

# LIVING WITH FIRE



## HOMEOWNERS' FIRESAFE GUIDE FOR MONTANA 2009



# LIVING WITH FIRE

The solution to Montana's wildfire crisis is to create communities that can survive wildfire. Montana must learn to live with fire. Based on recent history and experience, Montana possesses all of the characteristics necessary to support large, intense, and uncontrollable wildfires.

Within this hazardous environment are individual houses, subdivisions, and entire communities. Many homes, however, are ill-prepared to survive an intense wildfire. It is not a question of "if" a wildfire will occur but when. As such, the potential of losing human lives and properties are growing.

Our ability to live more safely in this fire environment depends on pre-fire activities. These are actions taken before a wildfire occurs that improve the survivability of human lives and homes. It is important to remember that there are no guarantees when wildfires meet extreme conditions.

The look of our Montana forests has changed dramatically in the last several decades. In many instances, trees are far more numerous. This change has led to destructive fires in recent years. The buildup of fuel coupled with recent insect and disease outbreaks has greatly increased potential for severe wildfires. Climatic factors such as drought and warmer temperatures also play a role.

This guide provides the homeowner with an effective approach to prevent home ignition in the event of wildfire, built on the survivable space concept (see page 17). It features a series of management zones with prescribed treatments, a graphic summary for protecting a home from wildfire, and a checklist of pre-fire activities. The reader will also find the wildfire emergency guidelines useful.



*The pre-fire activities implemented by this homeowner include a maintained landscape, use of fire resistant plants, reduced vegetation around the home, and fire resistant roofing materials.*

## FIRESAFE MONTANA

FireSafe Montana, is a non-profit, statewide public/private organization designed to educate the public about wildfire safety and fuels reduction programs that prevent and mitigate wildfires. FireSafe Montana also assists Montana communities to develop local FireSafe Councils. FireSafe Montana is your first link to mitigation information. We join a growing number of non-governmental state FireSafe Councils around the Western U.S, providing support and assistance to citizens.

FireSafe Montana functions as a statewide clearinghouse, advocate, and focal point for FireSafe activities in the state. Educational materials and technical information are available to you through our resource-rich website [www.firesafemt.org](http://www.firesafemt.org).

The mission of FireSafe Montana is to assemble diverse interests in a coalition that will work together on solutions to reduce the loss of lives and property from wildfire in and around Montana's communities. We strive to mobilize Montanans to make their homes, neighborhoods, and communities fire safe. One of our first goals is to assist in the formation and development of local FireSafe Councils throughout the state to address neighborhood wildland fire threats. These councils can help provide the awareness, motivation, expertise, and resources to do the job that will help Montana communities survive wildland fire. For information about FireSafe Montana and how to form a FireSafe Council in your area, call 406-431-8718.



# Fire Behavior

## EXTREME CONDITIONS IN THE FIRE ENVIRONMENT

Three factors influence extreme wildland fire behavior: **WEATHER, TOPOGRAPHY, AND FUEL**

These components affect and increase the likelihood of a fire starting, the speed and direction at which a fire will travel, the intensity at which it burns, and the ability to control and extinguish it. We cannot realistically change weather or topography, but fuels (or vegetation) can be modified. Opportunities to reduce wildfire risk lie in proper management of vegetation and use of building materials.

### OVERSTOCKED FUEL



### THE HUMAN ENVIRONMENT

**EXTREME TOPOGRAPHY**

**EXTREME WEATHER**



#### FUEL

Fuel is required for any fire to burn. In regards to wildland fire, fuels consist of live and dead vegetation, such as trees, shrubs, grasses and their debris. Structures also become a potential source of fuel when they are in the vicinity of a wildfire. The amount of fuel, its moisture content, arrangement, and other characteristics influence fire behavior.



#### WEATHER

Dry, hot, and windy weather increases the likelihood of a major wildfire occurring. These conditions make ignition easier, allow fuels to burn more rapidly, and increase fire intensity. High wind speeds, in particular, can transform a small, easily controllable fire into a catastrophic event in a matter of minutes.



#### TOPOGRAPHY

Since heat rises, steepness of slope greatly influences fire behavior and rate of fire spread. Slopes with south and southwest aspects tend to be drier and more prone to ignition. Steep, narrow drainages and canyons act like chimneys when wildfires occur.



#### HUMAN

When people choose to build or buy homes in high-hazard fire areas their homes are potential fuel. Untreated wood shake and shingle roofs, narrow roads, limited access, lack of firewise landscaping, inadequate water supplies, and inadequately planned subdivisions increase the risk of wildfire to people and their property.

# EXAMPLES OF FIRE BEHAVIOR

Presented below are five types of vegetation common to Montana. Computer-generated estimates are shown to demonstrate how vegetation would burn under the following conditions: wind speed of 20 mph, flat terrain, and typical moisture content of living and dead vegetation in the summertime.



**FLAME LENGTH 8 FEET**  
**3,000 ACRES CAN BURN IN ONE HOUR**  
**TRAVELS AT 4 1/2 MPH**

**GRASS:** Native grasslands occur throughout the state. Grasses can dry out rapidly and burn quickly, creating fast, low-intensity fires. Grasses and invasive plants (weeds) may act as carriers of fire in other vegetation types.



**FLAME LENGTH 22 FEET**  
**3,400 ACRES CAN BURN IN ONE HOUR**  
**TRAVELS AT 6 1/2 MPH**

**SAGEBRUSH:** Big sagebrush is the dominant shrub in this type with an understory of cheatgrass, bunch grass, and wildflowers. Large amounts of dead woody material are present.



**FLAME LENGTH 10 FEET**  
**150 ACRES CAN BURN IN ONE HOUR**  
**TRAVELS AT 1 1/2 MPH**

**OPEN PINE FOREST:** This type consists of open, park-like ponderosa pine, interspersed with firs and other coniferous trees. The understory consists of pine needles, often dense saplings, twigs, old logs, and grass.



**FLAME LENGTH 9 FEET**  
**15 ACRES CAN BURN IN ONE HOUR**  
**TRAVELS AT 1/2 MPH**

**DENSE CONIFER FOREST:** Thick stands of mature pine, fir, and other conifers. There are mixed layers of vegetation among young trees, seedlings, and shrubs. Large amounts of dead and down woody material, needles, and organic matter on the forest floor.



**FLAME LENGTH 27 FEET**  
**650 ACRES CAN BURN IN ONE HOUR**  
**TRAVELS AT 1 3/4 MPH**

**DENSE CONIFER REPRODUCTION:** Thick stands of young conifers. The understory consists of pine needles, grass, and sagebrush in the open areas.

## FIRESAFE MONTANA TIP

- Fire behavior will vary as wind, slope, and moisture content change.
- Within these vegetation types the fire behavior can change. An example being a surface fire moving to a crown fire, which will increase flame length and rate of speed.

# EXTREME CONDITIONS

## EXTREME CONDITIONS INTENSIFY RISK IN THE FIRE ENVIRONMENT

- ✓ **Steep Topography**
  - South & East Facing Slopes
- ✓ **Red Flag Conditions**
  - High Winds
  - High Temperatures
  - Low Relative Humidities
  - Lightning Potential
- ✓ **Heavy Fuel Loads Near Structures**
- ✓ **Long Access Routes with Heavy Fuel Loads and/or Mid-Slope**
- ✓ **No Safety or Survival Area at Structures**
- ✓ **Multiple Large Fires in the Area or State**



Many people assume that when a wildfire starts, it will be quickly controlled and extinguished. This is an accurate assumption 97% of the time. For most wildfires, firefighters have the ability, equipment, and technology for effective fire suppression. Three percent of the time wildfires burn so intensely that there is little firefighters can do. Even airtankers and helicopters cannot be expected to save every home in these cases.

## MONTANA'S FIRE ENVIRONMENT

Wildland fires are an integral part of many ecosystems throughout Montana. These ecosystems often exhibit adaptations to recurring fire. Lightning, volcanoes, and aboriginal people sustained a continuing interaction between wildland fires and ecosystems over millennia.

Periodic forest, shrubland, and grassland fires are part of our natural environment—as natural and vital as rain, snow, or wind. Evidence of past fires and their periodicity is found in charcoal layers in lakes and bogs; and in the fire-scarred cross sections of trees.

Fire-adapted ecosystems in Montana are termed fire-dependent, recurring fire disturbances are essential to their functioning. Numerous examples have been documented on how fire affects the functioning of ecosystems: regulating plant succession; regulating fuel accumulations; controlling age, structure, and species composition of vegetation; affecting insect and disease populations; influencing energy cycles and energy flows; and determining habitats for wildlife.

The plants and animals we enjoy in Montana generally are present because of past fires, not because we have tried to exclude fire. Plants and animals have adapted to their fire environment in a compatible manner. The question for us is simply this: Can those who live in the interface do the same?

# SURVIVABLE SPACE

## WHAT IS SURVIVABLE SPACE?

Survivable space has evolved from the term defensible space (see page 17). Survivable space is the modification of landscape design, fuels, and building materials that make a home ignition caused by wildfire unlikely, without direct firefighter intervention. The size of the survivable space area is usually expressed as a distance extending outward from the structure and all attachments, such as a deck. This distance varies by the type of wildland vegetation growing near the house and steepness of the terrain.

On the “Vegetation and Slope Influence” chart presented below, find the vegetation type and percent slope that best describes the area where your house is located. Then find the recommended survivable space distance for your situation.

For example, if your property is on flat land surrounded by grassland, your survivable space distance will extend out at least 30 feet from the sides of the house. If your house sits on a 25 percent slope

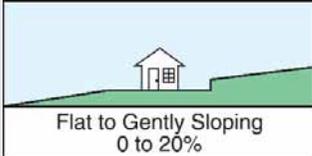
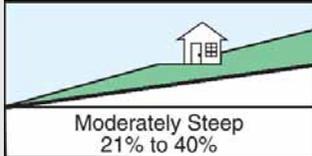
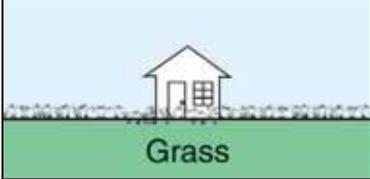
and the adjacent wildland vegetation is shrubs, you will need to reduce hazardous fuels out at least 200 feet from your home.

If the recommended distance goes beyond your property boundaries, contact the adjacent property owner to work cooperatively on creating survivable space for both properties. The effectiveness of survivable space increases when multiple property owners work together. FireSafe Montana can provide assistance if the owners of adjacent properties are unknown. Do not work on someone else’s property without their permission.

Temporarily mark the recommended distance with flagging tied to shrubs, trees or stakes around your home. This will be your treatment area for survivable space.

Please note that these are recommendations made by professional fire managers and firefighters experienced in protecting homes from wildfire. They are not requirements nor do they take precedence over local ordinances.

## VEGETATION AND SLOPE INFLUENCE

		RECOMMENDED DISTANCES - STEEPNESS OF SLOPE		
		 Flat to Gently Sloping 0 to 20%	 Moderately Steep 21 to 40%	 Very Steep +40%
VEGETATION TYPE	 Grass Wildland grasses (such as cheatgrass), weeds, and widely scattered shrubs with grass understory.	<b>30 feet</b>	<b>100 feet</b>	<b>100 feet</b>
	 Brush Includes shrub dominant areas such as sagebrush.	<b>100 feet</b>	<b>200 feet</b>	<b>200 feet</b>
	 Trees Includes forested areas. If substantial grass or shrub understory is present, use those values shown above.	<b>30 feet</b>	<b>100 feet</b>	<b>200 feet</b>

# HOME IGNITION ZONE

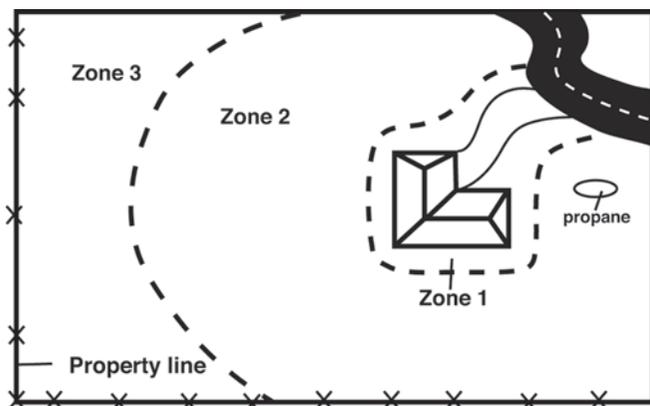


Figure 1: The home ignition zone showing the three survivable-space zones around a home or other structure.

Your house is more likely to withstand a wildfire if grasses, brush, trees, and other natural and man-made fuels are managed to reduce a fire's intensity. The Home Ignition Zone refers to the home itself and the immediate surrounding 30 to 200 feet. Survivable Space is the modification of landscape design, fuels, and building materials within the home ignition zone to make an ignition caused by wildfire unlikely, without direct firefighter intervention. Create a survivable space around your structures by removing, reducing, relocating, and replacing fuels and vegetation to slow the spread of wildfire. Include detached garages, storage buildings, barns, and other structures in your plan. Survivable space involves developing a series of management zones in which different treatments are used. Not all properties extend into each zone. See Figure 1 for a general view of the relationships among these management zones.

## ZONE 1

### INTENSIVE FUEL REDUCTION ZONE

This is the area of maximum modification and treatment. It consists of an area of at least 30 feet around the structure in which flammable materials and vegetation are removed and replaced with non-flammable decking or decorative stone and well-placed fire-resistant plants and groundcover. This distance is measured from the outside edge of the home's eaves and any attached structures, such as decks or stairways.

- Trees here are considered part of the structure, the fewer the better, and are at least 10 feet from the structure. Choose deciduous trees over coniferous or fire-prone trees.
- Remove "ladder fuels" from beneath trees.
- Keep plantings within 3 to 5 feet of the walls to a minimum, especially if structure sides are flammable. Decorative gravel, flagstone or concrete decking is recommended in this area.
- Dry grass next to flammable structural components can easily ignite and carry fire that may cause a home ignition.
- Succulent plants and other low growing, fire-resistant plants and groundcover are acceptable.
- Do not stack firewood or store other combustibles in this zone.
- Remove branches overhanging or touching the roof to a distance of at least 10 feet. Remove all branches within 15 feet of the chimney.

**In Zone 1, remove the "fuses" or receptive ember beds next to or near structures that provide opportunity for wildfire and embers to cause home ignition. Common fuses include dry grass, stacked firewood, ladder fuels, and fire-prone plants such as juniper.**

### ZONE 1 FIRESAFE MONTANA TIPS

- Avoid using high resin, fire-prone plant materials, as burning embers and ground fires can easily ignite them.
- Succulent plants and ground covers are good choices, as are flowerbeds and vegetable gardens.
- Broadleaf and/or deciduous trees are also good choices. Try to plant trees so that branches do not reach the structure, or prune branches back at least 10 to 15 feet away, especially near chimneys.
- Keep grasses and lawns mowed short and at least 3 to 5 feet away from structures, as they dry out quickly during fires and can be ignited easily by embers.
- Look for fuel ladders of any sort, from plants to building materials, and rearrange or remove plants or other fuels as necessary.
- Using gravel, flagstone, or non-flammable decking adjacent to structures can be an effective strategy to reduce the possibility of home ignition.



## SURVIVABLE SPACE MANAGEMENT ZONES

### ZONE 2 MODERATE FUEL REDUCTION ZONE

The size of Zone 2 depends on the slope of the ground where the structure is built. Typically, survivable space should extend at least 100 feet from the structure. Within this zone, the continuity and arrangement of vegetation is modified. Remove stressed, diseased, dead or dying trees, and shrubs. Thin and prune the remaining larger trees and shrubs. Be sure to extend thinning along either side of the driveway all the way to the main access road. These actions help eliminate continuous fuel surrounding a structure while enhancing fire safety and the aesthetics of the property.

- Thin trees and shrubs at least 10 feet between crowns, more if on a steep slope. Crown separation is measured from the outermost branch of one tree to the nearest branch on the next tree.
- Prune under large trees to a height of 10 feet. Remove ladder fuels from under trees.
- Locate propane tanks at least 30 feet from any structures, preferably on the same elevation as the house. Keep flammable vegetation at least 10 feet away from these tanks. Do not screen with shrubs or vegetation.
- Stack firewood and woodpiles at least 30 feet away and uphill from structure. Keep flammable vegetation at least 10 feet from woodpiles.
- Dispose of slash (limbs, branches and other woody debris) removed from your trees and shrubs by chipping or by piling and burning. If desired, no more than two or three small, widely spaced brush piles may be left for wildlife purposes. Locate these towards the outer portions of your survivable space.

#### ZONE 2 FIRESAFE MONTANA TIPS

- Use broadleaf trees to replace or buffer native pines and junipers in this area. Having more deciduous trees than evergreens in this area is a good strategy to keep flames on the ground and out of the trees.
- Isolated or small groupings of trees or shrubs are best to create screening and privacy.
- Native grass lawns and recreated meadows are also possibilities for this zone. Use drought resistant and low water use species. Seed a cleared area with native species, combinations of warm and cool season perennial grasses as well as annual and perennial wildflowers.
- Keep grasses and wildflowers under eight inches high, especially when dry or dormant.
- Walkways and paths can be effective for breaking up fuel continuity so that it is difficult for a fire to carry.



# SURVIVABLE SPACE MANAGEMENT ZONES

## ZONE 3 MANAGED WILDLAND ZONE

This is the Managed Wildland Zone. This is an area of native vegetation. This zone may extend at least 200 feet from the structure. This area may also represent or be part of the community ignition zone discussed in Zone 4.

- Typical management objectives for areas surrounding home sites or subdivisions are: recreational use; aesthetics; maintaining ecological health and vigor; providing barriers for wind, noise, dust, and visual intrusions; and possibly limited production of firewood, fence posts, and other natural resource commodities.
- Specific thinning requirements depend on species and land objectives. Thinning improves the forest stand by removing trees that are damaged, attacked by insects, infected by disease, or are of poor form or low vigor. The remaining trees should be the larger and healthier trees in the stand.
- A limited number of wildlife trees are appropriate in Zone 3. Make sure dead trees pose no threat to power lines or access roads.
- It is a good idea from the standpoint of personal access and safety to prune trees along trails and access roads. Pruning helps reduce ladder fuels within the tree stand, thus keeping a fire on the ground instead of in the crowns.
- Any approved method of slash treatment may be acceptable for this zone, including piling and burning, chipping or lop-and-scatter.



**BEFORE**



**AFTER**

### ZONE 3 FIRESAFE MONTANA TIPS

- Proper thinning and pruning in this zone will make a significant difference in protecting your home and other structures.
- Re-sprouting of shrubs will happen and is acceptable. Monitor re-sprouting regularly to guard against the creation of ladder fuels, and thin and trim again when necessary.



# SURVIVABLE SPACE MANAGEMENT ZONES

## ZONE 4 COMMUNITY IGNITION ZONE

This zone usually includes the entire Wildland Urban Interface of a community and may be comprised of both private and public land. It requires joint community and public land planning to further assist wildfire mitigation. Communities may need to plan fire/fuel breaks and evacuation plans, appropriate infrastructure such as ingress/egress routes, emergency water supplies and other fire protection resources. Businesses that utilize local fuels (such as pellet and particle board plants, bio-fuels, as well as furniture industries) also help. By working together you can create survivable space for the entire community. Youth education is important to affect attitudes concerning what can be done to protect homes from wildfire. All residents and property owners have an important role to play.

Fire behavior makes Zone 4 important. For example, spotting often spreads wildfires. Spotting occurs when pieces of burning debris are picked up by wind and carried ahead of the main fire, starting more fires.

The work within the community ignition zone is planned and implemented to create survivable space for the entire community. This work begins with the homeowner, but also includes potential greenbelt fuel breaks, adequate infrastructure, and planning. Thinning landscape tree densities will significantly limit the potential for crown fire and flame front development across the community Wildland Urban Interface. If the vegetation in this area is properly modified and maintained, a wildfire can be confined to the ground. This will limit flame length, intensity, rate of spread, and the heat produced. All of these will assist firefighters in defending the community, individual neighborhoods, and homes. Contact FireSafe Montana to learn how to make the entire community more capable of surviving wildfire.



### ZONE 4 FIRESAFE MONTANA TIPS

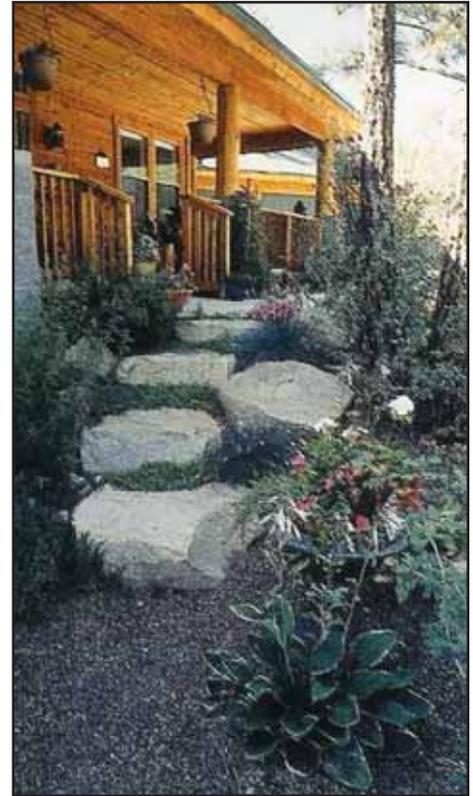
- Work with your community to develop a Community Wildfire Protection Plan (CWPP), which will provide a long-range plan for reducing community risk from wildfire.
- Stay engaged with neighbors and community efforts to support actions to manage forested areas of the community in a safe manner.

## LANDSCAPING – FIRESAFE PLANT MATERIALS

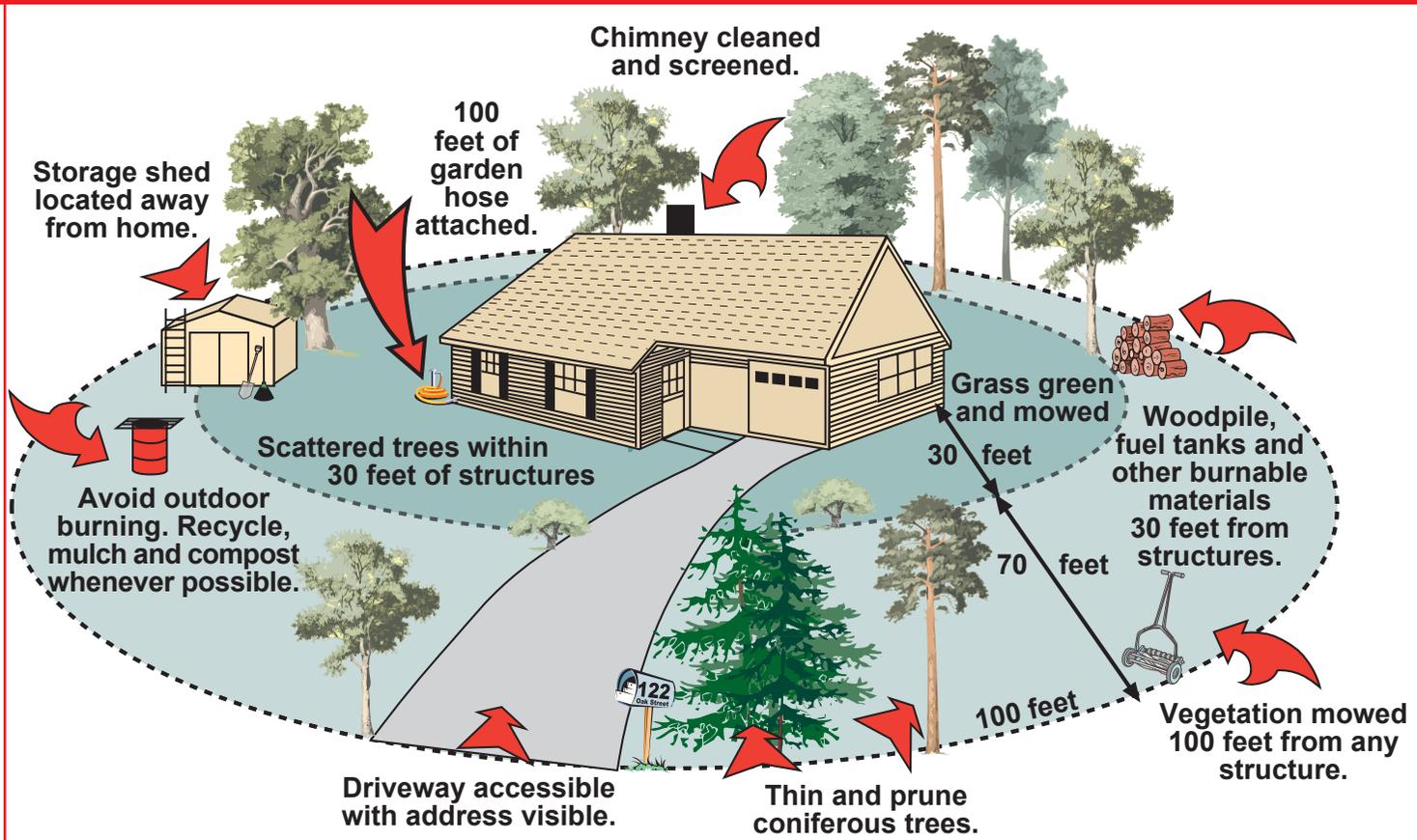
Creating survivable space around your home is one of the most important and effective steps you can take to protect yourself, your family, and your home from wildfire. All vegetation, naturally occurring and otherwise, is potential fuel for fire. Plant choice, spacing and maintenance are critical; where and how you plant can be more important than which species you use. Some important things to remember about plants are:

- No plant species is totally “fireproof”.
- Moisture content is the most important factor influencing flammability.
- Plants with high resin content tend to be most readily flammable. Many native plants in arid environments, such as big sagebrush, juniper and pine, are resinous.
- Deciduous plants tend to be most fire resistant, because leaves have high moisture content.
- Salt tolerant plants show natural fire resistance, with the exception of saltcedar.
- Isolated or small groupings of trees or shrubs are best. Treat groups as individual vegetation units.

For more information on fire resistant plants in Montana go to <http://msuextension.org/publications/YardandGarden/MT200101AG.pdf>



## SUMMARY: PROTECT YOUR HOME FROM WILDFIRE



# CREATING SURVIVABLE SPACE

## SURVIVABLE SPACE CHECKLIST

THIS CHECKLIST IS A GUIDE, NOT AN EXHAUSTIVE LIST. ANY "NO" ANSWERS SHOULD REQUIRE TREATMENT.

YES NO

1. HAS DEAD VEGETATION WITHIN THE RECOMMENDED SPACE BEEN REMOVED?

2. HAS CONTINUOUS DENSE COVER OF SHRUBS AND/OR TREES BEEN BROKEN UP?

3. HAVE LADDER FUELS BEEN REMOVED?

4. IS THE AREA SURROUNDING STRUCTURES "LEAN AND CLEAN" TO A DISTANCE OF AT LEAST 30 FEET?

5. ARE VEGETATION AND OTHER FUELS SURROUNDING STRUCTURES REGULARLY MAINTAINED?

6. IS ROOFING MATERIAL FIRE-RESISTANT?

## 1. RECOMMENDATIONS FOR DEAD VEGETATION

Dead vegetation includes dead trees and shrubs, dead branches lying on the ground or still attached to living plants, dried grass, flowers and weeds, dropped leaves and needles, and stacks of firewood. Most dead vegetation should be removed from the recommended survivable space area. However, a thin layer of pine needles, leaves, and twigs may be desirable to allow for soil mulch and erosion control. The actions below are recommended:

REMOVE

- Standing dead and downed trees and shrubs.
- Dead leaves, branches, twigs, and needles on mature trees to a height of 15 feet.
- Debris from roof and rain gutters.
- Dried out and "cured" grasses and wildflowers.

REDUCE

- Layers of pine needles, leaves, twigs, and cones to a depth of three inches or less.

REPLACE

- Replace dead vegetation with fire-resistant plants that lower fire intensity and reduce soil erosion as appropriate.

RELOCATE

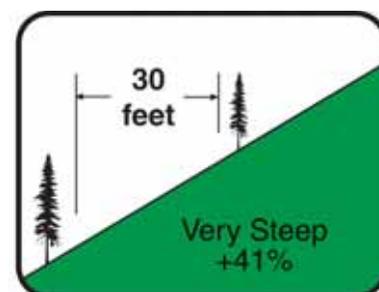
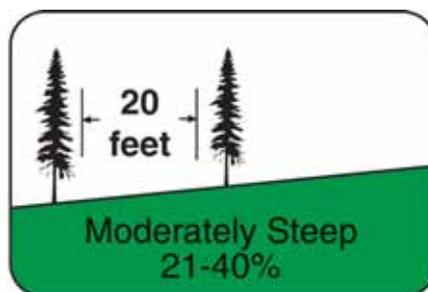
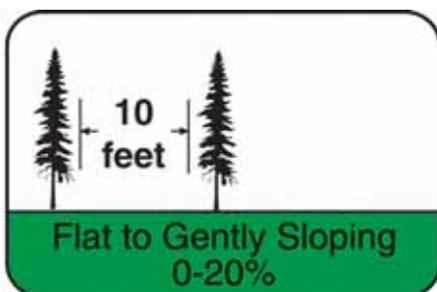
- Firewood and other combustible debris (wood scraps, grass clippings, leaf, and compost piles, etc.) to at least 30 feet uphill from structures.

# CREATING SURVIVABLE SPACE

## 2. BREAK UP CONTINUOUS VEGETATION

Sometimes vegetation occurs in a continuous layer of fuel. The possibility of wildfire increases as the vegetation becomes more continuous and dense. To reduce fire intensity, adequate spacing needs to be created in the vegetation. The recommended practice is to remove and "break up" vegetation to provide separation between plants. Whether you have grass, shrubs or trees around your home, you need to consider the influence of slope. Regardless of vegetation type (grass, shrubs or trees), slope is an important influence.

For example, in a forested area, consider the following examples as a reference:



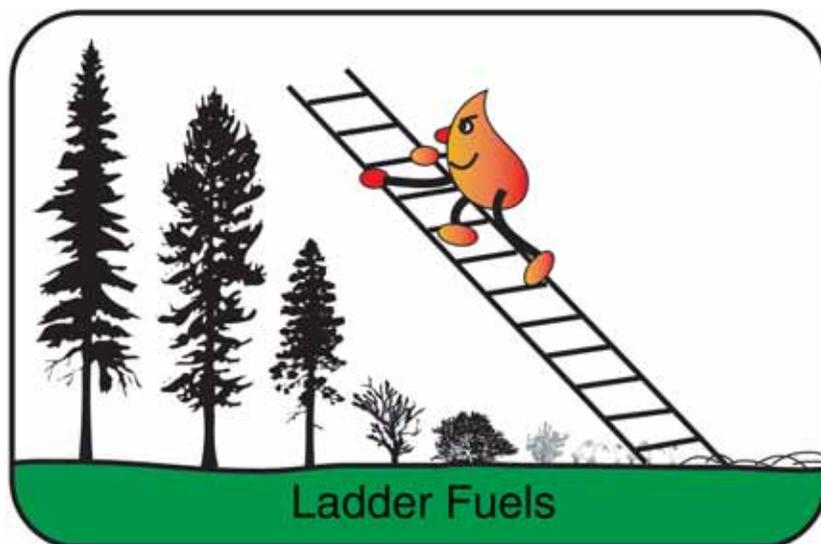
**NOTE:** Spacing distances are measured between canopies (outermost branches of a plant), not between trunks or stems.

Not only do steep slopes affect fire behavior, they are more vulnerable to erosion. When removing shrubs and trees from steep slopes, try to keep soil disturbance to a minimum. To reduce soil erosion, it may also be necessary to replace the vegetation you remove with fire-resistant plants.

## 3. LADDER FUELS

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

This may be accomplished by removing lower tree branches, reducing shrub height, or both. Shrubs may also be removed. A common rule of thumb is a vertical separation of three times the height of the lower fuels.



# CREATING SURVIVABLE SPACE

## 4. "LEAN AND CLEAN"

The area adjacent to your house is particularly important in terms of an effective survivable 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 and plants are kept healthy.
- **Clean** – no accumulation of dead vegetation or other flammable debris.

Following the "Lean and Clean" checklist will help you properly establish and maintain survivable space around your home and outbuildings.

### THE "LEAN AND CLEAN" CHECKLIST

- Use low growing herbaceous (non-woody) or succulent plants near structures. Herbaceous plants include succulent ground covers such as ice plant, bedding plants, bulbs, and perennial flowers.
- Use non-flammable mulches, rock and non-combustible hard surfaces (concrete sidewalks, brick patios, pavers, and asphalt driveways). Break up continuity of vegetation with hardscape features such as decorative rock, gravel and stepping-stones to slow the spread of fire.
- Space deciduous ornamental trees and shrubs as individual plantings or as groups of plants. The plants nearest to structures should be more widely spaced and smaller than those farther away. Use small, irregular clusters, and islands, not large masses.
- Most wildland shrubs and trees should be removed from this zone and replaced with the above practices.
- Minimize the use of fire-prone and resinous shrubs and trees (such as juniper, big sagebrush, and pine) and tall grasses.
- Tree limbs within 15 feet of a chimney, encroaching on power lines, or touching the house should be removed.
- Keep plants free of dead leaves, branches, and ladder fuels.
- Check with your homeowners' association or community to see if permits are required to carry out any of the above actions. If codes interfere with fire protection, they should be updated.

# CREATING SURVIVABLE SPACE

## 5. VEGETATION MAINTENANCE

Keeping your survivable space effective is a continual process. Before fire season, review the survivable space checklist and take action accordingly. Follow the “Four R’s of Survivable Space” to maintain your property:

### REMOVE

- Rake up leaves and litter before and during fire season, but leave layer of decomposing plant matter (duff) if present.

### REDUCE

- Prune or trim trees and shrubs annually as needed.

### REPLACE

- Add non-flammable hardscape elements such as boulders, pathways, and other features.
- Replace fire-prone plants with fire-resistant plants.

### RELOCATE

- Firewood, fuel tanks, and other combustible debris (wood scraps, grass clippings, leaf, and compost piles, etc.) to at least 30 feet from structures.

## 6. ROOFING MATERIALS

Fire-resistant (not readily flammable) roofing material is rated by the National Fire Protection Association. These ratings are dependent upon proper installation. Rating categories include:

- **Combustible or non-combustible**
- **Classes: A, B and C**
- **Time: 20-minute, 1-hour, 2-hour, and 4-hour**

Non-rated roof materials (such as combustible wood shakes and shingles) should be replaced with class A roofing. Examples of class A roof materials are:

- **Fiberglass reinforced asphalt shingles (one of the less expensive options)**
- **Fiber-cement shingles, galvanized metal underlaid with gypsum, slate, and tile shingles**

Embers have been known to enter through melted skylights and ignite structures. It is recommended that covers be built for skylights. For more information on roofing and construction materials, see *Firewise Construction: Design and Materials* by Peter Slack, Colorado State Forest Service; available at: [http://csfs.colostate.edu/pdfs/construction\\_booklet.pdf](http://csfs.colostate.edu/pdfs/construction_booklet.pdf).

# WILDFIRE EMERGENCY GUIDELINES

Should a community be threatened by wildfire, the occupants may be advised to evacuate by law enforcement or fire officials. The purpose of evacuation is to protect people from life-threatening situations. Homeowners who have prepared well to make their property fire resistant may choose to stay and defend their property against ember fires. However, homeowners who initially choose to prepare, stay and defend but later change their mind and undertake a late evacuation (when visibility and other conditions may be poor) increase their risk of running into dangers.

## WHEN A WILDFIRE APPROACHES

### WHERE TO KEEP THESE GUIDELINES:

- Refrigerator Door
- Home Bulletin Board

### BEFORE THE FIRE:

- Collect valuables, important documents, medications, and other personal items in one place to be ready to evacuate if necessary.
- What you can fit into your vehicle is what you can take (make priorities by what is replaceable and what is not).
- Maintain a mobile survival kit. This includes first aid kit, emergency tools, battery powered radio and flashlight, extra batteries, car keys, credit cards, water, and non-perishable food. Also consider blankets and sleeping bags.
- Place fire resistant coverings over at-risk skylights and windows.
- Make sure your children's needs are met.
- Clearly post name/address so it can be seen from the street.
- Establish and practice a family evacuation plan and meeting location. Know whom you will notify about the evacuation. Know where you will get fire updates.
- Have means of transporting pets and livestock readily available.

### WHEN FIRE IS NEARBY

- Park your vehicle facing out. Put your valuables in the car. Place the car keys where you can find them.
- Dress appropriately. Have sturdy shoes, long pants and shirt, gloves, and handkerchief.
- Confine or secure pets and livestock to one area. Prepare them to be transported.
- Move all flammable furniture (including outdoor furniture) to the center of the home or a storage facility.
- Leave your electricity on and leave some lights on.
- Close shutters, blinds, and heavy drapes. Remove lightweight window dressings.
- Close fireplace dampers and fireplace screens.
- Shut all doors, exterior and interior. Leave doors unlocked.
- Place a note attached to front door stating names of all evacuees, time and date of evacuation, destination, and contact information.
- Connect garden hose to faucet and leave buckets full of water around the house.
- Place a ladder outside for roof access.



# WILDFIRE EMERGENCY GUIDELINES

## NOTIFICATIONS

### Alert Phase

Residents will be advised of potential hazards and the possibility of evacuation. Residents should be prepared and ready when given instructions as to travel routes and safe locations.

### Planning Your Evacuation Route

The direction of your evacuation will be dictated by the location of the fire in relation to your home and the direction and speed it is spreading.

### Warning / Leave Early

Applies to areas in the influence zone of the fire. Changes in weather and/or fire conditions could rapidly cause a threatening situation to occur. This is a good probability of a need to evacuate. Recommend movement of persons requiring extraordinary care, large mobile property, and livestock (if feasible). Only individuals with proper identification may be allowed in the affected area.

### Evacuation Order or Prepared Residents Stay and Defend

Issued when the fire is moving toward an area and there is an immediate threat to life and property. This is your last chance to safely evacuate before roads in the area will be closed.

## IF YOU ARE UNABLE TO EVACUATE WHEN A FIRE APPROACHES:

### INSIDE YOUR HOUSE

- Stay inside your house away from outside walls.
- Keep all doors closed but leave them unlocked.
- Keep your entire family together and REMAIN CALM. Remember if it gets hot in the house, it is four to five times hotter and more dangerous outside.
- Place water in sinks, bathtubs, and buckets so you are prepared to extinguish any fire that may start.

### TRAVELING

- Be prepared to be directed by law enforcement or traffic control personnel: Follow their directions.
- Drive travel routes in advance so that you will be prepared.
- Have checklist and map ready.
- If you become trapped in your car, park in an area clear of vegetation, close all vehicle windows and vents, cover yourself with a blanket or jacket and lie on the floor.
- If you are trapped while on foot, select an area clear of vegetation or lie face down in a ditch.

### AFTER THE FIRE PASSES

- Check your home's exterior, roof, and under deck immediately, extinguish all sparks and embers. If you must climb on the roof, use caution.
- Check inside the attic and underneath decks for hidden burning embers.
- Check your yard for burning woodpiles, trees, fence posts or other materials.
- Stay clear of all downed power lines.

### LIFTING THE EVACUATION NOTICE

- Evacuation notices may stay in effect for several days. They will be rescinded when it is determined that the threat is over.

### RETURN TO YOUR HOME

- The county sheriff or local law enforcement will determine when it is safe for citizens to move back into their homes.
- Be alert for downed power lines and contact your gas or electric company before turning utilities back on.

### Unplanned and Late Evacuations is Where the Danger Lies...

Every year, most of the people injured and killed from wildfires are trying to escape from them. Unplanned and late evacuation lead to desperate escape attempts.

#### Know the Hazards

- Mid-slope roads
- Long access routes through heavy fuels
- Steep topography
- No fire escape plan
- No situational awareness to extreme conditions
- No safety or survival area at structure



# FREQUENTLY ASKED QUESTIONS

## **WHAT IS SURVIVABLE SPACE?**

In the 1980's the term "defensible space" was coined to describe vegetation management practices aimed at reducing the wildfire threat to homes. The focus of defensible space was to provide greater opportunity for structural protection by firefighters. However, in many cases, firefighting resources are not always available to defend every home. Survivable space is the modification of landscape design, fuels and building materials that makes a home ignition caused by wildfire unlikely, even without direct firefighter intervention.

## **WHAT IS THE COMMUNITY IGNITION ZONE?**

As homeowners, we have the most power to modify fuel conditions on our own properties, but it is not enough to only treat your own property. We need to work together to create survivable space for the entire community. Work together to develop a wildfire protection plan, strategically locate greenbelts/fuel breaks, ensure adequate community infrastructure, etc. Call your local county extension office, fire department or state or federal land management agency to learn how you can make your community better able to survive wildfire.

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

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

## **WHAT IS FIREWISE?**

Firewise is a program that encourages the development of defensible and survivable space and the prevention of disastrous wildfires. Being "fire wise" is having the mindset and taking the actions needed to meet the challenges of living in a fire-prone ecosystem. It's creating conditions that reduce wildfire intensity in communities and prevent home ignitions.

## **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, what is growing adjacent to homes can have considerable influence upon their survivability. All vegetation, including naturally occurring native plants and ornamental plants in the residential landscape, is potential wildfire fuel. If 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 firefighters in defending the home against an oncoming wildfire.

## **DOESN'T THE FIRE DEPARTMENT PROTECT MY HOME FROM WILDFIRE?**

During a major wildfire, it is unlikely there will be enough firefighting resources available to defend every home. In those instances, firefighters will likely select homes they can safely and effectively protect. Even with adequate resources, some wildfires may be so intense that there may be little that firefighters can do to prevent a house from burning. The key is to reduce fire intensity as wildfire nears the house. Consequently, the most important person in protecting a house from wildfire is not a firefighter, but the property owner. And it's the action taken by the owner before the wildfire occurs (such as proper landscaping) that is critical.

## **DOES CREATING SURVIVABLE SPACE REQUIRE SPECIAL SKILLS OR EQUIPMENT?**

No. For the most part, creating a survivable space requires only routine gardening and landscape maintenance practices such as pruning, mowing, weeding, plant removal, appropriate plant selection, and irrigation. The necessary equipment consists of common tools like a chain saw, pruning saw, pruning shears, loppers, weed-eater, shovel, and rake. A chipper, compost bin, or large rented trash dumpster may be useful in disposing of unwanted plant material.

## **HOW IMPORTANT IS ROOFING MATERIAL?**

Very important. The roof is the largest surface area of most structures and the most vulnerable to wildfire. It can easily catch fire from wind-blown embers. Use Uniform Building Code class A roofing materials, such as fireglass reinforced asphalt shingles, slate or clay tile, or metal. Roof eaves extending beyond exterior walls are also susceptible to flame exposure. Limit them in length and box or enclose them with fire-resistant materials.

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

The specific reasons for not creating survivable space are varied. Some individuals think "it won't happen to my home." Others do not believe the costs (time and money) would outweigh the benefits. Others have failed to implement survivable space practices because of lack of knowledge or misconceptions.

# IS YOUR NEIGHBORHOOD PREPARED?

## Has your neighborhood...

- Clearly posted signs to show bridge and road weight limitations and traffic restrictions such as dead-end streets?
- Identified at least two exit routes accessible to all residents and made sure everyone knows where those routes are, so there is no last minute confusion in the event of fire?
- Designed road widths, grades, and curves adequate to provide safe access for large emergency vehicles?
- Cleared all flammable vegetation at least 10 feet from roads and five feet from driveways?
- Posted the house address at the beginning of each driveway (or on the house itself if it is easily visible from the road) using large, reflective numbers?
- Constructed fire barriers such as greenbelts and/or fuel breaks?
- Constructed turnouts on one-way roads?
- Cleared dead vegetation and ladder fuels at least 100 feet on either side of all evacuation routes?
- Installed and maintained an emergency water supply that meets fire department standards through one of the following:
  - community hydrant system?
  - minimum storage supply of 2,500 gallons per lot?
  - cooperative emergency storage tank with neighbors that provides required gallonage?
- Clearly marked water supply sources and provided easy access to them for firefighters?
- Identified safety zones and make sure all residents know where they are in case of an emergency situation.

# WHAT WILL A FIRESAFE COUNCIL DO FOR YOU?

- **Mobilize** people in the community
- **Create** a powerful group initiative
- **Save** lives, property and expense from wildfires
- **Develop** an emergency preparedness plan
- **Provide** an opportunity for community residents to voice their concerns about public safety issues
- **Increase** the chances that homes will remain insurable



Contact FireSafe Montana for additional information.

P.O. Box 1960

Helena, MT 59624-1960

Phone (406) 431-8718

Email: [execdir@firesafemt.org](mailto:execdir@firesafemt.org)

Website: [www.firesafemt.org](http://www.firesafemt.org)



## Visit These Websites

for more information on how to enhance the protection of your community from wildfires:

[www.firesafemt.org](http://www.firesafemt.org)

[www.Firewise.org](http://www.Firewise.org)

[www.firesafecouncil.org](http://www.firesafecouncil.org)

[www.nfpa.org](http://www.nfpa.org)

[www.dnrc.mt.gov](http://www.dnrc.mt.gov)

[www.fema.gov](http://www.fema.gov)

[www.nifc.gov](http://www.nifc.gov)

[www.keepgreen.org](http://www.keepgreen.org)

[www.blm.gov/mt/st/en.html](http://www.blm.gov/mt/st/en.html)

[www.fs.fed.us](http://www.fs.fed.us)

## Think Before You Burn It!!! It's Your Responsibility

- Use caution and common sense before lighting any fire.
- Understand that any fire could become a wildfire.
- Understand and practice proper guidelines for fire outdoors.
- Never, ever leave any fire unattended.
- Make sure any fire is properly and completely extinguished before leaving.
- Properly extinguish and discard smoking materials.
- Be aware of surroundings and careful when operating equipment during periods of dry or hot weather.
- Speak up and step in when someone is in danger of starting a wildfire.

**Thanks to the USDOJ/Bureau of Land Management  
for funding the printing of this publication.**

In May 1998, the University of Nevada (Cooperative Extension and Agricultural experiment Station) and the Sierra Front Wildfire Cooperators initiated a program entitled "Living with Fire." One program product was a publication for homeowners. The Arizona Interagency Coordinating Group (AICG) has reviewed and modified, with permission, this publication for use in Arizona. FireSafe Montana would like to recognize Nevada and Arizona for their work and for sharing their publication with Montana. Thanks also to Fireline Protection Services for generously allowing us to use some of their excellent photographs.