

# WINDLETTER

THE MONTHLY NEWSLETTER OF THE AMERICAN WIND ENERGY ASSOCIATION

Volume 22, Issue No. 9 - September 2003

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## SMALL TURBINE COLUMN:

### Wind System Setbacks

--Mick Sagrillo, Sagrillo Power & Light

Most anyone who wishes to install a home-sized wind system needs to obtain a building permit to do so. In many cases, local municipalities do not have any zoning regulations on their books applying to the installation of wind turbines and towers. As a result, a zoning hearing often becomes part of the process that an applicant must go through before the building permit is issued.

At zoning hearings, neighbors are allowed to voice any concerns they might have about the wind system. One issue that often arises concerns the tower falling over. While home-sized wind systems may have occasionally collapsed or fallen over during the 1980s renewables tax credit era, such failures were usually the result of installer error or the fault of a do-it-yourselfer cutting corners. In today's mature home-sized turbine industry, such failures are indeed quite rare.

Be that as it may, zoning officials are sometimes concerned about a wind turbine tower falling over. For that reason, they are eager to restrict the location of the tower in such a way so that, should the tower fall over, the entire structure, tower as well as turbine, will fall only on the owner's property. This is often referred to as the "fall zone," a negative connotation that only reinforces the idea that such a failure is inevitable. The term "setback," since it also applies to other structures a homeowner may wish to build on his or her property, is a more appropriate term. This language is in keeping with local zoning language, which relies heavily on state unified building codes for zoning guidance.

The way standard setbacks are usually calculated for home-sized wind systems is to locate the tower at the distance from a property line equal to the tower height plus the additional height of an extended blade above the tower. For example, a wind turbine with a 31-foot rotor diameter would have a blade length of 15.5 feet. If this turbine were installed on a 120-foot tower, the total height would be 135.5 feet (120 + 15.5). Therefore, the setback that might be adopted would be 135.5 feet from the applicant's property line.

Setbacks are somewhat contentious with home-sized turbine manufacturers, dealers, and installers, because they often severely restrict where a tower can be installed--or even if it can be installed--but towers rarely, if ever, fall over. While it has not been unheard of for a tower to fail, the failure rarely results in the tower falling over--instead, the tower usually collapses on itself.

Mike Bergey of Bergey Windpower points out that the statistical incidence of trees falling over and causing injury or damage is orders of magnitude greater than wind turbine towers falling over, given the numbers of failures per population of each. Bergey noted that "in 25 years of doing business with home-sized wind systems, we can report no injuries or property damage from a tower falling over."

Bergey concludes that wind turbine towers should be treated no differently than trees, which are often planted right on property lines.

There is, however, one area of concern that must be addressed when installing a home-sized wind turbine, and that is overhead utility lines. A setback equal to the tower plus an extended blade is certainly prudent in this case. This is not due to the possibility of the tower falling, but rather to the risk of losing the tower during installation when a crew is working with the tower. If the crane were to drop the tower during the installation and it were to hit a utility line, the results could be disastrous for the crew. Since utility lines usually run along a road, a setback that places the tower back from the road right-of-way is usually adequate.

Zoning authorities are not always concerned about setting a tower back from the applicant's property line equal to its total height. In my own case, for example, I have an 80-foot tower located 37 feet from our house, the closest I could get it to the house due to the area's bedrock. That tower is a mere four feet from our property line. My township's zoning administrator required that I make sure that the adjacent property owner had no concerns with the location of the tower when I applied for the building permit 23 years ago, which he did not. It is interesting to note that, while several of our trees and numerous large branches have fallen or blown onto his property, our tower still stands.

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[Editor's Note: The opinions expressed in this column belong solely to the author.]