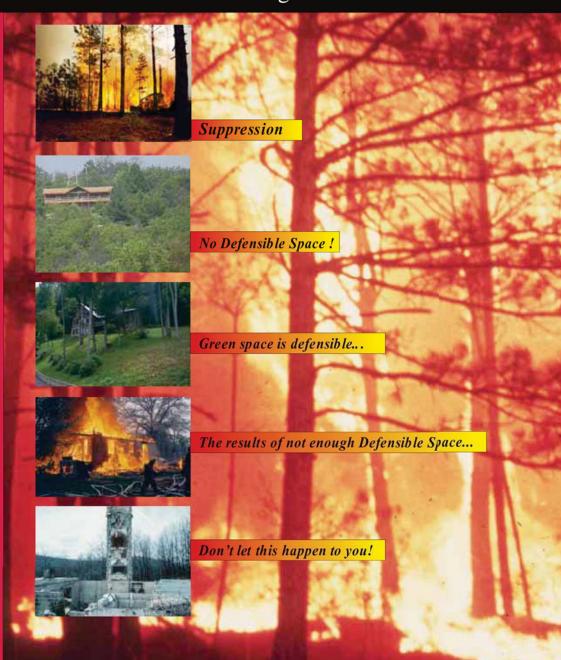


# Living With Fire

# A Guide for Protecting IIomes from Wildfire

# Alabama Forestry Commission





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# Living With Fire

# A Guide for Protecting a Home

# Fire Prevention

This publication is provided to help you (homeowners, firefighters and the general public) identify numerous activities that will help you co-exist more safely with wildfire. For additional information or assistance, contact the Alabama Forestry Commission or your local fire department.

# "When?" Not "If"

Dangerous fires do not only occur in the Western U.S., high fire activity is also common in the South. Within this hazardous environment, there are homes, subdivisions and entire communities. However, many who live near woodlands or vegetated areas are ill prepared to



The pre-fire activities implemented by this homeowner included a green and well maintained landscape, reduction of wild vegetation around the perimeter of the property, a fire-resistant roof, and a good access road with a turnaround area. As seen in the photo, these pre-fire activities were effective.

# Act, Not React

Our ability to live more safely in this environment depends on "pre-fire" activities. Research shows by being proactive before a wildfire occurs, you have a better chance of saving lives and property from wildfire.

## What To Do:

We cannot "fire proof" the forest, but we can:

- Manage the vegetation around homes to create defensible space for protection
- Use fire resistant building materials when building new or improving homes
- Help design new subdivisions using fire-safe measures
- Ensure coordination among all emergency response agencies to wildland fires



# THE FIRE ENVIRONMENT

There are three components of the fire environment that determine fire behavior:

1. Weather

2. Topography

3. Fuel

Although weather and topography cannot be changed, the fuels (or vegetation) can be modified.

Together, these environmental factors determine:

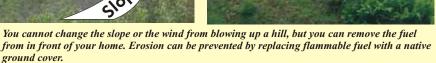
- 1. The likelihood a wildfire will start
- 2. How fast a wildfire will burn
- 3. The direction a wildfire will burn
- 4. The intensity of a wildfire
- 5. The ability to control and extinguish a wildfire

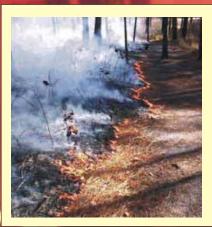
Consequently, many of our opportunities to reduce the wildfire threat rest with the proper management and manipulation of wildland vegetation.



We cannot stop the wind from blowing a wildfire.







# **Prescribed Fire:**

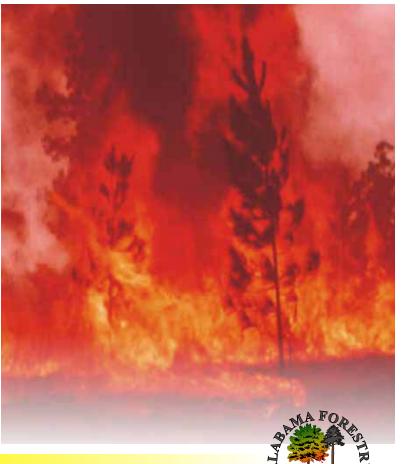


A "hazard reduction burn" is a form of prescribed fire. This type of fire is used to remove built up dead fuel from the forest floor. Burning like this on a regular basis prevents the fuels from building up, which would prevent a much hotter fire that could burn up into the crowns of the trees, destroying the trees and everything in the path of the fire.

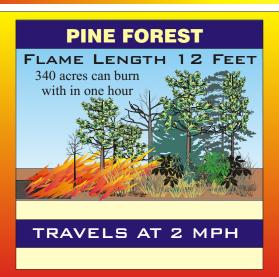
# The Limitations of Wildland Fire-fighting

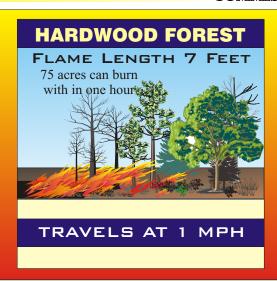


Many people assume that when a wildfire starts, it will quickly be controlled and extinguished. This is an accurate assumption 97 percent of the time. For most wildfires, firefighters have the ability, equipment and technology for effective fire suppression. But 3 percent of the time, wildfires burn so intensely that there is little firefighters can do.



# **EXAMPLES OF FIRE BEHAVIOR**





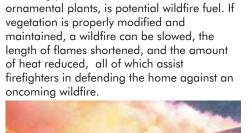
Above are two types of vegetation common to the South. These are computer generated estimates of how they would burn under certain conditions. These predictions assume a wind speed of 20 mph, flat terrain and typical moisture contents of living and dead vegetation in the spring.

# WHAT IS DEFENSIBLE SPACE?

Defensible space is the area between a house and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and to provide an opportunity for firefighters to effectively defend the house. Sometimes, a defensible space is simply a homeowner's properly maintained backyard.

# WHAT IS THE RELATIONSHIP BETWEEN **VEGETATION AND WILDFIRE THREAT?**

Many people do not view the plants growing on their property as a threat. But in terms of wildfire, the vegetation adjacent to their homes can have considerable influence upon the survivability of their houses. All vegetation, including plants native to the area as well as vegetation is properly modified and maintained, a wildfire can be slowed, the length of flames shortened, and the amount of heat reduced, all of which assist



# THE FIRE DEPARTMENT IS SUPPOSED TO PROTECT MY HOUSE, SO WHY BOTHER WITH **DEFENSIBLE SPACE?**

During a major wildfire, it is unlikely there will be enough firefighting resources available to defend every home. Firefighters may have to select homes they can most safely and effectively protect. Even with adequate resources, some wildfires may be so intense that there is little firefighters can do to prevent a house from burning. The key is to reduce fire intensity as wildfire nears the house. This can be accomplished by reducing the amount of flammable vegetation surrounding a home. The most important person in protecting a house from wildfire is the owner.

# DOES DEFENSIBLE SPACE REQUIRE A LOT OF BARE GROUND IN MY LANDSCAPE?

No. Unfortunately, many people have this misconception. While bare ground is certainly effective in reducing the wildfire threat, it is unnecessary and unacceptable due to appearance, soil erosion and other reasons. Many homes have attractive, well vegetated landscapes that also serve as effective defensible space.

# DOES CREATING A DEFENSIBLE SPACE REQUIRE ANY SPECIAL SKILLS OR EQUIPMENT?

No. For the most part, creating a defensible space employs routine gardening and landscape maintenance practices such as pruning, mowing, weeding, plant removal, appropriate plant selection, and irrigation.

**DEFENSIBLE** 

**SPACE** 

# HOW BIG IS AN EFFECTIVE DEFENSIBLE SPACE?

The necessary distance for an effective defensible space is not the same for everyone. Slope and type of wildland vegetation growing near the house will determine how much space will be needed. See the section entitled "Creating An Effective Defensible Space" for specific information.

# DOES DEFENSIBLE SPACE MAKE A **DIFFERENCE?**

Yes. Experience shows houses with an effective defensible space are much more likely to survive a wildfire. Defensible space gives firefighters a greater opportunity to effectively and safely defend the home.

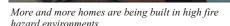
# DOES HAVING A DEFENSIBLE SPACE **GUARANTEE MY HOUSE WILL SURVIVE** A WILDFIRE?

No. Under extreme conditions, almost any house can burn. But having defensible space will significantly improve the odds of your home surviving a wildfire.

# WHY DOESN'T EVERYONE LIVING IN A HIGH WILDFIRE HAZARD AREA CREATE A DEFENSIBLE SPACE?

Some individuals believe "it won't happen to me," while others think it's costly and others are simply unaware of the benefits





# **HOW DO I CHANGE THE VEGETATION** ON MY PROPERTY TO REDUCE THE WILDFIRE THREAT?

The objective of defensible space is to reduce the wildfire threat to a home by changing the characteristics of the adjacent vegetation.

### **Defensible space practices:**

- Decrease the amount of flammable vegetation.
- Shorten plant height.
- Alter the arrangement of plants.
- Increase the moisture content of vegetation.

This is accomplished through the "Three R's of Defensible Space."

# THE THREE R's OF DEFENSIBLE SPACE

# This technique involves the elimination of entire Removal plants, particularly trees and shrubs, from the site. Examples of reduction are pruning dead wood from Reduction a shrub, removing low tree branches and mowing dried grass. Replacement is the substitution of less flammable

# Replacement

plants for more hazardous vegetation. For example, removal of a dense stand of flammable shrubs and planting an irrigated, well maintained flower bed.

# CREATING AN EFFECTIVE DEFENSIBLE SPACE



Are you worried about the wildfire threat to your home, but aren't sure how to get started in making your home defensible? Then follow these six steps to an effective defensible space...

# STEP 1: DETERMINE THE SIZE OF YOUR DEFENSIBLE SPACE

The size of the defensible space area is usually expressed as a distance extending outward from the boundaries of the house. This distance varies by the type of wildland vegetation growing near the house and steepness of the terrain.

If the recommended distance goes beyond your property boundaries, contact the adjacent property owner and work cooperatively on creating a defensible space.

The effectiveness of defensible space increases when multiple property owners work together.

# **DEFENSIBLE SPACE RECOMMENDED DISTANCES** STEEPNESS OF SLOPE **∫∏⊞Ì** [U⊞] Flat to Gently Sloping Moderately Steep Very Steep 0 to 20% 21-40% +40% **GRASSES** Wildland grasses, weeds, and 30 **50** widely scattered shrubs with grass understory. feet feet feet Water Market **VEGETATION TYPE SHRUBS** Shrubs: includes mostly small or **30** 30-60 60-100 tall shrubs and scattered trees, with grass or weed understory. feet feet feet **TREES** Trees: includes forested areas consisting of mostly trees, with shrub 30-100 100-200 30 feet feet feet

Determine the percent slope which best describes your property.

Find the type of vegetation which best describes the wildland plants growing on or near your property.

Locate the number in feet corresponding to your slope and vegetation. This is your recommended defensible space distance.

Please note: the recommendations presented in this article are suggestions made by local firefighters experienced in protecting homes from wildfire. They are not requirements nor do they take precedence

# **STEP 2: REDUCE DEAD VEGETATION**

| TYPES OF DEAD VEGETATION AND RECOMMENDED PRACTICE                          |   |  |  |  |
|--|---|--|--|--|
| IDEAD FUEL TYPE  | RECOMMENDED PRACTICE  |  |  |  |
| STANDING DEAD TREE   | Remove all standing dead trees within the defensible space area.  |  |  |  |
| DOWN DEAD TREE   | Remove down dead trees within defensible space area if<br>they have recently fallen and are not yet embedded into<br>the ground. Downed trees that are embedded into soil<br>and which cannot be removed without soil disturbance<br>should be left in place. Remove all exposed branches |  |  |  |
| DEAD SHRUBS  | Remove all dead shrubs from within the defensible space area.   |  |  |  |
| DRIED GRASSES AND WILD FLOWERS   | Once grasses and wild flowers have dried out or "cured," cut down and remove them from the defensible space area.   |  |  |  |
| DEAD NEEDLES, LEAVES, BRANCHES, CONES (ON THE GROUND)                      | Reduce thick layers of pine needles to a depth of two inches. Do not remove all needles. Take care not to disturb the "duff" layer (dark area at the ground surface where needles are decomposing) if present. Remove dead le   |  |  |  |
| DEAD NEEDLES, LEAVES, BRANCHES,<br>AND TWIGS<br>(OTHER THAN ON THE GROUND) | Remove all dead leaves, branches, twigs, and needles still attached to living trees and shrubs to height of 15 feet above ground. Remove all debris which accumulates on the roof, rain gutters and awnings on a routine basis (at least once a year).                                    |  |  |  |
| FIREWOOD AND OTHER COMBUSTIBLE DEBRIS                                      | Locate firewood and other combustible debris (wood scraps, grass clippings, leaf piles, etc.) at least 30 feet uphill from the house.   |  |  |  |



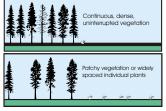
# **Recommended Separation Distance for Shrubs.**

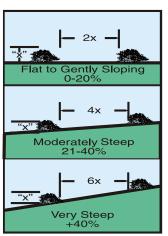
For areas with dense brush, the recommended separation distance is dependent upon shrub height and steepness of slope. Specific recommendations are presented below.

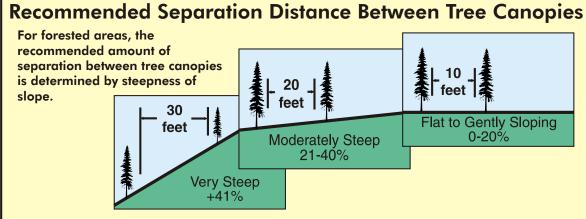
Note: Separation distances are measured between canopies (outermost branches) and not between trunks. Plants can be pruned to reduce the diameter or height (shorter height means less separation) of shrubs. For shrubs which readily resprout, pruning to reduce height may be the best approach.

# **STEP 3: PROVIDE SEPARATIONS BETWEEN PLANTS**

The more continuous and dense the vegetation, the greater the wildfire threat. If this situation is present within your recommended defensible space area, you should "break-it-up" by providing for a separation between plants or small groups of plants.







Note: Separation distances are measured between canopies (outermost branches) and not between trunks.

For example, if your house is situated on a 30 percent slope, the separation of tree canopies within your defensible space should be 20 feet. Creating separation between tree canopies can be accomplished through tree removal.

Not only are steep slopes often considered high wildfire areas, they are also highly erodible. When removing shrubs and trees from steep slopes, keep soil disturbance to a minimum. Also, it may be necessary to replace flammable vegetation with other plant materials to prevent excessive soil erosion.

# **STEP 4: REMOVE LADDER FUELS**

Vegetation is often present at varying heights, similar to the rungs of a ladder. Under these conditions, flames from fuels burning at ground level, such as a thick layer of pine needles, can be carried to shrubs which can ignite still higher fuels like tree branches. Vegetation that allows a fire to move from lower growing plants to taller ones is referred to as "ladder fuel." The ladder fuel problem can be corrected by providing a separation between the vegetation layers.

Within the defensible space area, a vertical separation of three times the height of the lower fuel layer is recommended.

For example, if a shrub growing adjacent to a large pine tree is three feet tall, the recommended separation distance would be 9 feet (3 feet shrub height x = 9 feet). This could be accomplished by removing the lower tree branches, reducing the height of the shrub, or both. The shrub could also be removed.

# **STEP 5: MAKE YOUR DEFENSIBLE** SPACE "LEAN, CLEAN, AND GREEN"

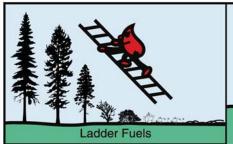
The area immediately adjacent to your house is particularly important in terms of an effective defensible space. It is also the area that is usually landscaped. Within an area extending at least 30 feet from the house, the vegetation should be kept:

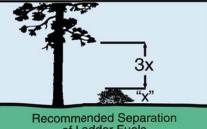
- Lean small amounts of flammable vegetation.
- Clean no accumulations of dead vegetation or other flammable debris, and
- Green plants are healthy and green during the fire season.

# **STEP 6: MAINTAIN DEFENSIBLE SPACE**

Keeping your defensible space effective is a continual process. At least annually, review these defensible space steps and take action accordingly. An effective defensible space can be quickly diminished through neglect.







of Ladder Fuels

# Is Your Home At Risk?

*Use the following scale to determine whether* vour house is at risk from wildfire.

| Y | ΟU | JR | LAN | D | IS: |
|---|----|----|-----|---|-----|
|   |    |    |     |   |     |

1 point Gentle slope 3 points Steep slope 5 points

# **VEGETATION WITHIN 30 FEET OF YOUR HOUSE**

Grass/open area 1 point Mature oak/pine 2 points Medium undergrowth 3 points Heavy undergrowth 5 points

# **ROOFING:**

Fiberglass, tile, metal, etc. 1 point Composition 3 points Wood 5 points

SUBTOTAL:

# ADD 1 POINT EACH FOR ANY OF THE FOLLOWING **CONDITIONS AT YOUR HOME:**

Open wood deck or porch House on stilts Natural wood siding Combustible materials next to house

1 point point

1 point

1 point\_

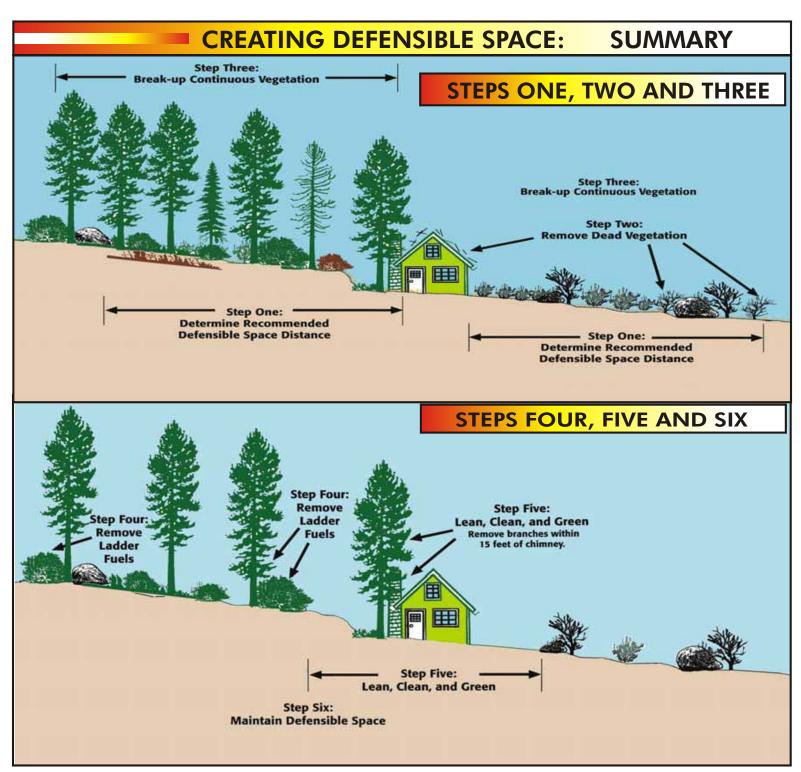
TOTAL:

How does your house add up? If you tallied 3 points, consider your home a low risk from wildfire. Four to six points, a medium risk. Seven to 10 points, a high risk. Eleven or more, an extreme risk.

If your house is at risk, do something about it! Use the guidelines in this booklet, or call your county forest ranger and your fire department for suggestions.







Be aware of areas where timber damage has occurred. Hurricanes, tornadoes, ice storms, insect and disease outbreaks strike some where in the south every year. These damaged areas may become dangerous situations during a wildfire due to concentrations of fuel.

# Storm, Insect and Disease Damaged Areas

Such "hotspots" serve as a source of flying sparks. Glowing embers may be sent very high by the increased convention and fall far down wind. These "firebrands" might set spot fires across a firebreak or even land on rooftops

Tips on mitigating fire hazards in timber-damaged areas on your property:

Salvage merchantable timber Haul, chip or scatter the debris Prescribe burn only under safe conditions Exercise caution when working around areas where timber damage has occurred. anger items include broken tops, twisted trunks, hanging limbs, or tensioned limbs that might spring when released. These situations also make fire suppression more difficult.

# FIRESCAPING--

# "FIRE SMART" LANDSCAPE DESIGN

Firescaping is landscape design that reduces a home's vulnerability to wildfire. The goal is to develop a landscape that offers the best fire protection and enhances the beauty of the property.

The ideal design involves surrounding the house with things that are less likely to burn, creating a defensible space around a home.

Planning this type of landscape is best done when a home is built, but appropriate manipulation of existing landscapes can make a significant contribution towards wildfire survival.

- √ Choose "fire smart" species.
- ✓ Choose safe places to plant.
- ✓ Keep plants and trees well pruned, thinned, and maintained.
  ♠ FOx

COMMISSION

# **CREATING FUEL BREAKS**

In Firescaping, the open spaces are more important than the plants.

Landscaping features used to reduce the amount of flammable fuels near a home and create a fire break include:

- Open lawns;
- Driveways, walkways, parking areas;
- Patios with masonry or rock planters;
- Fences constructed of nonflammable materials such as rock, stone, or cement;
- Water features, pools, ponds, or streams and
- Areas with rock mulches. Be creative with boulders, riprap, dry stream beds.

# "FIRE SMART" PLANTS

There are no fire proof plants, but some are more fire resistant than others.

These "fire smart" plants:

- Are less likely to ignite from a wildfire.
- Burn less intensely when they do ignite, and spread the fire slower.
- Are lower growing or smaller.
- Have stems and leaves that are <u>not resinous, oily, or waxy.</u>
- Have a high moisture content.
- Easy to maintain and prune.
- Have less accumulated debris and fewer dead branches.
- Have an open, loose branching habit.
- Are drought resistant, requiring less irrigation.

# PLACEMENT AND MAINTENANCE

"The location of plants in your yard should always be carefully planned."

- The arrangement, spacing and density of plants, shrubs and trees that grow around the house can be more crucial than what species are planted.
- When planning tree placement, remember their size at maturity.
- Keep tree limbs 15 feet from chimneys, power lines and structures.
- A single bush or tree can be dangerous if it catches fire from flying embers, especially if it's within 10 feet of a window.
- Proper maintenance is vital to remove excess debris. Lack of maintenance can make plants more flammable.



# **SOME COMMON FIRE RESISTANT PLANT**

**LESS IS BETTER...** When designing a landscape for fire safety, remember that less is better. You can do this by simplifying visual lines and reducing the number of plant groupings. A fire smart landscape lets plants and garden elements reveal their innate beauty by leaving space between plants and groups of plants. In firescaping, the open spaces are more important than the plants.

<u>Large Trees</u> <u>Medium Trees</u> <u>Shrubs</u> <u>Ground Cover</u>

Oaks Maples Ash Hickory Yellow Poplar Dogwood Crepe Myrtle Persimmon Apple and Crabapple Maples

Holly Nandina Witch Hazel Azalea Star Magnolia Periwinkle Pachysandra Jasmine

Creeping Phlox Liriope

FOR A MORE COMPLETE LIST OF PLANTS OF THE SOUTH, VISIT www.ext.vt.edu/pubs/turf/430-300/lists.html

# OTHER CONSIDERATIONS IN MAKING YOUR HOME DEFENSIBLE

#### 1. ROOF

- Remove dead branches overhanging your roof.
- Remove any branches within 15 feet of your chimney.
- Clean all dead leaves and needles from your roof and gutters.
- Cover your chimney outlet and stovepipe with a nonflammable screen of ½ inch or smaller mesh.
- When building a home, install a roof and subroof that meets a fire resistant classification. Metal, tile and asphalt roofing materials are more fire resistant than wooden shingles.

#### 2. CONSTRUCTION

- Build your home set back at least 30 feet and away from ridge tops, canyons and areas between high points on a ridge.
- Build your home at least 30 feet from your property line.
- Use fire resistant building materials.
- Enclose the underside of balconies and above-ground decks with fire resistant materials.
- Limit the size and number of windows in your home that face large areas of vegetation.
- Use tempered glass for large, vulnerable windows.
- Consider sprinkler systems within the house. They may protect your home while you're away or prevent a house fire from spreading into the wildlands.

#### 3. LANDSCAPE

 See "Creating An Effective Defensible Space" and "Firescaping- Fire Smart Landscape Design."

#### 4. YARD

- Stack woodpiles at least 30 feet from all structures and clear away flammable vegetation within 10 feet of woodpiles.
- Locate gas tanks (butane and propane) at least 30 feet from any structure and surround them with 10 feet of clearance.
- Remove all stacks of construction materials from your yard.
- Obey local burning laws.
- Compost or mulch pine needles, leaves and grass clippings.

# THE WOOD SHAKE AND SHINGLE ROOF HAZARD

A house can be threatened by a wildfire in three ways: direct exposure to flames, radiated heat, and airborne embers. Of these, embers account for the majority of homes burned by wildfire. The most vulnerable part of a house to flying embers is the roof.

Because of its angle, the roof can catch and trap theses embers. If the roof is constructed of combustible materials such as untreated wood shakes and shingles, the house is in jeopardy of igniting and burning.

Not only are combustible roofing materials a hazard to the structure on which they are installed, but also to other houses in the vicinity. Embers from burning wood shakes can be carried blocks away and land on other flammable materials and combustible roofs.

Unfortunately for homeowners with existing combustible roofs, there are no reliable long-term measures available to reduce roof vulnerability to wildfire other than re-roofing with fire resistant



One spark on this roof could be a disaster. Wooden shingles and leaf litter is hazardous combination.

 Where burn barrels are allowed, clear flammable materials from at least 10 feet around the barrel; cover the open top with a non-flammable screen with mesh no larger than 1/4 inch.

### 5. EMERGENCY WATER SUPPLY

- Maintain an emergency water supply that meets fire department standards through one of the following:
  - o a community water/hydrant system
  - a cooperative emergency storage tank, pools or ponds may be used
  - a minimum storage supply of 2,500 gallons on your property
- Clearly mark all emergency water sources and notify your local fire department of their existence.
- Create easy firefighter access to your closest emergency water source.
- If your water comes from a well, consider an emergency generator to operate the pump during a power failure.



#### ACCESS

- Identify at least two exit routes from your neighborhood.
- Construct driveways to allow large emergency equipment to reach your house.
- Clear flammable vegetation at least 10 feet from roads and five feet from driveways.
- Post your house address at the beginning of your driveway, or on your house if it is easily visible from the road.

#### 7. OUTSIDE

- Designate an emergency meeting place outside your home.
- Practice emergency exit drills regularly.
- Make sure that electric service lines, fuse boxes and circuit breaker panels are installed and maintained as prescribed by code.
- Contact qualified individuals to perform maintenance and repairs.

# ACCESS STANDARDS FOR DEVELOPMENT

- Construct roads that allow two-way traffic.
- Design road width, grade and curves to allow access for large emergency vehicles.
- Design bridges to carry heavy emergency vehicles, including bulldozers carried on large trucks.
- Post clear road signs to show traffic restrictions such as dead-end roads and weight and height limitations.
- Make sure dead-end roads and long driveways have turnaround areas wide enough for emergency vehicles. Construct turnouts along oneway roads.
- Cut back overhanging tree branches above roads.
- Make sure your street is named or numbered, and a sign is visibly posted at each intersection.
- Make sure that your street name and house number are not duplicated elsewhere in the county.

# WHEN WILDFIRE APPROACHES

Should a house be threatened by wildfire, the occupants may be advised to evacuate by a fire or law enforcement official. The purpose of evacuation is to protect people from life-threatening situations.

# PROTECT YOUR FAMILY

- Contact a friend or relative and relay your plans.
  - Evacuate all family members, as well as pets.
  - Make sure family members are aware of the prearranged meeting place.
- Tune into a local radio station and listen for instructions.
- Place vehicles in the garage, have them pointing out, and roll up windows.
- Place valuable papers and mementos in the car.
- Close the garage door, but leave it unlocked. If applicable, disconnect the electric garage door opener so that the door can be opened manually.
- Wear only cotton or wool clothes. Proper attire includes long pants, long sleeved shirt or jacket, and boots. Carry gloves, a handkerchief to cover face, water to drink, and goggles.

#### PROTECT THE EXTERIOR OF YOUR HOME

- Place combustible patio furniture in the house or garage.
- Shut off propane at the tank or natural gas at the meter.
  - Prop a ladder against the house so firefighters have easy access to the roof.
- Make sure that all garden hoses are connected to faucets and attach a nozzle set on "spray"
- Soak rags, towels, or small rugs with water to use in beating out embers or small fires.
- Keep wood shake or shingle roofs moist by spraying water. Do not waste water. Consider placing a lawn sprinkler on roof if water pressure is adequate. Do not turn on until burning embers begin to fall on the roof.

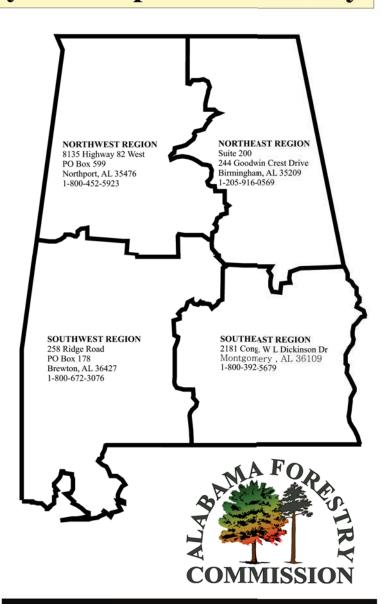
#### PROTECT THE INTERIOR OF YOUR HOME

- Close all exterior doors and windows.
- Close all exterior vents.
- Close all interior doors.
- Inside, fill bathtubs, sinks, and other containers with water. Outside, do the same with garbage cans and buckets. Remember that the water heater and toilet tank are available sources of water.
- Open the fire place damper, but place the screen over the hearth to prevent sparks and embers from entering the house.
- Leave a light on in each room.
  - Remove lightweight and/or non-fire resistant curtains and other combustible materials from around windows.
- If available, close fire resistant drapes, shutters, or venetian blinds. Attach pre-cut plywood panels to the exterior side of windows and glass doors.
- Turn off all pilot lights.
- Move overstuffed furniture (e.g. couches, easy chairs, etc.) to center of the room.
- Continually check the roof and attic for embers, smoke or fire.



# To report a wildfire, call 911

or the toll-free number in the front of your telephone directory.



www.forestry.alabama.gov