H) zones; and the industrial (M-L, M-1 and M-2) zones; and on parcels in the agricultural (A-P, A-1, AGI) zones that are less than two (2) acres in size;
  (2) Eighty (80) feet on parcels within the Residential Suburban (R-S) and Rural Residential (RRA) zones; the commercial (C-1, C-2, C-3, and C-H) zones; and the industrial (M-L, M-1 and M-2) zones; and on parcels in the agricultural (A-P, A-1, AGI) zones that are between two (2) and five (5) acres in size;
  (3) One hundred (100) feet on parcels greater than five (5) acres or more in the agricultural (A-P, A-1, AGI) zones; and
  (4) Notwithstanding the height limits in (1), (2), and (3), above, all allowed and permitted wind energy towers located on properties adjacent to an Airport (AV) Zone that are within a designated aviation safety zone and/or which are regulated by an applicable airport master or land use plan, shall comply with applicable Federal Aviation Administration (FAA) safety height requirements and/or the applicable adopted airport master or land use plans. Such permitted wind systems shall be of a height that does not require installation of a flashing light or signal in compliance with FAA regulations, unless the lights/signals are screened from view of motorists, pedestrians, and occupants of adjacent structures, consistent with FAA requirements; or the applicant demonstrates that the alternative locations for the system would also require a light/signal and would be no less visible from the surrounding area than the proposed location.

(b) Setbacks. The minimum setback from any property line to the base of wind energy system shall be equal to the system's height. The setbacks required by this subsection shall be measured from the base of the tower to the property line of the parcel on which it is located; provided that where guy wire supports are used, setbacks shall be measured from where the guy wire is anchored to the ground, rather than the base of the tower. The Zoning Administrator may allow reduced setbacks if s/he determines it would result in better screening of the system, i.e., closer spacing would allow greater screening from trees, structures, or topography or otherwise reduce the systems' visual impact, provided that the owner of the neighboring property agrees in writing.

(c) Lattice or guyed towers shall not be allowed within five hundred (500) feet of a residential district (R-1, R-2, R-3, or R-4 districts), excluding Residential Suburban (R-S) and Rural Residential (RRA) districts.

(d) Measures to minimize aesthetic impacts.
  (1) Use of existing site features for screening. Small wind energy systems shall be located to take maximum advantage of the screening afforded by any existing trees, topography and structures to minimize the system's visibility from dwellings on adjacent property and public roads, consistent with viable system performance. Priority shall be given (in descending order) to minimizing visibility from existing dwellings on adjacent properties and across the roadway from the wind energy system, public rights-of-way, and public parks and open spaces. Applicants proposing wind energy systems in locations that cannot be at least partially

screened by existing trees, topography or structures must submit documentation as to why locations which would provide screening are not available or technically feasible.

(2) Colors and finish. Wind energy system components shall have a nonglare/non-reflective finish (e.g., galvanized metal) or color appropriate to the background against which they would be primarily viewed (e.g., green or brown to the tree line and gray or light blue above), as determined by the Zoning Administrator, unless it is not technically possible to do so.

(3) Signals, Lights and Signs. No signals, lights or signs shall be permitted on a small wind energy system unless required by the Federal Aviation Administration (FAA). If lighting is required, the County shall review the available lighting alternatives acceptable to the FAA and approve a design that it determines would cause the least impact on surrounding views. However, in documented migratory bird flyways, preference shall be given to white strobe lights operating at the longest interval allowed per FAA requirements.

(e) In the event a small wind energy system is proposed to be sited in an agricultural area that may have pest control aircraft operating at low altitudes, the applicant and County shall take reasonable steps to notify and solicit comments from pest control aircraft pilots registered to operate in the County. Small wind energy systems shall not be allowed where the Zoning Administrator determines they would pose a risk for pilots spraying fields.

(f) Military airspace authority. Small wind energy system shall not be sited on land within a restricted military airspace unless adequate notice and opportunity to comment has been provided to the governing authority of that air space.

(g) Small wind energy systems shall not be allowed in locations that support habitat for special status protected bird and bat species. To minimize the potential for special status birds and bats to collide with towers/turbines, small wind energy systems shall not be located in the following general locations, unless findings are adopted by the Zoning Administrator or Planning Commission, as described in (d), below:

(a) Within one thousand (1,000) feet of wetlands, staging areas, wintering areas, bat roosts, or rookeries documented as supporting birds or bats listed as endangered or threatened species under the federal or California Endangered Species Acts; or
(b) Within migratory flyways documented by state or federal agencies; or
(c) Within one thousand (1,000) feet of publicly owned wildlife refuges.
(d) Small wind energy systems may be located in such areas described above in (a), (b), or (c), if the Zoning Administrator or Planning Commission determines and adopts findings of fact, after consultation with the California Department of Fish and Game and U.S. Fish and Wildlife Service, as appropriate, and consistent with The California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development, (October 2007, as amended), that determine installation of a small wind energy system in the proposed location will not have a significant impact on any protected birds and bats.

(h) Scenic corridors. Small wind energy systems shall not be located where they would extend above any predominate ridgeline visible from any designated scenic corridor listed in the Open Space Element of the General Plan, unless they are designed to blend in with the surrounding

environment in such a manner that they would not have a significant visual impact, as determined by the Zoning Administrator or Planning Commission.

(i) Climbing apparatus. Climbing apparatus shall be located at least twelve (12) feet above the ground, and the tower shall be designed to prevent climbing within twelve (12) feet of the ground.

(j) Noise. The proposed system shall not generate noise levels exceeding 60 decibels or any existing maximum noise levels applied pursuant to the Noise Element of the General Plan, or noise ordinance, for the applicable zoning district, as measured at the closest neighboring inhabited dwelling, except during short-term events such as utility outages and severe wind storms.

(k) Site access. Construction of on-site roads to install and maintain the small wind energy system shall be minimized. Temporary access roads used for initial installation shall be regraded and revegetated to a natural/preconstruction condition after completion of installation.

(l) Turbine certification. The system's turbine shall be approved by the California Energy Commission or certified by a national program (i.e., National Electrical Code (NEC), American National Standards Institute (ANSI) and Underwriters Laboratories (UL).

(m) Building, engineering, and electrical codes. The system shall comply with the Uniform Building Code (UBC) or the California Building Code and be certified by a professional mechanical, structural, or civil engineer licensed by the state. However, a wet stamp shall not be required, provided that the applicant demonstrates that the system is designed to meet the:
(1) UBC requirements for wind exposure D;
(2) UBC requirements for Seismic Zone 4;
(3) Requirements for soil strength of not more than 1,000 pounds per square foot; or
(4) Other relevant conditions required by the County to protect public safety.
(5) The electrical components of the system shall conform to the National Electric Code.

8-2.2418.6 Abandonment and Financial Surety.

(a) An accessory wind energy system that ceases to produce electricity on a continuous basis for twelve (12) months shall be considered abandoned. Facilities deemed by the County to be unsafe and facilities in violation of this chapter shall also be deemed abandoned. The code enforcement officer, who shall have the right to request documentation and/or affidavits from the system owner/operator regarding the system's usage, shall make a determination as to the date of abandonment.

(b) Upon a determination of abandonment, the County shall send a notice hereof to the owner/operator, indicating that the responsible party shall remove the small wind energy system and all associated facilities, and remediate the site to its approximate original condition within ninety (90) days of notice by the County, unless the County determines that the facilities must be removed in a shorter period to protect public safety.

(c) In the event that the responsible parties have failed to remove the small wind energy system and/or restore the facility site within the specified time period, the County may remove the small wind energy system and restore the site and may thereafter initiate judicial proceedings against the responsible parties.

(d) Financial Surety. Prior to the issuance of a building permit authorizing installation of a small wind energy system, the applicant shall provide a demolition surety in a form and amount deemed by the County to be sufficient to remove and dispose of the wind energy system and restore the

site to its approximate preconstruction condition. The County shall draw upon this surety in the event the responsible party fails to act in accordance with the provisions of this section within ninety (90) days of termination of operations, or upon determination by the County that the wind energy system is unsafe, has been abandoned, or is in violation of this chapter. The surety shall remain in effect until the wind energy system is removed.

Section 4. Revisions to Articles 4, 6, 6.1, 7, 7.1, 12, 13, 14, 15, 16, 17, and 18 of Title 8, Chapter 2, of the Yolo County Code.

Revisions to Article 4 of Title 8, Chapter 2 (Agricultural Preserve Zone). The following provisions contained in the current version of Article 4 of Chapter 2 of Title 8 of the Yolo County Code shall be revised as follows:

Sec. 8-2.403. Accessory uses (A-P). *Revise subsection (a) to read as follows:*
(a) Small wind energy systems, consistent with Section 8-2.2418;

Sec. 8-2.405. Height regulations (A-P). *Revise to read as follows:*
There shall be no height regulations in the AP Zone except where required for conditional uses and as set forth in Section 8-2.2605, Section 8-2.2418, and Article 34 of this Chapter.

Add other zoning district revisions (A-1, AGI, C-1, C-2, C-3, M-L, M-1, M-2)…

Section 5. Revisions to Section 8-2.2605 of Title 8, Chapter 2, of the Yolo County Code.

Revisions to Section 8-2.2605 of Title 8, Chapter 2 (Height regulations). The following provisions contained in the current version of Section 8-2.2605 of Chapter 2 of Title 8 of the Yolo County Code shall be revised as follows:

Sec. 8-2.2605. Height regulations.
The maximum height limitation regulations set forth in this Chapter for each particular zone shall be modified as follows:
(a) In any zone, other than the Agricultural Preserve Zone (A-P), the Agricultural General Zone(A-1), the Agricultural Exclusive Zone (AE), the Agricultural Industry Zone (AGI), the Airport Zone (AV), and the Special Height Combining Zone (H), and other than properties adjacent to an AV Zone within a designated aviation safety zone and/or which are regulated by an applicable airport master or land use plan, the following structures may extend not more than thirty (30') feet above the height limits set forth in such zone; provided, however, applicable State and Federal regulations shall govern wherever conflicts occur: chimneys, church spires, flagpoles, monuments, water towers, fire and hose towers, observation towers, distribution lines and poles, communication equipment buildings, ~~windmills~~, smokestacks, ~~radio towers~~, television towers, radar towers, masts, aerials, television antennas, outdoor theater screens (provided such screens contain no advertising matter other than the name of the theater), equipment penthouses and cooling towers, grain elevators, farm equipment and storage barns, silos, and gas holders.
(b) In the Agricultural Preserve Zone (A-P), the Agricultural General Zone(A-1), the Agricultural Exclusive Zone (AE), and the Agricultural Industry Zone (AGI), there shall be no height limits, except for small wind energy systems, as specified in Section 8-2.2418.
(c) In the Airport Zone (AV), and the Special Height Combining Zone (H), and for those properties adjacent to an AV Zone that are within a designated aviation safety zone and/or which are regulated by an applicable airport master or land use plan, height limits shall be as

set forth by the applicable Federal Aviation Agency height safety standards and/or by the applicable airport master or land use plan.

~~(b)~~(d) Upon the approval of the Planning Commission, the structures set forth in subsection (a) of this section and all structures normally permitted in such zones may be permitted to further exceed the height limits for the particular zone when the Planning Commission finds that such additional height is necessary for the normal operation of a permitted use and will not be injurious to neighboring properties or detrimental to the public health, safety, and welfare.

~~(c)~~(e) Churches, schools, and other permitted public and semi-public buildings may exceed the height limits of the zone in which they are located in accordance with the terms and conditions of an approved use permit.

~~(d)~~(f) In any zone, other than the Airport Zone (AV) and Special Height Combining Zone (H), public utility transmission lines may exceed the height limits of the zone in which they are located. (§ 27.05, Ord. 488, as amended by §10, Ord. 1244, eff. February 3, 2000)

GOVERNMENT CODE
SECTION 65892.13

65892.13. (a) The Legislature finds and declares all of the following:

(1) California has a shortage of reliable electricity supply, which has led the Governor to proclaim a state of emergency and to issue numerous Executive orders to lessen, and mitigate the effects of, the shortage. The Executive orders, among other things, expedite and shorten the processing of applications for existing and new powerplants, establish an emergency siting process for peaking and renewable powerplants, and relax existing air pollutant emission requirements in order to allow power generation facilities to continue generating much needed electricity.

(2) Wind energy is an abundant, renewable, and nonpolluting energy resource. When converted to electricity, it reduces our dependence on nonrenewable energy resources and reduces air and water pollution that result from conventional sources. Distributed small wind energy systems also enhance the reliability and power quality of the power grid, reduce peak power demands, increase in-state electricity generation, diversify the state's energy supply portfolio, and make the electricity supply market more competitive by promoting consumer choice.

(3) In 2000, the Legislature and Governor recognized the need to promote all feasible adoption of clean, renewable, and distributed energy sources by enacting the Reliable Electric Service Investments Act (Article 15 (commencing with Section 399) of Chapter 2.3 of Part 1 of Division 1 of the Public Utilities Code). As set forth in Section 399.6 of the Public Utilities Code, the stated objectives of the act include to "increase, in the near term, the quantity of California's electricity generated by in-state renewable energy resources while protecting system reliability, fostering resource diversity, and obtaining the greatest environmental benefits for California residents."

(4) Small wind energy systems, designed for onsite home, farm, and small commercial use, are recognized by the Legislature and the State Energy Resources Conservation and Development Commission as an excellent technology to help achieve the goals of increased in-state electricity generation, reduced demand on the state electric grid, increased consumer energy independence, and nonpolluting electricity generation. In June 2001, the commission adopted a Renewable Investment Plan that includes one hundred one million two hundred fifty thousand dollars ($101,250,000) over the next five years, in the form of a 50-percent buydown incentive for the purchasers of "emerging renewable technologies," including small wind energy systems.

(5) In light of the state's electricity supply shortage and its existing program to encourage the adoption of small wind energy systems, it is the intent of the Legislature that any ordinances regulating small wind energy systems adopted by local agencies have the effect of providing for the installation and use of small wind energy systems and that provisions in these ordinances relating to matters including, but not limited to, parcel size, tower height,

ATTACHMENT B

noise, notice, and setback requirements do not unreasonably restrict the ability of homeowners, farms, and small businesses to install small wind energy systems in zones in which they are authorized by local ordinance. It is the policy of the state to promote and encourage the use of small wind energy systems and to limit obstacles to their use.

(b) The implementation of consistent statewide standards to achieve the timely and cost-effective installation of small wind energy systems is not a municipal affair, as that term is used in Section 5 of Article XI of the California Constitution, but is instead a matter of statewide concern. It is the intent of the Legislature that this section apply to all local agencies, including, but not limited to, charter cities, charter counties, and charter cities and counties.

(c) The following definitions govern this section:

(1) "Small wind energy system" means a wind energy conversion system consisting of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity that does not exceed the allowable rated capacity under the Emerging Renewables Fund of the Renewables Investment Plan administered by the California Energy Commission and which will be used primarily to reduce onsite consumption of utility power.

(2) "Tower height" means the height above grade of the fixed portion of the tower, excluding the wind turbine.

(d) Any local agency may, by ordinance, provide for the installation of small wind energy systems in the jurisdiction outside an "urbanized area," as defined in paragraph (2) of subdivision (b) of Section 21080.7 of the Public Resources Code pursuant to this section. The local agency may establish a process for the issuance of a conditional use permit for small wind energy systems.

(1) The ordinance may impose conditions on the installation of small wind energy systems that include, but are not limited to, notice, tower height, setback, view protection, aesthetics, aviation, and design safety requirements. However, the ordinance shall not require conditions on notice, tower height, setbacks, noise level, turbine approval, tower drawings, and engineering analysis, or line drawings that are more restrictive than the following:

(A) Notice of an application for installation of a small wind energy system shall be provided to property owners within 300 feet of the property on which the system is to be located.

(B) Tower heights of not more than 65 feet shall be allowed on parcels between one and five acres and tower heights of not more than 80 feet shall be allowed on parcels of five acres or more, provided that the application includes evidence that the proposed height does not exceed the height recommended by the manufacturer or distributor of the system.

(C) Setbacks for the system tower shall be no farther from the property line than the height of the system, provided that it also complies with any applicable fire setback requirements pursuant to Section 4290 of the Public Resources Code.

(D) Decibel levels for the system shall not exceed the lesser of 60 decibels (dBA), or any existing maximum noise levels applied pursuant to the noise element of a general plan for the applicable zoning classification in a jurisdiction, as measured at the closest neighboring inhabited dwelling, except during short-term events such as utility outages and severe wind storms.

(E) The system's turbine must have been approved by the California Energy Commission as qualifying under the Emerging Renewables Fund of the commission's Renewables Investment Plan or certified by a national program recognized and approved by the Energy Commission.

(F) The application shall include standard drawings and an engineering analysis of the system's tower, showing compliance with the Uniform Building Code or the California Building Standards Code and certification by a professional mechanical, structural, or civil engineer licensed by this state. However, a wet stamp shall not be required, provided that the application demonstrates that the system is designed to meet the most stringent wind requirements (Uniform Building Code wind exposure D), the requirements for the worst seismic class (Seismic 4), and the weakest soil class, with a soil strength of not more than 1,000 pounds per square foot, or other relevant conditions normally required by a local agency.

(G) The system shall comply with all applicable Federal Aviation Administration requirements, including Subpart B (commencing with Section 77.11) of Part 77 of Title 14 of the Code of Federal Regulations regarding installations close to airports, and the State Aeronautics Act (Part 1 (commencing with Section 21001) of Division 9 of the Public Utilities Code).

(H) The application shall include a line drawing of the electrical components of the system in sufficient detail to allow for a determination that the manner of installation conforms to the National Electric Code.

(2) The ordinance may require the applicant to provide information demonstrating that the system will be used primarily to reduce onsite consumption of electricity. The ordinance may also require the application to include evidence, unless the applicant does not plan to connect the system to the electricity grid, that the electric utility service provider that serves the proposed site has been informed of the applicant's intent to install an interconnected customer-owned electricity generator.

(3) A small wind energy system shall not be allowed where otherwise prohibited by any of the following:

(A) A local coastal program and any implementing regulations adopted pursuant to the California Coastal Act, Division 20 (commencing with Section 30000) of the Public Resources Code.

(B) The California Coastal Commission, pursuant to the California Coastal Act, Division 20 (commencing with Section 30000) of the Public Resources Code.

(C) The regional plan and any implementing regulations adopted by the Tahoe Regional Planning Agency pursuant to the Tahoe Regional Planning Compact, Title 7.4 (commencing with Section 66800) of the Government Code.

(D) The San Francisco Bay Plan and any implementing regulations adopted by the San Francisco Bay Conservation and Development Commission pursuant to the McAteer-Petris Act, Title 7.2 (commencing with Section 66600) of the Government Code.

(E) A comprehensive land use plan and any implementing regulations adopted by an airport land use commission pursuant to Article 3.5 (commencing with Section 21670) of Chapter 4 of Division 9 of Part 1 of the Public Utilities Code.

(F) The Alquist-Priolo Earthquake Fault Zoning Act, Chapter 7.5 (commencing with Section 2621) of Division 2 of the Public Resources Code.

(G) A local agency to protect the scenic appearance of the scenic

highway corridor designated pursuant to Article 2.5 (commencing with Section 260) of Chapter 2 of Division 1 of the Streets and Highways Code.

(H) The terms of a conservation easement entered into pursuant to Chapter 4 (commencing with Section 815) of Division 2 of Part 2 of the Civil Code.

(I) The terms of an open-space easement entered into pursuant to the Open-Space Easement Act of 1974, Chapter 6.6 (commencing with Section 51070) of Division 1 of Title 5 of the Government Code.

(J) The terms of an agricultural conservation easement entered into pursuant to the California Farmland Conservancy Program Act, Division 10.2 (commencing with Section 10200) of the Public Resources Code.

(K) The terms of a contract entered into pursuant to the Williamson Act, Chapter 7 (commencing with Section 51200) of Division 1 of Title 5 of the Government Code.

(L) The listing of the proposed site in the National Register of Historic Places or the California Register of Historical Resources pursuant to Section 5024.1 of the Public Resources Code.

(4) If the governing authority of the restricted military airspace known as "R-2515" files a detailed diagram of that restricted military airspace with a local agency, and if a local agency receives an application to install a small wind energy system on a site that is within that restricted military airspace, then the local agency shall promptly forward a copy of that application to the governing authority of that restricted military airspace. If the governing authority of the restricted military airspace known as "R-2515" provides written comments regarding that application, the local agency shall consider those comments before acting on the application.

(5) In the event a small wind energy system is proposed to be sited in an agricultural area that may have aircraft operating at low altitudes, the local agency shall take reasonable steps, concurrent with other notices issued pursuant to this subdivision, to notify pest control aircraft pilots registered to operate in the county pursuant to Section 11921 of the Food and Agricultural Code.

(6) Notwithstanding the requirements of paragraph (1), a local agency may, if it deems it necessary due to circumstances specific to the proposed installation, provide notice by placing a display advertisement of at least one-eighth page in at least one newspaper of general circulation within the local agency in which the installation is proposed.

(7) Nothing in this section shall be construed to alter or affect existing law regarding the authority of local agencies to review an application.

(e) Notwithstanding subdivision (f), any local agency that has not adopted an ordinance in accordance with subdivision (d) by July 1, 2002, may adopt such an ordinance at a later date, but any applications that are submitted between July 1, 2002, and the adopted date of the ordinance must be approved pursuant to subdivision (f).

(f) Any local agency that has not adopted an ordinance pursuant to subdivision (d) on or before July 1, 2002, shall approve applications for small wind energy systems by right if all of the following conditions are met:

(1) The size of the parcel where the system is located is at least one acre and is outside an "urbanized area," as defined in paragraph

(2) of subdivision (b) of Section 21080.7 of the Public Resources Code.

(2) The tower height on parcels that are less than five acres does not exceed 80 feet.

(3) No part of the system, including guy wire anchors, extends closer than 30 feet to the property boundary, provided that it also complies with any applicable fire setback requirements pursuant to Section 4290 of the Public Resources Code.

(4) The system does not exceed 60 decibels (dBA), as measured at the closest neighboring inhabited dwelling, except during short-term events such as utility outages and severe wind storms.

(5) The system's turbine has been approved by the State Energy Resources Conservation and Development Commission as qualifying under the Emerging Renewables Fund of the commission's Renewables Investment Plan or certified by a national program recognized and approved by the Energy Commission.

(6) The application includes standard drawings and an engineering analysis of the tower, showing compliance with the Uniform Building Code or the California Building Standards Code and certification by a licensed professional engineer. A wet stamp is not required if the application demonstrates that the system is designed to meet the most stringent wind requirements (Uniform Building Code wind exposure D), the requirements for the worst seismic class (Seismic 4), and the weakest soil class, with a soil strength of not more than 1,000 pounds per square foot, or other relevant conditions normally required by a local agency.

(7) The system complies with all applicable Federal Aviation Administration requirements, including any necessary approvals for installations close to airports, and the requirements of the State Aeronautics Act (Part 1 (commencing with Section 21001) of Division 9 of the Public Utilities Code).

(8) The application includes a line drawing of the electrical components of the system in sufficient detail to allow for a determination that the manner of installation conforms to the National Electric Code.

(9) Unless the applicant does not plan to connect the system to the electricity grid, the application includes evidence, that the electric utility service provider that serves the proposed site has been informed of the applicant's intent to install an interconnected customer-owned electricity generator.

(10) A small wind energy system shall not be allowed where otherwise prohibited by any of the following:

(A) A local coastal program and any implementing regulations adopted pursuant to the California Coastal Act, Division 20 (commencing with Section 30000) of the Public Resources Code.

(B) The California Coastal Commission, pursuant to the California Coastal Act, Division 20 (commencing with Section 30000) of the Public Resources Code.

(C) The regional plan and any implementing regulations adopted by the Tahoe Regional Planning Agency pursuant to the Tahoe Regional Planning Compact, Title 7.4 (commencing with Section 66800) of the Government Code.

(D) The San Francisco Bay Plan and any implementing regulations adopted by the San Francisco Bay Conservation and Development Commission pursuant to the McAteer-Petris Act, Title 7.2 (commencing with Section 66600) of the Government Code.

(E) A comprehensive land use plan and any implementing regulations

adopted by an airport land use commission pursuant to Article 3.5 (commencing with Section 21670) of Chapter 4 of Division 9 of Part 1 of the Public Utilities Code.

(F) The Alquist-Priolo Earthquake Fault Zoning Act, Chapter 7.5 (commencing with Section 2621) of Division 2 of the Public Resources Code.

(G) A local agency to protect the scenic appearance of the scenic highway corridor designated pursuant to Article 2.5 (commencing with Section 260) of Chapter 2 of Division 1 of the Streets and Highways Code.

(H) The terms of a conservation easement entered into pursuant to Chapter 4 (commencing with Section 815) of Division 2 of Part 2 of the Civil Code.

(I) The terms of an open-space easement entered into pursuant to the Open-Space Easement Act of 1974, Chapter 6.6 (commencing with Section 51070) of Division 1 of Title 5 of the Government Code.

(J) The terms of an agricultural conservation easement entered into pursuant to the California Farmland Conservancy Program Act, Division 10.2 (commencing with Section 10200) of the Public Resources Code.

(K) The terms of a contract entered into pursuant to the Williamson Act, Chapter 7 (commencing with Section 51200) of Division 1 of Title 5 of the Government Code.

(L) On a site listed in the National Register of Historic Places or the California Register of Historical Resources pursuant to Section 5024.1 of the Public Resources Code.

(11) If the governing authority of the restricted military airspace known as "R-2515" files a detailed diagram of that restricted military airspace with a local agency, and if a local agency receives an application to install a small wind energy system on a site that is within that restricted military airspace, then the local agency shall promptly forward a copy of that application to the governing authority of that restricted military airspace. If the governing authority of the restricted military airspace known as "R-2515" provides written comments regarding that application, the local agency shall consider those comments before acting on the application.

(12) In the event that a proposed site for a small wind energy system is in an agricultural area that may have aircraft operating at low altitudes, the local agency shall take reasonable steps, concurrent with other notices issued pursuant to this subdivision, to notify pest control aircraft pilots registered to operate in the county pursuant to Section 11921 of the Food and Agricultural Code.

(13) No other local ordinance, policy, or regulation shall be the basis for a local agency to deny the siting and operation of a small wind energy system under this subdivision.

(14) No changes in the general plan shall be required to implement this subdivision. Any local agency, when amending its zoning ordinance or general plan to incorporate the policies, procedures, or other provisions applicable to the approval of small wind energy systems, must do so in a manner consistent with the requirements of this subdivision and the Permit Streamlining Act (commencing with Section 65920).

(g) This section does not limit the authority of local agencies to adopt less restrictive requirements for the siting and operation of small wind energy systems.

(h) A local agency shall review an application for a small wind

energy system as expeditiously as possible pursuant to the timelines established in the Permit Streamlining Act (commencing with Section 65920).

(i) Fees charged by a local agency to review an application for a small wind energy system shall be determined in accordance with Chapter 5 (commencing with Section 66000).

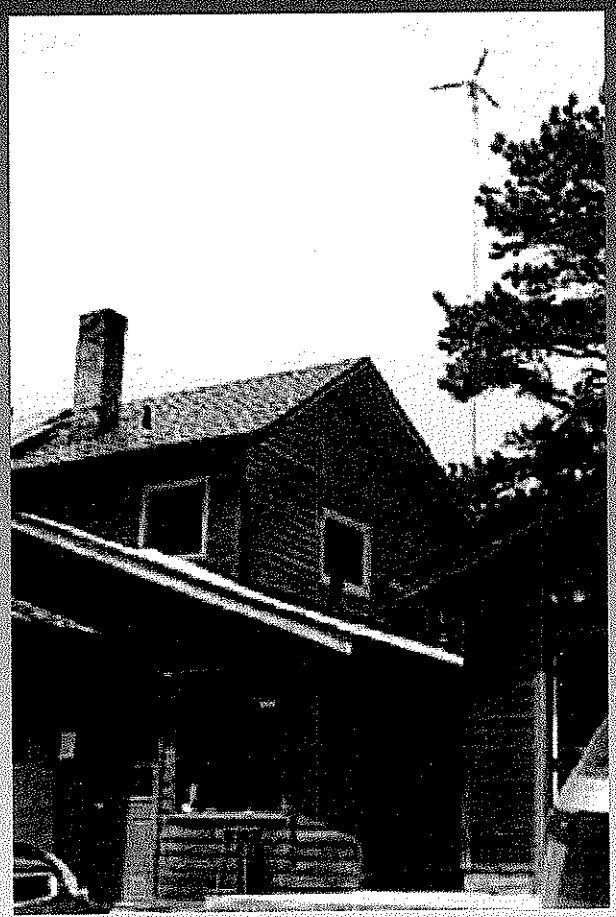
(j) Any requirement of notice to property owners imposed pursuant to subdivision (d) shall ensure that responses to the notice are filed in a timely manner.

(k) This section shall become inoperative on July 1, 2005, and as of January 1, 2006, is repealed, unless a later enacted statute, that becomes effective on or before January 1, 2006, deletes or extends that date.

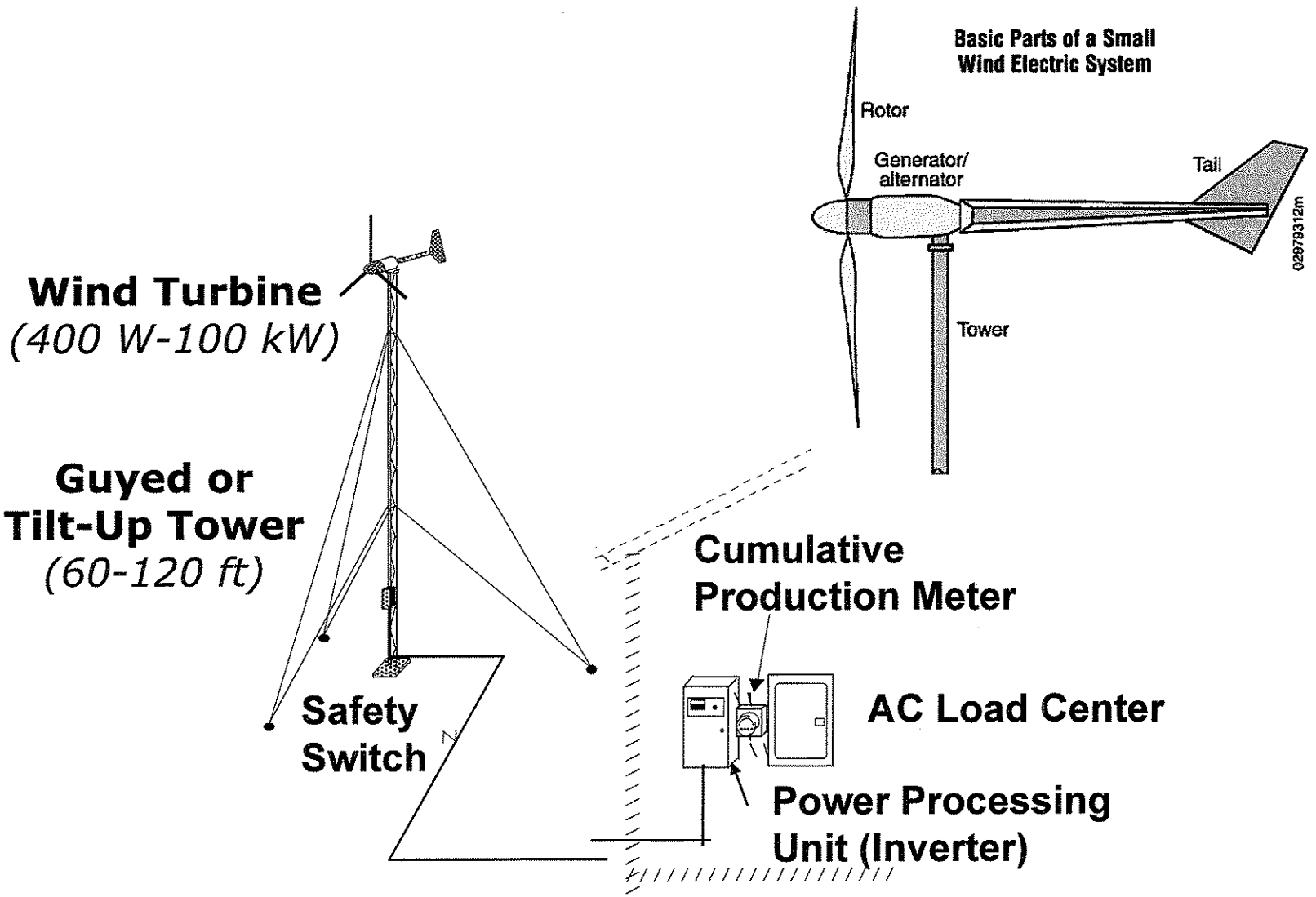
Small Wind 101: An Overview of Small-Scale Wind Electric Systems

American Wind Energy Association

Affordable, Clean Energy for Homes, Farms & Businesses



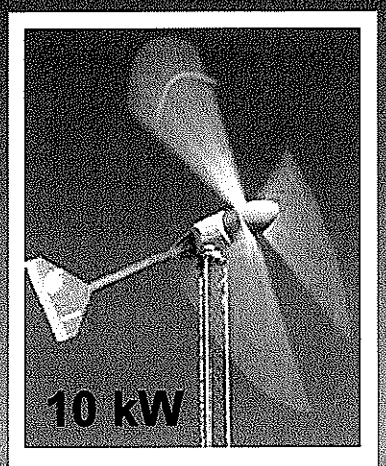
How Small Wind Turbines Work

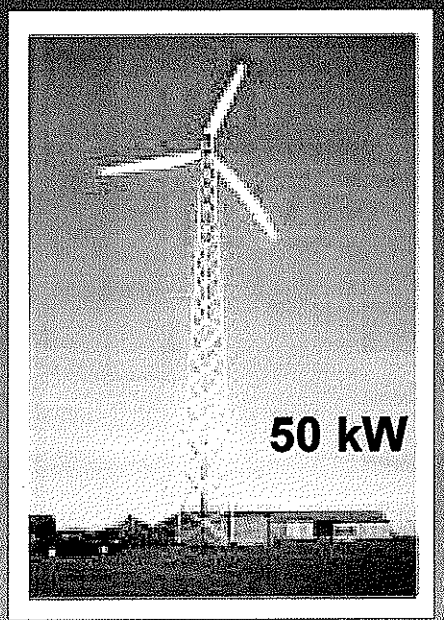


Modern Small Wind Turbines

High Tech, High Reliability, Low Maintenance

- **Small turbines range from 20 W to 100 kW**
- **Only 3-4 moving parts means very low maintenance**
- **20- to 40-year design life**
- **Proven technology – 150,000 installed; over a billion operational hours**
- **American companies are the market and technology leaders**
- **Substantial cost-reduction potential**

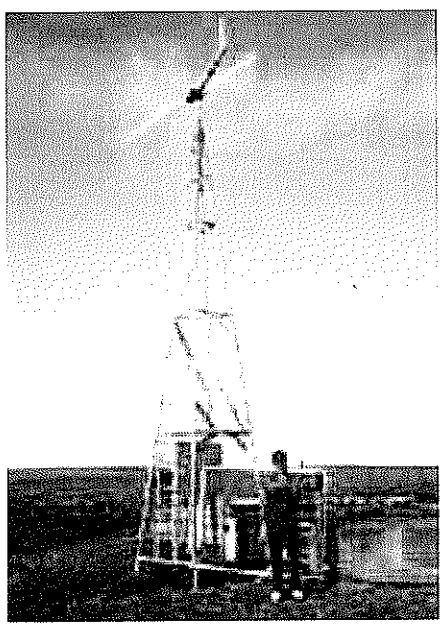




(Not to scale)

Typical Applications
Farms, Homes, Businesses

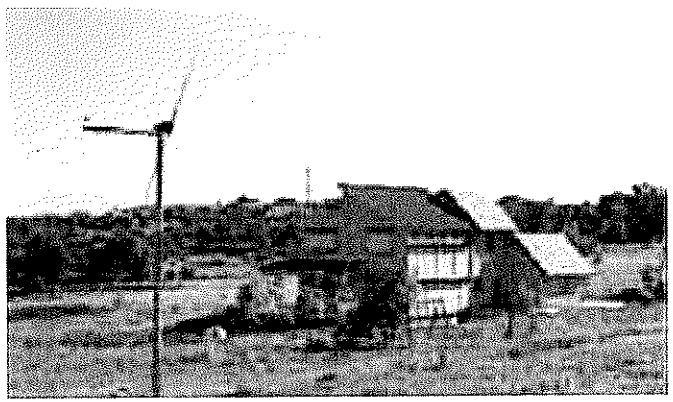
Off-Grid Water Pumping with Wind



- Supplies water for 120 head of cattle
- 1 kW, 9-ft rotor, 30-ft tower

- Produces ~ 2,000 kWh/yr
- Offsets ~ 1.5 tons CO_2/yr
- Costs ~ $4,000 installed

Supplementing Grid Power



- Connected to utility grid through house/farm wiring
- 3 kW, 15-ft rotor, 23-ft tower*
- Produces ~ 5,000 kWh/yr
- Offsets ~ 3.8 tons CO_2/yr
- Costs ~ $10,000

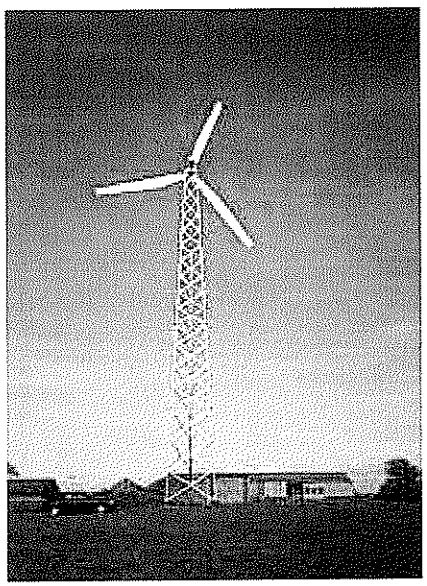
** due to zoning restrictions (not recommended)*

Typical Applications
Farms, Homes, Businesses

Offsetting All Utility Power

- "Net metering" utility power
- 10 kW, 23-ft rotor diameter, 100-ft tower
- Produces ~ 15,000 kWh/yr
- Offsets ~ 14 tons CO_2/yr
- Costs ~ $35,000

Selling Power Back to Utility

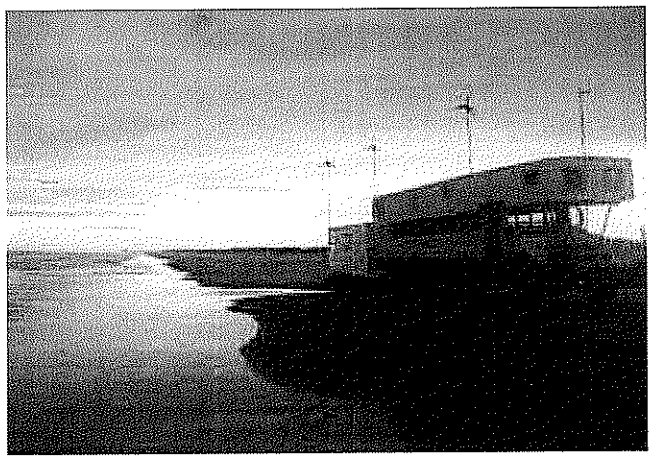


- Excess power sold to utility
- 50 kW, 49-ft rotor, 90-ft tower

- Produces ~120,000 kWh/yr
- Offsets ~ 91 tons CO_2/yr
- Costs ~ $150,000

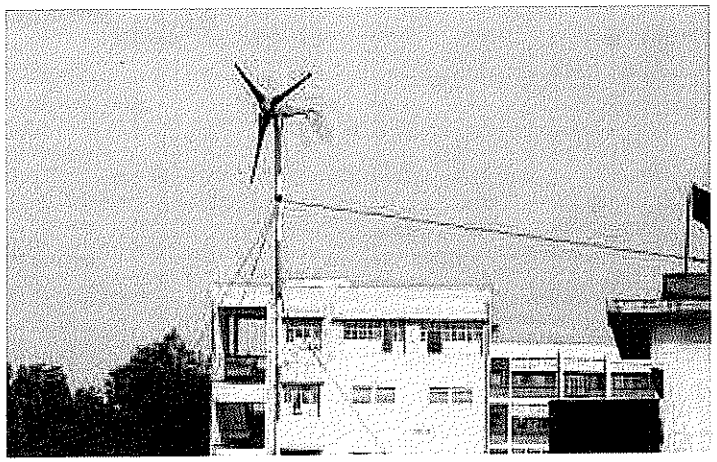
Options: On or Off the Grid?

Stand-Alone System



- Batteries to store excess power
- Charge controller
- Inverter (DC to AC)
- Back-up power source for complete energy independence

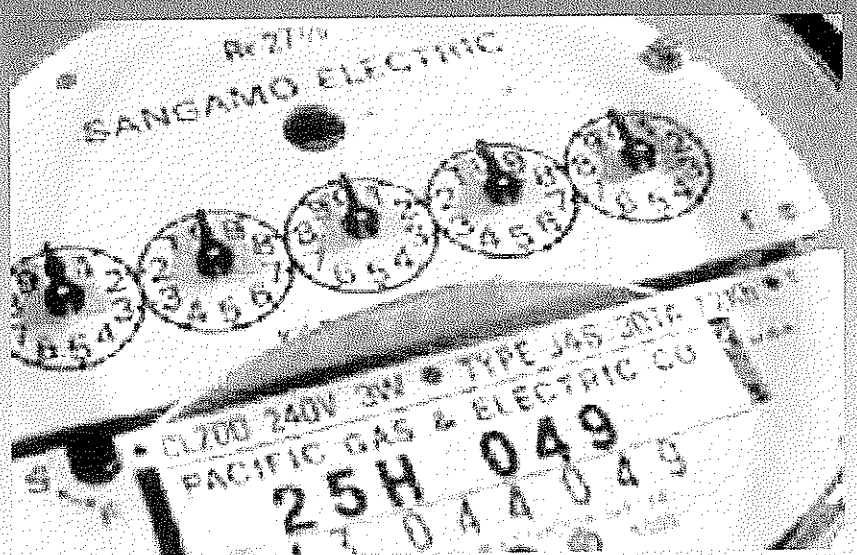
Grid-Connected System



- Inverter (DC to AC)
- Annual wind speed $\geq$10 mph (4.5 m/s)
- Customer motivated by high utility prices, self sufficiency, or environmental concerns

Net-metering for Grid-Connected Systems

- "Bank" excess energy with the local utility
- Meter spins backward; customer receives full retail value for each kWh produced
- Net excess generation (NEG) credited monthly or annually



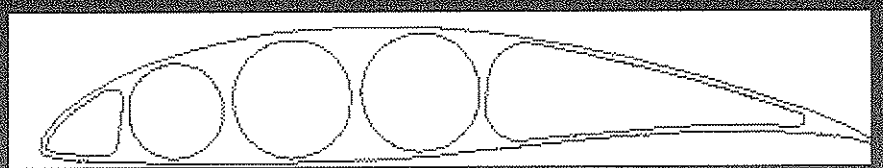
Why Wind?

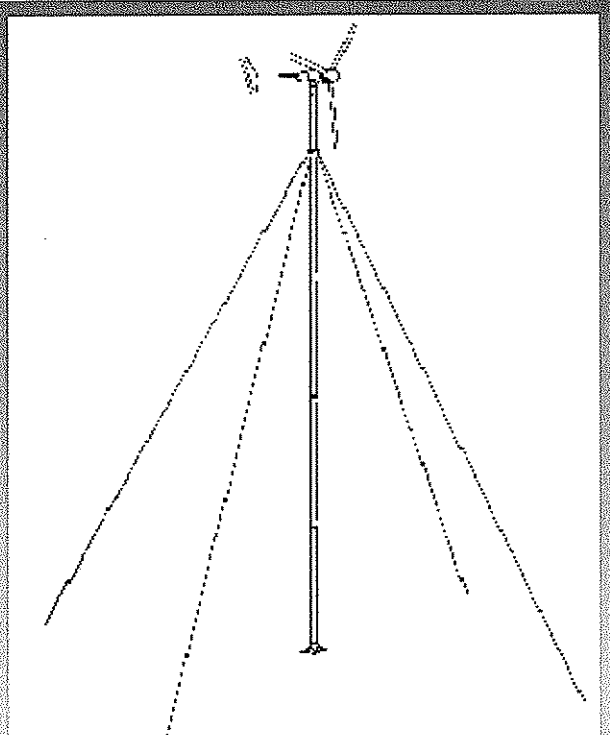
- Gain energy independence
- Ease demand on the power grid
- Reduce vulnerability to volatile utility prices
- Reduce air pollution from fossil electricity sources

New Technology is Lowering Costs

U.S. DOE's Advanced Small Wind Turbine Program + industry-funded R&D

- Advanced airfoils
- "Super-magnet" generators
- Low cost manufacturing
- Smart power electronics
- Very tall towers
- "Stealth" low noise & visual impact





Programs and Policies to Nurture the Rural Residential Market

- Buy-down, rebate or grant programs
- State production tax credits
- Sales and property tax exemptions

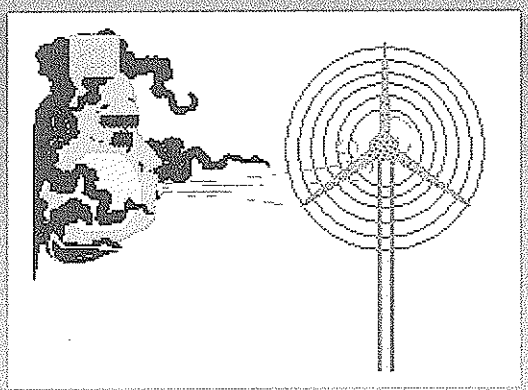
- Net metering, with annual "banking" period
- Reasonable interconnection standards
- Model zoning ordinances

Sources for Further Information on Small Wind

- **American Wind Energy Association**
  Washington, DC 202-383-2500
  www.awea.org/smallwind.html

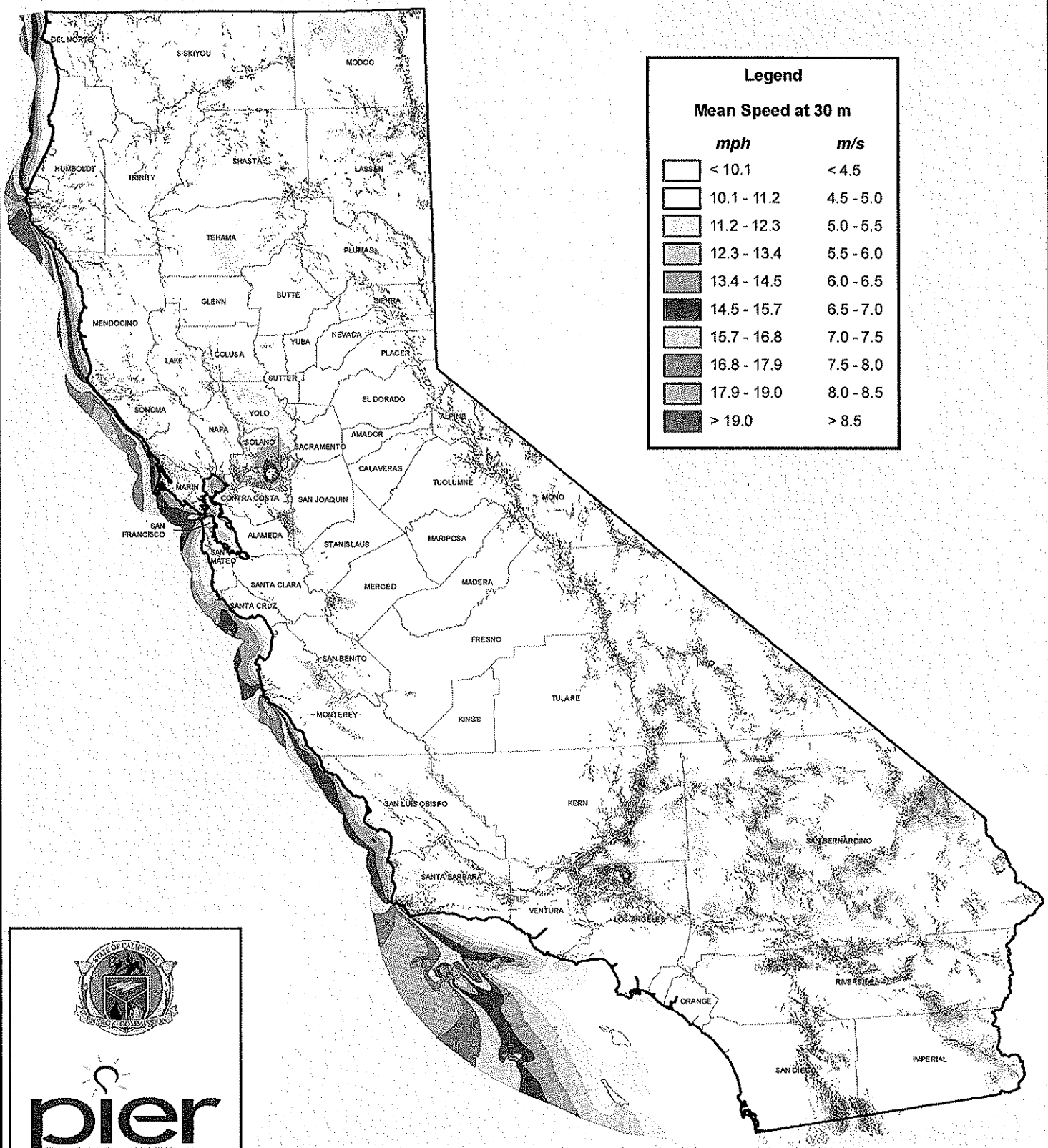
- **U.S. DOE National Wind Technology Center**
  Boulder, CO Clearinghouse: 800-363-3732
  www.nrel.gov/wind/smalltur.html
  www.eren.doe.gov/erec/factsheets/wind.html
  www.eren.doe.gov/power/consumer/

- **Home Power Magazine**
  Ashland, OR 800-707-6585
  www.homepower.com



California Wind Resources

Annual Wind Speed at 30 Meter Elevation



Legend

Mean Speed at 30 m

mph	*m/s*
< 10.1	< 4.5
10.1 - 11.2	4.5 - 5.0
11.2 - 12.3	5.0 - 5.5
12.3 - 13.4	5.5 - 6.0
13.4 - 14.5	6.0 - 6.5
14.5 - 15.7	6.5 - 7.0
15.7 - 16.8	7.0 - 7.5
16.8 - 17.9	7.5 - 8.0
17.9 - 19.0	8.0 - 8.5
> 19.0	> 8.5

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PUBLIC INTEREST ENERGY RESEARCH
"Research Powers the Future"

This map was created by AWS TrueWind Solutions using the Mesomap system and historical weather data. Although it is belived to represent an accurate overall picture of the wind energy resource, estimates at any location should be confirmed by measurment. Data current 2006

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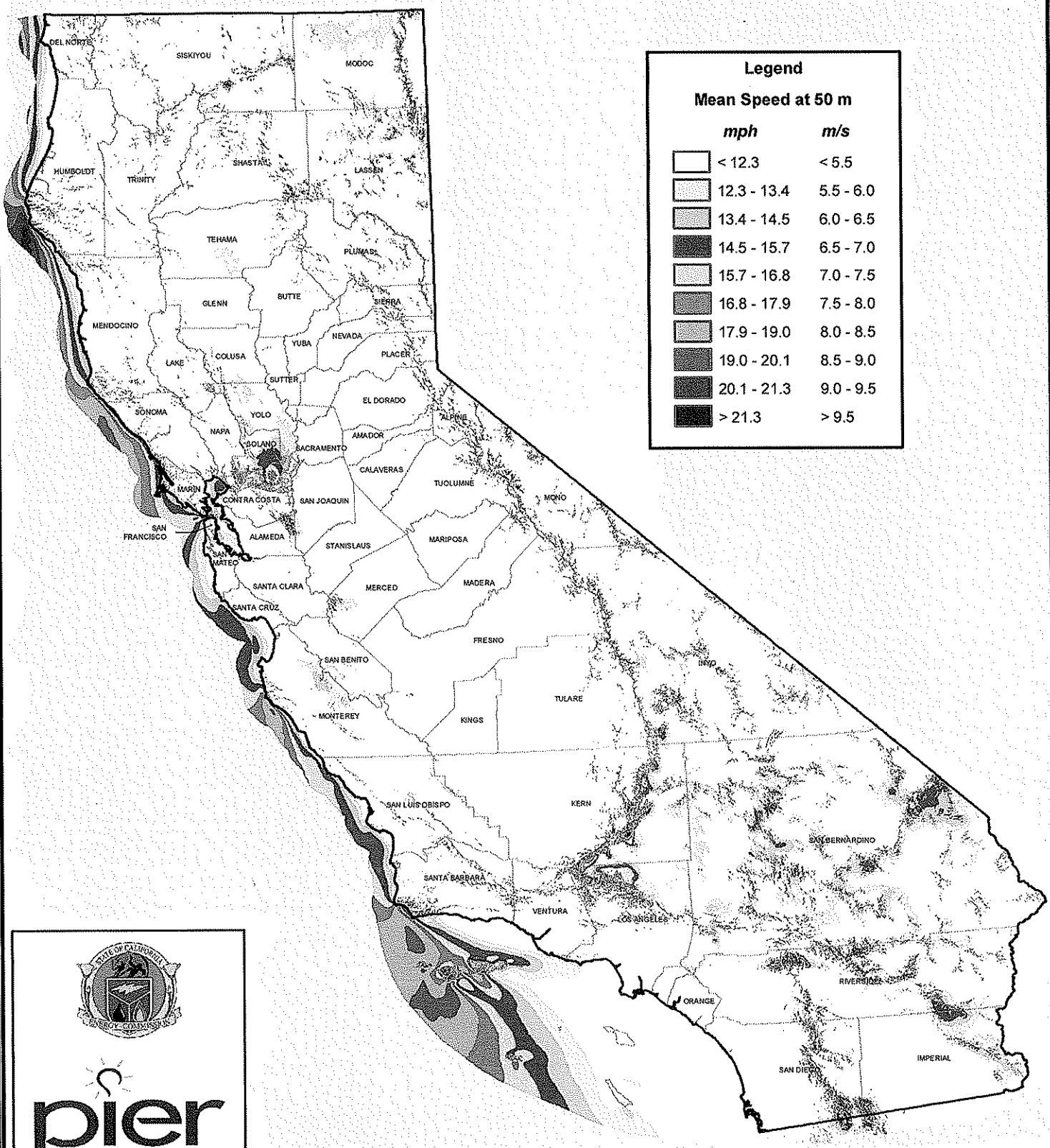
California Energy Commission
Facilities Siting Division
Cartography Unit
www.energy.ca.gov

To inquire about ordering this map or information on other types of maps call the map line at (916) 654-4182 or E-Mail: JGILBREA@ENERGY.STATE.CA.US

www.energy.ca.gov/maps/wind

California Wind Resources

Annual Wind Speed at 50 Meter Elevation



Legend

Mean Speed at 50 m

mph	*m/s*
< 12.3	< 5.5
12.3 - 13.4	5.5 - 6.0
13.4 - 14.5	6.0 - 6.5
14.5 - 15.7	6.5 - 7.0
15.7 - 16.8	7.0 - 7.5
16.8 - 17.9	7.5 - 8.0
17.9 - 19.0	8.0 - 8.5
19.0 - 20.1	8.5 - 9.0
20.1 - 21.3	9.0 - 9.5
> 21.3	> 9.5

pier
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