

# Zoning for Distributed Wind Power — Breaking Down Barriers

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# ZONING FOR DISTRIBUTED WIND POWER — BREAKING DOWN BARRIERS

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## Introduction

Distributed wind power is attracting increasing attention in the United States. At least ten companies are currently active in this market with small wind turbines, up to 100 kW. The market is driven in no small part by emerging state incentive programs for small, distributed renewable energy systems. More grid-connected wind systems are being installed in less remote locations where zoning becomes a factor. Local zoning authorities and neighbors of prospective distributed wind turbine owners usually do not understand the acoustic, visual, safety, and other impacts of distributed turbines—they tend to fear the worst and act accordingly.

Zoning is a complicated problem. Zoning regulations vary from state to state and from one local jurisdiction to the next. There are perhaps 25,000 local zoning jurisdictions in the nation.

Further, existing zoning laws seldom address distributed wind turbines. In this paper, we will highlight the experiences of veterans of zoning battles that illustrate this market barrier. We will look at the option of local action on distributed wind zoning to highlight certain shortcomings of this approach. Last, we will consider examples of state and federal limited preemption of local zoning authority as a means of promoting the implementation of new technologies, and we will present recommendations for action by the wind industry to pursue constructive and effective zoning solutions for distributed wind power.

## The Zoning Barrier

Prospective distributed wind buyers frequently encounter the dilemma that existing zoning ordinances do not address wind turbines, nor do they typically allow structures taller than 35 ft. Wind turbines are rarely identified as an allowed use of property, also called a permitted use. In 2001, a committee in the California legislature concluded that potential buyers were “thwarted by archaic or even hostile local land-use regulations,” and as many as “half the applicants will give up in disgust” (Shane 2001). Those who do persevere with the process, both buyers and dealers, may have to make a significant investment of time and money to be successful. The following stories relate the experiences of three wind-turbine owners who were successful in overcoming their zoning barriers, but at a high cost.

Bob Loebelenz of Dover, Massachusetts, applied for and received a building permit in 2001 to install a Whisper 175 wind turbine on his small farm. Three months later, but before that installation was complete, his permit was revoked in response to objections from neighbors. A protracted public hearing process ensued for which Mr. Loebelenz retained legal representation

and brought in expert witnesses. Finally, the permit was re-issued after 13 months and legal fees of about \$13,000.

Douglas Stockman of Penfield, New York, applied for a permit from his town's Building and Planning Office. When opposition arose from neighbors, the request went before the Town Planning Board. Much disinformation was presented during an initial public hearing, which Mr. Stockman then had to refute over the following 4 months. Eventually, a special-use permit was issued. Following this ordeal, Mr. Stockman created a Web site (no longer available) and authored a magazine article (Stockman 2001) documenting the lessons learned for the benefit of others who may face a similar struggle.

Dave and Jan Blittersdorf of Charlotte, Vermont, faced a different problem. In Vermont, an on-grid wind turbine, even at 10-kW, is treated like an electric power plant. In addition to local zoning approval, it must also be approved by the state Public Service Board. That approval process includes a visual impact and aesthetics test with the burden of proof being on the applicant. The approval was granted after a contentious and convoluted process over a period of 11 months. The Blittersdorfs estimated that they and their lawyer invested the equivalent of \$9,500 of their time along the way.

These stories are examples of the experience that is all too common for wind turbine owners. Fortunately, these examples are not universal. There have been numerous situations where individuals were able to secure zoning approval and building permits without significant cost or delay. Despite those successes, we are convinced that the overall market for distributed wind is limited by zoning barriers. This paper seeks to give some perspective on those barriers and explore possible remedies.

## **Zoning Background**

Zoning ordinances are one form of land-use law and are the principle means for local governments to implement land-use planning. The legal basis for zoning has been described as follows (Wright and Gitelman 2000):

The validity of zoning is predicated on the police power—the power to regulate for the advancement and protection of the health, morals, safety or general welfare of the community.

The specific authority for zoning is established by state laws known as “zoning enabling legislation.” When zoning was first implemented in the 1920s, the U.S. Department of Commerce published “A Standard Zoning Enabling Act” (USDC 1926) as a template for zoning enabling legislation. As a result, zoning is addressed in a somewhat homogeneous manner in the various states. The resulting state statutes delegate authority for land-use regulation to local government entities—this is called home rule. The intent is that land-use choices and regulation be done at a local level as close as possible to the affected property owners. Home rule is generally given a high value by both state and federal governments and the courts.

## **Jurisdictions Having Zoning Authority**

The local jurisdictions having zoning authority go by many names in the various states: counties, parishes, boroughs, municipalities, townships, towns, cities, villages, etc. Despite this diverse

nomenclature, there are essentially three levels of local government at which zoning may occur: county, township, and municipality.

One of the many challenges with zoning is that the local jurisdictions having zoning authority are so numerous. Table 1 summarizes zoning enabling legislation for the 50 states (APA 1996). Not only is enabling legislation universal in the United States, home rule is literally the rule. Zoning authority is delegated all the way to the municipal level in 49 states (Hawaii is the lone exception), whereas only two states retain some zoning authority at the state level. At least 13 states also give zoning authority to townships, and 39 states explicitly grant zoning authority to counties.

**Table 1. Summary of State Delegation of Zoning Authority**

<b>States with Zoning Enabling Laws</b>	<b>50</b>
<b>States with State-Level Zoning Authority</b>	<b>2</b>
<b>States with County Zoning Authority</b>	<b>39</b>
<b>States with Town/Township Zoning Authority</b>	<b>13</b>
<b>States with Municipal Zoning Authority</b>	<b>49</b>

The next question is “How many of these local jurisdictions are there?” We have not found a specific reference to the number of local government entities having zoning authority. We can, however, make a reasonable estimate based on the data in Table 2, which shows the total number of counties, townships, and municipalities in the United States (USCB 2002).

**Table 2. Total Number of Local Government Entities in the United States**

<b>Counties</b>	<b>3,034</b>
<b>Townships</b>	<b>16,504</b>
<b>Municipalities</b>	<b>19,429</b>

Given that nearly all the municipalities, perhaps 80% of the counties, and some of the townships have zoning authority, we estimate there may be on the order of 25,000 local zoning jurisdictions in the United States.

This estimate makes the prospect of local action on distributed wind zoning a daunting task. The American Wind Energy Association (AWEA) has estimated that the effort needed to pursue ordinances for permitted use of distributed wind in each of the 534 local jurisdictions California might cost as much as \$20 million (Berger 2005). That is not a realistic cost for the wind industry to bear for the entire nation, much less for just one state.

## **Local Initiatives For Distributed Wind Zoning**

Some local jurisdictions around the country do have zoning ordinances that specifically address distributed wind systems. These laws are typically the result of efforts by prospective wind turbine owners, often supported by their dealers, or by local renewable energy advocates. We are aware of jurisdictions in Virginia, Ohio, New York, Wisconsin, Colorado, and California that have such ordinances. There are likely many more that we don't know about. These ordinances are quite diverse in their provisions and terms. Providing for conditional or special use seems more common than permitted use. Most include height limitations on the turbine tower. With each local jurisdiction developing its own rules, the results are mixed and not always favorable to distributed wind.

AWEA (2002) has proposed a model zoning ordinance for small wind turbines. It addresses terms including tower height, property size, setbacks, noise, utility notification, and code compliance. Most important, it proposes that small wind turbines should be considered a permitted use in all zoning classifications. While it's important for the industry to take a position on this issue, the AWEA model has the vulnerability of being viewed as representing industry interests rather than the interests of local communities or zoning authorities.

A more broad-based approach to a model ordinance is currently being pursued in Wisconsin. Local zoning has repeatedly been identified as the most significant barrier to the installation of small wind systems in this state. To address this situation, Mick Sagrillo has been asked by Wisconsin's Focus on Energy to facilitate the drafting of a model zoning ordinance for small wind turbines in Wisconsin (Focus On Energy 2005). The definition of "small wind" includes turbines up to 100 kW in capacity with up to 60-ft rotor diameters and total heights of tower and extended blade of 170 ft. This definition reflects the new and remanufactured equipment commercially available in the market and eligible for Wisconsin's renewable energy buy-down program, which is also managed by Focus on Energy.

The goal of the model zoning initiative is to develop a ready-to-use ordinance crafted by credible interests that would pass legal challenges, if needed, and to be compatible with Wisconsin's wind statute. The model has been drafted with input from several stakeholders including Focus on Energy, Division of Energy of Wisconsin, Electrical Division of the Public Service Commission of Wisconsin, a township board supervisor, and a wind-system installer. The draft is currently in the hands of the University of Wisconsin Agricultural Extension Service and the Wisconsin Towns Association for legal review. Upon completion, the ordinance will be forwarded to the Wisconsin Counties Association and the Wisconsin Towns Association for distribution and presentation to their respective members. Also in the works is a reference guide that will explain the ordinance and address questions that frequently arise about the operation and safety of wind systems. Previously, a small wind toolbox including fact sheets, utility interconnection information, and zoning information specific to Wisconsin has been posted on the Web (RENEWisconsin 2005).

## **Alternatives, But Not Solutions**

There are means of relief from existing zoning rules that have been used by individual property owners desiring to install wind turbines—variance, special exception, special use, and conditional use. In many states, zoning variances may be granted in cases where "unnecessary hardship" to the landowner would result if compliance to the existing zoning rules were

enforced. “These hardship conditions... should be peculiar and unique to the land in question” (Wright and Gitelman 2000). However, the intent to install a wind turbine is not a characteristic of the property itself; it is a land-use preference of the owner. As such, the hardship resulting from a wind turbine installation being denied is a “self-induced hardship” and does not appear to be a proper use of the variance process.

Special exception, special use, and conditional use are zoning relief options similar to one another differing primarily in name (Wright and Gitelman 2000). Typically, conditions or findings specified in the existing zoning ordinance must be met for the zoning authority to grant the relief. The authority may also attach conditions to the ruling. Whereas a variance allows an otherwise prohibited use, special or conditional use is tied to existing zoning provisions.

These alternatives might be useful to a particular land owner who faces a zoning barrier. When used as noted above, the alternatives will likely stand up to court challenge. We also note that it’s not unknown for these relief options to be “abused” by stretching their application or definition beyond that described here. Each of these options will likely require a public hearing and always require a specific and unique ruling by the zoning authority. All too often, the resulting process is slow, time-consuming, contentious, and costly. These means of zoning relief clearly are neither long-term nor broad solutions to the distributed wind zoning barrier.

## **The Preemption Option**

An option for distributed wind advocates to consider that has significant leverage is the preemption of home rule. A higher legislative authority, state or federal, can override home rule in order to implement particular land-use policy in the public interest. The preemption addressed here is limited in scope so as to preserve home rule to the extent possible while breaking through a particular zoning barrier. The key advantage of preemption is the avoidance of taking the distributed wind zoning battle to each local jurisdiction. The policy argument may be made once at a higher, more central level of government. The result is more rapid and uniform application of a particular policy. Home rule is a well-established legal principle and is not easily set aside, but there are precedents for the effective use of limited preemption.

## **Federal Preemption of Home Rule**

The Telecommunications Act of 1996 includes partial federal preemption of home rule that facilitated the rapid expansion of the cell phone industry during the past decade (Heverly 1996). This act limits the authority of local jurisdictions to regulate the installation of cell phone antennas and towers.

The act precludes

1. unreasonable discrimination among providers of similar services;
2. prohibitions, or restrictions that have the effect of prohibiting, provision of wireless services; and
3. regulation of placement, construction, or modification of facilities based on environmental effects of radio-frequency emissions (so long as facilities comply with FCC requirements).

The act requires

4. action on applications to take place within a reasonable period of time; and
5. denial of applications be in writing supported by substantial evidence contained in a written record.

Item #2 is quite powerful in that it mandates, in effect, that wireless services must be allowed anywhere the industry chooses to provide service. Item #3 is also critical. It takes the contentious issue of the health effects of the radio-frequency emissions out of the local discussion. Whatever the FCC decides, at the national level, applies to every local zoning jurisdiction. This emotional and highly technical issue could not have been effectively argued by the industry in each local zoning jurisdiction.

Obviously, the telecommunications industry was able to convince the Congress that this level of preemption of home rule was necessary and in the national interest. They are a large and well-capitalized industry with a compelling policy argument for the national benefit of wireless telecommunications. While this is a success story for the preemption option, it may not be a realistic option for the distributed wind industry, which does not have similar financial nor political resources. And, the benefit of distributed wind may be a less persuasive national policy initiative.

## State Preemption of Home Rule

### *Wisconsin*

In Wisconsin, the state passed a rather strong statute in 1993 protecting the rights of individuals to install solar energy or wind energy systems (Wisconsin 2005). The statute, 66.0401, states:

No county, city, town, or village may place any restriction, either directly or in effect, on the installation or use of a solar energy system...or a wind energy system...unless the restriction satisfies one of the following conditions:

- (a) Serves to preserve or protect the public health or safety.
- (b) Does not significantly increase the cost of the system or significantly decrease its efficiency.
- (c) Allows for an alternative system of comparable cost and efficiency.

The footnote to the statute states:

This section is a legislative restriction on the ability of municipalities to regulate solar and wind energy systems. The statute is not superceded by...municipal zoning or conditional use powers. A municipality's consideration of an application for a conditional use permit for a system under this section must be in light of the restrictions placed on local regulation by this section.

In essence, restrictions on the construction of a wind system can only be imposed in order to protect public health or safety per section (a). The intent of section (b) is to prohibit a zoning board from requiring a shorter tower, or multiple shorter towers rather than one tall tower, so that the neighbors "don't have to look at the thing." Because of the cubic relationship of wind power to wind speed, shorter towers significantly impact wind turbine output. And just as four 20-foot silos would cost significantly more than one 80-foot silo, the same would be true for multiple wind turbines on multiple short towers. Sections (c) means that a permitting agency can require an alternative location on the applicant's property in order to address the concerns of adjacent neighbors.

The interesting twist about this ordinance is that the burden of proving that a public health or safety concern exists is on the zoning authority rather than the applicant having to prove that such a concern does not exist. Also note that the issue of public health and safety is treated

differently than in the federal Telecommunications Act. That act specifically preempts local authority on this issue, whereas in Wisconsin, public health and safety is specifically delegated to the local level. This statute has been challenged in Wisconsin courts and has been subsequently upheld all the way to the state supreme court.

### *Nevada*

A bill currently before the Nevada legislature, AB236 (Nevada 2005), addresses several aspects of the regulation of renewable energy systems including zoning for distributed wind up to 150 kW:

This bill amends existing law to provide that an owner may not be prohibited or unreasonably restricted from using a wind energy system on his property.

The bill further states:

For the purposes of this section, “unreasonably restricts the use of a system for obtaining solar or wind energy” means placing a restriction or requirement on the use of such a system which significantly decreases the efficiency or performance of the system and does not allow for the use of an alternative system at a comparable cost and with comparable efficiency and performance.

Other language in the bill extends this protection to covenants contained in deeds and to regulations by a homeowner’s association.

The construction of this bill is a variation on the preemption theme. It uses some of the core language previously legislated in Wisconsin about efficiency, performance, and cost of wind systems while omitting the Wisconsin language delegating the decision about public health and safety to the local jurisdictions. Elimination of that decision from the local zoning process may well be expeditious for distributed wind energy projects. Of course, this bill is not yet law nor has it stood the test of court challenges, as is the case in Wisconsin. Nevertheless, it will be instructive to follow the progress of this legislation.

### *California*

In 2001, California passed into law a bill called AB1207 (2001) addressing zoning for small wind systems. It is a more substantial preemption of home rule in contrast to the limited preemption examples discussed above. It authorizes local zoning jurisdictions to establish processes to issue conditional-use permits while laying out specific limits to local regulation of certain conditions, including notice to neighbors, property size, tower height, setback, noise, wind turbine approval/certification, and technical submittals. In the event that a local jurisdiction does not create such an ordinance, the law establishes small wind systems as a use by right if those systems are compliant with conditions enumerated in the statute. The law took effect on July 1, 2002, and has a sunset clause effective as of July 1, 2005.

The timing of AB 1207 was critical. First, California was immersed in the post-Enron energy crisis and was eager to pursue all reasonable solutions to their energy supply short-fall. At the same time, the wind industry was eager to achieve rapid changes with zoning so that wind turbine buyers could take advantage of a substantial state incentive program being offered during a limited 5-year period. Full credit should be given to Mike Bergey of Bergey Windpower and AWEA for seeing this opportunity and successfully promoting this legislation. AWEA (2003) has also created a handbook documenting some of the experience with this law. AB1207 has been substantially effective in breaking through the zoning barriers that existed in California. It

also has been criticized as a “one-size-fits-all” approach (Shane 2001) that eliminates appropriate consideration of local conditions.

## **Recommendations**

Having considered these facts about distributed wind zoning, we recommend limited state preemption of home rule as being a viable and attractive approach for advocates to pursue in addressing the distributed wind zoning barrier. It’s clear that addressing zoning on the local level is and will continue to be an overwhelming task. In comparison, a single state-level action has the leverage of directly affecting hundreds of local jurisdictions—an estimated 500 jurisdictions per state on average. The experience in California demonstrates that quick results are possible, as well. Of course, federal preemption is also an option, but we expect it is not a realistic objective for the distributed wind industry. Two examples of state preemption, on the other hand, already exist.

If state preemption is pursued, a specific formulation must be chosen. From our point of view, an approach like that used in Wisconsin and in Nevada presents the best option. These approaches focus on limited preemptions that include a clear mandate for implementation much like the very successful federal Telecommunications Act of 1996. Unlike the California approach, they neither dictate nor allow a limit on tower height. We can’t understate the value of this feature to promote successful distributed wind installations. Further, the substantial preemption of home rule as done in California is likely to meet with strong political resistance apart from periods of crisis. The key issue of the treatment of “public health and safety” remains an open question. In our examples, it is variously preempted at the federal level, delegated to local authority, or not addressed at all. Is one of these approaches best? Perhaps more than one of them can be successful?

We understand that others may choose to differ with our preference for this formulation for limited state preemption. It is also possible, perhaps likely, that the unique political and legal processes in the various states will result in a variety of approaches to home rule preemption. Clearly, more work remains to be done to develop models for state legislation to preempt local zoning and effectively break the zoning barrier to distributed wind. And, successfully promoting such legislation is no small task. When such legislation is in place, it should be followed with development and promotion of model zoning ordinances that are fair, effective, and endorsed by state-level organizations that will be viewed as credible and unbiased by local zoning jurisdictions. Such a process is underway in Wisconsin that, if successful, can serve as a template for other states to follow.

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## **References**

AB1207 (Assembly Bill 1207). 2001. Chapter 562 of the California Statutes, <http://www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=5924348996+9+0+0&WAIAction=retrieve>. Accessed April 2005.

- APA (American Planning Association). 1996. *1996 State Summaries*, <http://www.planning.org/growingsmart/states.htm>. Accessed April 2005.
- AWEA (American Wind Energy Association). 2002. *AWEA Model Zoning Ordinance: Permitted Use Regulation for Small Wind Turbines*. <http://www.awea.org/smallwind/documents/modelzo.html>. Accessed May 2005.
- AWEA (American Wind Energy Association). 2003. *Permitting Small Wind Turbines: A Handbook. Learning from the California Experience*, <http://www.awea.org/smallwind/documents/permitting.pdf>. Accessed May 2005.
- Bergey, M. 2005. Personal communication to J. Green on May 23, 2005
- Heverly, R. A. 1996. "Dealing with Towers, Antennas, and Satellite Dishes." *Land Use Law*, November 1996, pp. 3-9.
- Focus on Energy. 2005. <http://www.focusonenergy.com>. Accessed May 2005.
- Nevada Legislature. 2005. *A.B. No. 236—Makes various changes relating to energy systems that use certain types of renewable energy, 1<sup>st</sup> Reprint*, <http://www.leg.state.nv.us/73rd/Reports/history.cfm?ID=1760>. Access May 2005.
- Shane, B. J. 2001. *Solving California's Energy Crisis: The Answer May Be Blowing in the Wind*. *McGeorge Law Review*, Vol. 33, pp. 403-413.
- RENEWisconsin. 2005. *Small Wind Toolbox*. <http://www.renewwisconsin.org/wind/windtoolbox.html>. Accessed May 2005.
- Stockman, D. 2001. *The Hard Part About Wind Turbines*. *Home Power Magazine*, Vol. 86, pp. 22-25.
- USCB (U.S. Census Bureau). 2002. *2002 Census of Governments, Volume I, Number I, Government Organization*, GC02(1)-1, <http://www.census.gov/prod/2003pubs/gc021x1.pdf>. Accessed April 2005. Washington D.C.: U.S. Government Printing Office.
- USDC (U.S. Department of Commerce). 1926. *A Standard Zoning Enabling Act Under Which Municipalities May Adopt Zoning Regulations*, <http://www.planning.org/growingsmart/pdf/SZEnablingAct1926.pdf>. Accessed April 2005. Washington D.C.: U.S. Government Printing Office.
- Wisconsin. 2005. 2003-04 Wisconsin Statutes and Annotations, Section 66.0401, <http://www.legis.state.wi.us/rsb/Statutes.html>. Accessed April 2005.
- Wright, R. R.; Gitelman, M. 2000. *Land Use in a Nutshell*, 4<sup>th</sup> Edition. St. Paul, Minnesota: West Group.