Installer Issues: Integrating Distributed Wind into Local Communities

Jim Green
National Wind Technology Center
National Renewable Energy Laboratory

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Installer Issues: Integrating Distributed Wind into Local Communities

- Zoning
- Local Permits
- Installer Insurance
- Installer Training/Certification
- Avian Concerns
- Safety
- Sound
- Aesthetics

Zoning Basics

- Zoning is one form of land use law
- Based on legal principle of "police power:"
  the power to regulate in order to promote the health, morals, safety, and general welfare of the community
- Zoning authority originates from state laws called "zoning enabling legislation"
  - *Standard Zoning Enabling Act*, Dept. of Commerce, 1920s
- Enabling legislation delegates land use authority to local jurisdictions, "Home Rule"
  - counties, parishes, boroughs, municipalities, townships, cities, villages, etc.

Look at the #s

- 3,034 counties (National Association of Counties)
- 16,504 townships
- 19,429 municipalities (National League of Cities)

Total: 38,967

Estimated # of local zoning jurisdictions:

15,000-20,000

Zoning is Complicated!

Denver's 24,000 zoning and land use combinations

Zoning Stories

- Dave & Jan Blittersdorf of Charlotte, Vermont, 2000
  - Sought approval from the state Public Service Board, same process as large power plants
  - Required 11 months and $6,250 in legal fees, plus an estimated $4,250 in personal time
- Bob Loebelenz of Dover, Massachusetts, 2001
  - Received building permit only to have it revoked 3 months later
  - A protracted approval process followed

Zoning Scenarios

1. No Zoning – some local jurisdictions have not yet exercised their authority to regulate land use

For Jurisdictions With Zoning:

2. Obtain a "Variance" or a "Special Use Permit" (permission to violate the zoning code on one property)
   - Structures up to 35 ft (typical) are allowed
   - Hearing process can cost thousands of dollars and take several months
3. Work with the local jurisdiction to pass a small wind zoning ordinance (broad application to many properties)
4. State Preemption – state law can preempt home rule (California and Wisconsin)

Zoning Issues (I)

- Property size
- Tower height (… as a function of property size?)
- Setbacks
  - Site plan
- Maximum capacity or size
- Building code compliance
  - Drawings of tower and foundations/footings
  - Engineering analysis, wet or dry stamp?
- National Electric Code compliance
  - One-line electrical drawings

Zoning Issues (II)

- Compliance with FAA regulations
  - FAA Advisory Circular AC 70/7460-2K
  - No warning lights required under 200 ft total height
  - Height limits may apply within 3 miles of any runway
- "Approved" wind turbines (design safety)
  - Certification to national/international standards?
  - Evidence of reliable one-year operation?
- Notice to the utility, and/or interconnection agreement
- Notice to neighbors

Zoning Issues (III)

- TV/radio interference
  - Not a problem for wood or fiberglass blades
- Noise
  - Apply existing rules
  - Exception for utility outages or severe storms?
  - Sound level decreases with distance^2 from the source
- View protection
- Attractive nuisance
  - No handholds/footholds for first 12 ft above ground?
- Signage/labeling

Zoning Issues (IV)

- Abandonment
- Permitted use, conditional use, special use?
- Use varies by zone?
- Is a public hearing required?
  - Hearings place a significant additional burden on the applicant to prepare and defend the application

Utility Poles

Jefferson County, Colorado

Transmission Lines

Cell Phone Towers

Jefferson County, Colorado

How Do Wind Turbines Compare?

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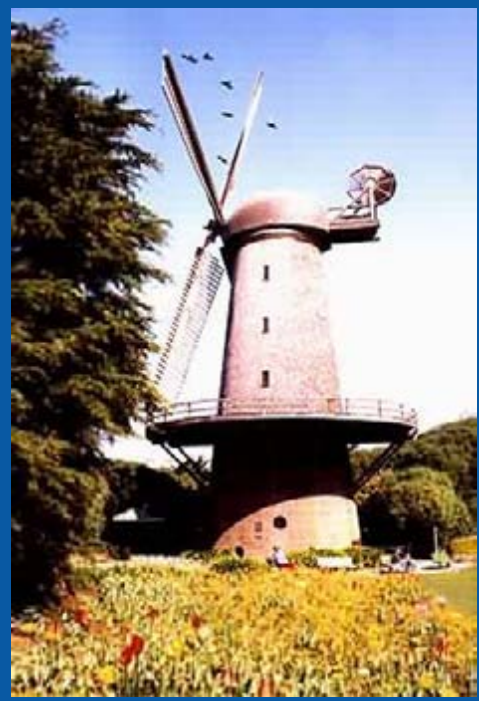
Windmills Ugly?
No, They're Cultural Icons

Dutch Windmills



Windmills Ugly?
No, They're Cultural Icons

American Windmills

Windmill… or not?

Adams County, Colorado

Credit: Jim Green, NREL

Windmill…
or not?

Adams County, Colorado

Credit: Jim Green, NREL

Precedent for State Preemption (1)

- Wisconsin (66.0401), 1993 - No restriction on wind systems allowed unless it satisfies one of the following:
  1. Serves to protect public health or safety
  2. Does not significantly increase the cost of the system or significantly decrease its efficiency
  3. Allows for an alternative of comparable cost and efficiency
- Similar language as in the Telecommunications Act of 1996 that enables cell phone towers to get approved
- The law has been upheld in 2 court challenges

Precedent for State Preemption (2)

- California (AB 1207, 2001)
  - Implemented consistent state-wide standards for permitting small wind turbines by prescribing limits to restrictions including: tower height, notifications, setbacks, noise, turbine approval, etc.
  - In jurisdictions without small wind zoning ordinances after July 1, 2002:
    ➔ Mandates approval of applications compliant with default terms in the statute
  - Sunset clause: statute inoperative on July 1, 2005

Zoning Information on the AWEA Web Site

- Model zoning ordinances
  - AWEA model ordinance
    www.awea.org/smallwind/documents/modelzo.html
  - Wisconsin model ordinance
    www.renewwisconsin.org/wind/windtoolbox.html
- How to do zoning hearings
  - Mick Sagrillo
    www.awea.org/faq/sagrillo/ms_zoning1.html
  - Douglas Stockman
    www.awea.org/smallwind/toolbox/windzone/index.htm

Closing Thoughts

- Identify your “zoning scenario”
- The primary opportunity for small wind turbines will be in rural and less-densely-populated areas
  - Zoning
  - Wind resource
  - Space for turbine installation
- Zoning costs, delays, and antiquated zoning rules are ongoing problems in some locations

Permits

- Zoning controls ***whether*** you can install a wind turbine
- Permits control ***how*** you install a wind turbine

Types of Permits

- Two primary types of permits:
  - Building permit (structural safety)
  - Electrical permit (electrical safety)
- Permitting is done locally
- Every jurisdiction is unique
- Investigate early in the process
  - Talk to the local authorities
  - Talk to local contractors

Permit Process

- Fees varies by jurisdiction:
  ~ $50 up to $6,000 (in California)
- Submittals:
  - Site plan
  - Structural analysis on foundation and tower, may require either wet stamp or dry stamp
  - Electrical one-line diagram, UL label required for grid-connected device (at least)
- Inspections

Other Types of Permits
(these are the exception)

- State coastal regulations (Within the coastal zone)
- State dept. of environmental management
  - Environmental permit (NY SEQR Program)
  - Wildlife areas, wetlands, landfills, etc.
- Local historic districts
- State historic or cultural resource commissions
  - Designated historic area
  - Areas with archeological significance
  - Designated viewshed area
- Federal lands or National Historic Register sites

Installer's Insurance

- General Liability Insurance
- Workman's Compensation Insurance

Installer's Insurance

- Insurers typically don't know how to categorize small wind installers, perception of risk is high
- Insurance is based on known statistics of large populations ← lacking for small wind
- Finding reasonably-priced general liability insurance has been a challenge for many installers
- Premiums range from $3,000/y to $10,000/y to not available

Installer's Insurance

- Insurance rates vary widely, so shop around!
- Insurance costs are sufficiently high such that coverage for occasional installations may be cost prohibitive
- Worker's compensation insurance is not required in all states, but provides added protection.
  - Adds $2/h to labor rate (Wisconsin)
- Lower liability insurance rates will be contingent on…

Installer Training & Certification

Installer Training &Certification

- "NABCEP" is the North American Board of Energy Practitioners
  - Voluntary credentialing and certifications for renewable energy professionals
  - Existing "Solar PV Installer" certification program
  - Similar program for solar thermal systems is in development
- NABCEP initiated an effort in 2004 to create a training & certification process for small wind turbine installers
  - "Small wind" defined as ≤100 kW

Installer Training &Certification

- NABCEP Small Wind Technical Committee:
  - Mick Sagrillo, Chair
  - Trudy Forsyth, Co-Chair
  - 20 committee members representing installers from multiple states, manufacturers, non-profits, consultants, academia, AWEA, and the IBEW
  - NABCEP lead is Pete Sheehan
- “Task Analysis” is underway to define the job:
  - www.nabcep.org/wind.cfm

Installer Training & Certification

- Draft task analysis will be available for public comment in late June
- NABCEP is also seeking comment as to the need for this certification program
- Yet to be completed:
  - certification exam
  - requirements to sit for that exam
  - training curriculum

Avian Concerns

Birds, Bats, and Wind Farms

- Bird kills by wind turbines have been site-specific and species-specific
- Wind farms on Altamont Pass, California, have seen more bird kills than any other location
- Migration-season bat kills have been observed at two wind farms in the Mid-Atlantic states
- Pre-construction bird studies seem to be helping the industry avoid problem situations

Birds and Small Wind Turbines

- Use observation & common sense - avoid sites frequented for feeding, watering, nesting, or roosting
- Small wind turbines are less a concern
  - They have small rotors
  - They are dispersed, installed individually
- Perception - Small wind turbines are installed in wildlife refuges, nature preserves, National and State Parks, etc.
- Guy wires may be an additional risk
- Nesting sites create additional risk

Eastern Neck Wildlife Refuge, Maryland

- U.S. Fish and Wildlife Service
- Bergey Windpower Excel wind turbine, 10 kW, 23-ft rotor
- Commissioned May, 2002
- 3-year study of bird kills
- 15 fatalities/year – starlings (nesting & roosting on the turbine)
- 3 fatalities/year - all other birds

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