



## STEP 9

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# E<sup>3</sup>A: Small Wind Energy Applications for the Home, Farm, or Ranch

This fact sheet identifies considerations and addresses questions about living with an installed small wind turbine.

## Insurance

Liability insurance will most likely be required by your utility for grid-connected systems. The amount of coverage required will vary. If your turbine is financed or if your home is off-grid, liability coverage may be required by your lender. Coverage will likely be required for both damage to property from the turbine and for personal injury. A property damage example: a blade comes off the rotor hub and damages a neighbor's roof. Personal injury coverage relates both to people being hurt on the generator itself, as well as possible injuries to linemen working on utility lines during an outage. Industry proponents point out that there are few examples of people being hurt or liability claims related to small wind systems. Coverage is usually required for small wind owners, nevertheless. You should budget the insurance cost for the life of the system.

Insurance for the turbine itself is another expense that should be included in your budget for the life of the system. This insurance will help to cover replacement costs in an unexpected event. In small wind, unexpected events are typically extreme winds, lightning strikes, or wild land fires. The coverage usually also addresses issues of theft, vandalism, fire caused by the system (faulty wiring, etc.), flooding, and other "acts of God." The easiest and least expensive means of insuring the turbine is often as a part of your home owners insurance. The turbine would be an appurtenant structure if it is on the same property as your home. This is the same type of coverage used for a shop, disconnected garage, or barn. Coverage costs can be inexpensive. You will need to discuss costs of coverage (as well as types of coverage if the turbine is not on the same property as your home) with your insurance agent.

## Lightning

A properly sited wind turbine will generally be the tallest structure on your property. Lightning strikes do occur on small wind systems. However, lightning protection is standard equipment for small wind turbines. Many electrical system components have protections built into them at the manufacturing facility. In addition, grounding is included in a proper installation. Guy wires should have ground rods or a concrete anchor at each point where the cable is in contact with the soil. Towers should have ground rods connect to each tower leg. Grid-connected systems have additional protections in place from the utility-side of the inverter. These protections include a ground, lightning, and voltage surge arrestors. None of the protections will prevent lightning strikes, but they will help to ensure your safety and provide protection to the system in general. This will also help to demonstrate to the insurance company and manufacturer that you have taken prudent steps to protect your system.



*Credit: Clipart.com*

## Icing and Ice Shedding

There are two main ways ice can impact your small wind system. The first is by icing system components. This can occur when weather conditions are right for ice to form, but there is no wind blowing to keep the turbine in motion. The turbine may freeze, but the icing does not typically cause damage. You can thaw the turbine, but usually system

owners wait for the ice to melt. When the system is iced, you will experience loss of energy production. The second issue is ice shedding. When ice builds on rotor blades, it will slow the aerodynamic function of the blade. In large, utility-scale equipment, the blades can have enough momentum to “throw” the ice off the blade. Small wind systems turn more slowly when iced, and usually the ice will be found at the base of the tower where it has fallen from the blades. While it is not common for ice throwing to occur with small wind turbines, some zoning ordinances do prohibit ice being thrown over property lines or onto public right-of-ways. You may wish to discuss icing and ice shedding with your manufacturer or installer to learn more about your turbine’s performance in ice situations.

## Birds and Bats

As mentioned in the Siting and Permitting Fact Sheets, there are no comprehensive studies on avian impact with small wind systems. Use common sense and do not site a wind turbine in or close to a sensitive area.

## Flicker and Noise



Credit: Clipart.com

Shadow flicker is caused when the intermittent shadow of the rotating blades pass over an object, such as a house. Shadow flicker is becoming a topic of concern in utility-scale wind, but is not often discussed in small wind. In some areas, siting restrictions are present in local

ordinances that help to ensure your turbine will not cast a flicker-causing shadow on neighboring properties. You may want to consider the possibility of shadow flicker on your own home and site the turbine accordingly.

An additional consideration is that unusual noise might indicate a problem with your turbine. Issues with bushings, yaw, or unbalanced blades will change the sound your turbine creates. Sensitivity to changes in the sound may help you to catch maintenance issues before they become more significant.

## Wind Easement

In some situations, small wind turbine owners seek to protect the wind resource on their property by insuring undisturbed flow of wind across neighboring properties. A wind energy easement is allowed under Montana law for this purpose. Considerations in developing an easement with your neighbors for your small wind turbine include:

- The agreement must be in writing, recorded and filed according to requirements for other easements on real property. Check with your County Clerk and Recorder’s office for those requirements.
- The agreement must include:
  - A legal description of the property benefited and burdened by the easement
  - Dimensions of horizontal space across and vertical space above the burdened property that must remain unobstructed
  - Types of restrictions – vegetation, structures, wind turbines or other objects that would impair the wind resource
  - Terms or conditions for changing the easement.

Your neighbors are not obligated to enter into an easement agreement with you and may expect compensation from you for the burden you are placing on their property. Legal counsel is encouraged if you intend to pursue this type of agreement.

## Property Tax Implications

Your property taxes may be impacted by the installation of a small wind system. Tax codes do change and the actual impact to your property taxes will vary according to your situation. Contact the state Department of Revenue to understand your property tax implications. Be aware that there are many property tax exemptions in place for renewable energy systems at present, but some of those exemptions expire over a set number of years. Be sure to ask if any exemptions offered will expire during the life expectancy of your system.

## References

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