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ASK THE EXPERT

We are about to move into a house located on top of a ridge and would like to know more about whether we should put up a lightning rod or some other sort of lightning protection. Also, we and the kids have several computers and other electronic equipment we wouldn't like to see zapped.

The quick answer is that installation of lightning protection would be a good idea.

A single bolt of lightning can carry more than 30 million volts of electricity, according to the Lightning Protection Institute (LPI). And lightning damage often tops the list of all homeowner insurance claims, says the Insurance Research Council, accounting for more than \$1 billion in structural damage to buildings in the United States. It can rip through roofs, explode brick and concrete and ignite fires.

Florida records more lightning strikes each year than any other state, but central and southern Arkansas lie within one of the most lightning-prone parts of the country.

Thunderstorms result from the clash between cold and warm air masses. The LPI describes lightning this way: "A cloud-to-ground lightning strike begins as an invisible channel of electrically charged ions moves from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of ions from the ground moves upward toward the cloud and produces the visible lightning strike. This interchange of oppositely charged ions from cloud to ground results in lightning striking buildings, chimneys, trees and even humans as these charges try to meet."

Lightning can act all sorts of ways other than a direct strike. It can hit utility lines and be carried through them into your house. There can be "side flashing," lightning jumping between two objects, such as from a nearby tree into your home, or within your home between separately grounded systems like plumbing and sewage pipes. When lightning reaches the ground, it spreads over the surface for a distance to neutralize the charge. How far it spreads depends on the soil structure. This creates the effect of an "electrified grid" that can affect anything – from people standing on the ground to metal piping systems.

Qualified professionals can design and install a certified lightning protection system that meets industry safety standards. Typically, such a system has several components.

- Lightning rods, technically called "air terminals," made of copper or aluminum. Lightning rods are mounted on the roof at regular intervals which are designed to intercept the lightning strike.
- Main conductors, made of braided cables of aluminum or copper, which connect the lightning rods to other parts of the system and to the ground rods.
- Ground rods, also called "grounds," are driven at least 10 feet deep in the earth. At least two of them are needed; probably more. These direct the current into

- the ground, eliminating the chance of injury to the house. If the soil is shallow, sandy or rocky, special grounding requirements may need to be met.
- Bonding joins the metallic roof components to the ground rods to ensure conductivity and prevent side flashing.
 - Surge arresters and suppressors. A surge is an increase in electrical current because of a lightning strike on or near a power line or other utility service. Surge suppression is installed at the electrical panel(s) to prevent over-voltages causing a fire. Arresters, also installed at the electrical panel(s), help protect heavy appliances and prevent fires at the service-box entrances. Additional surge protectors may be needed for computers and other electronics in your home.
 - A lightning protection system should be considered for any tree taller than your home or within 10 feet of it, not only for the tree's own value, but also because if lightning hits it, there could be a side flash into your home.

The cost of a lightning protection system varies with many factors, but one meeting code and quality standards for a two-story colonial house with 2,000 to 3,000 square feet and an attached garage would run from \$2,000 to \$3,000.

The LPI's Web site, www.lightning.org adds details and answers many other questions.

Do you have a home decorating or remodeling question? We'll get you an answer from an authority. Send your question to Marcia Schnedler, Arkansas Democrat-Gazette, P.O. Box 2221, Little Rock, Ark. 72203 or e-mail mschnedler@arkansasonline.com