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SMALL TURBINE COLUMN:

Residential Wind Turbines and "Code Compliance"

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There are a variety of different "codes" that come into play when a homeowner applies for a building permit for a residential wind turbine. While some of the codes are universal, others are required only in specific states or even locations. A review of the possible codes that may exist in your area will help you better prepare your building permit application.

1. The Federal Aviation Administration (FAA) becomes a consideration only if a tower is taller than 200 feet or within 3 3/4 miles of a commercial runway. If such is the case, form 7460 must be submitted to the FAA, from which they will make a determination as to whether there will be any restrictions placed on the tower or its location. (see *Windletter* Volume 22, Issue 8, August 2003 for the article "Home Wind Turbines and the FAA" for detailed information)

2. The National Electric Code (NEC) applies to all wiring and associated hardware that is part of a home wind installation. Some locales require an electrical permit for the installation of a residential wind turbine, while other areas do not. Check with your local zoning officials about their particular requirements. If an electrical permit is required, an electrical inspector will likely visit the installation to inspect and approve of the system before it is allowed to generate. You may need to inform your local zoning authority of the successful inspection. If an electrical permit and inspection are not required, it is still a good idea to make sure that you follow all NEC rules as they apply to your system. The NEC is in place to protect against shocks and fires caused by electricity. If you ever have a problem that involves an insurance claim, and the system was not code compliant when it was installed, it is possible that your insurance company could refuse to honor your claim.

3. Regardless of whether an electrical permit and inspection are required, if you are installing a system that is interconnected with the grid, your local utility may wish to inspect your wind system. It, too, will be looking at whether the system is NEC compliant. Quite often, the utility will require that you submit a one-line diagram of the system designating all electrical components. Such a diagram might also be submitted to the zoning authority to help them understand what you are up to.

4. Also with a utility-intertied wind system, the utility will likely require that you fill out an application for its review, detailing equipment and system specifics. Upon its review and possible inspection, it will sign an interconnection agreement with you before you are allowed to operate the system on its grid.

Those four requirements are essentially out of the control of the local zoning authority, as the FAA, NEC, and local utility regulations supercede those of a local zoning authority in granting building permits. However, your local zoning officials may require that they are adhered to as conditions for obtaining a building permit. If the FAA is not an issue regarding proximity to a runway (residential wind turbines never reach 200 feet in height), and no electrical permit and inspection is required, there should

be no need for the local zoning authority to require these specifically for a residential wind system. Your wind turbine should be treated just like any other construction application.

Local building code compliance rarely covers construction projects like towers. So, there may be some confusion about what needs to be provided to the local zoning authority. However, several documents should be provided to help zoning officials understand your wind turbine project and what it entails.

1. A plot plan of your property indicating the location of any structures on your property, including the proposed location of the tower, should be drawn up and offered to the zoning authority. It is always helpful to include distances of the tower to structures on your property as well as to property lines as well as any roads or overhead utility lines. A simple diagram should be sufficient for the zoning officials to understanding what you are requesting.

2. It is always helpful – even when not required – to submit drawings or blueprints of the tower and the tower footings when requesting a building permit for a wind system. While tower foundations differ considerably from building foundations, a good, detailed blueprint will go a long way toward assuring zoning officials that your project is well thought out.

3. Even though the tower blueprint may not directly state such, you can assure the zoning officials that any commercially available tower conforms to the requirements set down by the Uniform Building Code. Otherwise, it would not be commercially available.

4. In rare cases, I have seen zoning authorities require an engineering analysis of a tower and its foundation. Even rarer, a "wet stamp" is required, meaning a state certified structural engineer has approved the tower and foundation by muddling through all of the engineering calculations for the structure. Such an engineering analysis can easily cost thousands of dollars. This is a ridiculous requirement, since any company selling towers for wind systems will have gone through the engineering just to be in business and to secure liability insurance. My experience with such requirements indicates that the zoning authority is throwing very expensive hurdles in the applicant's way, essentially to make him or her go away. This is inappropriate, to say the least, especially if such requirements are applied selectively and not across the board to all similar construction projects. If such a requirement is placed on your application, I'd suggest that you offer instead to locate the tower a distance away from any property line equal to its height. Sited that way, a failed tower will only affect your property and not your neighbor’s.

5. Another rare requirement is that a licensed wind system contractor or installer must install your wind system. No such system of licensing or certifying wind installers is in place anywhere in the U.S. at this time. Unfortunately, no one can meet this requirement.