

# The Homeowner's Role in Firewise

As a resident in a rural or forested area, you play a key role in wildfire protection. You are responsible for protecting your buildings and property. If you already live in, or are planning to build in rural areas, you should take fire into account. Common sense will help you plan precautions.

## The Basic Steps to Wildfire Protection

1. Understand how wildfires start and spread
2. Choose a building site that offers natural protection
3. Build a house that is fire-resistant, or improve the fire-resistance of your present house.
4. Use firewise landscaping principles to reduce a fire's ability to spread easily.
5. Follow fire-safety rules.

These steps all work together.

## Your Building Site

Choose the location of your house and the type of site carefully. The chance that your property will survive a wildfire could depend on the decisions you make. Read all the information in this article to find out how to avoid common and perhaps costly mistakes.

What if you already own a site? You can make many fire prevention improvements around your house and land, as suggested in this article.

## Choosing a New Site

### Fire Protection

You may have chosen to live in either a rural or forested area to get away from a busy city. Don't forget that the fire department may be only a small group of volunteers, located far away. Before you buy property, it is a good idea to ask local fire officials if the fire department will have trouble getting to the site that interests you. More information can be found in the subsequent section titled "access."

### Slopes

Don't be tempted to build on a hillside because of the marvelous view. It could cost you your home. Level building sites are the best protection from wildfire.

If your site is near a ridge, set your home back 30 to 100 feet (10 to 30 meters) from the crest. Clear vegetation down slope from the house and avoid narrow valleys or canyons. These act as natural chimneys during a fire, and would draw heat and flames to your home.

## Improving Sites

### Access

Firefighters need to get to your home quickly and safely. They also need room to move their equipment around.

- A gate with a strong lock could stop firefighters from reaching your home in time to save it. If you must have a locked gate, leave a spare key with your local fire agency.
- Access roads should be two-way, with broad shoulders to let emergency vehicles through. Avoid steep and winding roads. Plan grades that have no more of a rise than 10 feet in 100 feet (3 meters in 30 meters). Provide a minimum unobstructed width of 12 feet (4 meters), and a minimum unobstructed height of 14 feet (4.2 meters).
- Try to put your driveway on the downhill side of your home or the side that faces the wind. This makes a good fire barrier.
- Bridges have to be wide and strong enough to hold a fire truck. We recommend that the bridge should support a minimum weight of 40,000 pounds (18,100 kilograms). Ask your local fire officials what they require. They may have a small truck now, but could buy heavier equipment in the future. Ask them to check out bridges on your property, and on roads leading to your property.
- A turnaround is ideal for the end of your private drive or road. Make sure it is at least 100 feet in diameter. Don't park on it. Clear a separate area for parking.

### Make Your Home Easy to Find

Firefighters need to find your property quickly. At the entrance to your property put up a sign with your house number, road name, and any other needed details. Make sure the sign can be read from the main road. Use large, easy-to-read letters and numbers in a color that contrasts with the background. Keep trees and bushes cut back so that sign always stands out.

### Structures

When we think of having a home in a rural or forest area we tend to dream of a rustic wood cabin with a broad, open deck and a cozy fireplace, nestled among tall pines. To protect yourself from fire, this is not the type of structure and surroundings you want. However, if this is what you already have, you can still do a lot to make your home more "firewise."

## **Start With Design**

Your home can be firewise and still be attractive. Protective features such as smoke detectors, sprinkler systems, water taps and enclosed eaves are easy to add. If you are building or renovating, you and your architect or builder should talk to fire safety experts and have them review your plans.

## **Construction Materials**

### Roofing

Roofs are the largest surface areas exposed to airborne sparks. Studies show that sparks setting fire to wood shake roofs are the major reason for home losses in rural and forested areas. The best roofing materials are those that have the best resistance to fire.

Metal, tile, and fiberglass roofing materials offer the best protection because they are not likely to catch fire. Asphalt shingles and tarpaper are less protective because they are made of oil-based products which can catch fire when exposed to enough heat.

Wood, such as cedar shakes, offers the least protection. The smallest spark can set fire to dry, sun-baked wooden shingles. Note: fire retardants are available, but must be applied at regular intervals. Follow the manufacturer's recommendations.

### Gutters

Metal gutters are the best. Wooden and plastic gutters are a hazard. All gutters can be a danger if they are not regularly cleaned; airborne sparks can set fire to debris in them.

### Outside Walls

Like roofs, walls should be built with fire-resistant materials. Stone, brick, and metal are the best. Wood and vinyl give the least protection.

### Foundations

The foundation area of a building is often the first area to come into contact with a spreading wildfire. Stone, brick, and cement are the materials to use here. A closed foundation is safer than an open foundation.

- **Closed** - The best foundations are made of cement block or stone. The material will not burn, and fire can't be trapped under the building, where it would set fire to beams and floor bases.
- **Open** - A foundation of wood posts or cement-block pillars with no skirting around has the greatest risk and should be fire-protected. It can be improved by covering open areas with one-quarter inch (6 mm) wire mesh. If there is a good firebreak around the building (see the Landscaping section), wooden or fiberglass skirting is acceptable. Skirting also helps to reduce the accumulation of debris under the building. Note: never store flammable materials underneath.

## **Structural Hazards**

### Roofs

A flat roof hold sparks that heat up and set fire to the roof. Sparks will roll off a steep roof, but can get caught in any roof valleys or grooves.

Eaves (the projecting roof edges) should be boxed in or have little overhang. This lessens the chance of heat or flames becoming trapped there. Gutters should be cleaned regularly.

Attic and under eave vents can draw sparks into the attic, starting a fire. Under eave vents should be put near the roofline and away from the wall.

Cover all outside vents with wire mesh, not larger than one-quarter inch (6 mm). Do not use plastic or nylon mesh as it will melt and burn.

Keep chimneys above the roofline.

Roof sprinklers can give a false sense of security. Don't forget that the pumps will fail if electricity stops, high winds can blow the water away, and water pressure is often lowered when firefighters open hydrants in public water systems.

### Windows

Windows are often overlooked as fire hazards, but they can be a serious risk. Radiant heat can pass through them and set fire to curtains. More heat is radiated with large windows and they break more easily. Cracked windows shatter with heat, letting in fire and sparks.

Multi-pane windows provide insulation from trapped air and give more protection from radiant heat than single-pane windows. Tempered safety glass should be used for picture windows, sliding doors, and other large glass areas.

Protect windows from the outside with fireproof shutters. Fire-resistant draperies and metal flashing around skylights will also add protection to your home.

### Heating Systems

The choice of heating systems will not affect the survival of your home in a wildfire, but it affects the extent to which your home is a fire hazard. Heating a building with a wood-burning stove or furnace increases fire hazards and the hazard increases even more when the chimney is not insulated and has no spark arresters. Spark arresters and regularly cleaned chimneys will greatly reduce the risk of starting a fire.

## **Firewise Landscaping**

Firewise landscaping means changing, reducing, or eliminating the amount or type of fuel near your building by creating a fuel break. The fuel break should be around all buildings and be at least 30-feet wide, with more width on the downhill side of a slope.

- Clear a three-foot strip around the outside of each building, right down to sand or gravel (mineral soil). This cuts down on the threat of a surface fire burning across the area and reaching the building. This strip is the first section of your fuel break.
- Trees in the 30-foot fuel break should have all branches removed up to a height of six to 10 feet. Space the trees so that the edges of the crowns are at least 10 to 16 feet apart.
- Keep the fuel break clear of everything that could burn. Remove small trees, household debris, ground fuel, and shrubs.
- A green lawn or rock gardens are good fuel breaks. Grass must be kept watered and cut, and dead grass removed.
- Stone, brick, or masonry walls, free of vegetation, are good fire barriers. They can be located inside or outside of the fuel break area.

**Beyond the 30 foot fuel break area**, prune branches away from power lines and outbuildings. Remove ladder fuels by cutting lower branches and any dead branches. Remove small shrubs, scrub growth, ground litter and dead trees.

## **Fire-Resistant Plants**

There are no “fireproof” plants. However, many common plants naturally resist fire and are characterized by low oil content, leaves that stay moist and low ground cover litter production. While all plants will burn if conditions are severe enough, the following plants are adapted to Kentucky and have fire resistant characteristics.

### **Ground Covers/Perennials**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Comments</b>
Ajuga reptans	Ajuga, Bugleweed	Not drought tolerant. Prefer light shade
Aquilegia spp.	Columbine	Disease and insect prone; short-lived in mass plantings
Asclepias tuberosa	Butterfly weed	Drought tolerant; shade intolerant; not well adapted to mass plantings
Begonia spp.	Begonia	Succulent foliage is fire resistant; prone to mulch-induced nitrogen deficiency
Dianthus spp.	Pinks	Foliage somewhat succulent; sun tolerant; variable

		disease sensitivity
<i>Gaillardia aristata</i>	Blanket flower	Drought and sun tolerant; intolerant of moist soils.
<i>Hemerocallis</i> spp.	Daylily	Urban tolerant; tolerates various soils; resists erosion.
<i>Heuchera</i> spp.	Coralbells	Shade tolerant; grows in forest understory; variably disease resistant
<i>Hosta</i> spp.	Hosta	Tolerates variable moisture; best in partial shade; urban tolerant; variable habit
<i>Hypericum calycinum</i>	St. Johnswort	Used in erosion control; poisonous foliage; disease sensitive
<i>Iris</i> spp.	Iris	Variably moist to dry soils; sun-loving; urban tolerant
<i>Liatis</i> spp.	Blazing Star	Prairie native; drought tolerant; sun to partial shade required
<i>Mertensia virginia</i>	Virginia Bluebells	Ephemeral foliage; shade tolerant; tolerates moist soil; forms mass plantings
<i>Opuntia</i> spp.	Prickly Pear	Native to arid regions, but very climate adaptable; has spiny stems
<i>Pachysandra procumbens</i>	Pachysandra	Disease and insect resistant; shade tolerant; evergreen
<i>Paeonia</i> spp.	Peony	Sun to light shade; urban tolerant; long-lived; intolerant of wet soils
<i>Phlox</i> spp.	Phlox	Variably tolerant of shade; variably disease tolerance
<i>Rhus aromatica</i>	Fragrant Sumac	Low-growing cultivars are good for erosion control; tolerates drought
<i>Sedum</i> spp.	Sedum	Drought tolerant; shade intolerant; fire resistant foliage
<i>Veronica</i> spp.	Veronica	Full sun; well-drained soils; variable in height
<i>Vinca minor</i>	Periwinkle	Good for erosion control; tolerates drought; prefers shady locations

## Shrubs

Scientific Name	Common Name	Comments
<i>Aesculus parviflora</i>	Bottlebrush Buckeye	Well-suited for use under shade trees; stress tolerant; long-lived
<i>Aronia arbutifolia</i>	Chokeberry	Adaptable to soil type; subject to weed invasion
<i>Callicarpa americana</i>	American Beautyberry	Woodland edge plant; showy fruit
<i>Calycanthus floridus</i>	Sweetshrub	Aromatic flowers and stems; shade tolerant
<i>Cephalanthus occidentalis</i>	Buttonbush	Well suited for use in wet soils; summer flowering
<i>Chaenomeles speciosa</i>	Flowering Quince	Adaptable species; long-lived; cosmetic diseases; lightly armed
<i>Clethra alnifolia</i>	Clethra	Well suited for use in wet soils
<i>Corylus americana</i>	American Hazelnut	Adapts to various soils; shade tolerant
<i>Deutzia gracilis</i>	Slender Deutzia	Alkaline soil intolerant; shade intolerant
<i>Euonymus americanus</i>	Strawberrybush	Insect susceptible; adaptable to wet or dry soil conditions

<i>Fothergilla major</i>	Fothergilla	Requires moist, well-drained, acid soils
<i>Hamamelis virginiana</i>	Witchhazel	Adaptable to various conditions; insect sensitive
<i>Hibiscus syriacus</i>	Rose-of Sharon	Urban tolerant; reseeds readily; marginally cold hardy
<i>Hydrangea</i> spp.	Hydrangea	Plant parts are poisonous; tolerates shade; very adaptable and long-lived
<i>Ilex verticillata</i>	Winterberry Holly	Tolerates wet soils; prefers acid soils
<i>Itea virginica</i>	Sweetspire	Tolerates wet soils; requires acid soils
<i>Lindera benzoin</i>	Spicebush	Tolerates shade; has spicy-scented foliage
<i>Philadelphus coronarius</i>	Mockorange	Adapts to various soils; vase-shaped habit
<i>Physocarpus opulifolius</i>	Nine-Bark	Drought resistant; pH adaptable
<i>Prunus glandulosa</i>	Flowering Almond	Very adaptable; disease and insect sensitive
<i>Rhus copallina</i>	Shining Sumac	Tolerates poor conditions; pH adaptable; stabilizes soils
<i>Rhus glabra</i>	Smooth Sumac	Tolerates poor conditions; pH adaptable; stabilizes soils
<i>Rhus typhina</i>	Staghorn Sumac	Tolerates poor conditions; pH adaptable; stabilizes soils
<i>Sambucus canadensis</i>	Elderberry	Tolerates both wet and dry soils; shade tolerant
<i>Syringa</i> spp.	Lilac	Alkaline soil tolerant; prone to cosmetic diseases
<i>Vaccinium</i> spp.	Blueberry	Tolerates acid soils, cold temperatures and high pH
<i>Viburnum acerifolium</i>	Mapleleaf Viburnum	Tolerates shade; drought tolerant
<i>Viburnum dentatum</i>	Arrowwood Viburnum	Tolerates high pH and cold temperatures; salt tolerant
<i>Weigela florida</i>	Weigela	Urban tolerate; insect and disease tolerant

## Trees

Scientific Name	Common Name	Comments
<i>Acer</i> spp.	Maples	Tolerates a wide variety of sites and soils; disease sensitive
<i>Aesculus</i> spp.	Buckeyes/Horsechestnuts	Urban tolerant; pH adaptable; slow growing
<i>Amelanchier arborea</i>	Serviceberry	Drought tolerant; edible fruit; wound intolerant
<i>Asimina triloba</i>	Pawpaw	Tolerant of wet soils; edible fruits; urban tolerant
<i>Betula lenta</i>	Sweet Birch	Not tolerant of drought or high pH
<i>Betula nigra</i>	River Birch	Tolerates wet soils; not tolerant of high pH; cold sensitive
<i>Carpinus caroliniana</i>	American Hornbeam	Shade tolerant; urban stress intolerant
<i>Carya</i> spp.	Hickories	Shade tolerant; fast-growing; tolerates variable sites and soils

<i>Catalpa speciosa</i>	Catalpa	Tolerates many soil types – including hot, dry sites; urban tolerant
<i>Celtis laevigata</i>	Sugarberry	Tolerates many soil types and conditions; urban tolerant
<i>Celtis occidentalis</i>	Hackberry	Tolerates wind and poor soils; pH adaptable; urban tolerant
<i>Cercis canadensis</i>	Eastern Redbud	Woodland edge native; lavender blooms; short-lived
<i>Chionathus virginicus</i>	Fringetree	Tolerates partial shade and air pollution; multi-stemmed
<i>Cladrastis kentuckea</i>	Yellowwood	Heat tolerant; insect prone; adaptable to many soil types
<i>Cornus florida</i>	Flowering Dogwood	Shade tolerant; moisture, stress, insect and disease intolerant
<i>Crataegus</i> spp.	Hawthorns	Lightly to moderately armed; white to pink blooms; subject to wind throw and disease problems
<i>Diospyros virginiana</i>	Persimmon	Tolerates poor and dry soils; pH adaptable; edible fruit
<i>Fagus grandifolia</i>	American Beech	Construction intolerant; shade tolerant; long-lived
<i>Fraxinus</i> spp.	Ashes	Tolerates a wide variety of sites and soils; urban tolerant; subject to insects and fails without warning
<i>Gleditsia triacanthos</i>	Honeylocust	Tolerates drought, soil salts and high pH.
<i>Gymnocladus dioica</i>	Kentucky Coffeetree	Tolerates drought and urban conditions; irregular growth habit
<i>Halesia carolina</i>	Carolina Silverbell	Prefers moist soil; understory tree
<i>Juglans cinerea</i>	Butternut	Tolerates varied conditions; disease sensitive
<i>Juglans nigra</i>	Black Walnut	Produces allelotoxins; fast-growing, prefers good site with adequate drainage
<i>Liquidambar styraciflua</i>	Sweetgum	Tolerates moist soils; urban tolerant; messy fruit
<i>Liriodendron tulipifera</i>	Yellow-Poplar	Shade intolerant; fast-growing; prefers rich, deep soils
<i>Magnolia tripetala</i>	Umbrella Magnolia	Requires rich, deep soils; large leaves; disease sensitive
<i>Malus</i> spp.	Crabapples	Variably resistant to insect and disease problems; urban tolerant
<i>Nyssa sylvatica</i>	Blackgum	Intolerant of air pollution or alkaline soils; tolerates wet soils
<i>Ostrya virginiana</i>	Hophornbeam	Stress intolerant; understory trees; insect sensitive
<i>Oxydendrum arboreum</i>	Sourwood	Requires acid soils; urban intolerant
<i>Platanus occidentalis</i>	American Sycamore	Urban tolerant; prone to insect and disease problems; tolerates wet soils and long-lived
<i>Populus deltoides</i>	Cottonwood	Tolerates of most soil conditions; short-lived

Populus grandidentata	Big-Toothed Aspen	Tolerates dry soils; pH tolerant
Prunus serotina	Black Cherry	Tolerates most soil types; wilted foliage is poisonous to livestock
Quercus spp.	Oaks	Tolerates a variety of soil conditions and sites; construction tolerant
Robinia pseudoacacia	Black Locust	Tolerates dry soils; new growth lightly armed
Salix nigra	Black Willow	Grows in wet soils; construction tolerant
Sassafras albidum	Sassafras	Grows in a variety of sites; urban tolerant; subject to disease problems
Tilia americana	American Basswood	Urban tolerant; insect prone; pH adaptable
Ulmus americana	American Elm	Urban tolerant; susceptible to insect and disease problems; tolerant of a variety of soils
Ulmus rubra	Slippery Elm	Urban tolerant; susceptible to insect and disease problems; tolerant of a variety of soils

## Keeping Your Property Safe

Proper maintenance of your structure and the surrounding grounds helps considerably in protecting your home from wildfire. The guidelines presented here apply at any stage of construction or occupation of the site.

### Fire-Safe Storage

Store items that could easily catch fire at least 30 feet away from your home and outside your 30-foot fuel break. These items include:

- Fuel
- Firewood
- Oil and propane tanks
- Brush and slash
- Gasoline
- Paint and Solvents

Get rid of brush and slash by chipping or composting. Gasoline, paint, and solvents can be very dangerous; store these materials in a cool, well-aired area, away from other flammable materials. Clean up spills and safely dispose of soiled rags, following local environmental rules for disposal.

### Yard Waste

Don't burn yard wastes. This may start a wildfire. You can recycle materials such as grass clippings, hedge trimmings, or dead plants by plowing or roto-tilling it into your garden, or make compost or mulch with it.

### Composting

There are several ways to do this. The easiest is to put all garden and yard waste in one pile in a back corner of your property. The waste will slowly decompose (break down). If you want it to



break down faster, your environmental agency or Cooperative Extension Service office can advise you of various methods.

### Mulching

Spread garden and lawn waste in thin layers on the ground. For example, grass clippings, leaves, and compost can be placed around garden vegetables and flowers to keep down weeds and retain moisture. Mulching will also keep the soil around your plants cooler in summer and warmer in winter. Only two to three inches of mulch is necessary – in this case, more is not better. Too much mulch can actually cause problems.

If you must burn yard wastes, check with your local fire agency for fire permit regulations and safety information.

## **Fire Safe Lifestyle**

Make sure you and your family is prepared for a fire emergency.

- Keep firefighting equipment handy. This includes fire extinguishers, buckets, shovels, ladders, and lengths of hose.
- Develop a fire escape plan. Practice it with your family regularly.
- Have at least two ground floor escape exits.
- Install smoke detectors or alarms and test them monthly. Replace batteries annually, or as recommended by the manufacturer.
- Set up a fire-watch with neighbors. This can protect your home when you are not there.
- Have reliable telephones or two-way radios and keep the local number for reporting fires handily.

## **Your Home Check-up**

- Mark the entrance to your property with a sign that can be easily seen and read.
- Cut grass short around your buildings.
- Clear a three-foot strip right down to sand or gravel around all buildings.
- Create defensible space around your buildings by creating a 30-foot wide fuel break with additional space on downward slopes.
- Extend this defensible space by removing dead wood, ladder fuels, and thinning out grown beyond the 30-foot fuel break.
- Store materials that easily catch fire away from main buildings.
- Put skirting or mesh around open foundations.
- Replace wooden shingles with fiberglass ones, metal, or regularly treat the wooden shingles with a retardant.
- Put fire retardant on wood siding, or, better still, brick the outside of your home. Metal and stone are also good, fire resistant siding materials.
- Close in the ends of eaves, and put metal screens on vents.
- Insulate chimneys, and put spark arresters on them.
- Keep roofs and gutters clear of debris.
- Keep firefighting equipment handy. This includes fire extinguishers, buckets, shovels, ladders, and lengths of hose.
- Develop a fire escape plan. Practice it regularly with your family.
- Have at least two ground floor escape exits.
- Install smoke detectors or alarms and test them regularly. Replace batteries annually, or as recommended by the manufacturer.

- Set up a fire-watch in your neighborhood. This can protect your home when you are not there.
- Have reliable telephones or two-way radios and keep the local number for reporting fires handy.

### **Tips if you are planning to build or purchase in a rural or forested area:**

- Choose as flat a site as possible.
- Avoid narrow, steep, or winding roads and driveways.
- Place driveways on the downhill side of your home, or the side toward the prevailing wind, to act as a fire barrier.
- Do not build on poles or pilings.
- Use roofing and siding material that won't catch fire.
- Keep chimneys above the roofline.
- Install water taps on two sides of your home and near each outbuilding. Attach hoses to each tap.
- Use firewise landscaping techniques in the design of your yard. Using your yard to create defensible space is the most important fire safety practice.
  - Manage the vegetation to provide a fuel break of 30 feet.
  - Use fire-resistant plants.
  - Masonry walls at least two- feet high provide additional protection.

The guidelines are generally accepted in most states and provinces. However, check with your local officials to find out what local regulations may apply. Rural and forested areas sometimes have special building and zoning codes.

