COMMUNITIES *Compatible With* NATURE

Over the past century, America's population has nearly tripled, with much of the growth flowing into traditionally natural areas. These serene, beautiful settings are attracting more residents every year. This trend has created an extremely complex landscape that has come to be known as the wildland/urban interface: a set of conditions under which a wildland fire reaches beyond trees, brush, and other natural fuels to ignite homes and their immediate surroundings.

Consequently, in nearly all areas of the country, the wildland/urban interface can provide conditions favorable for the spread of wildfires and ongoing threats to homes and people.

Many individuals move into these picturesque landscapes with urban expectations. They may not recognize wildfire hazards or might assume that the fire department will be able to save their home if a wildfire ignites. However, when an extreme wildfire spreads, it can simultaneously expose dozens — sometimes hundreds — of homes to potential ignition. In cases such as this, firefighters do not have the resources to defend every home.

Wildland fires are a natural process. Making your home compatible with nature can help save your home and, ultimately, your entire community during a wildfire.

Homeowners who take proactive steps to reduce their homes' vulnerability have a far greater chance of having their homes withstand a wildfire.

The nation's federal and state land management agencies and local fire departments have joined together to empower homeowners with the knowledge and tools to protect their homes through the National Firewise Communities Program. Firewise Communities is designed to encourage local solutions for wildfire safety by involving firefighters, homeowners, community leaders, planners, developers, and others in efforts to design, build, and maintain homes and properties that are safely compatible with the natural environment. The best Firewise approach involves a series of practical steps that help individuals and community groups work together to protect themselves and their properties from the hazard of wildfire. Using at least one element of a Firewise program and adding other elements over time will reduce a homeowner's and a community's vulnerability to fire in the wildland/urban interface.

Wildland fires are a natural process. Making your home compatible with nature can help save your home and, ultimately, your entire community during a wildfire.

FIREWISE COMMUNITIES

How Homes Ignite

Wildfires are much less likely to ignite a home if the home has been prepared with simple landscaping, construction, and maintenance methods such as those recommended by the National Firewise Communities Program.

To understand a home's wildfire risk and what you can do to can protect it, first consider how wildfires spread. Wildfires do not always burn everything in their paths — fire behavior is affected by fuel, weather, and terrain. Here is a look at the role these elements play:

Fuel: Fuel includes anything that burns – trees, shrubs, grass, homes, fences, sheds, and other vegetation and structures. Fine fuels, such as dead grass and pine needles, spread fire faster than coarse fuels, such as dead twigs and branches.

- *Surface fuels* include dry grass, shrubs, pine needles, dead branches and twigs. Surface fires tend to be relatively low-intensity fires, but homes are at risk if there are continuous fuels that can burn right up to the house.
- *Ladder fuels* include tall brush, low branches, and other fuels that can carry fire from a low-intensity ground fire up into the tops of the trees, known as the crowns or canopies.
- *Crown fuels* are flammable tops of trees and tall shrubs, also called canopies. Once a wildfire becomes a crown fire, it spreads rapidly and reaches extreme intensity. Research suggests that homes must be within 100 feet of the flames to be directly ignited by a high-intensity crown fire, and breaks in tree canopies, such as roads and utilities, frequently keep high-intensity crown fire from directly reaching communities. During a high-intensity wildfire, homes are far more likely to be threatened by firebrands (burning embers) that can be carried more than a mile by strong winds and start separate fires that lead right up to the home.

Weather: Dry, windy weather contributes significantly to the spread of wildfire. Drought conditions accompanied by low humidity lead to dry vegetation that burns easily. Wind can cause wildfires to grow quickly, to die down, or to change direction. Wind can also carry firebrands long distances — up to a mile or more.

Terrain: Generally, fire moves more quickly uphill and has longer flames than on level ground or when spreading downhill. Even the direction of the slope and how much sunlight or wind an area receives can impact fire behavior.

FIREWISE COMMUNITIES

Hazard Assessment

Fire history is not a reliable indicator of fire hazard. For example, lack of recent wildfires may lead to a buildup of dry vegetation, and therefore could become a contributor to intense fire conditions. Or, a recent high-intensity fire may have removed vegetation and perhaps reduced the chances for high-intensity fire for decades to come.

The following pages outline a number of steps you, your family, and your community can take to prepare for potential wildfires. The first step is to look at the climate, vegetation, and terrain of your community to determine the hazards facing your property. The following categories are general descriptions of hazards that will help guide you when deciding how to best protect your home. Not all characteristics must be present. The category that most closely resembles the characteristics of your area determines your hazard level. For information about hazard assessment of your area, contact your local fire department or state forestry office.

Low Hazard Areas:

- *Vegetation:* Limited wildland. Forest and other heavy vegetation is not continuous and is interspersed with urban development. Area contains primarily short grass, low shrubs, light herbaceous (nonwoody) plants, such as groundcover, bedding plants, and perennials, and deciduous trees, such as aspen, poplar, maple, oak, and beech.
- *Weather:* Humid climate with a short dry season. May experience hot, dry, windy conditions, but not necessarily every year.

Moderate Hazard Areas:

- *Vegetation:* Wildland continuous around and throughout the community. Tall, heavy grass; small, flammable shrub species; and broadleaf evergreens.
- *Weather:* Periods of dry, windy conditions at least once a year. Climate includes a dry season or is in a prolonged drought.

High Hazard Areas:

- *Vegetation:* Dense vegetation surrounding the community; high-flammability vegetation and tree canopies; medium to tall evergreen broadleaf and coniferous shrubs.
- *Weather:* Multiple occurrences of dry, windy conditions throughout the year. Area in a prolonged drought, or dry climate with a dry season that lasts more than three months.

All Areas: Regardless of vegetation, weather, and terrain, the following conditions put any home at risk if a wildfire ignites in the area:

- Flammable roof (See "Firewise Home Construction").
- Flammable materials within five feet of the home such as high-flammability plants or dried leaves and pine needles.
- Continuous path of fuels within 10 feet of the home. More materials burning close to each other will lengthen the flames and cause a higher risk of igniting the home (see "A Lean, Clean, and Green Landscape").
- Firewood piles within 30 feet of the home.
- Flammable attachments, such as wood boardwalks, decks, fences, utility buildings. If it is attached to the house, consider it part of the house.

For information about hazard assessment of your area, contact your local fire department or state forestry office.

A Lean, Clean, and Green Landscape

Firewood and Propane Tanks: During cold wet seasons, it is generally acceptable to stack firewood near the home for easy access. However, during dry seasons, firewood should be kept at least 30 feet from the home. If it must be kept closer to the home, consider storing it in a fire-resistant container with an incline on the lid. Be sure to keep the area around the container clear of debris. Propane tanks should be kept 30 feet from the home or at the distance designated by local fire codes, whichever is greater. Be sure there are no flammable materials around it, such as firewood or dead leaves.

Landscaping is among the first elements of a home that others notice. The balance of colorful plants, trees, shrubs, rocks, mulch, and other landscaping materials helps establish a home's personality, and it can enhance the beauty and value of any property. If managed effectively, landscaping can also serve as a fuel break, protecting a home in the event of a wildfire.

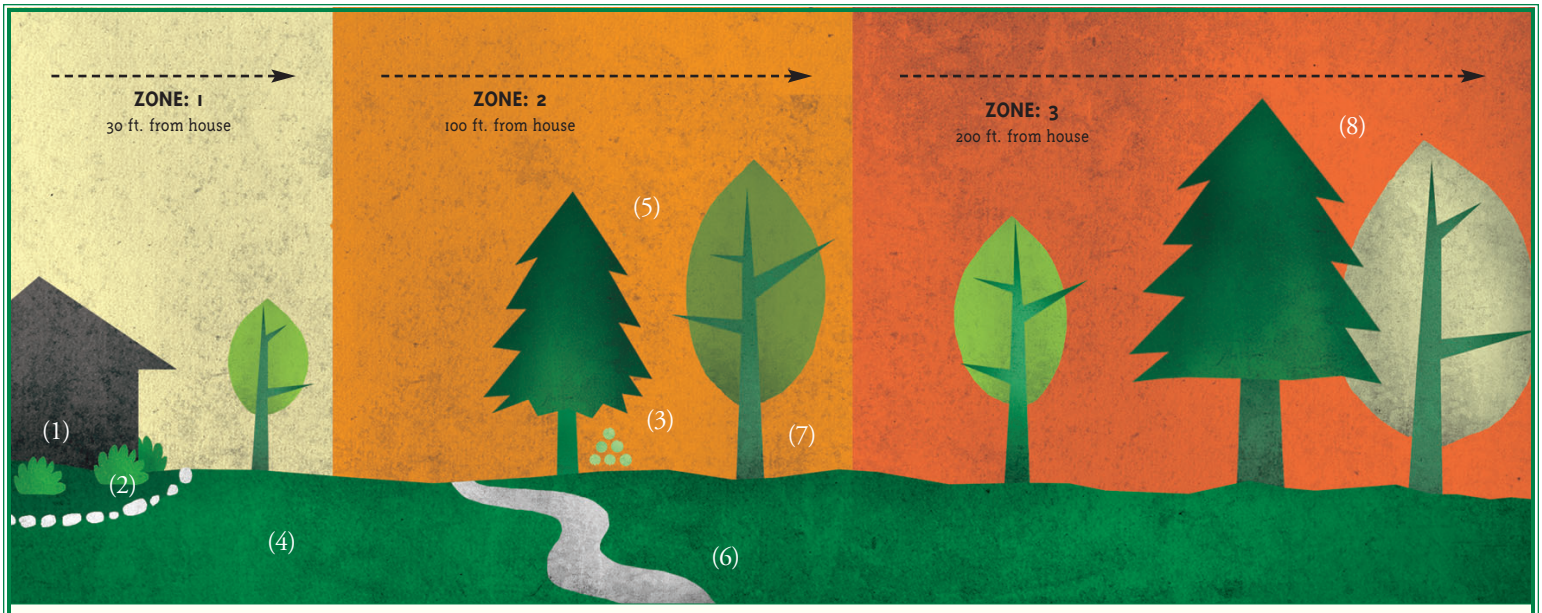
The primary goal for Firewise landscaping is fuel reduction — limiting the level of flammable vegetation and materials surrounding the home and increasing the moisture content of remaining vegetation. Firewise landscaping also allows plants and gardens to reveal their natural beauty by leaving space between individual and groups of plants and trees.

Whether conducting regular maintenance on existing landscaping or designing a new setting, the following tips can help homeowners prepare the area surrounding the home for an intense wildfire.

Consider the entire "home ignition zone," which extends up to 200 feet from the home in high hazard areas. Firewise Communities divides this area into three zones, depending on the hazard level for your area. Assess your landscaping several times a year to ensure that it is lean, clean, and green.

"Firewise measures can help make homes and landscapes as beautiful as they are safe. Today's fire-resistant building materials can be attractive and complement the area's culture and style, and Firewise landscaping techniques can actually improve the aesthetic quality of your home by clearing out dry and dead vegetation and allowing space between trees and plants."

Jim Smalley, Firewise Communities Program Manager
NATIONAL FIRE PROTECTION ASSOCIATION



ZONE 1: 30 feet adjacent to the home (All Hazard Areas)

For all hazard levels, this area should be well-irrigated and free from fuels that may ignite your home, such as dry vegetation, clutter, and debris. Flammable attachments to the home, such as wooden decks, fences, and boardwalks, are considered part of the house. The perimeter should extend 30 feet beyond these attachments.

Lean

- Plants in this area should be limited to carefully spaced plantings that are low-growing and free of resins, oils, and waxes that burn easily. For a list of low-flammability vegetation for your area, contact your state forester, forestry office, or local landscape specialist. *(1)*
- Mow the lawn regularly. Prune all trees so the lowest limbs are at least six to 10 feet from the ground.
- Space flammable conifer trees 30 feet between crowns to reduce the risk of crown fire. Remember, trees that hang over the house will deposit leaves and branches on the house and immediate area.
- Within five feet of the home, use nonflammable landscaping materials, such as rock, pavers, annuals, and high-moisture-content perennials. Be sure to remove dead leaves and stems immediately.

Clean

- Remove dead vegetation, such as leaves and pine needles from gutters, under your deck, and within 10 feet of your home. Be sure to keep the area clean of flammable debris. *(2)*
- This is generally where patio furniture, swing sets, and other accessories are located. If you live in a moderate to high hazard area, consider fire-resistant material for these accessories, and be sure to keep the area around them clear of debris. Keep patio cushions inside the house when not in use during periods of high fire potential.
- Firewood stacks and propane tanks should not be located in this area. Keep them at least 30 feet from the home. *(3)*

Green

- Water plants and trees regularly to ensure that they are healthy and green, especially during the fire season. Mulch should also be kept watered, as it can become flammable when dry. *(4)*
- Consider xeriscaping, especially in areas with low water supply and/or water-use restrictions. Xeriscaping is a popular method for conserving water through creative use of landscaping features that are fire-resistant, yet require limited irrigation. Contact your local nursery or landscape architect for more information.

ZONE 2: 30 to 100 feet from the home (Moderate and High Hazard Areas)

For moderate and high hazard areas, Zone 2 extends 30 feet to 100 feet from the home. Plants in this zone should be low-growing, well-irrigated, and less flammable.

- Leave 30 feet between clusters of two to three trees, or 20 feet between individual trees. *(5)*
- Encourage a mixture of deciduous and coniferous trees. Most deciduous trees do not support high-intensity fires.
- Give yourself added protection with "fuel breaks," such as driveways, gravel walkways, and lawns. *(6)*
- Prune trees so branches and leaves are at least 6 to 10 feet above the ground. Remove heavy accumulations of woody debris. *(7)*

ZONE 3: 100 to 200 feet from the home (High Hazard Areas)

In high hazard conditions, this area should be thinned out as well, though less space is required than in Zone 2. Remove heavy accumulation of woody debris, such as piles of stem wood or branches. Thin trees to remove smaller conifers that are growing between taller trees. Reduce the density of tall trees so canopies are not touching to reduce the ability for high-intensity crown fire to reach your home. *(8)*

Contact your state forester or landscape specialist for more information about Firewise landscaping.

FIREWISE COMMUNITIES

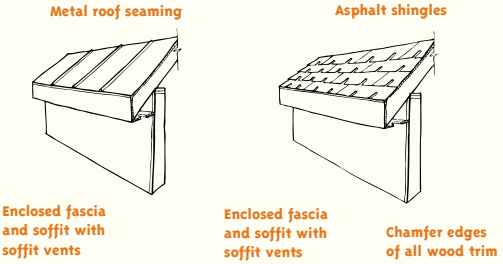
Firewise Home Construction

"When considering improvements to reduce wildfire vulnerability, the key is to consider the home in relation to its immediate surroundings, that is, consider the home ignition zone. The home's vulnerability is determined by the exposure of its external materials and design to flames and firebrands during extreme wildfires. The higher the fire intensities within the home ignition zone, and the greater the firebrand exposure from the wildfire, the more you need nonflammable construction materials and a resistant building design."

JACK COHEN,
USDA Forest Service
FIRE SCIENCES LABORATORY
MISSOULA, MONT.

Even if a landscape is designed in perfect compliance with Firewise recommendations, fire may still reach your home. For example, heavy winds can carry firebrands over the tops of trees to land on a roof. If that were to happen to your home, your home's exterior must play an important role in preventing ignitions that could lead to total home destruction. Keep in mind that the home ignition zone includes the home, in relation to its immediate surroundings within 100 to 200 feet.

Use Rated Roofing Material: The roof can be the part of your home most vulnerable during extreme wildfires. If firebrands fall on a roof with untreated, nonrated roofing, the entire roof can ignite, destroying the home. In contrast, roofing material with a Class A, B, or C rating, such as composition shingle, metal, and clay or cement tile, is fire-resistant and will help keep the flame from spreading.



Use Fire-Resistant Building Materials on Exterior Walls: Wall materials that resist heat and flames include cement, plaster, stucco and masonry, such as concrete, stone, brick or block. Though some materials, such as vinyl, are difficult to ignite, exposure to extreme heat causes a loss of integrity. These materials may fall away or melt, providing the firebrands with a direct path into the home. If your home has vinyl siding, use metal screening over openings that will become exposed if the siding falls away.

Use Double-Paned or Tempered Glass: Exposure to the heat of a wildfire can cause glass on exterior windows to fracture and collapse, allowing firebrands to enter the home. Double-paned glass can help reduce this risk by providing an added layer of protection. Tempered glass is the most effective option, as it has a higher heat tolerance and is less likely to break. For skylights, glass is less penetrable than plastic or fiberglass, which can melt at lower temperatures.

Exposure to heat from a wildfire can cause windows to break. Double-paned or tempered glass windows offer added protection

Enclose Eaves, Fascias, Soffits, and Vents: Eaves, fascias, soffits, and vents should be "boxed" or enclosed with metal screens to reduce the size of the openings. Vent openings should be screened to help prevent firebrands or other objects larger than 1/8" from entering your home.

Protect Overhangs and Other Attachments: Overhangs and other attachments, such as room additions, bay windows, decks, porches, carports and fences, are often very vulnerable to flames or firebrands. Remove all fuels from around these areas. Box in the undersides of the overhangs, decks and balconies with noncombustible or fire-resistant materials to reduce the possibility of ignition. Make sure fences constructed of flammable materials, such as wood, don't attach directly to your home. Remember: if it is attached to house, it's part of your house.

FIREWISE COMMUNITIES

Firewise Communities/USA

Firewise community projects can be as varied as residents' imaginations. Following are just a few examples of what neighborhoods can do to protect their communities.

Host a "Chipping Day" for residents to remove excess vegetation from their property, as well as community property.

Conduct Firewise landscaping and construction information sessions at a local home improvement retailer.

Modify homeowner association covenants to include Firewise concepts.

Enlist local fire staff to conduct a wildfire hazard overview at a community meeting.

Distribute Firewise information at community festivals. Include homeowner tips in community newsletters.

Firewise Communities/USA

In addition to preparing your home and family for potential wildfires, consider working with your neighbors to prepare your entire community. When a community has taken preemptive measures to prepare homes to survive a wildfire, the fire service is able to focus resources on the main body of the fire instead of individual structures.

In cooperation with National Association of State Foresters (NASF), Firewise Communities has developed a nationwide program to recognize communities that maintain an appropriate level of fire readiness.

Working with local wildland fire staff, fire-prone communities can earn Firewise Communities/USA status by meeting the following criteria:

- Enlist a wildland/urban interface specialist to complete a community assessment, and create a plan that identifies agreed-upon achievable solutions to be implemented by the community.
- Sponsor a local Firewise Task Force Committee, Commission or Department that maintains the Firewise Communities/USA program and tracks its progress or status.
- Observe a Firewise Communities/USA Day each spring that is dedicated to a local Firewise project.
- Invest a minimum of $2 per capita annually in local Firewise projects. (Work by municipal employees or volunteers using municipal and other equipment can be included, as can state/federal grants dedicated to that purpose.)
- Submit an annual report to Firewise Communities/USA that documents continuing compliance with the program.

This program is of special interest to small communities and neighborhood associations that are willing to mitigate against wildfire by adopting and implementing programs tailored to their needs. The communities create these programs themselves with cooperative assistance from state forestry agencies and local fire staff. Contact your state forestry office or visit the Firewise Communities/USA Web site *(www.firewise.org/usa)* to find out more about how to begin the assessment process.

The collaboration among the governmental agencies and our community has been remarkable. Representatives from the city, county, state and national government offered information, but no edicts. They were so willing to share their expertise, but they also were sensitive to the fact that the property being addressed is private and that we, as owners, would be making all the decisions. The Firewise program here in Hyde Park is a terrific example of government and citizenry working together with full cooperation."

Sally Butler, Resident

HYDE PARK ESTATES — SANTA FE, N.M.

Additional Resources

National Firewise Communities Program | *www.firewise.org*

The National Firewise Communities Program provides wildland/urban interface resources for firefighter safety, community planning, landscaping, construction, and maintenance to help protect people, property, and natural resources from wildland fire. Web site visitors can view streaming video; download checklists, school education materials, and other information; browse an extensive list of helpful links; and use a searchable library of national, state, and local documents on a wide range of wildfire safety issues. Communities can also contact Firewise staff for assistance in hazard planning and mitigation.

National Wildland/Urban Interface Fire Program

Federal Emergency Management Agency | *www.fema.gov*
International Association of Fire Chiefs | *www.iafc.org*
National Association of State Fire Marshals | *www.firemarshals.org*
National Association of State Foresters | *www.stateforesters.org*
National Emergency Management Association | *www.nemaweb.org*
National Fire Protection Association | *www.nfpa.org*
USDA Forest Service | *www.fs.fed.us*
U.S. Department of the Interior | *www.doi.gov*

- *Bureau of Land Management*
- *Bureau of Indian Affairs*
- *National Park Service*
- *U.S. Fish and Wildlife Service*

U.S. Fire Administration | *www.usfa.fema.gov*

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